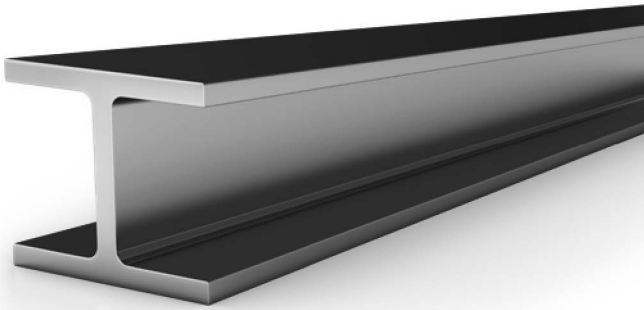


Product Guide

현대제철 종합 제품소개 | **PART 2**

HYUNDAI STEEL

CONTENTS

HYUNDAI STEEL

현대제철 사명을 부각시킨 심벌 H는 High Spirit(진취적 기상), Harmony(조화), Humanity(인류애)를 상징합니다. H의 견고한 양축은 현대제철의 신·기존사업과 기업, 고객을 뜻하며 가운데 교량(Bridge)은 양축의 균형적 만남과 통합으로 성장하는 미래를 의미합니다.

The 'H' symbol of Hyundai Steel highlights the company's mission for High Spirit, Harmony and Humanity. Like its shape, the firm axes on both sides signify Hyundai Steel's new and existing businesses and the company and clients, and the bridge in the middle balances both axes and their future growing in consolidation.

현대제철은 미래 사업환경의 핵심 기반인 철을 생산하고, 첨단 기술을 바탕으로 최적의 소재를 공급하는 파트너입니다. 고객의 기대를 뛰어넘는 혁신적인 제품과 서비스로 사업영역을 확장하고, 차별화된 방식으로 고객이 원하는 가치의 제품을 생산하고 있습니다. 현대제철은 철, 그 이상의 가치를 창조하고, 상생 속에 발전하는 새로운 산업 생태계 모델을 만들어갈 것입니다.

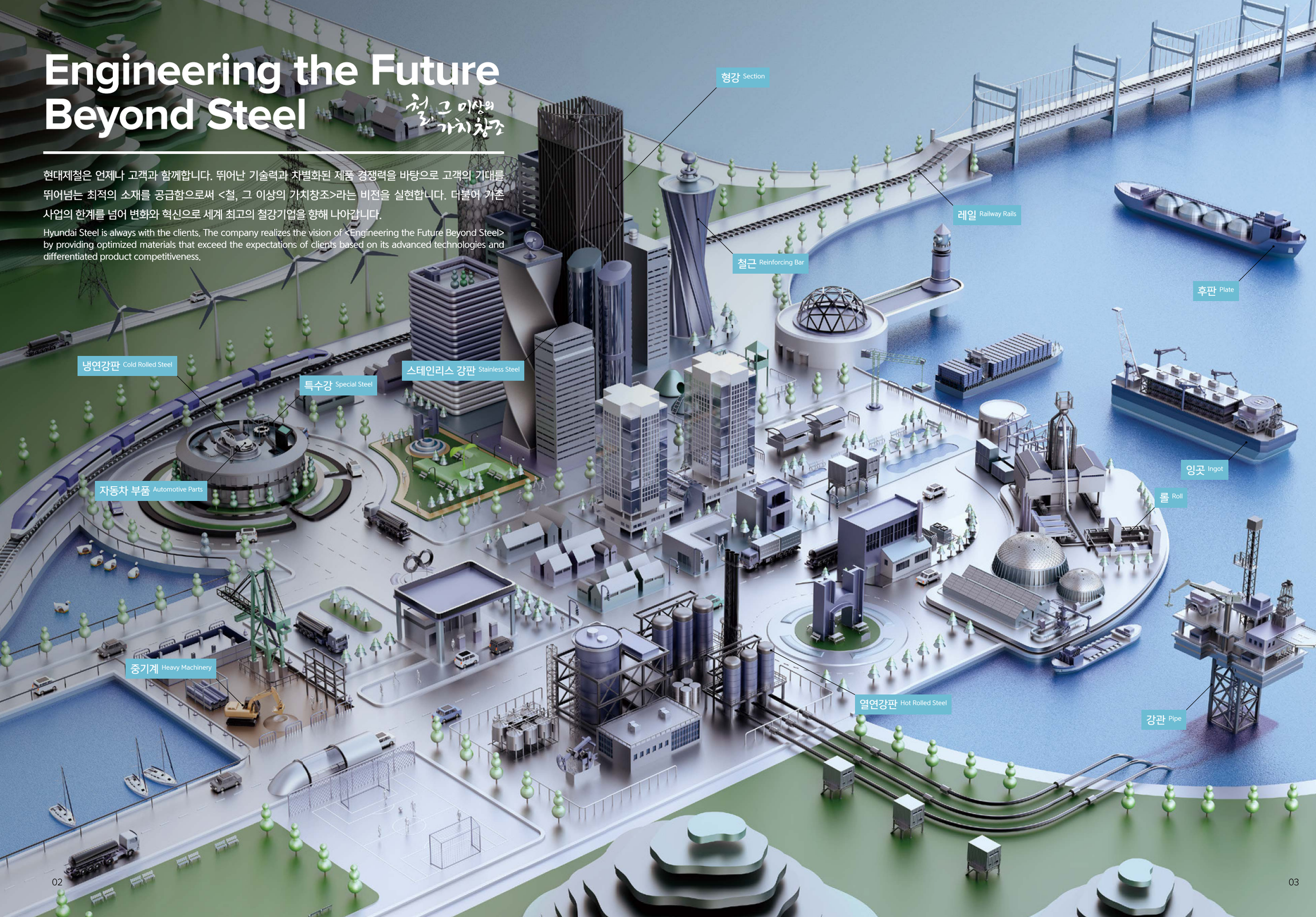
HYUNDAI STEEL manufactures steel, a key foundation for future business environment, and supplies optimal materials through cutting-edge technologies. The company is a reliable partner for an increasing number of businesses around the world. We are expanding our business territories with innovative products and services that exceed our customers' expectations while manufacturing products that transcend targeted values through differentiation. HYUNDAI STEEL will continue to create values and new industrial ecosystems that develop in harmony.

Engineering the Future Beyond Steel

철, 그 이상의 가치창조

현대제철은 언제나 고객과 함께합니다. 뛰어난 기술력과 차별화된 제품 경쟁력을 바탕으로 고객의 기대를 뛰어넘는 최적의 소재를 공급함으로써 <철, 그 이상의 가치창조>라는 비전을 실현합니다. 더불어 기존 사업의 한계를 넘어 변화와 혁신으로 세계 최고의 철강기업을 향해 나아갑니다.

Hyundai Steel is always with the clients. The company realizes the vision of <Engineering the Future Beyond Steel> by providing optimized materials that exceed the expectations of clients based on its advanced technologies and differentiated product competitiveness.



Hyundai Steel Products & Application

현대제철은 지속적인 연구개발과 고도화된 기술력을 바탕으로 철이 활용되는 다양한 산업군의 요구에 부응하는 탁월한 제품을 공급하고 있습니다.

Hyundai Steel offers outstanding products built around continuous research development and sophisticated technical skills that meet the demands from various steel-required industry fields.

Automobile
자동차

냉연강판 | Cold Rolled Steel 열연강판을 상온에서 압연한 제품으로 두께가 균일하고 표면이 미려합니다. 차체 내·외판 등 자동차 강재의 가장 많은 부분에 적용되는 제품입니다.

Rolled from hot rolled steel at ambient temperature, cold rolled steel has even thickness and fine surface. It is most widely used in the automotive material such as inner and outer car frames.

자동차부품 | Automotive Parts 자동차의 안전성과 연비를 향상시키는 제품으로 강도를 높이고 무게를 낮추는 복합적 기술을 필요로 하며 주요 충돌부, 도어 내판, 샤시 부품 등에 적용됩니다.

Enhancing the strength and fuel efficiency, automotive parts require complicated techniques to reduce the weight and are applied to impact point, door inner plate and chassis parts.

특수강 | Special Steel 크랭크샤프트, 콘로드 및 각종 기어류 등 자동차의 핵심 부품에 사용되는 제품으로 고강도와 고내구성이 요구됩니다.

Special steels are employed in critical automotive parts such as crankshaft, connecting rod and many other gear parts where high intensity and durability are necessary.

Energy
에너지

강관 | Pipe 에너지용 강관은 에너지원을 시추, 채굴, 이송하는 데 사용되며 높은 압력, 급격한 온도 변화, 부식 등을 극복할 수 있는 높은 기술력을 필요로 합니다. 현대제철은 에너지용 강재 기준인 API 규격을 만족하는 다양한 강관을 생산하고 있습니다.

Energy pipes are used to drill, mine, and transfer energy sources and require sophisticated technical skill which can overcome high pressure, rapid temperature change, and corrosion. Hyundai Steel produces various pipes that satisfy API standard.

후판 | Plate 시추된 석유나 가스를 분류, 정제하고 저장하는 압력용기 제작에 사용됩니다. 압력용기는 처리하는 석유나 가스의 종류에 따라 저온, 고온, 부식 등을 견딜 수 있어야 합니다.

Plates are applied to build pressure vessel to extract, refine and store drilled oil or gas. Depending on different oil or gas types, pressure vessel must be able to stand high and low temperature and corrosion.

Construction
건설

H형강 | H-Section H형강은 건물의 뼈대를 이루는 철강의 대표적인 제품입니다. SHN은 용접 성능과 내충격 성능이 월등한 H형강으로서 타 철강재 대비 강재 사용량을 줄이고 공사 기간을 단축시키는 장점이 있습니다.

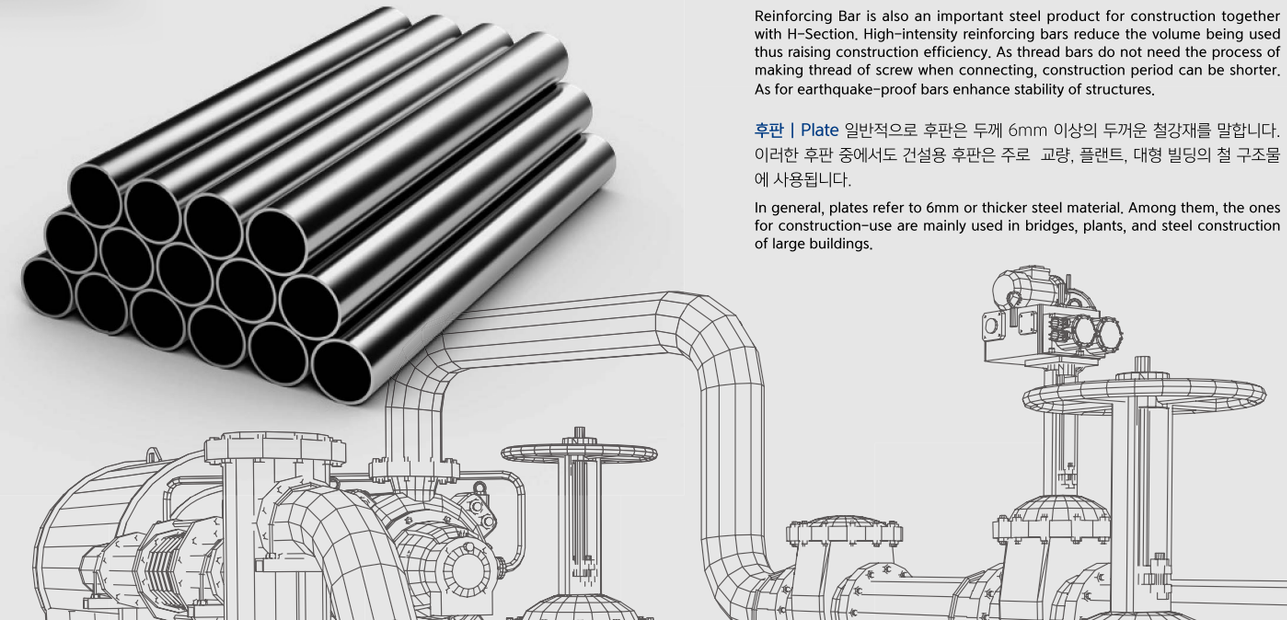
H-Section comprises the structure of a building as one of the main steel product. SHN is an H-Section with outstanding welding performance and impact resistance and its advantage is in reducing volume of steel materials used in comparison to other steel materials and shortening the construction period.

철근 | Reinforcing Bar 철근은 H형강과 마찬가지로 건설용 철강재의 대표 제품입니다. 초고강도 철근은 철근 사용량을 줄여 시공성을 높여주며 나사형 철근은 철근 이음시 나사선을 만드는 공정이 불필요해 공사기간을 단축시킬 수 있습니다. 그리고 내진용 철근은 지진저항에 최적화되어 구조물의 안전성을 한층 높일 수 있습니다.

Reinforcing Bar is also an important steel product for construction together with H-Section. High-intensity reinforcing bars reduce the volume being used thus raising construction efficiency. As thread bars do not need the process of making thread of screw when connecting, construction period can be shorter. As for earthquake-proof bars enhance stability of structures.

후판 | Plate 일반적으로 후판은 두께 6mm 이상의 두꺼운 철강재를 말합니다. 이러한 후판 중에서도 건설용 후판은 주로 교량, 플랜트, 대형 빌딩의 철 구조물에 사용됩니다.

In general, plates refer to 6mm or thicker steel material. Among them, the ones for construction-use are mainly used in bridges, plants, and steel construction of large buildings.



Home Appliances
가전

냉연강판 | Cold Rolled Steel 가전용 냉연강판은 TV, 냉장고, 세탁기의 외판 등 가전제품 곳곳에 적용됩니다. 다양한 디자인을 위해 뛰어난 가공성을 비롯해 고내식성, 전도성 등의 여러 특징을 지니고 있습니다.

Cold rolled steel for home appliance is applied to various products such as TV, refrigerator, outer panel of washer. With different designs, cold rolled coils have excellent machinability, high corrosion resistance and conductivity.

스테인리스 강판 | Stainless Steel 스테인리스 강판은 다른 철강재에 비해 녹이 잘 슬지 않습니다. 일반강의 수십에서 수천 배 이상의 내식성을 가지며 뛰어난 내열성을 지녀 식기 세척기, 세탁기 등의 가전제품에 널리 이용됩니다.

Stainless steel is highly anti-rust compared to other materials. Its corrosion-proof ability exceeds from tens to thousands of times the regular steel and its great heat-resistance allows it to be widely used in home appliances such as dishwashers and washing machines.

Others
기타산업

레일 | Railway Rails 고속열차, 일반열차, 자기부상열차 등의 선로에 사용되는 레일은 다른 형강에 비해 강도가 높으며 내마모성이 뛰어난 특징을 가지고 있습니다.

Rails used in railroads for high-speed, regular and Maglev trains are higher in intensity compared to other sections and they have excellent abrasion resistance.

무한궤도 | Track Shoe Assembly 무한궤도는 굴삭기의 하부 구조로 모래와 자갈 등이 많은 공사 현장에서 안정적으로 무게를 지탱하고 경사면에서 기동하기 위한 고강도 정밀 제품입니다.

Built as substructure of an excavator, track shoe assembly is a high-strength/precision product for stably sustain the weight on sandy and gritty sites and function on the slope.

롤 | Roll 철강재의 반제품인 슬래브, 빌릿 등을 압연하는 롤은 압연기에 장착되어 고온의 반제품을 압연하는데 사용되어 내마모성, 내열성, 내구성이 필요합니다.

Attached to a rolling machine, rolls must have wear and heat resistance; durability to roll semi-finished products including slab and billet at a high temperature.

강널말뚝 | Sheet Pile 강널말뚝은 토목, 건축 공사 및 하천 해안 공사의 물막이, 흙막이 용도로 사용되며 연결부의 견고함으로 우수한 차수성능을 발휘합니다.

Sheet pile plays a role as the stop gate against water and soil in civil engineering, works in river and the coast. The rigid connector of the pile enhances its water-proof ability.

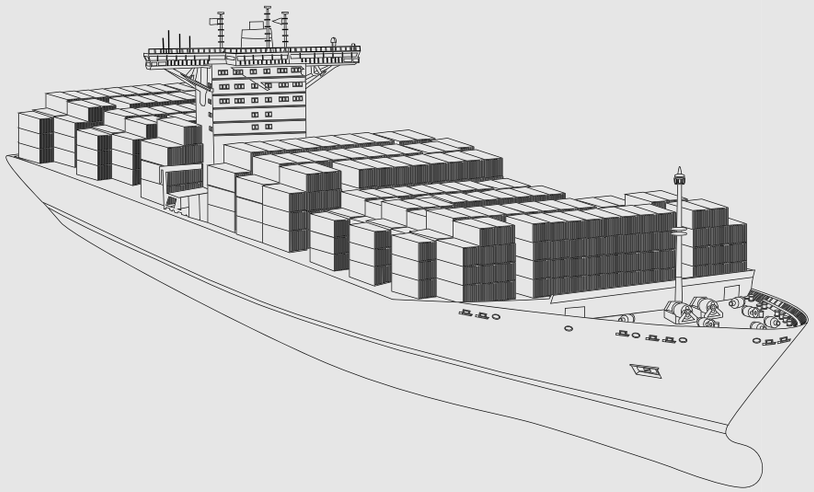
Shipbuilding
조선

후판 | Plate 조선용 후판은 저온인성, 내충격성 등의 특성을 보이는데 주로 벌크선, 컨테이너선, LNG선 등의 내외벽과 상부 갑판 및 해치 덮개 등에 적용됩니다. 현대제철은 각국 선급협회로부터 제조법 승인을 받아 선급 일반용과 고장력강을 생산하고 있습니다.

Ship plates show properties such as low temperature toughness and impact resistance and are usually applied to inner and outer walls, upper decks, and hatch covers of bulk carriers, container ships, and LNG ships. Hyundai Steel manufactures regular and high strength steels after its manufacturing process is approved by classification associations from different nations.

형강 | Section 형강은 모양에 따라 H, I, ㄱ, ㄷ형강 등으로 구분됩니다. 선박의 후판 보강재나 데크 하우스 등에 사용되며 고강도와 충격 흡수력 등의 기술이 요구됩니다.

Depending on the shape, sections are classified into H-BEAM, I-BEAM, angle and channel. Used in reinforcement for vessel plate or deckhouse, sections are required to have high strength and shock absorption.



Manufacturing Work Sites


1


2


5


3


4


6


7

생산 공장

1

울산공장 Ulsan Plant

최첨단 용접 설비와 자동화 설비를 갖추고 있으며, 에너지개발, 산업, 건설, 자동차 등에 사용되는 고부가 가치 강관 및 자동차 경량화 제품을 생산하고 있습니다.

Ulsan Plant, with its advanced welding equipment and automotive facility, produces high-value steel plates and automobile lightweight materials used in energy development, construction and automobiles.

생산제품 강관, 자동차 경량화 부품
Products Steel Pipes, Automotive Lightweight Materials

2

인천공장 Incheon Plant

한국 철강산업의 효시가 된 공장으로 세계 최대 단일 전기로 공장의 위용을 갖춘 인천공장은 친환경, 고효율의 시설을 갖추고 있습니다. 특히 인천 북항 철재부두를 통해 물류비 효율성을 한층 높입니다.

Being the pioneer in Korean steel industry, Incheon Plant is the world's largest single electric furnace plant and equipped with eco-friendly and high-efficiency facilities. Incheon North Port's steel pier, in particular, enhances cost efficiency.

생산제품 H형강, 철근, 일반형강, 스테인리스 강판
Products H-Section, Re-Bar, Regular Section, Stainless Steel

3

포항공장 Pohang Plant

최고 수준의 기술력과 높은 경쟁력을 바탕으로 세계에서 두 번째로 자기부상열차 레일개발에 성공해 국내에서 유일하게 고속 철도용 레일을 공급하고 있습니다.

With its top level technology and high competitiveness, Pohang Plant is the only source manufacturing railroads for high-speed railways in Korea after successful development of Maglev train railroads as the second in the world.

생산제품 H형강, 철근, 레일, 원형강, 롤, 중기, 특수강
Products Re-Bar, Railway Rails, Round Steel, Rolls, Heavy Equipment

4

당진제철소 Dangjin Steelworks

2010년 국내 민간기업 최초로 일관제철소를 가동해 한국 철강사를 다시 쓰고 있는 당진제철소는 고로 및 전기로 공정을 모두 갖춘 종합제철소입니다.

Dangjin Steelworks, rewriting the history of Korean steel industry by being the first private corporation in the nation to run an integrated steel plant in 2010, is an integrated steel mill equipped with blast furnace and electric furnace processes.

생산제품 열연강판, 냉연강판, 후판, 철근, 특수강
Products Hot Rolled Steel, Cold Rolled Steel, Heavy Plate, Re-Bar, Special Steel

5

순천공장 Suncheon Plant

단일설비로는 세계 최대인 120만 톤 규모의 연속소둔 설비를 갖춘 순천공장은 연간 200만 톤의 냉연제품을 생산할 수 있는 공장입니다.

Suncheon plant boasts the world's largest single unit—1.2 million-ton-scale Continuous Annealing Line (CAL) with the annual capacity of producing 2-million-ton of cold rolled coils.

생산제품 냉연강판, 용융아연도금강판, 전기아연도금강판, 컬러강판
Products Cold Rolled Steel, Hot-dip Galvanizing Steel, Electro Galvanizing Steel, Color Steel

6

예산공장 Yesan Plant

자동차 경량화 제품 생산의 중심인 예산공장은 핫스탬핑(Hot-Stamping) 설비 21기, TWB(Tailor Welded Blanks) 설비 6기 등을 보유하고 있습니다.

As the center of automobile weight-reduction products plant, Yesan Plant possesses twenty one Hot-Stamping machines and six TWB(Tailor Welded Blanks) equipments.

생산제품 자동차 경량화 부품
Products Automotive Lightweight Materials

7

청도공장 Qingdao Plant

중국 시장의 잠재력과 무한한 가능성을 내다보며 2000년 설립된 청도공장은 무한궤도 부품을 조립·생산하고 있습니다.

Established from the perspective of the Chinese market's potential and infinite possibility, Qingdao Plant is an integral overseas plant serving as the bridge for Hyundai Steel to enter into the global market.

생산제품 중기
Products Heavy Equipment

Company History

60년이 넘는 시간 동안 대한민국 철강 역사를 새로이 써왔습니다. 앞으로도 현대제철은
대한민국 최고의 철강기업이라는 명성에 걸맞게 인류의 삶에 기여하며 새로운 철강 시대를 열어나갈 것입니다.

For more than six decades, Hyundai Steel rewrote the foundation of Korea's steel history.
With the responsibility as the nation's top-notch steel maker, we will stay committed to bettering lives
for people and opening a new chapter in the steel industry.

1950s

1953. 06. **대한중공업공사 창립**
Korea Heavy Industry Corporation founded

1962. 11. **인천중공업주식회사로 상호변경**
Renamed as Incheon Heavy Industry Co., Ltd.

1964. 09. **인천제철주식회사 설립(양사 체제)**
Incheon Steel Corporation (two-company system) established

1970. 04. **인천제철로 통합**
Integrated as Incheon Steel

1980s

1982. 03. **H형강공장 조업 개시**
Starting of H-section plant operation

1987. 05. **기업공개**
Company opening

창립 초기의 대한중공업공사 전경
Panoramic view of Korea Heavy Industry Corporation in its early days

H형강공장
H-section plant

분괴압연공장
Blooming mill

1990s

1990. 09. **12만 톤 스테인리스 냉연공장 증설 준공**
Expansion of 120,000 ton stainless cold rolling mills completed

1999. 12. **청도 현대 기계 유한공사 설립**
Establishment of Hyundai Machinery limited in Cheongdo, China

중국 청도 현대 기계 유한공사 전경
Panorama of Hyundai Machinery limited in Cheongdo, China

스테인리스 공장 준공
Completed stainless steel plant

2000s

2001. 04. **현대자동차그룹으로 출범**
Launched as Hyundai Motor Group

2004. 10. **한보철강 당진공장 인수합병식**
M&A ceremony of Hanbo Steel Dangjin Plant

2006. 10. **일관제철소 기공식**
Ground-breaking ceremony of Integrated Steelworks

2006년 일관제철소 기공식
Ground-breaking ceremony of Integrated Steelworks

현대자동차그룹으로 출범하는 기념식에 참석한 정몽구 회장
Chairman Chung Mong-Koo attending at the ceremony of the launching of Hyundai Motor Group

2009년 밀폐형 원료처리시스템 가동
Launched closed-type raw materials handling system in 2009

2010s

2010. 01. **일관제철소 1고로 화입식**
Integrated Steelworks the 1st blast furnace firing ceremony

2010. 04. **일관제철소 준공식**
Integrated Steelworks completion ceremony

2010. 11. **일관제철소 2고로 화입식**
Integrated Steelworks the 2nd blast furnace firing ceremony

2013. 09. **일관제철소 3고로 화입식**
Integrated Steelworks the 3rd blast furnace firing ceremony

2015. 07. **현대하이스코 합병**
Merger of Hyundai HYSCO

2015. 10. **특수강 공장 준공**
Completion of special steel plant

2017. 11. **내진강재 브랜드 H CORE 론칭**
Launching 'H-Core' earthquake resistant steel brand

2019. 04. **자동차용 철강 솔루션 브랜드 H-Solution 출시**
Launching 'H-Solution' automotive specialized steel brand

2019. 11. **내마모강 브랜드 웨어렉스 론칭**
Wear resistant steel brand WEAREX launching

2020. 09. **고강도강 브랜드 울트렉스 론칭**
High strength steel brand ULTREX launching

2010년 제2고로 화입식
2010 the 2nd blast furnace firing ceremony

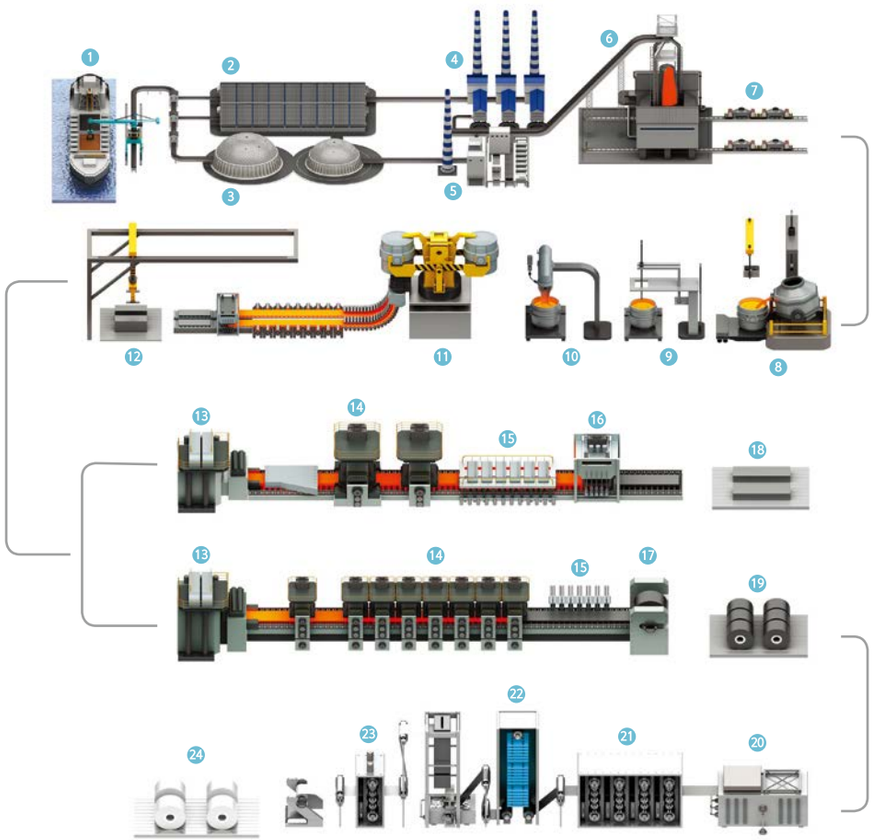
2019년 H-Solution 상해모터쇼 참가
Participated in 2019 H-Solution Shanghai Motor Show

Process

일관제철공정

일관제철공정은 철광석과 석탄을 원료로 자동차와 조선, 가전제품 등에 사용되는 열연·냉연강판, 후판, 강관, 자동차 경량화용 부품 등을 생산합니다. 덩어리 형태의 원료를 고로에서 쇳물로 만든 후 불순물을 제거하고 연속주조기를 거쳐 고체 상태의 반제품인 슬래브로 만듭니다. 이 슬래브를 1,100도 이상 가열한 다음, 눌러 얇게 만드는 압연 공정을 거치면 열연강판, 후판이 됩니다. 열연강판을 상온에서 다시 한 번 압연하면 냉연강판이 되며, 냉연강판을 최종 온도에 맞게 가공하면 자동차 경량화용 부품이 만들어집니다.

Hyundai Steel's integrated steelworks manufacture hot-rolled and cold-rolled coils, heavy plates, pipes, and lightweight automotive parts out of iron ore and coal. By melting lumps of raw materials, molten metal is generated in blast furnaces, after which it is purified in the steelmaking process and then goes on to the continuous casting process to make slabs that can also be hardened half-finished products. Those of slabs are thoroughly rolled at a high temperature (above 1,100°C) in order to make hot-rolled coils. After that, the cold-rolled coils are made by rolling the HRC (hot-rolled coils) at room temperature to process for final usage, which is mainly for lightweight automotive parts.

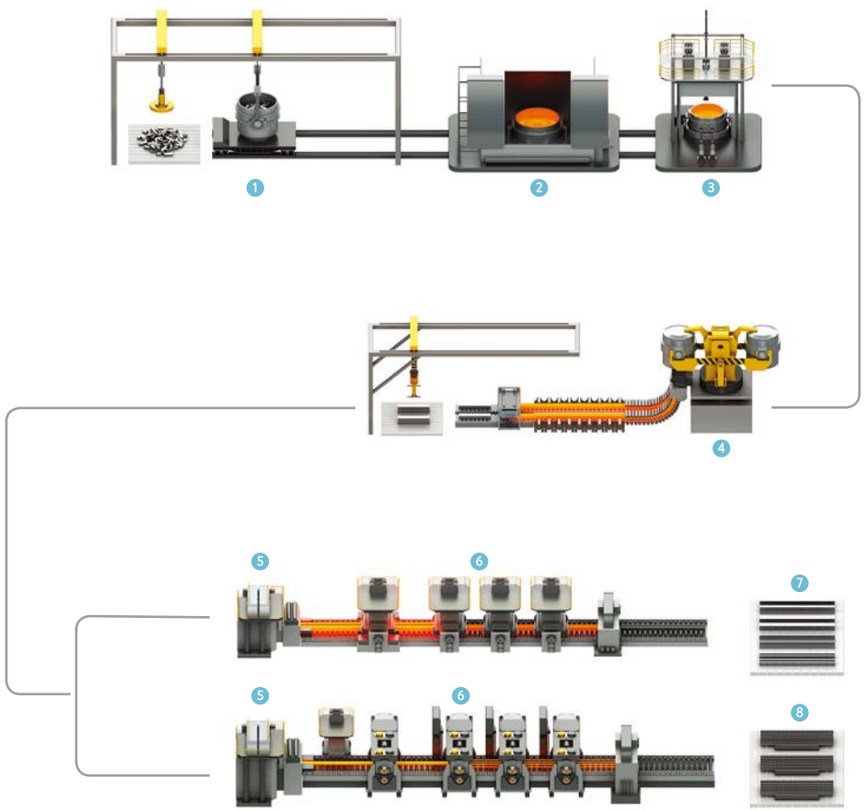


① 항만 Ports ② 선형저장고 Linear storages ③ 원형저장고 Circular storages ④ 코크스공장 Cokes plant ⑤ 소결공장 Sinter plant ⑥ 고로 Blast furnace ⑦ 토페도카 Torpedo ladle car ⑧ 용선예비처리기 Molten iron pretreating equipment ⑨ 전로 Converter ⑩ 정련기 Ladle furnace ⑪ 연속주조기 Continuous casting machine ⑫ 슬래브(반제품) Slabs (half-finished) ⑬ 가열로 Heating furnace ⑭ 압연기 Rolling machine ⑮ 냉각기 Cooler ⑯ 절단기 Cutter ⑰ 권취기 Winder ⑱ 후판 Plates ⑲ 열연강판 Hot-rolled coils ⑳ 산세공정 Pickling process ㉑ 압연공정 Rolling process ㉒ 열처리(소둔)공정 Annealing process ㉓ 도금공정 Galvanizing process ㉔ 냉연강판 Cold-rolled coils

전기로공정

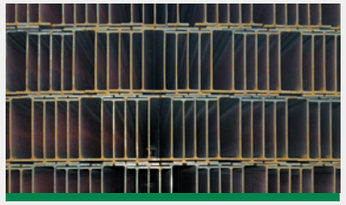
전기로공정에서는 철 스크랩을 원료로 건물과 교량, 철도레일 등에 사용되는 형강, 철근, 레일 등을 생산합니다. 철 스크랩을 녹여 쇳물을 만들고 정련 과정을 통해 불순물을 제거한 뒤 연속주조공정을 거쳐 블룸, 빌렛 등의 반제품을 만듭니다. 반제품을 다시 가열한 다음 최종제품의 규격에 맞게 압연해 다양한 두께와 길이의 형강, 철근 등이 완성됩니다.

Hyundai Steel's electric arc furnace uses steel scrap to manufacture sections, reinforcing bars, and railway rails that are used for buildings, bridges and railways. After melting the steel scrap to make molten metal, it is then smelted to eliminate impurities before proceeding to the continuous casting process to manufacture half-finished products, such as blooms and billets. These half-finished products can be rolled by reheating to increase their size as finished products, such as sections and reinforcing bars, in various sizes and thickness.



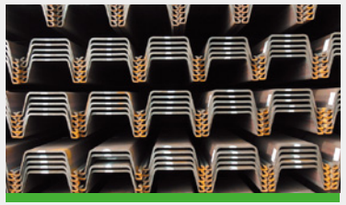
① 철스크랩 Steel scrap ② 전기로 Electric arc furnace ③ 정련기 Ladle furnace ④ 연속주조기 Continuous casting machine ⑤ 가열로 Heating furnace ⑥ 압연기 Rolling machine ⑦ 철근 Reinforcing bars ⑧ 형강 Sections

Main Products

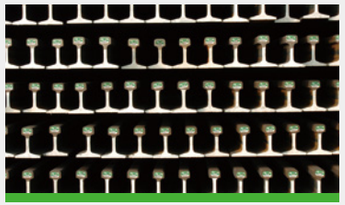


H SECTION H형강

ANGLE/CHANNEL ㄱㄷ형강



SHEET PILE 강널말뚝

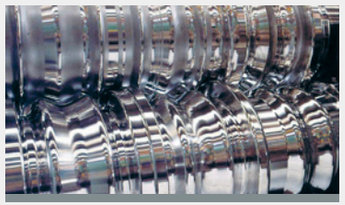


RAIL 레일

REINFORCING BAR 철근

SPECIAL STEEL 특수강

FORGING 단조



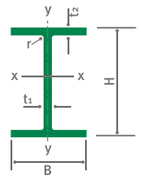
ROLL 롤

HEAVY MACHINERY 중기

Products Guide
Part 02

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(1) Metric Series – KS, JIS '90

호칭치수 Division (depth x width)	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
	W	H	B	t_1	t_2	r	A	Ix	Iy
100 x 100	17.2	100	100	6	8	10	21.90	383	134
125 x 125	23.8	125	125	6.5	9	10	30.31	847	293
150 x 75	14.0	150	75	5	7	8	17.85	666	49.5
150 x 100	21.1	148	100	6	9	11	26.84	1,020	151
150 x 150	31.5	150	150	7	10	11	40.14	1,640	563
200 x 100	18.2	198	99	4.5	7	11	23.18	1,580	114
	21.3	200	100	5.5	8	11	27.16	1,840	134
200 x 150	30.6	194	150	6	9	13	39.01	2,690	507
200 x 200	49.9	200	200	8	12	13	63.53	4,720	1,600
	56.2	200	204	12	12	13	71.53	4,980	1,700
	65.7	208	202	10	16	13	83.69	6,530	2,200
250 x 125	25.7	248	124	5	8	12	32.68	3,540	255
	29.6	250	125	6	9	12	37.66	4,050	294
250 x 175	44.1	244	175	7	11	16	56.24	6,120	985
250 x 250	64.4	244	252	11	11	16	82.06	8,790	2,940
	66.5	248	249	8	13	16	84.70	9,930	3,350
	72.4	250	250	9	14	16	92.18	10,800	3,650
	82.2	250	255	14	14	16	104.7	11,500	3,880
300 x 150	32.0	298	149	5.5	8	13	40.80	6,320	442
	36.7	300	150	6.5	9	13	46.78	7,210	508
300 x 200	56.8	294	200	8	12	18	72.38	11,300	1,600
	65.4	298	201	9	14	18	83.36	13,300	1,900
300 x 300	84.5	294	302	12	12	18	107.7	16,900	5,520
	87.0	298	299	9	14	18	110.8	18,800	6,240
	94.0	300	300	10	15	18	119.8	20,400	6,750
	106	300	305	15	15	18	134.8	21,500	7,100
	106	304	301	11	17	18	134.8	23,400	7,730
	130	310	305	15	20	18	165.3	28,600	9,470
	142	310	310	20	20	18	180.8	29,900	10,000

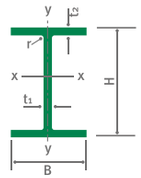
M

Dimension : KS D 3502:2016 JIS G 3192:1990
Dimensional Tolerance : KS D 3502:2016 JIS G 3192:1990
Surface Condition : KS D 3502:2016 JIS G 3192:1990

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Division (depth x width)
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
4.18	2.47	76.5	26.7	87.6	41.2	2.83	5.17	100 x 100
5.29	3.11	136	46.9	154	71.9	9.87	8.43	125 x 125
6.11	1.66	88.8	13.2	102	20.8	2.53	2.81	150 x 75
6.17	2.37	138	30.1	157	46.7	7.28	7.37	150 x 100
6.39	3.75	219	75.1	246	115	27.6	13.5	150 x 150
8.26	2.21	160	23.0	180	35.7	10.4	3.86	200 x 100
8.24	2.22	184	26.8	209	41.9	12.3	5.77	
8.30	3.61	277	67.6	309	104	43.4	10.9	200 x 150
8.62	5.02	472	160	525	244	142	29.8	200 x 200
8.35	4.88	498	167	565	257	150	39.6	
8.83	5.13	628	218	710	332	203	66.7	
10.4	2.79	285	41.1	319	63.6	36.7	6.74	250 x 125
10.4	2.79	324	47.0	366	73.1	42.7	9.68	
10.4	4.18	502	113	558	173	134	23.2	250 x 175
10.3	5.98	720	233	805	358	399	39.5	250 x 250
10.8	6.29	801	269	883	408	462	46.7	
10.8	6.29	867	292	960	444	508	58.7	
10.5	6.09	919	304	1,040	468	540	79.0	
12.4	3.29	424	59.3	475	91.8	92.9	8.65	300 x 150
12.4	3.29	481	67.7	542	105	107	12.4	
12.5	4.71	771	160	859	247	319	35.8	300 x 200
12.6	4.77	893	189	1,000	291	383	53.4	
12.5	7.16	1,150	365	1,280	560	1,097	61.4	300 x 300
13.0	7.50	1,270	417	1,390	634	1,258	71.3	
13.1	7.51	1,360	450	1,500	684	1,372	88.1	
12.6	7.26	1,440	466	1,610	716	1,443	116	
13.2	7.57	1,540	514	1,710	781	1,592	125	
13.2	7.57	1,850	621	2,080	949	1,991	215	
12.9	7.44	1,930	645	2,200	992	2,093	271	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(1) Metric Series – KS, JIS '90

M

Dimension : KS D 3502:2016 JIS G 3192:1990
Dimensional Tolerance : KS D 3502:2016 JIS G 3192:1990
Surface Condition : KS D 3502:2016 JIS G 3192:1990

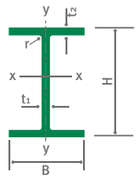
호칭치수 Division (depth x width)	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
	W	H	B	t_1	t_2	r	A	Ix	Iy
350 x 175	41.4	346	174	6	9	14	52.68	11,100	792
	49.6	350	175	7	11	14	63.14	13,600	984
	57.8	354	176	8	13	14	73.68	16,100	1,180
350 x 250	69.2	336	249	8	12	20	88.15	18,500	3,090
	79.7	340	250	9	14	20	101.5	21,700	3,650
350 x 350	106	338	351	13	13	20	135.3	28,200	9,380
	115	344	348	10	16	20	146.0	33,300	11,200
	131	344	354	16	16	20	166.6	35,300	11,800
	137	350	350	12	19	20	173.9	40,300	13,600
	156	350	357	19	19	20	198.4	42,800	14,400
400 x 200	56.6	396	199	7	11	16	72.16	20,000	1,450
	66.0	400	200	8	13	16	84.12	23,700	1,740
	*75.5	404	201	9	15	16	96.16	27,500	2,030
400 x 300	*94.3	386	299	9	14	22	120.1	33,700	6,240
	107	390	300	10	16	22	136.0	38,700	7,210
400 x 400	140	388	402	15	15	22	178.5	49,000	16,300
	147	394	398	11	18	22	186.8	56,100	18,900
	168	394	405	18	18	22	214.4	59,700	20,000
	172	400	400	13	21	22	218.7	66,600	22,400
	197	400	408	21	21	22	250.7	70,900	23,800
	200	406	403	16	24	22	254.9	78,000	26,200
	232	414	405	18	28	22	295.4	92,800	31,000
	283	428	407	20	35	22	360.7	119,000	39,400
	415	458	417	30	50	22	528.6	187,000	60,500
	605	498	432	45	70	22	770.1	298,000	94,400
450 x 200	66.2	446	199	8	12	18	84.30	28,700	1,580
	76.0	450	200	9	14	18	96.76	33,500	1,870
450 x 300	106	434	299	10	15	24	135.0	46,800	6,690
	124	440	300	11	18	24	157.4	56,100	8,110
500 x 200	79.5	496	199	9	14	20	101.3	41,900	1,840
	89.6	500	200	10	16	20	114.2	47,800	2,140
	103	506	201	11	19	20	131.3	56,500	2,580

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,$x10^3$)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Division (depth x width)
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
14.5	3.88	641	91.0	716	140	225	13.6	350 x 175
14.7	3.95	775	112	868	174	283	23.0	
14.8	4.01	909	135	1,020	208	344	36.1	
14.5	5.92	1,100	248	1,210	380	812	44.6	340 x 250
14.6	6.00	1,280	292	1,410	447	970	66.3	
14.4	8.33	1,670	534	1,850	818	2,477	90.3	350 x 350
15.1	8.78	1,940	646	2,120	980	3,024	121	
14.6	8.43	2,050	669	2,300	1,030	3,186	164	
15.2	8.84	2,300	777	2,550	1,180	3,721	199	
14.7	8.53	2,450	809	2,760	1,240	3,953	270	
16.7	4.48	1,010	145	1,130	224	536	27.1	400 x 200
16.8	4.54	1,190	174	1,330	268	650	42.2	
16.9	4.60	1,360	202	1,530	312	770	62.3	
16.7	7.21	1,750	418	1,920	637	2,160	79.9	400 x 300
16.9	7.28	1,980	481	2,190	733	2,521	114	
16.6	9.54	2,530	809	2,800	1,240	5,655	156	400 x 400
17.3	10.1	2,850	951	3,120	1,440	6,688	194	
16.7	9.65	3,030	985	3,390	1,510	7,053	264	
17.5	10.1	3,330	1,120	3,670	1,700	8,048	303	
16.8	9.75	3,540	1,170	3,990	1,790	8,550	415	
17.5	10.1	3,840	1,300	4,280	1,980	9,558	462	
17.7	10.2	4,480	1,530	5,030	2,330	11,557	714	
18.2	10.4	5,570	1,930	6,310	2,940	15,198	1,317	
18.8	10.7	8,170	2,900	9,540	4,440	25,188	3,885	
19.7	11.1	12,000	4,370	14,500	6,720	43,214	11,063	
18.5	4.33	1,290	159	1,450	247	744	38.3	450 x 200
18.6	4.40	1,490	187	1,680	291	890	56.9	
18.6	7.04	2,160	448	2,380	686	2,937	104	450 x 300
18.9	7.18	2,550	541	2,820	828	3,611	163	
20.3	4.27	1,690	185	1,910	290	1,072	60.8	500 x 200
20.5	4.33	1,910	214	2,180	335	1,254	85.9	
20.7	4.43	2,230	257	2,540	401	1,530	132	

* 는 KS(JIS)에 없는 규격

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(1) Metric Series – KS, JIS '90

호칭치수 Division (depth x width)	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
	W	H	B	t_1	t_2	r	A	Ix	Iy
500 x 300	114	482	300	11	15	26	145.5	60,400	6,760
	128	488	300	11	18	26	163.5	71,000	8,110
600 x 200	94.6	596	199	10	15	22	120.5	68,700	1,980
	106	600	200	11	17	22	134.4	77,600	2,280
	120	606	201	12	20	22	152.5	90,400	2,720
	134	612	202	13	23	22	170.7	103,000	3,180
600 x 300	137	582	300	12	17	28	174.5	103,000	7,670
	151	588	300	12	20	28	192.5	118,000	9,020
	175	594	302	14	23	28	222.4	137,000	10,600
700 x 300	166	692	300	13	20	28	211.5	172,000	9,020
	185	700	300	13	24	28	235.5	201,000	10,800
	215	708	302	15	28	28	273.6	237,000	12,900
800 x 300	191	792	300	14	22	28	243.4	254,000	9,930
	210	800	300	14	26	28	267.4	292,000	11,700
	241	808	302	16	30	28	307.6	339,000	13,800
900 x 300	213	890	299	15	23	28	270.9	345,000	10,300
	243	900	300	16	28	28	309.8	411,000	12,600
	286	912	302	18	34	28	364.0	498,000	15,700
	307	918	303	19	37	28	391.3	542,000	17,200

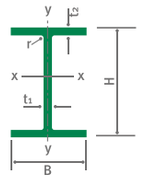
M

Dimension : KS D 3502:2016 JIS G 3192:1990
Dimensional Tolerance : KS D 3502:2016 JIS G 3192:1990
Surface Condition : KS D 3502:2016 JIS G 3192:1990

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,$x10^3$)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Division (depth x width)
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
20.4	6.82	2,500	451	2,790	695	3,688	118	500 x 300
20.8	7.04	2,910	541	3,230	830	4,481	172	
23.9	4.05	2,310	199	2,650	315	1,671	82.4	600 x 200
24.0	4.12	2,590	228	2,980	361	1,936	113	
24.3	4.22	2,980	271	3,430	429	2,336	167	
24.6	4.31	3,380	314	3,890	498	2,755	237	
24.3	6.63	3,530	511	3,960	793	6,121	173	600 x 300
24.8	6.85	4,020	601	4,490	928	7,275	241	
24.9	6.90	4,620	701	5,200	1,080	8,628	356	
28.6	6.53	4,970	601	5,630	936	10,189	260	700 x 300
29.3	6.78	5,760	722	6,460	1,120	12,367	383	
29.4	6.86	6,700	853	7,560	1,320	14,897	588	
32.3	6.39	6,410	662	7,290	1,040	14,720	341	800 x 300
33.0	6.62	7,290	782	8,240	1,220	17,569	486	
33.2	6.70	8,400	915	9,530	1,430	20,902	726	
35.7	6.16	7,760	688	8,910	1,080	19,308	403	900 x 300
36.4	6.39	9,140	843	10,500	1,320	24,015	633	
37.0	6.56	10,900	1,040	12,500	1,630	30,169	1,050	
37.2	6.63	11,800	1,140	13,500	1,790	33,391	1,316	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(1) Metric Series – JIS '94, '08

M

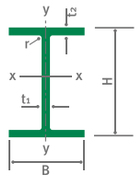
Dimension : JIS G 3192:1994 JIS G 3192:2008 JIS G 3136:2008
Dimensional Tolerance : JIS G 3192:1994 JIS G 3192:2008 JIS G 3136:2008
Surface Condition : JIS G 3192:1994 JIS G 3192:2008 JIS G 3136:2008

호칭치수 Division (depth x width)	'94	'08	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
			W	H	B	t_1	t_2	r	A	Ix	Iy
100 x 100	O	O	16.9	100	100	6	8	8	21.59	378	134
125 x 125	O	O	23.6	125	125	6.5	9	8	30.00	840	293
150 x 75	O	O	14.0	150	75	5	7	8	17.85	666	49.5
150 x 100	O	O	20.7	148	100	6	9	8	26.35	1,000	150
150 x 150	O	O	31.1	150	150	7	10	8	39.65	1,620	563
200 x 100	O	O	17.8	198	99	4.5	7	8	22.69	1,540	113
	O	O	20.9	200	100	5.5	8	8	26.67	1,810	134
200 x 150	O	O	29.9	194	150	6	9	8	38.11	2,630	507
200 x 200	O	O	49.9	200	200	8	12	13	63.53	4,720	1,600
250 x 125	O	O	25.1	248	124	5	8	8	31.99	3,450	255
	O	O	29.0	250	125	6	9	8	36.97	3,960	294
250 x 175	O	O	43.6	244	175	7	11	13	55.49	6,040	984
250 x 250	O	O	71.8	250	250	9	14	13	91.43	10,700	3,650
300 x 150	O	O	32.0	298	149	5.5	8	13	40.80	6,320	442
	O	O	36.7	300	150	6.5	9	13	46.78	7,210	508
300 x 200	O	O	55.8	294	200	8	12	13	71.05	11,100	1,600
300 x 300	O	O	93.0	300	300	10	15	13	118.5	20,200	6,750
350 x 175	O	O	41.2	346	174	6	9	13	52.45	11,000	791
	O	O	49.4	350	175	7	11	13	62.91	13,500	984
350 x 250	O	O	78.1	340	250	9	14	13	99.53	21,200	3,650
350 x 350	O		135	350	350	12	19	13	171.9	39,800	13,600
400 x 200	O	O	56.1	396	199	7	11	13	71.41	19,800	1,450
	O	O	65.4	400	200	8	13	13	83.37	23,500	1,740
400 x 300	O	O	105	390	300	10	16	13	133.3	37,900	7,200
400 x 400	O		172	400	400	13	21	22	218.7	66,600	22,400
	O		232	414	405	18	28	22	295.4	92,800	31,000
	O		283	428	407	20	35	22	360.7	119,000	39,400
	O		415	458	417	30	50	22	528.6	187,000	60,500
	O		605	498	432	45	70	22	770.1	298,000	94,400
450 x 200	O		65.1	446	199	8	12	13	82.97	28,100	1,580
	O		74.9	450	200	9	14	13	95.43	32,900	1,870

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Division (depth x width)
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
4.18	2.49	75.6	26.7	86.4	41.0	2.82	4.91	100 x 100
5.29	3.13	134	46.9	152	71.7	9.86	8.10	125 x 125
6.11	1.67	88.8	13.2	102	20.8	2.52	2.90	150 x 75
6.16	2.39	135	30.1	154	46.4	7.25	6.66	150 x 100
6.39	3.77	216	75.1	243	114	27.6	12.7	150 x 150
8.24	2.24	156	22.9	175	35.5	10.3	3.32	200 x 100
8.24	2.24	181	26.7	205	41.6	12.3	5.17	
8.31	3.65	271	67.6	301	103	43.3	9.43	200 x 150
8.62	5.02	472	160	526	244	141	30.2	200 x 200
10.4	2.82	278	41.1	312	63.2	36.6	5.80	250 x 125
10.3	2.82	317	47.0	358	72.7	42.5	8.61	
10.4	4.21	495	112	551	172	133	21.3	250 x 175
10.8	6.32	856	292	953	443	508	56.2	250 x 250
12.4	3.29	424	59.3	475	91.8	92.7	8.79	300 x 150
12.4	3.29	481	67.7	542	105	107	12.7	
12.5	4.75	755	160	842	245	318	31.8	300 x 200
13.1	7.55	1,350	450	1,480	683	1,370	82.9	300 x 300
14.5	3.88	636	91.0	713	140	224	13.3	350 x 175
14.6	3.96	771	113	864	173	282	22.5	
14.6	6.06	1,250	292	1,380	445	969	58.4	350 x 250
15.2	8.89	2,270	777	2,520	1,180	3,720	187	350 x 350
16.7	4.51	1,000	146	1,110	223	535	25.1	400 x 200
16.8	4.57	1,180	174	1,310	267	649	39.7	
16.9	7.35	1,940	480	2,140	730	2,520	100	400 x 300
17.5	10.1	3,330	1,120	3,670	1,700	8,040	304	400 x 400
17.7	10.2	4,480	1,530	5,030	2,330	11,500	721	
18.2	10.5	5,560	1,940	6,310	2,940	15,200	1,320	
18.8	10.7	8,170	2,900	9,540	4,440	25,100	3,930	
19.7	11.1	12,000	4,370	14,500	6,720	43,100	11,300	
18.4	4.36	1,260	159	1,420	245	742	34.3	450 x 200
18.6	4.43	1,460	187	1,650	290	887	52.0	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(1) Metric Series – JIS '94, '08

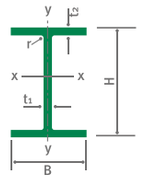
Dimension : JIS G 3192:1994 JIS G 3192:2008 JIS G 3136:2008
Dimensional Tolerance : JIS G 3192:1994 JIS G 3192:2008 JIS G 3136:2008
Surface Condition : JIS G 3192:1994 JIS G 3192:2008 JIS G 3136:2008

호칭치수 Division (depth x width)	'94	'08	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
			W	H	B	t_1	t_2	r	A	Ix	Iy
450 x 300	O	O	121	440	300	11	18	13	153.9	54,700	8,110
500 x 200	O		77.9	496	199	9	14	13	99.29	40,800	1,840
	O		88.2	500	200	10	16	13	112.3	46,800	2,140
500 x 300	O		111	482	300	11	15	13	141.2	58,300	6,760
	O		125	488	300	11	18	13	159.2	68,900	8,110
600 x 200	O		92.5	596	199	10	15	13	117.8	66,600	1,980
	O		103	600	200	11	17	13	131.7	75,600	2,270
600 x 300	O		133	582	300	12	17	13	169.2	99,000	7,660
	O		147	588	300	12	20	13	187.2	114,000	9,010
	O		170	594	302	14	23	13	217.1	134,000	10,600
700 x 300	O		163	692	300	13	20	18	207.5	168,000	9,020
	O		182	700	300	13	24	18	231.5	197,000	10,800
800 x 300			188	792	300	14	22	18	239.5	248,000	9,920
			207	800	300	14	26	18	263.5	286,000	11,700
900 x 300			210	890	299	15	23	18	266.9	339,000	10,300
			240	900	300	16	28	18	305.8	404,000	12,600
			283	912	302	18	34	18	360.1	491,000	15,700
			304	918	303	19	37	18	387.4	535,000	17,200

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Division (depth x width)
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
18.9	7.26	2,490	541	2,760	823	3,610	142	450 x 300
20.3	4.30	1,650	185	1,870	288	1,070	52.9	500 x 200
20.4	4.37	1,870	214	2,130	333	1,250	76.4	
20.3	6.92	2,420	451	2,700	690	3,680	95.5	500 x 300
20.8	7.14	2,820	541	3,130	825	4,470	144	
23.8	4.10	2,230	199	2,580	312	1,660	70.0	600 x 200
24.0	4.15	2,520	227	2,900	358	1,930	98.2	
24.2	6.73	3,400	511	3,820	786	6,110	139	600 x 300
24.7	6.94	3,880	601	4,350	921	7,260	200	
24.8	6.99	4,510	702	5,060	1,080	8,610	306	
28.5	6.59	4,860	601	5,500	931	10,200	228	700 x 300
29.2	6.83	5,630	720	6,340	1,110	12,300	342	
32.2	6.44	6,260	661	7,140	1,030	14,700	305	800 x 300
32.9	6.66	7,150	780	8,100	1,210	17,500	440	
35.6	6.21	7,620	689	8,750	1,080	19,300	365	900 x 300
36.3	6.42	8,980	840	10,300	1,320	24,000	581	
36.9	6.60	10,770	1,040	12,300	1,620	30,100	981	
37.2	6.66	11,660	1,140	13,400	1,780	33,300	1,240	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(2) ASTM

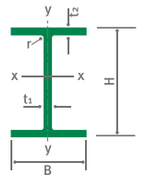
W

Dimension : ASTM A6-14
Dimensional Tolerance : ASTM A6-14
Surface Condition : ASTM A6-14

호칭치수 Desig-nation	단위무게 Unit Weight (lbs/ft)	표준단면치수 Standard Sectional Dimension (in)					단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6, $x10^3$)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
	W	H	B	t_1	t_2	r	M	H	B	t_1	t_2	r	A	Ix	Iy	ix	iy	Sx	Sy	Zx	Zy	Cw	J	
W4 x 4	13	4.16	4.060	0.280	0.345	0.30	19.35	105.7	103.1	7.1	8.8	7.6	24.90	477	161.1	4.37	2.54	90.2	31.3	104	48.1	3.77	6.91	W4 x 4
W5 x 5	16	5.01	5.000	0.240	0.360	0.30	23.81	127.3	127.0	6.1	9.1	7.6	30.26	889	311.0	5.42	3.21	140	49.0	157	74.6	10.9	8.02	W5 x 5
	19	5.15	5.030	0.270	0.430	0.30	28.28	130.8	127.8	6.9	10.9	7.6	35.88	1,090	379.6	5.51	3.25	167	59.4	190	90.6	13.6	13.2	
W6 x 4	8.5	5.83	3.940	0.170	0.195	0.30	12.65	148.0	100.1	4.3	4.9	7.6	16.25	620	82.1	6.17	2.25	83.7	16.4	94.1	25.4	4.19	1.58	W6 x 4
	9	5.90	3.940	0.170	0.215	0.30	13.39	149.9	100.1	4.3	5.5	7.6	17.48	693	92.1	6.30	2.30	92.5	18.4	104	28.4	4.79	1.90	
	12	6.03	4.000	0.230	0.280	0.30	17.86	153.2	101.6	5.8	7.1	7.6	22.99	923	124.4	6.34	2.33	121	24.5	137	38.0	6.62	4.09	
	16	6.28	4.030	0.260	0.405	0.30	23.81	159.5	102.4	6.6	10.3	7.6	30.76	1,350	184.8	6.62	2.45	169	36.1	193	55.8	10.3	9.72	
W6 x 6	15	5.99	5.990	0.230	0.260	0.30	22.32	152.1	152.1	5.8	6.6	7.6	28.63	1,220	387.4	6.53	3.68	160	50.9	177	77.7	20.5	4.58	W6 x 6
	20	6.20	6.020	0.260	0.365	0.30	29.76	157.5	152.9	6.6	9.3	7.6	38.10	1,730	554.5	6.74	3.81	220	72.5	246	111	30.4	10.5	
	25	6.38	6.080	0.320	0.455	0.30	37.20	162.1	154.4	8.1	11.6	7.6	47.57	2,240	712.4	6.86	3.87	276	92.3	312	141	40.3	20.0	
W8 x 4	10	7.89	3.940	0.170	0.205	0.30	14.88	200.4	100.1	4.3	5.2	7.6	19.08	1,280	87.1	8.19	2.14	128	17.4	145	27.1	8.28	1.87	W8 x 4
	13	7.99	4.000	0.230	0.255	0.30	19.35	202.9	101.6	5.8	6.5	7.6	24.72	1,650	114.0	8.17	2.15	163	22.4	187	35.4	11.0	3.86	
	15	8.11	4.015	0.245	0.315	0.30	22.32	206.0	102.0	6.2	8.0	7.6	28.60	2,000	142.0	8.36	2.23	194	27.8	222	43.7	13.9	5.86	
W8 x 5¼	18	8.14	5.250	0.230	0.330	0.30	26.79	206.8	133.4	5.8	8.4	7.6	33.93	2,580	332.8	8.72	3.13	250	49.9	279	76.6	32.7	7.25	W8 x 5¼
	21	8.28	5.270	0.250	0.400	0.30	31.25	210.3	133.9	6.4	10.2	7.6	39.97	3,150	408.7	8.88	3.20	300	61.0	336	93.6	40.9	12.0	
W8 x 6½	24	7.93	6.495	0.245	0.400	0.40	35.72	201.4	165.0	6.2	10.2	10.2	45.78	3,460	764.3	8.69	4.09	344	92.6	380	141	69.8	14.6	W8 x 6½
	28	8.06	6.535	0.285	0.465	0.40	41.67	204.7	166.0	7.2	11.8	10.2	53.11	4,070	900.5	8.75	4.12	398	109	445	166	83.7	22.4	
W8 x 8	31	8.00	7.995	0.285	0.435	0.40	46.13	203.2	203.1	7.2	11.0	10.2	58.62	4,560	1,540.0	8.82	5.13	449	152	496	230	142	22.3	W8 x 8
	35	8.12	8.020	0.310	0.495	0.40	52.09	206.2	203.7	7.9	12.6	10.2	66.52	5,280	1,780.0	8.91	5.17	512	175	570	265	166	32.5	
	40	8.25	8.070	0.360	0.560	0.40	59.53	209.6	205.0	9.1	14.2	10.2	75.60	6,090	2,040.0	8.98	5.19	581	199	651	303	195	46.9	
	48	8.50	8.110	0.400	0.685	0.40	71.43	215.9	206.0	10.2	17.4	10.2	91.05	7,650	2,540.0	9.17	5.28	709	247	803	375	250	82.3	
	58	8.75	8.220	0.510	0.810	0.40	86.31	222.3	208.8	13.0	20.6	10.2	110.5	9,490	3,130.0	9.27	5.32	854	300	982	458	318	141	
	67	9.00	8.280	0.570	0.935	0.40	99.71	228.6	210.3	14.5	23.7	10.2	126.8	11,300	3,680.0	9.44	5.39	989	350	1,150	535	386	212	
W10 x 4	12	9.87	3.960	0.190	0.210	0.30	17.86	250.7	100.6	4.8	5.3	7.6	22.68	2,230	90.2	9.92	1.99	178	17.9	206	28.4	13.5	2.41	W10 x 4
	15	9.99	4.000	0.230	0.270	0.30	22.32	253.7	101.6	5.8	6.9	7.6	28.43	2,870	121.1	10.0	2.06	226	23.8	262	37.9	18.4	4.55	
	17	10.11	4.010	0.240	0.330	0.30	25.30	256.8	101.9	6.1	8.4	7.6	32.26	3,410	148.7	10.3	2.15	266	29.2	306	46.1	22.9	6.67	
	19	10.24	4.020	0.250	0.395	0.30	28.28	260.1	102.1	6.4	10.0	7.6	36.28	4,000	178.0	10.5	2.22	308	34.9	354	54.8	27.7	9.78	
W10 x 5¾	22	10.17	5.750	0.240	0.360	0.30	32.74	258.3	146.1	6.1	9.1	7.6	41.73	4,900	473.6	10.8	3.37	379	64.8	425	100	73.4	10.0	W10 x 5¾
	26	10.33	5.770	0.260	0.440	0.30	38.69	262.4	146.6	6.6	11.2	7.6	49.17	6,010	588.8	11.1	3.46	458	80.3	513	123	92.8	16.9	
	30	10.47	5.810	0.300	0.510	0.30	44.64	265.9	147.6	7.6	13.0	7.6	57.10	7,090	697.7	11.1	3.50	533	94.5	601	145	111	26.2	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(2) ASTM

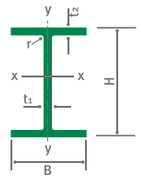
W

Dimension : ASTM A6-14
Dimensional Tolerance : ASTM A6-14
Surface Condition : ASTM A6-14

호칭치수 Designation	단위무게 Unit Weight (lbs/ft)	표준단면치수 Standard Sectional Dimension (in)					단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6, $x10^3$)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Designation
	W	H	B	t_1	t_2	r	M	H	B	t_1	t_2	r	A	Ix	Iy	ix	iy	Sx	Sy	Zx	Zy	Cw	J	
W10 x 8	33	9.73	7.960	0.290	0.435	0.50	49.11	247.1	202.2	7.4	11.0	12.7	62.53	7,070	1,520	10.6	4.93	572	150	634	229	211	24.4	W10 x 8
	39	9.92	7.985	0.315	0.530	0.50	58.04	252.0	202.8	8.0	13.5	12.7	74.14	8,720	1,880	10.8	5.04	692	185	769	282	267	40.9	
	45	10.10	8.020	0.350	0.620	0.50	66.97	256.5	203.7	8.9	15.7	12.7	85.38	10,300	2,210	11.0	5.09	803	217	898	331	321	62.3	
W10 x 10	49	9.98	10.000	0.340	0.560	0.50	72.92	253.5	254.0	8.6	14.2	12.7	92.9	11,300	3,880	11.0	6.46	892	306	987	463	555	57.6	W10 x 10
	54	10.09	10.030	0.370	0.615	0.50	80.36	256.3	254.8	9.4	15.6	12.7	102.0	12,600	4,300	11.1	6.49	983	338	1,090	512	623	75.9	
	60	10.22	10.080	0.420	0.680	0.50	89.29	259.6	256.0	10.7	17.3	12.7	114.0	14,200	4,840	11.2	6.52	1,090	378	1,220	575	710	104	
	68	10.40	10.130	0.470	0.770	0.50	101.2	264.2	257.3	11.9	19.6	12.7	129.0	16,400	5,570	11.3	6.57	1,240	433	1,400	658	832	150	
	77	10.60	10.190	0.530	0.870	0.50	114.6	269.2	258.8	13.5	22.1	12.7	146.1	19,000	6,390	11.4	6.61	1,410	494	1,600	752	975	215	
	88	10.84	10.265	0.610	0.990	0.50	131.0	275.3	260.7	15.4	25.1	12.7	166.9	22,200	7,420	11.5	6.67	1,610	569	1,850	868	1,160	315	
	100	11.10	10.340	0.680	1.120	0.50	148.8	281.9	262.6	17.3	28.4	12.7	189.5	25,900	8,580	11.7	6.73	1,840	654	2,120	998	1,380	455	
	112	11.36	10.415	0.755	1.250	0.50	167.0	288.5	264.5	19.2	31.8	12.7	212.8	29,800	9,820	11.8	6.79	2,070	743	2,420	1,130	1,620	637	
W12 x 4	14	11.91	3.970	0.200	0.225	0.30	20.83	302.5	100.8	5.1	5.7	7.6	26.83	3,680	97.7	11.7	1.91	243	19.4	286	31.1	21.4	3.12	W12 x 4
	16	11.99	3.990	0.220	0.265	0.30	23.81	304.5	101.3	5.6	6.7	7.6	30.37	4,260	117	11.8	1.96	280	23.0	328	36.9	25.7	4.44	
	19	12.16	4.005	0.235	0.350	0.30	28.28	308.9	101.7	6.0	8.9	7.6	36.06	5,410	157	12.2	2.08	350	30.8	406	48.9	35.1	7.66	
	22	12.31	4.030	0.260	0.425	0.30	32.74	312.7	102.4	6.6	10.8	7.6	41.83	6,500	194	12.5	2.15	416	37.9	481	60.0	44.0	12.3	
W12 x 6½	26	12.22	6.490	0.230	0.380	0.30	38.69	310.4	164.8	5.8	9.7	7.6	49.35	8,520	724	13.1	3.83	549	87.9	611	134	164	12.6	W12 x 6½
	30	12.34	6.520	0.260	0.440	0.30	44.64	313.4	165.6	6.6	11.2	7.6	56.80	9,930	849	13.2	3.87	634	103	707	157	194	19.2	
	35	12.50	6.560	0.300	0.520	0.30	52.09	317.5	166.6	7.6	13.2	7.6	66.60	11,900	1,020	13.4	3.91	750	122	837	188	236	30.9	
W12 x 8	40	11.94	8.005	0.295	0.515	0.60	59.53	303.3	203.3	7.5	13.1	15.2	76.03	12,900	1,840	13.0	4.92	851	181	944	276	386	39.4	W12 x 8
	45	12.06	8.045	0.335	0.575	0.60	66.97	306.3	204.3	8.5	14.6	15.2	85.19	14,600	2,080	13.1	4.94	953	204	1,060	311	441	54.3	
	50	12.19	8.080	0.370	0.640	0.60	74.41	309.6	205.2	9.4	16.3	15.2	94.92	16,400	2,350	13.1	4.98	1,060	229	1,190	351	505	74.3	
W12 x 10	53	12.06	9.995	0.345	0.575	0.60	78.87	306.3	253.9	8.8	14.6	15.2	100.5	17,700	3,990	13.3	6.30	1,160	314	1,280	478	847	65.7	W12 x 10
	58	12.19	10.010	0.360	0.640	0.60	86.31	309.6	254.3	9.1	16.3	15.2	110.1	19,800	4,470	13.4	6.37	1,280	352	1,420	534	961	87.2	
W12 x 12	65	12.12	12.000	0.390	0.605	0.60	96.73	307.8	304.8	9.9	15.4	15.2	123.3	22,200	7,270	13.4	7.68	1,440	477	1,590	724	1,550	91.7	W12 x 12
	72	12.25	12.040	0.430	0.670	0.60	107.1	311.2	305.8	10.9	17.0	15.2	136.2	24,800	8,110	13.5	7.72	1,590	530	1,770	805	1,750	122	
	79	12.38	12.080	0.470	0.735	0.60	117.6	314.5	306.8	11.9	18.7	15.2	149.7	27,600	9,010	13.6	7.76	1,760	587	1,950	892	1,970	161	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(2) ASTM

호칭치수 Desig-nation	단위무게 Unit Weight (lbs/ft)	표준단면치수 Standard Sectional Dimension (in)					단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)				
	W	H	B	t_1	t_2	r	M	H	B	t_1	t_2	r
W12 x 12	87	12.53	12.125	0.515	0.810	0.60	129.5	318.3	308.0	13.1	20.6	15.2
	96	12.71	12.160	0.550	0.900	0.60	142.9	322.8	308.9	14.0	22.9	15.2
	106	12.89	12.220	0.610	0.990	0.60	157.7	327.4	310.4	15.5	25.1	15.2
	120	13.12	12.320	0.710	1.105	0.60	178.6	333.2	312.9	18.0	28.1	15.2
	136	13.41	12.400	0.790	1.250	0.60	202.4	340.6	315.0	20.1	31.8	15.2
	152	13.71	12.480	0.870	1.400	0.60	226.2	348.2	317.0	22.1	35.6	15.2
	*161	13.88	12.535	0.906	1.484	0.60	239.6	352.5	318.4	23.0	37.7	15.2
	170	14.03	12.570	0.960	1.560	0.60	253.0	356.4	319.3	24.4	39.6	15.2
	190	14.38	12.670	1.060	1.735	0.60	282.8	365.3	321.8	26.9	44.1	15.2
	210	14.71	12.790	1.180	1.900	0.60	312.5	373.6	324.9	30.0	48.3	15.2
	230	15.05	12.895	1.285	2.070	0.60	342.3	382.3	327.5	32.6	52.6	15.2
	252	15.41	13.005	1.395	2.250	0.60	375.0	391.4	330.3	35.4	57.2	15.2
	279	15.85	13.140	1.530	2.470	0.60	415.198	402.6	333.8	38.9	62.7	15.2
	305	16.32	13.235	1.625	2.705	0.60	453.890	414.5	336.2	41.3	68.7	15.2
W14 x 5	22	13.74	5.000	0.230	0.335	0.40	32.74	349.0	127.0	5.8	8.5	10.2
	26	13.91	5.025	0.255	0.420	0.40	38.69	353.3	127.6	6.5	10.7	10.2
W14 x 6¾	30	13.84	6.730	0.270	0.385	0.40	44.64	351.5	170.9	6.9	9.8	10.2
	34	13.98	6.745	0.285	0.455	0.40	50.60	355.1	171.3	7.2	11.6	10.2
	38	14.10	6.770	0.310	0.515	0.40	56.55	358.1	172.0	7.9	13.1	10.2
W14 x 8	43	13.66	7.995	0.305	0.530	0.60	63.99	347.0	203.1	7.7	13.5	15.2
	48	13.79	8.030	0.340	0.595	0.60	71.43	350.3	204.0	8.6	15.1	15.2
	53	13.92	8.060	0.370	0.660	0.60	78.87	353.6	204.7	9.4	16.8	15.2
W14 x 10	61	13.89	9.995	0.375	0.645	0.60	90.78	352.8	253.9	9.5	16.4	15.2
	68	14.04	10.035	0.415	0.720	0.60	101.2	356.6	254.9	10.5	18.3	15.2
	74	14.17	10.070	0.450	0.785	0.60	110.1	359.9	255.8	11.4	19.9	15.2
	82	14.31	10.130	0.510	0.855	0.60	122.0	363.5	257.3	13.0	21.7	15.2
W14 x 14½	90	14.02	14.520	0.440	0.710	0.60	133.9	356.1	368.8	11.2	18.0	15.2
	99	14.16	14.565	0.485	0.780	0.60	147.3	359.7	370.0	12.3	19.8	15.2
	109	14.32	14.605	0.525	0.860	0.60	162.2	363.7	371.0	13.3	21.8	15.2

* 표시는 BS규격

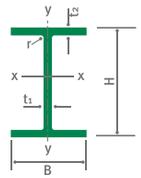
W

Dimension : ASTM A6-14
Dimensional Tolerance : ASTM A6-14
Surface Condition : ASTM A6-14

단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6, $x10^3$)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
A	Ix	Iy	ix	iy	Sx	Sy	Zx	Zy	Cw	J	
165.2	30,800	10,000	13.7	7.78	1,940	649	2,170	991	2,220	215	W12 x 12
182.2	34,700	11,300	13.8	7.88	2,150	732	2,420	1,110	2,530	289	
200.8	38,800	12,500	13.9	7.89	2,370	805	2,680	1,230	2,860	381	
227.7	44,600	14,400	14.0	7.95	2,680	920	3,050	1,400	3,340	544	
258.0	51,900	16,600	14.2	8.02	3,050	1,050	3,510	1,610	3,950	784	
288.9	59,700	18,900	14.4	8.09	3,430	1,190	3,980	1,830	4,620	1,090	
305.8	64,200	20,300	14.5	8.15	3,640	1,280	4,250	1,950	5,020	1,290	
322.5	68,500	21,500	14.6	8.16	3,840	1,350	4,500	2,060	5,390	1,500	
360.4	78,800	24,500	14.8	8.24	4,310	1,520	5,100	2,340	6,320	2,060	
398.9	89,300	27,700	15.0	8.33	4,780	1,710	5,710	2,620	7,300	2,740	
436.8	100,600	30,900	15.2	8.41	5,260	1,890	6,330	2,900	8,370	3,550	
477.9	113,200	34,500	15.4	8.50	5,780	2,090	7,020	3,210	9,590	4,580	
528.4	129,500	39,000	15.7	8.59	6,430	2,340	7,890	3,600	11,230	6,070	
578.4	147,600	43,700	16.0	8.69	7,120	2,600	8,810	4,010	13,010	7,880	
41.74	8,270	291	14.1	2.64	474	45.8	542	71.8	84.1	8.71	W14 x 5
49.77	10,200	372	14.3	2.73	577	58.2	661	91.1	109	15.1	
57.29	12,100	817	14.5	3.78	689	95.6	777	148	238	16.3	W14 x 6¾
64.53	14,200	973	14.8	3.88	800	114	896	175	287	23.9	
72.18	16,100	1,110	14.9	3.92	899	129	1,010	200	331	33.6	
81.46	17,800	1,890	14.8	4.82	1,030	186	1,140	285	524	43.4	W14 x 8
91.12	20,200	2,140	14.9	4.85	1,150	210	1,280	322	600	59.9	
100.8	22,600	2,410	15.0	4.89	1,280	236	1,430	361	681	80.8	
115.7	26,700	4,480	15.2	6.22	1,510	353	1,680	538	1,270	91.4	W14 x 10
128.9	30,100	5,060	15.3	6.27	1,690	397	1,880	605	1,450	125	
140.3	33,100	5,560	15.4	6.30	1,840	435	2,050	663	1,600	161	
155.3	36,700	6,170	15.4	6.30	2,020	480	2,270	734	1,800	212	
170.6	41,500	15,100	15.6	9.41	2,330	819	2,560	1,240	4,300	169	W14 x 14½
187.9	46,200	16,700	15.7	9.43	2,570	903	2,840	1,370	4,830	224	
206.3	51,500	18,600	15.8	9.50	2,830	1,000	3,140	1,520	5,420	296	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(2) ASTM

호칭치수 Desig-nation	단위무게 Unit Weight (lbs/ft)	표준단면치수 Standard Sectional Dimension (in)					단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					호칭치수 Desig-nation
	W	H	B	t_1	t_2	r	M	H	B	t_1	t_2	r	
W14 x 14½	120	14.48	14.670	0.590	0.940	0.60	178.6	367.8	372.6	15.0	23.9	15.2	W14 x 14½
	132	14.66	14.725	0.645	1.030	0.60	196.4	372.4	374.0	16.4	26.2	15.2	
W14 x 16	145	14.78	15.500	0.680	1.090	0.60	215.8	375.4	393.7	17.3	27.7	15.2	W14 x 16
	159	14.98	15.565	0.745	1.190	0.60	236.6	380.5	395.4	18.9	30.2	15.2	
	176	15.22	15.650	0.830	1.310	0.60	261.9	386.6	397.5	21.1	33.3	15.2	
	193	15.48	15.710	0.890	1.440	0.60	287.2	393.2	399.0	22.6	36.6	15.2	
	211	15.72	15.800	0.980	1.560	0.60	314.0	399.3	401.3	24.9	39.6	15.2	
	233	16.04	15.890	1.070	1.720	0.60	346.7	407.4	403.6	27.2	43.7	15.2	
	257	16.38	15.995	1.175	1.890	0.60	382.5	416.1	406.3	29.8	48.0	15.2	
	283	16.74	16.110	1.290	2.070	0.60	421.2	425.2	409.2	32.8	52.6	15.2	
	311	17.12	16.230	1.410	2.260	0.60	462.8	434.8	412.2	35.8	57.4	15.2	
	342	17.54	16.360	1.540	2.470	0.60	509.0	445.5	415.5	39.1	62.7	15.2	
	370	17.92	16.475	1.655	2.660	0.60	550.6	455.2	418.5	42.0	67.6	15.2	
W16 x 5½	26	15.69	5.500	0.250	0.345	0.40	38.69	398.5	139.7	6.4	8.8	10.2	W16 x 5½
	31	15.88	5.525	0.275	0.440	0.40	46.13	403.4	140.3	7.0	11.2	10.2	
W16 x 7	36	15.86	6.985	0.295	0.430	0.40	53.57	402.8	177.4	7.5	10.9	10.2	W16 x 7
	40	16.01	6.995	0.305	0.505	0.40	59.53	406.7	177.7	7.7	12.8	10.2	
	45	16.13	7.035	0.345	0.565	0.40	66.97	409.7	178.7	8.8	14.4	10.2	
	50	16.26	7.070	0.380	0.630	0.40	74.41	413.0	179.6	9.7	16.0	10.2	
	57	16.43	7.120	0.430	0.715	0.40	84.83	417.3	180.8	10.9	18.2	10.2	
W16 x 10¼	67	16.33	10.235	0.395	0.665	0.40	99.71	414.8	260.0	10.0	16.9	10.2	W16 x 10¼
	77	16.52	10.295	0.455	0.760	0.40	114.6	419.6	261.5	11.6	19.3	10.2	
	89	16.75	10.365	0.525	0.875	0.40	132.4	425.4	263.3	13.3	22.2	10.2	
	100	16.97	10.425	0.585	0.985	0.40	148.8	431.0	264.8	14.9	25.0	10.2	
W18 x 6	35	17.70	6.000	0.300	0.425	0.40	52.09	449.6	152.4	7.6	10.8	10.2	W18 x 6
	40	17.90	6.015	0.315	0.525	0.40	59.53	454.7	152.8	8.0	13.3	10.2	
	46	18.06	6.060	0.360	0.605	0.40	68.46	458.7	153.9	9.1	15.4	10.2	
W18 x 7½	*41	17.70	7.450	0.320	0.425	0.40	61.01	449.6	189.2	8.1	10.8	10.2	W18 x 7½
	*45	17.86	7.475	0.335	0.500	0.40	66.97	453.6	189.9	8.5	12.7	10.2	
	50	17.99	7.495	0.355	0.570	0.40	74.41	456.9	190.4	9.0	14.5	10.2	

* 표시는 BS규격

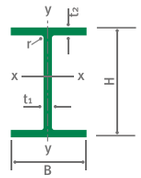
W

Dimension : ASTM A6-14
Dimensional Tolerance : ASTM A6-14
Surface Condition : ASTM A6-14

단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6, $x10^3$)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
A	Ix	Iy	ix	iy	Sx	Sy	Zx	Zy	Cw	J	
228.1	57,300	20,600	15.8	9.50	3,120	1,110	3,480	1,680	6,090	394	W14 x 14½
250.4	63,800	22,900	16.0	9.56	3,430	1,220	3,840	1,860	6,840	518	
275.5	71,300	28,200	16.1	10.12	3,800	1,430	4,270	2,170	8,510	638	W14 x 16
301.3	79,100	31,100	16.2	10.16	4,160	1,570	4,700	2,390	9,550	827	
334.2	89,100	34,900	16.3	10.22	4,610	1,760	5,250	2,670	10,900	1,120	
366.4	99,800	38,800	16.5	10.29	5,080	1,940	5,820	2,960	12,300	1,470	
399.5	111,000	42,700	16.7	10.34	5,560	2,130	6,390	3,240	13,800	1,870	
441.8	125,000	47,900	16.8	10.41	6,140	2,370	7,140	3,620	15,800	2,510	
487.4	142,000	53,700	17.1	10.50	6,830	2,640	7,970	4,040	18,200	3,330	
537.4	160,000	60,200	17.3	10.58	7,530	2,940	8,890	4,490	20,800	4,400	
589.7	180,000	67,100	17.5	10.67	8,280	3,260	9,880	4,980	23,900	5,740	
648.2	204,000	75,100	17.7	10.76	9,160	3,610	11,010	5,540	27,500	7,510	
702.2	227,000	82,800	18.0	10.86	9,970	3,960	12,070	6,070	31,000	9,430	
49.86	12,600	401	15.9	2.84	632	57.4	728	90.3	152	11.3	W16 x 5½
58.99	15,600	516.9	16.3	2.96	773	73.7	887	115	198	19.4	
68.14	18,600	1,020	16.5	3.87	924	115	1,050	177	389	22.9	W16 x 7
75.73	21,500	1,200	16.8	3.98	1,060	135	1,190	208	464	32.9	
85.88	24,500	1,370	16.9	3.99	1,200	153	1,350	238	535	47.1	
95.32	27,400	1,550	17.0	4.03	1,330	173	1,510	268	609	64.1	
108.2	31,600	1,800	17.1	4.08	1,510	199	1,730	310	714	93.2	
126.9	39,700	4,950	17.7	6.25	1,910	381	2,130	581	1,960	100	W16 x 10¼
146.0	46,100	5,760	17.8	6.28	2,200	441	2,460	673	2,300	150	
168.5	54,000	6,760	17.9	6.33	2,540	514	2,860	787	2,740	228	
190.1	61,800	7,750	18.0	6.38	2,870	585	3,250	899	3,190	324	
66.34	21,200	639	17.9	3.10	943	83.9	1,090	132	307	21.4	W18 x 6
75.79	25,400	793	18.3	3.23	1,120	104	1,280	163	385	33.7	
87.23	29,600	939	18.4	3.28	1,290	122	1,490	192	460	51.2	
76.56	25,400	1,220	18.2	3.99	1,130	129	1,290	201	587	26.2	W18 x 7½
85.52	29,400	1,450	18.5	4.12	1,300	153	1,470	237	704	37.5	
94.62	33,300	1,670	18.8	4.20	1,460	175	1,650	272	816	52.1	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(2) ASTM

호칭치수 Desig-nation	단위무게 Unit Weight (lbs/ft)	표준단면치수 Standard Sectional Dimension (in)					단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)				
	W	H	B	t_1	t_2	r	M	H	B	t_1	t_2	r
W18 x 7½	55	18.11	7.530	0.390	0.630	0.40	81.85	460.0	191.3	9.9	16.0	10.2
	60	18.24	7.555	0.415	0.695	0.40	89.29	463.3	191.9	10.5	17.7	10.2
	65	18.35	7.590	0.450	0.750	0.40	96.73	466.1	192.8	11.4	19.1	10.2
	*66	18.39	7.590	4.450	0.770	0.40	98.22	467.2	192.8	11.4	19.6	10.2
	71	18.47	7.635	0.495	0.810	0.40	105.7	469.1	193.9	12.6	20.6	10.2
W18 x 11	76	18.21	11.035	0.425	0.680	0.40	113.1	462.5	280.3	10.8	17.3	10.2
	86	18.39	11.090	0.480	0.770	0.40	128.0	467.1	281.7	12.2	19.6	10.2
	97	18.59	11.145	0.535	0.870	0.40	144.4	472.2	283.1	13.6	22.1	10.2
	106	18.73	11.200	0.590	0.940	0.40	157.7	475.7	284.5	15.0	23.9	10.2
	119	18.97	11.265	0.655	1.060	0.40	177.1	481.8	286.1	16.6	26.9	10.2
	130	19.25	11.160	0.670	1.200	0.40	193.5	489.0	283.5	17.0	30.5	10.2
	143	19.49	11.220	0.730	1.320	0.40	212.8	495.0	285.0	18.5	33.5	10.2
	158	19.72	11.300	0.810	1.440	0.40	235.1	500.9	287.0	20.6	36.6	10.2
	175	20.04	11.375	0.890	1.590	0.40	260.4	509.0	288.9	22.6	40.4	10.2
	192	20.35	11.455	0.960	1.750	0.40	285.7	516.9	291.0	24.4	44.4	10.2
	211	20.67	11.555	1.060	1.910	0.40	314.0	525.0	293.5	26.9	48.5	10.2
	234	21.06	11.650	1.160	2.110	0.40	348.2	534.9	295.9	29.5	53.6	10.2
	258	21.46	11.770	1.280	2.300	0.40	383.9	545.1	299.0	32.5	58.4	10.2
	283	21.85	11.890	1.400	2.500	0.40	421.2	555.0	302.0	35.6	63.5	10.2
	311	22.32	12.005	1.520	2.740	0.40	462.8	566.9	304.9	38.6	69.6	10.2
W21 x 6½	44	20.66	6.500	0.350	0.450	0.50	65.48	524.8	165.1	8.9	11.4	12.7
	50	20.83	6.530	0.380	0.535	0.50	74.41	529.1	165.9	9.7	13.6	12.7
	57	21.06	6.555	0.405	0.650	0.50	84.83	534.9	166.5	10.3	16.5	12.7
W21 x 8¼	48	20.60	8.140	0.350	0.430	0.50	71.43	523.2	206.8	8.9	10.9	12.7
	55	20.80	8.220	0.375	0.522	0.50	81.85	528.3	208.8	9.6	13.2	12.7
	62	20.99	8.240	0.400	0.615	0.50	92.27	533.1	209.3	10.2	15.6	12.7
	68	21.13	8.270	0.430	0.685	0.50	101.2	536.7	210.1	10.9	17.4	12.7
	73	21.24	8.295	0.455	0.740	0.50	108.6	539.5	210.7	11.6	18.8	12.7
	83	21.43	8.355	0.515	0.835	0.50	123.5	544.3	212.2	13.1	21.2	12.7
	93	21.62	8.420	0.580	0.930	0.50	138.4	549.1	213.9	14.7	23.6	12.7
W21 x 12¼	101	21.36	12.290	0.500	0.800	0.50	150.3	542.5	312.2	12.7	20.3	12.7
	111	21.51	12.340	0.550	0.875	0.50	165.2	546.4	313.4	14.0	22.2	12.7
	122	21.68	12.390	0.600	0.960	0.50	181.6	550.7	314.7	15.2	24.4	12.7

* 표시는 BS규격

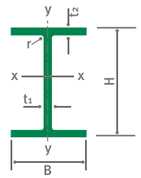
W

Dimension : ASTM A6-14
Dimensional Tolerance : ASTM A6-14
Surface Condition : ASTM A6-14

단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6, $x10^3$)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
A	Ix	Iy	ix	iy	Sx	Sy	Zx	Zy	Cw	J	
104.5	37,100	1,870	18.8	4.23	1,610	196	1,830	304	920	69.7	W18 x 7½
113.8	41,000	2,090	19.0	4.29	1,770	218	2,010	338	1,030	91.3	
123.3	44,700	2,290	19.0	4.31	1,920	238	2,190	370	1,140	115	
125.3	45,700	2,350	19.1	4.33	1,960	244	2,230	379	1,170	122	
134.7	48,800	2,510	19.0	4.32	2,080	259	2,390	405	1,260	147	
144.1	55,500	6,350	19.6	6.64	2,400	453	2,670	693	3,150	119	W18 x 11
163.5	63,700	7,310	19.7	6.69	2,730	519	3,050	794	3,660	173	
184.2	72,700	8,370	19.9	6.74	3,080	591	3,460	906	4,230	246	
201.1	79,700	9,190	19.9	6.76	3,350	646	3,780	992	4,680	315	
225.9	91,000	10,500	20.1	6.82	3,780	734	4,280	1,130	5,430	445	
246.6	103,000	11,600	20.4	6.86	4,210	818	4,760	1,260	6,090	609	
271.0	114,000	12,900	20.5	6.90	4,610	905	5,270	1,400	6,880	804	
299.1	127,000	14,500	20.6	6.96	5,070	1,010	5,840	1,550	7,770	1,060	
331.1	144,000	16,300	20.9	7.02	5,660	1,130	6,520	1,740	8,910	1,420	
363.8	161,000	18,300	21.0	7.09	6,230	1,260	7,240	1,940	10,180	1,880	
400.7	180,000	20,500	21.2	7.15	6,860	1,400	8,030	2,170	11,600	2,470	
444.3	204,000	23,200	21.4	7.23	7,630	1,570	9,000	2,440	13,400	3,320	
489.3	229,000	26,100	21.6	7.30	8,400	1,750	10,000	2,730	15,410	4,340	
536.8	257,000	29,300	21.9	7.39	9,260	1,940	11,100	3,030	17,600	5,620	
590.4	290,000	33,100	22.2	7.49	10,200	2,170	12,300	3,400	20,330	7,390	
83.71	35,000	859	20.4	3.20	1,330	104	1,560	166	563	33.1	W21 x 6½
95.19	41,100	1,040	20.8	3.31	1,550	125	1,810	200	688	48.9	
108.0	48,600	1,270	21.2	3.43	1,820	153	2,110	243	853	74.4	
91.09	39,800	1,610	20.9	4.20	1,520	156	1,750	244	1,050	34.6	W21 x 8¼
104.7	47,500	2,010	21.3	4.38	1,800	193	2,060	300	1,330	52.5	
117.9	55,300	2,390	21.7	4.50	2,070	228	2,370	356	1,600	77.0	
129.2	61,600	2,700	21.8	4.57	2,300	257	2,620	400	1,810	102	
138.8	66,800	2,940	21.9	4.60	2,480	279	2,830	435	1,990	127	
157.1	76,200	3,390	22.0	4.65	2,800	320	3,210	500	2,310	182	
176.1	86,100	3,860	22.1	4.68	3,140	361	3,610	568	2,660	253	
191.9	101,000	10,300	22.9	7.33	3,720	660	4,140	1,010	7,020	218	W21 x 12¼
210.8	111,000	11,400	22.9	7.35	4,060	728	4,560	1,120	7,820	286	
231.2	123,000	12,700	23.1	7.41	4,470	807	5,030	1,240	8,780	377	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(2) ASTM

W

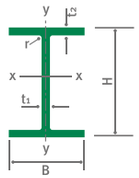
Dimension : ASTM A6-14
Dimensional Tolerance : ASTM A6-14
Surface Condition : ASTM A6-14

호칭치수 Desig-nation	단위무게 Unit Weight (lbs/ft)	표준단면치수 Standard Sectional Dimension (in)					단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6, $x10^3$)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
	W	H	B	t_1	t_2	r	M	H	B	t1	t2	r	A	Ix	Iy	ix	iy	Sx	Sy	Zx	Zy	Cw	J	
W21 x 12¼	132	21.83	12.440	0.650	1.035	0.50	196.4	554.5	316.0	16.5	26.3	12.7	250.4	134,000	13,900	23.1	7.45	4,830	880	5,460	1,350	9,650	474	W21 x 12¼
	147	22.06	12.510	0.720	1.150	0.50	218.8	560.3	317.8	18.3	29.2	12.7	278.8	151,000	15,600	23.3	7.48	5,390	982	6,120	1,520	11,000	648	
	166	22.48	12.420	0.750	1.360	0.50	247.0	571.0	315.5	19.1	34.5	12.7	315.0	178,000	18,100	23.8	7.58	6,230	1,150	7,080	1,760	13,000	988	
	182	22.72	12.500	0.830	1.480	0.50	270.8	577.1	317.5	21.1	37.6	12.7	346.0	197,000	20,100	23.9	7.62	6,830	1,270	7,800	1,950	14,600	1,290	
	201	23.03	12.575	0.910	1.630	0.50	299.1	585.0	319.4	23.1	41.4	12.7	381.9	221,000	22,500	24.1	7.68	7,560	1,410	8,680	2,180	16,600	1,720	
	*223	23.35	12.673	1.791	1.000	0.50	331.9	593.1	321.9	25.4	45.5	12.7	421.8	248,000	25,400	24.2	7.76	8,360	1,580	9,660	2,440	19,000	2,290	
	*248	23.74	12.776	1.988	1.114	0.50	369.1	603.0	324.5	28.3	50.5	12.7	471.2	281,000	28,900	24.4	7.83	9,320	1,780	10,900	2,760	21,900	3,140	
	*275	24.13	12.890	2.189	1.220	0.50	409.2	612.9	327.4	31.0	55.6	12.7	521.0	317,000	32,600	24.7	7.91	10,300	1,990	12,100	3,100	25,300	4,190	
	*300	24.53	12.988	2.382	1.319	0.50	446.4	623.1	329.9	33.5	60.5	12.7	568.8	353,000	36,400	24.9	8.00	11,300	2,210	13,400	3,440	28,600	5,390	
	*333	25.00	13.130	2.618	1.461	0.50	495.6	635.0	333.5	37.1	66.5	12.7	631.2	400,000	41,300	25.2	8.09	12,600	2,480	15,000	3,870	33,200	7,220	
W24 x 7	55	23.57	7.005	0.395	0.505	0.50	81.85	598.7	177.9	10.0	12.8	12.7	104.2	55,900	1,210	23.2	3.41	1,870	136	2,190	218	1,030	50.3	W24 x 7
	62	23.74	7.040	0.430	0.590	0.50	92.27	603.0	178.8	10.9	15.0	12.7	117.5	64,600	1,440	23.4	3.50	2,140	161	2,510	258	1,240	72.4	
W24 x 9	68	23.73	8.965	0.415	0.585	0.50	101.2	602.7	227.7	10.5	14.9	12.7	129.4	76,200	2,940	24.3	4.77	2,530	258	2,900	403	2,530	79.2	W24 x 9
	76	23.92	8.990	0.440	0.680	0.50	113.1	607.6	228.3	11.2	17.3	12.7	144.6	87,500	3,440	24.6	4.88	2,880	301	3,290	470	2,990	113	
	84	24.10	9.020	0.470	0.770	0.50	125.0	612.1	229.1	11.9	19.6	12.7	159.4	98,600	3,940	24.9	4.97	3,220	344	3,680	536	3,450	155	
	94	24.31	9.065	0.515	0.875	0.50	139.9	617.5	230.3	13.1	22.2	12.7	178.7	112,000	4,530	25.0	5.03	3,630	393	4,160	615	4,000	220	
	103	24.53	9.000	0.550	0.980	0.50	153.3	623.1	228.6	14.0	24.9	12.7	195.5	125,000	4,970	25.3	5.04	4,010	435	4,590	680	4,440	297	
W24 x 12¾	104	24.06	12.750	0.500	0.750	0.65	154.8	611.1	323.9	12.7	19.1	16.5	198.8	130,000	10,800	25.6	7.37	4,250	667	4,770	1,030	9,480	206	W24 x 12¾
	117	24.26	12.800	0.550	0.850	0.65	174.1	616.2	325.1	14.0	21.6	16.5	223.0	148,000	12,400	25.8	7.46	4,800	763	5,390	1,170	10,900	291	
	131	24.48	12.855	0.605	0.960	0.65	194.9	621.8	326.5	15.4	24.4	16.5	249.9	168,000	14,200	25.9	7.54	5,400	870	6,090	1,340	12,600	410	
	146	24.74	12.900	0.650	1.090	0.65	217.3	628.4	327.7	16.5	27.7	16.5	278.4	192,000	16,300	26.3	7.65	6,110	995	6,870	1,530	14,700	575	
	162	25.00	12.955	0.705	1.220	0.65	241.1	635.0	329.1	17.9	31.0	16.5	308.9	216,000	18,400	26.4	7.72	6,800	1,120	7,700	1,730	16,800	790	
	176	25.24	12.890	0.750	1.340	0.65	261.9	641.1	327.4	19.1	34.0	16.5	334.4	237,000	19,900	26.6	7.71	7,390	1,220	8,390	1,880	18,300	1,020	
	192	25.47	12.950	0.810	1.460	0.65	285.7	646.9	328.9	20.6	37.1	16.5	364.4	261,000	22,000	26.8	7.77	8,070	1,340	9,200	2,070	20,500	1,310	
	207	25.71	13.010	0.870	1.570	0.65	308.0	653.0	330.5	22.1	39.9	16.5	392.8	285,000	24,100	26.9	7.83	8,730	1,460	10,000	2,250	22,600	1,630	
	229	26.02	13.110	0.960	1.730	0.65	340.8	660.9	333.0	24.4	43.9	16.5	434.5	319,000	27,100	27.1	7.90	9,650	1,630	11,100	2,520	25,700	2,180	
	250	26.34	13.185	1.040	1.890	0.65	372.0	669.0	334.9	26.4	48.0	16.5	475.1	354,000	30,100	27.3	7.96	10,600	1,800	12,200	2,800	29,000	2,830	
	279	26.73	13.305	1.160	2.090	0.65	415.2	678.9	337.9	29.5	53.1	16.5	530.2	400,000	34,300	27.5	8.04	11,800	2,030	13,700	3,160	33,400	3,870	
	306	27.13	13.405	1.260	2.280	0.65	455.4	689.1	340.5	32.0	57.9	16.5	580.1	446,000	38,300	27.7	8.13	12,900	2,250	15,100	3,510	37,900	5,010	
	335	27.52	13.520	1.380	2.480	0.65	498.5	699.0	343.4	35.1	63.0	16.5	636.2	496,000	42,700	27.9	8.19	14,200	2,490	16,700	3,900	43,000	6,490	
	370	27.99	13.660	1.520	2.720	0.65	550.6	710.9	347.0	38.6	69.1	16.5	702.9	558,000	48,400	28.2	8.30	15,700	2,790	18,600	4,380	49,500	8,610	

* 표시는 BS규격

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(2) ASTM

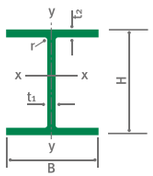
W

Dimension : ASTM A6-14
Dimensional Tolerance : ASTM A6-14
Surface Condition : ASTM A6-14

호칭치수 Desig-nation	단위무게 Unit Weight (lbs/ft)	표준단면치수 Standard Sectional Dimension (in)					단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6, $x10^3$)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
	W	H	B	t_1	t_2	r	M	H	B	t1	t2	r	A	Ix	Iy	ix	iy	Sx	Sy	Zx	Zy	Cw	J	
W27 x 10	84	26.71	9.960	0.460	0.640	0.60	125.0	678.4	253.0	11.7	16.3	15.2	160.0	119,000	4,410	27.3	5.25	3,510	349	4,010	546	4,820	120	W27 x 10
	94	26.92	9.990	0.490	0.745	0.60	139.9	683.8	253.7	12.4	18.9	15.2	178.0	136,000	5,160	27.6	5.38	3,980	407	4,550	635	5,680	169	
	102	27.09	10.015	0.515	0.830	0.60	151.8	688.1	254.4	13.1	21.1	15.2	194.0	151,000	5,800	27.9	5.47	4,390	456	5,010	713	6,440	222	
	114	27.29	10.070	0.570	0.930	0.60	169.7	693.2	255.8	14.5	23.6	15.2	216.4	170,000	6,600	28.0	5.52	4,900	516	5,620	808	7,380	307	
	129	27.63	10.010	0.610	1.100	0.60	192.0	701.8	254.3	15.5	27.9	15.2	244.0	198,000	7,670	28.5	5.61	5,640	603	6,460	943	8,680	464	
W30 x 10½	90	29.53	10.400	0.470	0.610	1.10	133.9	750.1	264.2	11.94	15.49	28.0	174.4	156,000	4,780	29.9	5.24	4,160	362	4,790	575	6,420	154	W30 x 10½
	99	29.65	10.450	0.520	0.670	1.10	147.3	753.1	265.4	13.21	17.02	28.0	192.1	172,000	5,330	29.9	5.27	4,570	402	5,270	639	7,180	199	
	108	29.83	10.475	0.545	0.760	1.10	160.7	757.7	266.1	13.84	19.30	28.0	209.0	191,000	6,090	30.2	5.40	5,040	458	5,820	727	8,260	251	
	116	30.01	10.495	0.565	0.850	1.10	172.6	762.3	266.6	14.35	21.59	28.0	225.0	211,000	6,850	30.6	5.52	5,540	514	6,360	813	9,350	313	
	124	30.17	10.515	0.585	0.930	1.10	184.5	766.3	267.1	14.86	23.62	28.0	239.8	228,000	7,540	30.8	5.61	5,950	565	6,840	892	10,300	380	
	132	30.31	10.545	0.615	1.000	1.10	196.4	769.9	267.8	15.62	25.40	28.0	255.1	245,000	8,170	31.0	5.66	6,360	610	7,320	964	11,300	456	
	148	30.67	10.480	0.650	1.180	1.10	220.2	779.0	266.2	16.51	29.97	28.0	285.0	283,000	9,470	31.5	5.76	7,270	712	8,350	1,120	13,200	662	
W33 x 11½	118	32.86	11.480	0.550	0.740	1.18	175.6	834.6	291.6	13.97	18.80	30.0	228.7	253,000	7,800	33.3	5.84	6,060	535	6,990	849	12,900	274	W33 x 11½
	130	33.09	11.510	0.580	0.855	1.18	193.5	840.5	292.4	14.73	21.72	30.0	252.2	287,000	9,090	33.7	6.00	6,830	622	7,840	983	15,200	362	
	141	33.30	11.535	0.605	0.960	1.18	209.8	845.8	293.0	15.37	24.38	30.0	273.1	318,000	10,300	34.1	6.14	7,520	703	8,610	1,100	17,200	462	
	152	33.49	11.565	0.635	1.055	1.18	226.2	850.6	293.8	16.13	26.80	30.0	293.8	347,000	11,400	34.4	6.23	8,160	776	9,350	1,220	19,200	578	
	169	33.82	11.500	0.670	1.220	1.18	251.5	859.0	292.1	17.02	30.99	30.0	324.4	394,000	12,900	34.9	6.31	9,170	883	10,500	1,390	22,100	805	
W36 x 12	135	35.55	11.950	0.600	0.790	1.18	200.9	903.0	303.5	15.24	20.07	30.0	261.1	333,000	9,400	35.7	6.00	7,380	619	8,540	986	18,200	349	W36 x 12
	150	35.85	11.975	0.625	0.940	1.18	223.2	910.6	304.2	15.88	23.88	30.0	290.0	385,000	11,300	36.4	6.24	8,460	743	9,730	1,170	22,000	480	
	160	36.01	12.000	0.650	1.020	1.18	238.1	914.7	304.8	16.51	25.91	30.0	308.1	414,000	12,300	36.7	6.32	9,050	807	10,400	1,270	24,100	577	
	170	36.17	12.030	0.680	1.100	1.18	253.0	918.7	305.6	17.27	27.94	30.0	327.5	445,000	13,300	36.9	6.37	9,690	870	11,100	1,380	26,400	694	
	182	36.33	12.075	0.725	1.180	1.18	270.8	922.8	306.7	18.42	29.97	30.0	350.5	479,000	14,500	37.0	6.43	10,400	946	12,000	1,500	28,700	844	
	194	36.49	12.115	0.765	1.260	1.18	288.7	926.8	307.7	19.43	32.00	30.0	372.3	512,000	15,600	37.1	6.47	11,000	1,010	12,800	1,610	31,100	1,010	
	210	36.69	12.180	0.830	1.360	1.18	312.5	931.9	309.4	21.08	34.54	30.0	403.3	557,000	17,100	37.2	6.51	12,000	1,110	13,800	1,760	34,300	1,270	
	232	37.12	12.120	0.870	1.570	1.18	345.3	942.8	307.8	22.10	39.88	30.0	444.0	633,000	19,500	37.8	6.63	13,400	1,270	15,500	2,010	39,500	1,760	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(3) Wide flange beams : HE

HE

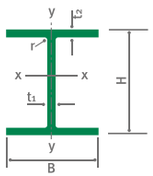
Dimension : DIN 1025 / EN 10365:2017
Dimensional Tolerance : EN 10034:1993
Surface Condition : EN 10163-3:2004 Class C

호칭치수 Designation		단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
		W	H	B	t_1	t_2	r	A	Ix	Iy
HE100	A	16.7	96.0	100.0	5.0	8.0	12.0	21.24	349	134
	B	20.4	100.0	100.0	6.0	10.0	12.0	26.04	450	167
	M	41.8	120.0	106.0	12.0	20.0	12.0	53.24	1,140	399
HE120	A	19.9	114.0	120.0	5.0	8.0	12.0	25.34	606	231
	B	26.7	120.0	120.0	6.5	11.0	12.0	34.01	864	318
	M	52.1	140.0	126.0	12.5	21.0	12.0	66.41	2,020	703
HE140	A	24.7	133.0	140.0	5.5	8.5	12.0	31.42	1,030	389
	B	33.7	140.0	140.0	7.0	12.0	12.0	42.96	1,510	550
	M	63.2	160.0	146.0	13.0	22.0	12.0	80.56	3,290	1,140
HE160	A	30.4	152.0	160.0	6.0	9.0	15.0	38.77	1,670	616
	B	42.6	160.0	160.0	8.0	13.0	15.0	54.25	2,490	889
	M	76.2	180.0	166.0	14.0	23.0	15.0	97.05	5,100	1,760
HE180	A	35.5	171.0	180.0	6.0	9.5	15.0	45.25	2,510	925
	B	51.2	180.0	180.0	8.5	14.0	15.0	65.25	3,830	1,360
	M	88.9	200.0	186.0	14.5	24.0	15.0	113.3	7,480	2,580
HE200	A	42.3	190.0	200.0	6.5	10.0	18.0	53.83	3,690	1,340
	B	61.3	200.0	200.0	9.0	15.0	18.0	78.08	5,700	2,000
	M	103	220.0	206.0	15.0	25.0	18.0	131.3	10,600	3,650
HE220	A	50.5	210.0	220.0	7.0	11.0	18.0	64.34	5,410	1,950
	B	71.5	220.0	220.0	9.5	16.0	18.0	91.04	8,090	2,840
	M	117	240.0	226.0	15.5	26.0	18.0	149.4	14,600	5,010
HE240	AA	47.4	224.0	240.0	6.5	9.0	21.0	60.38	5,840	2,080
	A	60.3	230.0	240.0	7.5	12.0	21.0	76.84	7,760	2,770
	B	83.2	240.0	240.0	10.0	17.0	21.0	106.0	11,300	3,920
	M	157	270.0	248.0	18.0	32.0	21.0	199.6	24,300	8,150
HE260	AA	54.1	244.0	260.0	6.5	9.5	24.0	68.97	7,980	2,790
	A	68.2	250.0	260.0	7.5	12.5	24.0	86.82	10,500	3,670
	B	92.9	260.0	260.0	10.0	17.5	24.0	118.4	14,900	5,130
	M	172	290.0	268.0	18.0	32.5	24.0	219.6	31,300	10,400

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
4.05	2.51	72.8	26.8	83.0	41.1	2.58	5.24	HE100
4.15	2.53	89.9	33.5	104	51.4	3.38	9.25	
4.63	2.74	190	75.3	236	116	9.93	68.2	
4.89	3.02	106	38.5	120	58.9	6.47	5.99	HE120
5.04	3.06	144	52.9	165	81.0	9.41	13.8	
5.52	3.25	289	112	351	172	24.8	91.7	
5.73	3.52	155	55.6	174	84.8	15.1	8.13	HE140
5.93	3.58	216	78.5	245	120	22.5	20.1	
6.39	3.76	411	156	494	241	54.3	120	
6.56	3.98	220	77.0	245	118	31.4	12.2	HE160
6.77	4.05	311	111	354	170	47.9	31.2	
7.25	4.26	567	212	675	326	108	162	
7.45	4.52	294	103	325	157	60.2	14.8	HE180
7.66	4.57	426	151	481	231	93.8	42.2	
8.13	4.77	748	277	883	425	199	203	
8.28	4.99	388	134	430	204	108	21.0	HE200
8.54	5.06	570	200	643	306	171	59.3	
8.99	5.27	964	354	1,140	543	346	259	
9.17	5.51	515	177	569	271	193	28.5	HE220
9.43	5.59	736	258	827	394	295	76.6	
9.89	5.79	1,220	443	1,420	679	573	315	
9.83	5.87	521	173	571	264	240	23.0	HE240
10.0	6.00	675	231	745	352	328	41.6	
10.3	6.08	942	327	1,050	498	487	103	
11.0	6.39	1,800	657	2,120	1,010	1,150	628	
10.8	6.36	654	215	715	328	383	30.3	HE260
11.0	6.50	840	282	920	430	516	52.4	
11.2	6.58	1,150	395	1,280	602	754	124	
11.9	6.88	2,160	776	2,520	1,190	1,730	719	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(3) Wide flange beams : HE

HE

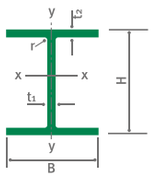
Dimension : DIN 1025 / EN 10365:2017
Dimensional Tolerance : EN 10034:1993
Surface Condition : EN 10163-3:2004 Class C

호칭치수 Designation		단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
		W	H	B	t_1	t_2	r	A	Ix	Iy
HE280	AA	61.3	264.0	280.0	7.0	10.0	24.0	78.02	10,600	3,660
	A	76.4	270.0	280.0	8.0	13.0	24.0	97.26	13,700	4,760
	B	103	280.0	280.0	10.5	18.0	24.0	131.4	19,300	6,590
	M	189	310.0	288.0	18.5	33.0	24.0	240.2	39,500	13,200
HE300	AA	69.8	283.0	300.0	7.5	10.5	27.0	88.91	13,800	4,730
	A	88.3	290.0	300.0	8.5	14.0	27.0	112.5	18,300	6,310
	B	117	300.0	300.0	11.0	19.0	27.0	149.1	25,200	8,560
	M	238	340.0	310.0	21.0	39.0	27.0	303.1	59,200	19,400
HE320	AA	74.3	301.0	300.0	8.0	11.0	27.0	94.58	16,400	4,960
	A	97.7	310.0	300.0	9.0	15.5	27.0	124.4	22,900	6,990
	B	127	320.0	300.0	11.5	20.5	27.0	161.3	30,800	9,240
	M	245	359.0	309.0	21.0	40.0	27.0	312.0	68,100	19,700
HE340	AA	78.9	320.0	300.0	8.5	11.5	27.0	100.5	19,600	5,180
	A	105	330.0	300.0	9.5	16.5	27.0	133.5	27,700	7,440
	B	134	340.0	300.0	12.0	21.5	27.0	170.9	36,700	9,690
	M	248	377.0	309.0	21.0	40.0	27.0	315.8	76,400	19,700
HE360	AA	83.7	339.0	300.0	9.0	12.0	27.0	106.6	23,000	5,410
	A	112	350.0	300.0	10.0	17.5	27.0	142.8	33,100	7,890
	B	142	360.0	300.0	12.5	22.5	27.0	180.6	43,200	10,100
	M	250	395.0	308.0	21.0	40.0	27.0	318.8	84,900	19,500
HE400	AA	92.4	378.0	300.0	9.5	13.0	27.0	117.7	31,300	5,860
	A	125	390.0	300.0	11.0	19.0	27.0	159.0	45,100	8,560
	B	155	400.0	300.0	13.5	24.0	27.0	197.8	57,700	10,800
	M	256	432.0	307.0	21.0	40.0	27.0	325.8	104,000	19,300
HE450	AA	99.8	425.0	300.0	10.0	13.5	27.0	127.1	41,900	6,090
	A	140	440.0	300.0	11.5	21.0	27.0	178.0	63,700	9,470
	B	171	450.0	300.0	14.0	26.0	27.0	218.0	79,900	11,700
	M	263	478.0	307.0	21.0	40.0	27.0	335.4	131,000	19,300

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10³)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
11.7	6.85	803	261	873	399	590	36.2	HE280
11.9	7.00	1,010	340	1,110	518	785	62.1	
12.1	7.08	1,380	471	1,530	718	1,130	144	
12.8	7.41	2,550	917	2,970	1,400	2,520	807	
12.5	7.29	975	315	1,070	482	877	49.4	HE300
12.8	7.49	1,260	421	1,380	641	1,200	85.2	
13.0	7.58	1,680	571	1,870	870	1,690	185	
14.0	8.00	3,480	1,250	4,080	1,910	4,390	1,410	
13.2	7.24	1,090	331	1,200	506	1,040	55.9	HE320
13.6	7.50	1,480	466	1,630	710	1,510	108	
13.8	7.57	1,930	616	2,150	939	2,070	225	
14.8	7.95	3,790	1,280	4,440	1,950	5,000	1,500	
14.0	7.18	1,230	345	1,340	529	1,230	63.1	HE340
14.4	7.47	1,680	496	1,850	756	1,820	127	
14.7	7.53	2,160	646	2,410	986	2,450	257	
15.6	7.90	4,050	1,280	4,720	1,950	5,580	1,510	
14.7	7.12	1,360	361	1,500	553	1,440	71.0	HE360
15.2	7.43	1,890	526	2,090	802	2,180	149	
15.5	7.48	2,400	673	2,680	1,030	2,880	292	
16.3	7.82	4,300	1,270	4,990	1,940	6,140	1,510	
16.3	7.06	1,660	391	1,820	600	1,950	84.7	HE400
16.8	7.34	2,310	571	2,560	873	2,940	189	
17.1	7.39	2,890	720	3,230	1,100	3,820	356	
17.9	7.70	4,810	1,260	5,570	1,930	7,410	1,510	
18.2	6.92	1,970	406	2,180	624	2,570	95.6	HE450
18.9	7.29	2,900	631	3,220	966	4,150	244	
19.1	7.33	3,550	780	3,980	1,200	5,260	440	
19.8	7.59	5,480	1,260	6,330	1,940	9,250	1,530	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(3) Wide flange beams : HE

HE

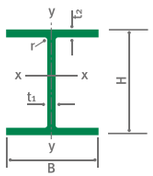
Dimension : DIN 1025 / EN 10365:2017
Dimensional Tolerance : EN 10034:1993
Surface Condition : EN 10163-3:2004 Class C

호칭치수 Designation		단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
		W	H	B	t_1	t_2	r	A	Ix	Iy
HE500	AA	107	472.0	300.0	10.5	14.0	27.0	136.9	54,600	6,310
	A	155	490.0	300.0	12.0	23.0	27.0	197.5	87,000	10,400
	B	187	500.0	300.0	14.5	28.0	27.0	238.6	107,000	12,600
	M	270	524.0	306.0	21.0	40.0	27.0	344.3	162,000	19,200
HE550	AA	120	522.0	300.0	11.5	15.0	27.0	152.8	72,900	6,770
	A	166	540.0	300.0	12.5	24.0	27.0	211.8	112,000	10,800
	B	199	550.0	300.0	15.0	29.0	27.0	254.1	137,000	13,100
	M	278	572.0	306.0	21.0	40.0	27.0	354.4	198,000	19,200
HE600	AA	129	571.0	300.0	12.0	15.5	27.0	164.1	91,900	6,990
	A	178	590.0	300.0	13.0	25.0	27.0	226.5	141,000	11,300
	B	212	600.0	300.0	15.5	30.0	27.0	270.0	171,000	13,500
	M	286	620.0	305.0	21.0	40.0	27.0	363.7	237,000	19,000
HE650	AA	138	620.0	300.0	12.5	16.0	27.0	175.8	114,000	7,220
	A	190	640.0	300.0	13.5	26.0	27.0	241.6	175,000	11,700
	B	225	650.0	300.0	16.0	31.0	27.0	286.3	211,000	14,000
	M	293	668.0	305.0	21.0	40.0	27.0	373.7	282,000	19,000
HE700	AA	150	670.0	300.0	13.0	17.0	27.0	190.9	143,000	7,670
	A	204	690.0	300.0	14.5	27.0	27.0	260.5	215,000	12,200
	B	241	700.0	300.0	17.0	32.0	27.0	306.4	257,000	14,400
	M	301	716.0	304.0	21.0	40.0	27.0	383.0	329,000	18,800
HE800	AA	172	770.0	300.0	14.0	18.0	30.0	218.5	209,000	8,130
	A	224	790.0	300.0	15.0	28.0	30.0	285.8	303,000	12,600
	B	262	800.0	300.0	17.5	33.0	30.0	334.2	359,000	14,900
	M	317	814.0	303.0	21.0	40.0	30.0	404.3	443,000	18,600
HE900	AA	198	870.0	300.0	15.0	20.0	30.0	252.2	301,000	9,040
	A	252	890.0	300.0	16.0	30.0	30.0	320.5	422,000	13,500
	B	291	900.0	300.0	18.5	35.0	30.0	371.3	494,000	15,800
	M	333	910.0	302.0	21.0	40.0	30.0	423.6	570,000	18,500

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10³)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Designation
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
20.0	6.79	2,310	421	2,580	649	3,300	108	HE500
21.0	7.26	3,550	693	3,950	1,060	5,640	309	
21.2	7.27	4,280	840	4,810	1,290	7,020	538	
21.7	7.47	6,180	1,250	7,090	1,930	11,200	1,540	
21.8	6.66	2,790	451	3,130	699	4,340	134	HE550
23.0	7.14	4,150	720	4,620	1,110	7,190	352	
23.2	7.18	4,980	873	5,590	1,340	8,860	600	
23.6	7.36	6,920	1,250	7,930	1,940	13,500	1,550	
23.7	6.53	3,220	466	3,620	725	5,380	150	HE600
25.0	7.06	4,780	753	5,350	1,160	8,980	398	
25.2	7.07	5,700	900	6,430	1,390	11,000	667	
25.5	7.23	7,650	1,250	8,770	1,930	15,900	1,560	
25.5	6.41	3,680	481	4,160	751	6,570	168	HE650
26.9	6.96	5,470	780	6,140	1,200	11,000	448	
27.1	6.99	6,490	933	7,320	1,440	13,400	739	
27.5	7.13	8,440	1,250	9,660	1,940	18,600	1,580	
27.4	6.34	4,270	511	4,840	800	8,160	195	HE700
28.7	6.84	6,230	813	7,030	1,260	13,400	514	
29.0	6.86	7,340	960	8,330	1,500	16,100	831	
29.3	7.01	9,190	1,240	10,500	1,930	21,400	1,590	
30.9	6.10	5,430	542	6,220	857	11,500	257	HE800
32.6	6.64	7,670	840	8,700	1,310	18,300	597	
32.8	6.68	8,980	993	10,200	1,550	21,800	946	
33.1	6.78	10,900	1,230	12,500	1,930	27,800	1,650	
34.5	5.99	6,920	603	8,000	958	16,300	335	HE900
36.3	6.49	9,480	900	10,800	1,410	25,000	737	
36.5	6.52	11,000	1,050	12,600	1,660	29,500	1,140	
36.7	6.61	12,500	1,230	14,400	1,930	34,700	1,670	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(4) Parallel flange I sections : IPE

IPE

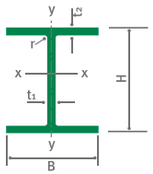
Dimension : DIN 1025 / EN 10365:2017
Dimensional Tolerance : EN 10034:1993
Surface Condition : EN 10163-3:2004 Class C

호칭치수 Designation		단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
		W	H	B	t_1	t_2	r	A	Ix	Iy
IPE120	A	8.66	117.6	64.0	3.8	5.1	7.0	11.03	257	22.4
	-	10.4	120.0	64.0	4.4	6.3	7.0	13.21	318	27.7
IPE140	A	10.5	137.4	73.0	3.8	5.6	7.0	13.39	435	36.4
	-	12.9	140.0	73.0	4.7	6.9	7.0	16.43	541	44.9
IPE160	A	12.7	157.0	82.0	4.0	5.9	9.0	16.18	689	54.4
	-	15.8	160.0	82.0	5.0	7.4	9.0	20.09	869	68.3
IPE180	A	15.4	177.0	91.0	4.3	6.5	9.0	19.58	1,060	81.9
	-	18.8	180.0	91.0	5.3	8.0	9.0	23.95	1,320	101
	O	21.3	182.0	92.0	6.0	9.0	9.0	27.10	1,510	117
IPE200	A	18.4	197.0	100.0	4.5	7.0	12.0	23.47	1,590	117
	-	22.4	200.0	100.0	5.6	8.5	12.0	28.48	1,940	142
	O	25.1	202.0	102.0	6.2	9.5	12.0	31.96	2,210	169
IPE220	A	22.2	217.0	110.0	5.0	7.7	12.0	28.26	2,320	171
	-	26.2	220.0	110.0	5.9	9.2	12.0	33.37	2,770	205
	O	29.4	222.0	112.0	6.6	10.2	12.0	37.39	3,130	240
IPE240	A	26.2	237.0	120.0	5.2	8.3	15.0	33.31	3,290	240
	-	30.7	240.0	120.0	6.2	9.8	15.0	39.12	3,890	284
	O	34.3	242.0	122.0	7.0	10.8	15.0	43.71	4,370	329
IPE270	A	30.7	267.0	135.0	5.5	8.7	15.0	39.15	4,920	358
	-	36.1	270.0	135.0	6.6	10.2	15.0	45.95	5,790	420
	O	42.3	274.0	136.0	7.5	12.2	15.0	53.84	6,950	514
IPE300	A	36.5	297.0	150.0	6.1	9.2	15.0	46.53	7,170	519
	-	42.2	300.0	150.0	7.1	10.7	15.0	53.81	8,360	603.8
	O	49.3	304.0	152.0	8.0	12.7	15.0	62.83	10,000	745.7
IPE330	A	43.0	327.0	160.0	6.5	10.0	18.0	54.74	10,200	685.2
	-	49.2	330.0	160.0	7.5	11.5	18.0	62.61	11,800	788.1
	O	57.0	334.0	162.0	8.5	13.5	18.0	72.62	13,900	960.4
IPE360	A	50.2	357.6	170.0	6.6	11.5	18.0	63.96	14,500	944
	-	57.1	360.0	170.0	8.0	12.7	18.0	72.73	16,300	1,040
	O	66.0	364.0	172.0	9.2	14.7	18.0	84.13	19,000	1,250

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
4.83	1.43	43.8	7.00	49.9	11.0	0.71	1.04	IPE120
4.90	1.45	53.0	8.70	60.7	13.6	0.89	1.74	
5.70	1.65	63.3	10.0	71.6	15.5	1.58	1.36	IPE140
5.74	1.65	77.3	12.3	88.3	19.2	1.98	2.45	
6.53	1.83	87.8	13.3	99.1	20.7	3.09	1.96	IPE160
6.58	1.84	109	16.7	124	26.1	3.96	3.60	
7.36	2.05	120	18.0	135	28.0	5.93	2.70	IPE180
7.42	2.05	147	22.2	166	34.6	7.43	4.79	
7.46	2.08	166	25.5	189	39.9	8.74	6.76	
8.23	2.23	161	23.4	182	36.5	10.5	4.11	IPE200
8.25	2.24	194	28.5	221	44.6	13.0	6.98	
8.32	2.30	219	33.1	249	51.9	15.6	9.45	
9.06	2.46	214	31.2	240	48.5	18.7	5.69	IPE220
9.11	2.48	252	37.3	285	58.1	22.7	9.07	
9.15	2.53	282	42.8	321	66.9	26.8	12.3	
9.94	2.68	278	40.0	312	62.4	31.3	8.35	IPE240
9.97	2.69	324	47.3	367	73.9	37.4	12.9	
10.0	2.74	361	53.9	410	84.4	43.7	17.2	
11.2	3.02	369	53.0	413	82.3	59.5	10.3	IPE270
11.2	3.02	429	62.2	484	97.0	70.6	15.9	
11.4	3.09	507	75.5	575	118	87.6	24.9	
12.4	3.34	483	69.2	542	107	107	13.4	IPE300
12.5	3.35	557	80.5	628	125	126	20.1	
12.6	3.45	658	98.1	744	153	158	31.1	
13.7	3.54	624	85.7	702	133	172	19.6	IPE330
13.7	3.55	715	98.5	804	154	199	28.2	
13.8	3.64	832	119	943	185	246	42.2	
15.1	3.84	811	111	907	172	282	26.5	IPE360
15.0	3.78	906	122	1,020	191	314	37.3	
15.0	3.85	1,040	145	1,190	227	380	55.8	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(4) Parallel flange I sections : IPE

IPE

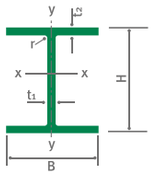
Dimension : DIN 1025 / EN 10365:2017
Dimensional Tolerance : EN 10034:1993
Surface Condition : EN 10163-3:2004 Class C

호칭치수 Designation		단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
		W	H	B	t_1	t_2	r	A	Ix	Iy
IPE400	A	57.4	397.0	180.0	7.0	12.0	21.0	73.10	20,300	1,170
	-	66.3	400.0	180.0	8.6	13.5	21.0	84.46	23,100	1,320
	O	75.7	404.0	182.0	9.7	15.5	21.0	96.39	26,700	1,560
IPE450	A	67.2	447.0	190.0	7.6	13.1	21.0	85.55	29,800	1,500
	-	77.6	450.0	190.0	9.4	14.6	21.0	98.82	33,700	1,680
	O	92.4	456.0	192.0	11.0	17.6	21.0	117.7	40,900	2,090
IPE500	A	79.4	497.0	200.0	8.4	14.5	21.0	101.1	42,900	1,940
	-	90.7	500.0	200.0	10.2	16.0	21.0	115.5	48,200	2,140
	O	107	506.0	202.0	12.0	19.0	21.0	136.7	57,800	2,620
IPE550	A	92.1	547.0	210.0	9.0	15.7	24.0	117.3	60,000	2,430
	-	106	550.0	210.0	11.1	17.2	24.0	134.4	67,100	2,670
	O	123	556.0	212.0	12.7	20.2	24.0	156.1	79,200	3,220
IPE600	A	108	597.0	220.0	9.8	17.5	24.0	137.0	82,900	3,120
	-	122	600.0	220.0	12.0	19.0	24.0	156.0	92,100	3,390
	O	154	610.0	224.0	15.0	24.0	24.0	196.8	118,000	4,520

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
16.7	4.00	1,020	130	1,140	202	432	34.8	IPE400
16.5	3.95	1,160	147	1,310	229	490	51.1	
16.6	4.02	1,320	171	1,500	269	588	73.1	
18.7	4.19	1,330	158	1,490	246	705	45.7	IPE450
18.5	4.12	1,500	177	1,700	276	791	66.9	
18.6	4.21	1,790	218	2,050	341	998	109	
20.6	4.38	1,730	194	1,950	302	1,130	62.8	IPE500
20.4	4.30	1,930	214	2,190	336	1,250	89.3	
20.6	4.38	2,280	259	2,610	409	1,550	143	
22.6	4.55	2,190	231	2,470	362	1,710	86.5	IPE550
22.3	4.46	2,440	254	2,790	401	1,880	123	
22.5	4.54	2,850	304	3,260	481	2,300	188	
24.6	4.77	2,780	284	3,140	442	2,610	119	IPE600
24.3	4.66	3,070	308	3,510	486	2,850	165	
24.5	4.79	3,870	404	4,470	640	3,860	318	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(5) Wide flange columns : HD

HD

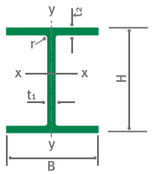
Dimension : DIN 1025 / EN 10365:2017
Dimensional Tolerance : EN 10034:1993
Surface Condition : EN 10163-3:2004 Class C

호칭치수 Designation	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
	W	H	B	t_1	t_2	r	A	Ix	Iy
HD260	68.2	250.0	260.0	7.5	12.5	24.0	86.82	10,500	3,670
	92.9	260.0	260.0	10.0	17.5	24.0	118.4	14,900	5,130
	114	268.0	262.0	12.5	21.5	24.0	145.7	18,900	6,460
	142	278.0	265.0	15.5	26.5	24.0	180.3	24,300	8,240
	172	290.0	268.0	18.0	32.5	24.0	219.6	31,300	10,400
HD320	97.7	310.0	300.0	9.0	15.5	27.0	124.4	22,900	6,990
	127	320.0	300.0	11.5	20.5	27.0	161.3	30,800	9,240
	158	330.0	303.0	14.5	25.5	27.0	201.2	39,600	11,800
	198	343.0	306.0	18.0	32.0	27.0	252.3	51,900	15,300
	245	359.0	309.0	21.0	40.0	27.0	312.0	68,100	19,700
	300	375.0	313.0	27.0	48.0	27.0	382.1	86,900	24,600
HD360	134	356.0	369.0	11.2	18.0	15.0	170.6	41,500	15,100
	148	360.0	370.0	12.3	19.8	15.0	187.9	46,300	16,700
	162	364.0	371.0	13.3	21.8	15.0	206.3	51,500	18,600
	179	368.0	373.0	15.0	23.9	15.0	228.3	57,400	20,700
	196	372.0	374.0	16.4	26.2	15.0	250.3	63,600	22,900

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
11.0	6.50	840	282	920	430	516	52.4	HD260
11.2	6.58	1,150	395	1,280	602	754	124	
11.4	6.66	1,410	493	1,600	753	979	222	
11.6	6.76	1,750	622	2,020	951	1,300	407	
11.9	6.88	2,160	776	2,520	1,190	1,730	719	
13.6	7.50	1,480	466	1,630	710	1,510	108	HD320
13.8	7.57	1,930	616	2,150	939	2,070	225	
14.0	7.66	2,400	779	2,720	1,190	2,740	420	
14.3	7.79	3,030	1,000	3,480	1,530	3,700	805	
14.8	7.95	3,790	1,280	4,440	1,950	5,000	1,500	
15.1	8.02	4,630	1,570	5,520	2,410	6,560	2,650	
15.6	9.41	2,330	818	2,560	1,240	4,310	169	HD360
15.7	9.43	2,570	903	2,840	1,370	4,840	224	
15.8	9.50	2,830	1,000	3,140	1,520	5,430	296	
15.9	9.52	3,120	1,110	3,480	1,680	6,120	394	
15.9	9.57	3,420	1,220	3,840	1,860	6,830	517	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(6) Wide flange bearing piles : HP

HP

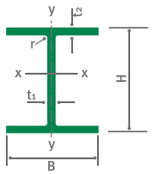
Dimension : DIN 1025 / EN 10365:2017
Dimensional Tolerance : EN 10034:1993
Surface Condition : EN 10163-3:2004 Class C

호칭치수 Designation	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
	W	H	B	t_1	t_2	r	A	Ix	Iy
HP200	53.5	204	207	11.3	11.3	10.0	68.14	4,980	1,670
HP220	57.2	210	224.5	11	11	18.0	72.85	5,730	2,080
HP260	75.0	249	265	12	12	24.0	95.54	10,600	3,730
	87.3	253	267	14	14	24.0	111.2	12,600	4,460
HP305	78.4	299.3	306.4	11	11	15.2	99.89	16,300	5,280
	88.0	301.7	307.8	12.4	12.3	15.2	112.1	18,400	5,980
	95.0	303.7	308.7	13.3	13.3	15.2	121.0	20,000	6,530
	110	307.9	310.7	15.3	15.4	15.2	140.1	23,600	7,710
	126	312.3	312.9	17.5	17.6	15.2	160.6	27,400	9,000
	149	318.5	316	20.6	20.7	15.2	189.9	33,100	10,900
	180	326.7	319.7	24.8	24.8	15.2	229.3	41,000	13,500
	186	328.3	320.9	25.5	25.6	15.2	236.9	42,600	14,100
	223	337.9	325.7	30.3	30.4	15.2	284.0	52,700	17,600
HP320	88.5	303	304	12	12	27.0	112.7	18,700	5,630
	103	307	306	14	14	27.0	131.0	22,100	6,700
	117	311	308	16	16	27.0	149.5	25,500	7,810
	147	319	312	20	20	27.0	186.9	32,700	10,200
	184	329	317	25	25	27.0	234.5	42,300	13,300
HP360	84.3	340	367	10	10	15.2	107.4	23,200	8,240
	109	346.4	371	12.8	12.9	15.2	138.7	30,600	11,000
	133	352	373.8	15.6	15.7	15.2	169.4	38,000	13,700
	152	356.4	376	17.8	17.9	15.2	193.7	44,000	15,900
	174	361.4	378.5	20.3	20.4	15.2	221.5	51,000	18,500
	180	362.9	378.8	21.1	21.1	15.2	229.5	53,000	19,100

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Designation
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
8.55	4.95	488	161	551	249	155	34.2	HP200
8.87	5.34	546	185	614	286	205	44.2	HP220
10.5	6.25	851	282	959	435	523	79.3	HP260
10.6	6.33	996	334	1,120	516	634	116	
12.8	7.27	1,090	345	1,210	527	1,100	50.6	HP305
12.8	7.30	1,220	389	1,360	595	1,250	70.1	
12.9	7.35	1,320	423	1,470	648	1,370	86.7	
13.0	7.42	1,530	496	1,720	762	1,650	131	
13.1	7.49	1,750	575	1,990	885	1,950	194	
13.2	7.58	2,080	690	2,370	1,070	2,410	314	
13.4	7.67	2,510	845	2,900	1,310	3,080	542	
13.4	7.71	2,600	879	3,000	1,370	3,230	594	
13.6	7.87	3,120	1,080	3,650	1,680	4,140	998	
12.9	7.07	1,230	370	1,380	572	1,190	99.0	HP320
13.0	7.15	1,440	438	1,610	677	1,430	142	
13.1	7.23	1,640	507	1,850	786	1,700	198	
13.2	7.39	2,050	654	2,340	1,010	2,260	357	
13.4	7.53	2,570	839	2,980	1,310	3,070	662	
14.7	8.76	1,360	449	1,500	683	2,240	44.4	HP360
14.9	8.91	1,770	593	1,960	903	3,050	90.7	
15.0	8.99	2,160	733	2,410	1,120	3,860	161	
15.1	9.06	2,470	846	2,770	1,290	4,540	236	
15.2	9.14	2,820	978	3,190	1,500	5,360	348	
15.2	9.12	2,920	1,010	3,310	1,550	5,580	387	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(7) Universal beams : UB

UB

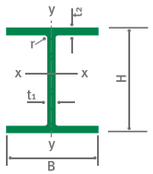
Dimension : EN 10365:2017
Dimensional Tolerance : EN 10034:1993
Surface Condition : EN 10163-3:2004 Class C

호칭치수 Designation		단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
		W	H	B	t_1	t_2	r	A	Ix	Iy
203 x 102	23	23.1	203.2	101.8	5.4	9.3	7.6	29.40	2,100	164
203 x 133	25	25.1	203.2	133.2	5.7	7.8	7.6	31.97	2,340	308
	30	30.0	206.8	133.9	6.4	9.6	7.6	38.21	2,900	385
254 x 102	22	22.0	254.0	101.6	5.7	6.8	7.6	28.02	2,840	119
	25	25.2	257.2	101.9	6.0	8.4	7.6	32.04	3,410	149
	28	28.3	260.4	102.2	6.3	10.0	7.6	36.08	4,000	179
254 x 146	31	31.1	251.4	146.1	6.0	8.6	7.6	39.68	4,410	448
	37	37.0	256.0	146.4	6.3	10.9	7.6	47.17	5,540	571
	43	43.0	259.6	147.3	7.2	12.7	7.6	54.77	6,540	677
305 x 102	25	24.8	305.1	101.6	5.8	7.0	7.6	31.60	4,460	123
	28	28.2	308.7	101.8	6.0	8.8	7.6	35.88	5,370	155
	33	32.8	312.7	102.4	6.6	10.8	7.6	41.83	6,500	194
305 x 165	40	40.3	303.4	165.0	6.0	10.2	8.9	51.32	8,500	764
	46	46.1	306.6	165.7	6.7	11.8	8.9	58.75	9,900	896
	54	54.0	310.4	166.9	7.9	13.7	8.9	68.77	11,700	1,060
356 x 127	33	33.1	349.0	125.4	6.0	8.5	10.2	42.13	8,250	280
	39	39.1	353.4	126.0	6.6	10.7	10.2	49.77	10,200	358
356 x 171	45	45.0	351.4	171.1	7.0	9.7	10.2	57.33	12,100	811
	51	51.0	355.0	171.5	7.4	11.5	10.2	64.91	14,100	968
	57	57.0	358.0	172.2	8.1	13.0	10.2	72.56	16,000	1,110
	67	67.1	363.4	173.2	9.1	15.7	10.2	85.49	19,500	1,360
406 x 140	39	39.0	398.0	141.8	6.4	8.6	10.2	49.65	12,500	410
	46	46.0	403.2	142.2	6.8	11.2	10.2	58.64	15,700	538
406 x 178	54	54.1	402.6	177.7	7.7	10.9	10.2	68.95	18,700	1,020
	60	60.1	406.4	177.9	7.9	12.8	10.2	76.52	21,600	1,200
	67	67.1	409.4	178.8	8.8	14.3	10.2	85.54	24,300	1,360
	74	74.2	412.8	179.5	9.5	16.0	10.2	94.51	27,300	1,550
457 x 152	52	52.3	449.8	152.4	7.6	10.9	10.2	66.64	21,400	645
	60	59.8	454.6	152.9	8.1	13.3	10.2	76.23	25,500	795
	67	67.2	458.0	153.8	9.0	15.0	10.2	85.55	28,900	913
	74	74.2	462.0	154.4	9.6	17.0	10.2	94.48	32,700	1,050
	82	82.1	465.8	155.3	10.5	18.9	10.2	104.5	36,600	1,180

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
8.45	2.36	207	32.2	234	49.8	15.4	7.02	203 x 102
8.56	3.10	230	46.2	258	70.9	29.3	6.10	203 x 133
8.71	3.17	281	57.5	314	88.2	37.3	10.4	
10.1	2.06	224	23.5	259	37.3	18.2	4.35	254 x 102
10.3	2.15	265	29.2	306	46.0	22.9	6.56	
10.5	2.22	307	34.9	353	54.8	27.9	9.66	
10.5	3.36	351	61.3	393	94.1	65.9	8.68	254 x 146
10.8	3.48	433	78.0	483	119	85.6	15.4	
10.9	3.52	504	92.0	566	141	103	24.0	
11.9	1.97	292	24.2	342	38.8	27.2	4.98	305 x 102
12.2	2.08	348	30.5	403	48.5	34.8	7.51	
12.5	2.15	416	37.9	481	60.0	44.0	12.3	
12.9	3.86	560	92.7	623	142	164	14.7	305 x 165
13.0	3.90	646	108	720	166	194	22.2	
13.0	3.93	754	127	846	196	234	34.9	
14.0	2.58	473	44.7	543	70.3	81.0	8.97	356 x 127
14.3	2.68	577	56.8	659	89.1	105	15.2	
14.5	3.76	689	94.8	775	147	236	16.2	356 x 171
14.7	3.86	794	113	896	174	285	24.0	
14.8	3.91	894	129	1,010	199	329	33.6	
15.1	3.99	1,070	157	1,210	243	411	55.9	
15.9	2.87	628	57.8	724	90.8	155	11.0	406 x 140
16.4	3.03	779	75.7	888	118	206	19.1	
16.5	3.85	929	115	1,050	178	391	23.5	406 x 178
16.8	3.96	1,060	135	1,200	209	465	33.5	
16.9	3.99	1,190	152	1,350	237	532	46.4	
17.0	4.05	1,320	173	1,500	267	607	63.1	
17.9	3.11	952	84.6	1,100	133	310	21.7	457 x 152
18.3	3.23	1,120	104	1,290	163	386	34.0	
18.4	3.27	1,260	119	1,450	187	446	48.0	
18.6	3.33	1,420	136	1,630	213	516	66.2	
18.7	3.36	1,570	152	1,810	240	589	89.7	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(7) Universal beams : UB

UB

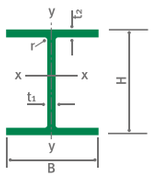
Dimension : EN 10365:2017
Dimensional Tolerance : EN 10034:1993
Surface Condition : EN 10163-3:2004 Class C

호칭치수 Designation		단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
		W	H	B	t_1	t_2	r	A	Ix	Iy
457 x 191	67	67.1	453.4	189.9	8.5	12.7	10.2	85.51	29,400	1,450
	74	74.3	457.0	190.4	9.0	14.5	10.2	94.63	33,300	1,670
	82	82.0	460.0	191.3	9.9	16.0	10.2	104.5	37,100	1,870
	89	89.3	463.4	191.9	10.5	17.7	10.2	113.8	41,000	2,090
	98	98.3	467.2	192.8	11.4	19.6	10.2	125.3	45,700	2,350
533 x 210	82	82.2	528.3	208.8	9.6	13.2	12.7	104.7	47,500	2,010
	92	92.1	533.1	209.3	10.1	15.6	12.7	117.4	55,200	2,390
	101	101.0	536.7	210.0	10.8	17.4	12.7	128.7	61,500	2,690
	109	109.0	539.5	210.8	11.6	18.8	12.7	138.9	66,800	2,940
	122	122.0	544.5	211.9	12.7	21.3	12.7	155.4	76,000	3,390
610 x 229	101	101.2	602.6	227.6	10.5	14.8	12.7	128.9	75,800	2,910
	113	113.0	607.6	228.2	11.1	17.3	12.7	143.9	87,300	3,430
	125	125.1	612.2	229.0	11.9	19.6	12.7	159.3	98,600	3,930
	140	139.9	617.2	230.2	13.1	22.1	12.7	178.2	112,000	4,510
610 x 305	149	149.1	612.4	304.8	11.8	19.7	16.5	190.0	126,000	9,310
	179	179.0	620.2	307.1	14.1	23.6	16.5	228.1	153,000	11,400
	238	238.1	635.8	311.4	18.4	31.4	16.5	303.3	209,000	15,800
686 x 254	125	125.1	677.9	253.0	11.7	16.2	15.2	159.5	118,000	4,380
	140	140.1	683.5	253.7	12.4	19.0	15.2	178.4	136,000	5,180
	152	152.4	687.5	254.5	13.2	21.0	15.2	194.1	150,000	5,780
	170	170.2	692.9	255.8	14.5	23.7	15.2	216.8	170,000	6,630
762 x 267	134	133.9	750.0	264.4	12.0	15.5	16.5	170.6	151,000	4,790
	147	146.9	754.0	265.2	12.8	17.5	16.5	187.2	169,000	5,460
	173	173.0	762.2	266.7	14.3	21.6	16.5	220.4	205,000	6,850
	197	196.8	769.8	268.0	15.6	25.4	16.5	250.6	240,000	8,170
838 x 292	176	175.9	834.9	291.7	14.0	18.8	17.8	224.0	246,000	7,800
	194	193.8	840.7	292.4	14.7	21.7	17.8	246.8	279,000	9,070
	226	226.5	850.9	293.8	16.1	26.8	17.8	288.6	340,000	11,400
914 x 305	201	200.9	903.0	303.3	15.1	20.2	19.1	255.9	325,000	9,420
	224	224.2	910.4	304.1	15.9	23.9	19.1	285.6	376,000	11,200
	253	253.4	918.4	305.5	17.3	27.9	19.1	322.8	436,000	13,300
	289	289.1	926.6	307.7	19.5	32.0	19.1	368.3	504,000	15,600

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Designation
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
18.5	4.12	1,300	153	1,470	237	704	37.5	457 x 191
18.8	4.20	1,460	175	1,650	272	817	52.1	
18.8	4.23	1,610	196	1,830	304	920	69.7	
19.0	4.29	1,770	218	2,010	338	1,040	91.3	
19.1	4.33	1,960	244	2,230	379	1,170	122	
21.3	4.38	1,800	193	2,060	300	1,330	52.5	533 x 210
21.7	4.51	2,070	228	2,360	356	1,600	76.3	
21.9	4.57	2,290	256	2,610	399	1,810	102	
21.9	4.60	2,480	279	2,830	436	1,990	127	
22.1	4.67	2,790	320	3,200	500	2,310	180	
24.2	4.75	2,520	256	2,880	400	2,510	78.2	610 x 229
24.6	4.88	2,870	301	3,280	469	2,980	112	
24.9	4.97	3,220	343	3,680	535	3,440	155	
25.1	5.03	3,630	392	4,140	611	3,980	218	
25.8	7.00	4,110	611	4,590	937	8,170	200	610 x 305
25.9	7.07	4,930	742	5,550	1,140	10,100	342	
26.3	7.22	6,570	1,010	7,490	1,570	14,400	791	
27.2	5.24	3,480	346	3,990	542	4,790	118	686 x 254
27.6	5.39	3,980	408	4,560	638	5,710	170	
27.8	5.46	4,360	454	5,000	710	6,410	221	
28.0	5.53	4,910	518	5,630	811	7,400	310	
29.8	5.30	4,030	362	4,640	570	6,440	122	762 x 267
30.0	5.40	4,480	412	5,160	647	7,380	162	
30.5	5.57	5,380	514	6,200	808	9,360	270	
30.9	5.71	6,240	610	7,170	959	11,300	407	
33.1	5.90	5,890	535	6,810	842	12,900	226	838 x 292
33.6	6.06	6,640	620	7,640	974	15,200	310	
34.3	6.28	7,990	776	9,150	1,210	19,200	517	
35.6	6.07	7,200	621	8,350	982	18,300	298	914 x 305
36.3	6.26	8,260	737	9,530	1,160	22,000	427	
36.8	6.42	9,490	871	10,900	1,370	26,300	631	
37.0	6.51	10,900	1,010	12,600	1,600	31,100	934	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(8) British Standard (BS) – Universal Column

UC

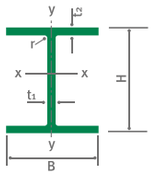
Dimension : BS 4:2005
Dimensional Tolerance : EN 10034:1993
Surface Condition : EN 10163-3 2004 CLASS C Subclass1

호칭치수 Designation		단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
		W	H	B	t_1	t_2	r	A	Ix	Iy
152 x 152	23	23.0	152.4	152.2	5.8	6.8	7.6	29.25	1,250	400
	30	30.0	157.6	152.9	6.5	9.4	7.6	38.26	1,750	561
	37	37.0	161.8	154.4	8.0	11.5	7.6	47.11	2,210	706
203 x 203	46	46.1	203.2	203.6	7.2	11.0	10.2	58.73	4,570	1,550
	52	51.95	206.2	204.3	7.9	12.5	10.2	66.28	5,260	1,780
	60	53.9	209.6	205.8	9.4	14.2	10.2	76.37	6,120	2,060
	71	60.0	215.8	206.4	10.0	17.3	10.2	90.43	7,620	2,540
	86	86.1	222.2	209.1	12.7	20.5	10.2	109.6	9,450	3,130
254 x 254	73	73.1	254.1	254.6	8.6	14.2	12.7	93.10	11,400	3,910
	89	88.9	260.3	256.3	10.3	17.3	12.7	113.3	14,300	4,860
	107	107.1	266.7	258.8	12.8	20.5	12.7	136.4	17,500	5,930
	132	132.0	276.3	261.3	15.3	25.3	12.7	168.1	22,500	7,530
	167	167.1	289.1	265.2	19.2	31.7	12.7	212.9	30,000	9,870
305 x 305	97	96.9	307.9	305.3	9.9	15.4	15.2	123.4	22,200	7,310
	118	117.9	314.5	307.4	12.0	18.7	15.2	150.2	27,700	9,060
	137	136.9	320.5	309.2	13.8	21.7	15.2	174.4	32,800	10,700
	158	158.1	327.1	311.2	15.8	25.0	15.2	201.4	38,700	12,600
	198	198.1	339.9	314.5	19.1	31.4	15.2	252.4	50,900	16,300
	240	240.0	352.5	318.4	23.0	37.7	15.2	305.8	64,200	20,300
	283	282.9	365.3	322.2	26.8	44.1	15.2	360.4	78,900	24,600
356 x 368	129	129.0	355.6	368.6	10.4	17.5	15.2	164.3	40,200	14,600
	153	152.9	362.0	370.5	12.3	20.7	15.2	194.8	48,600	17,600
	177	177.0	368.2	372.6	14.4	23.8	15.2	225.5	57,100	20,500
	202	201.9	374.6	374.7	16.5	27.0	15.2	257.2	66,300	23,700
356 x 406	235	235.1	381.0	394.8	18.4	30.2	15.2	299.4	79,100	31,000
	287	287.1	393.6	399.0	22.6	36.5	15.2	365.7	99,900	38,700
	340	339.9	406.4	403.0	26.6	42.9	15.2	433.0	122,500	46,900
	393	393.0	419.0	407.0	30.6	49.2	15.2	500.6	146,600	55,400
	467	467.0	436.6	412.2	35.8	58.0	15.2	594.9	183,000	67,800
	551	551.0	455.6	418.5	42.1	67.5	15.2	701.9	227,000	82,700
	634	633.9	474.6	424.0	47.6	77.0	15.2	807.5	275,000	98,100

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
6.54	3.70	164	52.5	182	80.2	21.2	4.86	152 x 152
6.76	3.83	222	73.3	248	112	30.8	10.7	
6.85	3.87	273	91.5	309	140	39.8	19.5	
8.82	5.14	450	152	497	231	143	22.3	203 x 203
8.91	5.18	510	174	567	264	167	32.0	
8.95	5.19	584	200	656	305	197	47.8	
9.18	5.30	706	246	799	374	250	80.6	
9.29	5.34	851	299	977	456	318	138	
11.1	6.48	897	307	992	465	562	57.7	254 x 254
11.2	6.55	1,100	379	1,220	575	717	103	
11.3	6.59	1,310	458	1,480	697	897	174	
11.6	6.69	1,630	576	1,870	878	1,180	321	
11.9	6.81	2,080	744	2,420	1,140	1,630	634	
13.4	7.70	1,440	479	1,590	726	1,560	91.8	305 x 305
13.6	7.77	1,760	590	1,960	895	1,980	162	
13.7	7.83	2,050	692	2,300	1,050	2,390	251	
13.9	7.91	2,370	810	2,680	1,230	2,870	382	
14.2	8.04	2,990	1,040	3,440	1,580	3,870	741	
14.5	8.15	3,640	1,280	4,250	1,950	5,020	1,290	
14.8	8.26	4,320	1,530	5,110	2,340	6,340	2,060	
15.6	9.43	2,260	792	2,480	1,200	4,170	153	356 x 368
15.8	9.51	2,690	950	2,960	1,430	5,110	251	
15.9	9.53	3,100	1,100	3,460	1,670	6,080	383	
16.1	9.60	3,540	1,270	3,970	1,920	7,150	561	
16.3	10.2	4,150	1,570	4,690	2,380	9,530	818	356 x 406
16.5	10.3	5,080	1,940	5,810	2,950	12,320	1,460	
16.8	10.4	6,030	2,330	7,000	3,540	15,460	2,370	
17.1	10.5	7,000	2,720	8,220	4,150	18,900	3,590	
17.5	10.7	8,380	3,290	10,000	5,030	24,300	5,900	
18.0	10.9	9,960	3,950	12,100	6,060	31,100	9,400	
18.5	11.0	11,600	4,630	14,200	7,110	38,700	14,000	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(9) British Standard (BS) – Universal Bearing Pile

UBP

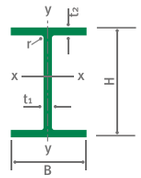
Dimension : BS 4:2005
Dimensional Tolerance : EN 10034:1993
Surface Condition : EN 10163-3 2004 CLASS C Subclass1

호칭치수 Designation		단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
		W	H	B	t_1	t_2	r	A	Ix	Iy
203 x 203	54	53.9	204.0	207.7	11.3	11.4	10.2	68.72	5,030	1,710
254 x 254	63	63.0	247.1	256.6	10.6	10.7	12.7	80.22	8,860	3,020
	71	71.0	249.7	258.0	12.0	12.0	12.7	90.39	10,100	3,440
	85	85.1	254.3	260.4	14.4	14.3	12.7	108.4	12,300	4,220
305 x 305	79	79.0	299.2	306.0	11.1	11.1	15.2	100.7	16,400	5,310
	88	88.0	301.7	307.2	12.3	12.3	15.2	111.6	18,400	5,950
	95	94.9	303.8	308.3	13.4	13.4	15.2	121.7	20,200	6,550
	110	110.0	307.9	310.3	15.4	15.4	15.2	140.2	23,600	7,680
	126	126.1	312.4	312.5	17.7	17.7	15.2	161.6	27,500	9,020
	149	149.1	318.5	315.6	20.7	20.7	15.2	190.0	33,000	10,900
	186	186.0	328.3	320.9	25.5	25.6	15.2	236.9	42,600	14,100
	223	222.9	337.9	325.7	30.3	30.4	15.2	284.0	52,700	17,600
356 x 368	109	108.9	346.4	371.0	12.8	12.9	15.2	138.7	30,600	11,000
	133	133.0	352.0	373.8	15.6	15.7	15.2	169.4	38,000	13,700
	152	152.0	356.4	376.0	17.8	17.9	15.2	193.7	44,000	15,900
	174	173.9	361.4	378.5	20.3	20.4	15.2	221.5	51,000	18,500

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Desig-nation
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
8.56	4.99	493	165	557	252	158	35.0	203 x 203
10.5	6.14	717	235	799	360	421	37.2	254 x 254
10.6	6.17	809	267	904	409	485	52.3	
10.7	6.24	967	324	1,090	498	606	87.8	
12.8	7.26	1,100	347	1,220	530	1,100	51.9	305 x 305
12.8	7.30	1,220	387	1,360	593	1,240	69.3	
12.9	7.34	1,330	425	1,480	651	1,380	88.5	
13.0	7.40	1,530	495	1,720	760	1,640	132	
13.0	7.47	1,760	577	2,000	888	1,950	199	
13.2	7.57	2,070	691	2,370	1,060	2,400	316	
13.4	7.71	2,600	879	3,000	1,370	3,230	594	
13.6	7.87	3,120	1,080	3,650	1,680	4,140	998	
14.9	8.91	1,770	593	1,960	903	3,050	90.7	356 x 368
15.0	8.99	2,160	733	2,410	1,120	3,860	161	
15.1	9.06	2,470	846	2,770	1,290	4,540	236	
15.2	9.14	2,820	978	3,190	1,500	5,360	348	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(10) Australian/New Zealand Universal Beams (AS/NZS) – UB

AS/NZS

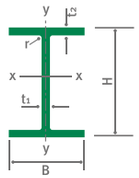
Dimension : AS/NZS 3679.1:2016
Dimensional Tolerance : AS/NZS 3679.1:2016
Surface Condition : AS/NZS 3679.1:2016

호칭치수 Designation		단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm²)	단면 2차 모멘트 Moment of Inertia (cm⁴)	
		W	H	B	t1	t2	r	A	Ix	Iy
150UB	14	14.0	150	75	5	7	8.0	17.85	666	50
	18	18.0	155.0	75.0	6.0	9.5	8.0	22.96	905	67
200UB	18	18.2	198.0	99.0	4.5	7.0	11.0	23.18	1,580	114
	23	22.3	201.6	133.0	5.0	7.0	8.9	28.68	2,100	275
	25	25.4	203.2	133.0	5.8	7.8	8.9	32.31	2,360	306
	30	29.8	207.0	134.0	6.3	9.6	8.9	38.24	2,910	386
250UB	26	25.7	248.0	124.0	5.0	8.0	12.0	32.68	3,540	255
	31	31.4	251.5	146.0	6.1	8.6	8.9	40.08	4,450	447
	37	37.3	256.2	146.0	6.4	10.9	8.9	47.51	5,570	566
310UB	32	32.0	298.0	149	5.5	8	13.0	40.80	6,320	442
	41	40.4	304.0	165	6.1	10.2	11.4	52.08	8,640	765
	47	46.2	307.2	166	6.7	11.8	11.4	59.29	10,000	901
360UB	45	44.7	352.0	171.0	6.9	9.7	11.4	57.24	12,100	810
	51	50.7	355.6	171.0	7.3	11.5	11.4	64.73	14,200	960
	57	56.7	358.6	172.0	8.0	13.0	11.4	72.44	16,100	1,100
410UB	54	53.7	402.6	178.0	7.6	10.9	11.4	68.86	18,800	1,030
	60	59.7	406.4	178.0	7.8	12.8	11.4	76.39	21,600	1,210
460UB	67	67.1	453.8	190.0	8.5	12.7	11.4	85.79	29,600	1,450
	75	74.6	457.4	190.0	9.1	14.5	11.4	95.20	33,500	1,660
	82	82.1	460.4	191.0	9.9	16.0	11.4	104.6	37,200	1,860
530UB	82	82.0	528.2	209.0	9.6	13.2	14.0	105.0	47,700	2,010
	93	92.4	533.0	209.0	10.2	15.6	14.0	118.1	55,400	2,380
610UB	102	101	602	228	10.6	14.8	14.0	129.8	76,100	2,930
	114	113	607	228	11.2	17.3	14.0	144.7	87,500	3,430
	125	125	611.6	229	11.9	19.6	14.0	159.6	98,600	3,930
690UB	125	125	677.9	253	11.7	16.2	15.2	159.5	118,000	4,380
	140	140	683.5	253.7	12.4	19	15.2	178.4	136,000	5,180
760UB	147	147	754	265.2	12.8	17.5	16.5	187.2	169,000	5,460
	173	173	762.2	266.7	14.3	21.6	16.5	220.4	205,000	6,850
	197	197	769.8	268	15.6	25.4	16.5	250.6	240,000	8,170
	220	220	775.5	269.8	17.4	28.3	16.5	280.1	270,000	9,300
	244	244	781.3	271.6	19.3	31.3	16.5	311.1	302,000	10,500

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm³)		소성단면계수 Plastic Modulus (cm³)		뒤틀림상수 Warping Constant (cm⁶,x10³)	비틀림상수 Torsional Constant (cm⁴)	호칭치수 Designation
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
6.11	1.67	88.8	13.2	102	20.8	2.52	2.90	150UB
6.28	1.71	117	17.9	135	28.2	3.54	6.12	
8.26	2.21	160	22.9	180	35.7	10.3	3.85	200UB
8.56	3.10	208	41.3	231	63.4	26.0	4.59	
8.55	3.08	232	46.1	260	70.9	29.2	6.46	
8.72	3.18	281	57.6	316	88.4	37.5	10.7	
10.4	2.79	286	41.1	319	63.6	36.6	6.69	250UB
10.5	3.34	354	61.2	397	94.2	65.8	9.09	
10.8	3.45	435	77.5	486	119	85.1	15.8	
12.4	3.29	424	59.3	475	91.8	92.7	8.79	310UB
12.9	3.83	568	92.7	633	142	165	15.7	
13.0	3.90	651	109	729	166	196	23.2	
14.5	3.76	688	94.7	777	146	237	16.4	360UB
14.8	3.85	799	112	897	173	284	24.3	
14.9	3.90	898	128	1,010	198	329	33.9	
16.5	3.87	934	116	1,060	179	393	23.8	410UB
16.8	3.98	1,060	136	1,200	209	466	33.8	
18.6	4.11	1,300	153	1,480	238	706	38.3	460UB
18.8	4.18	1,460	175	1,660	271	813	53.3	
18.9	4.22	1,620	195	1,840	303	917	70.6	
21.3	4.38	1,810	192	2,070	301	1,330	53.8	530UB
21.7	4.49	2,080	228	2,370	355	1,590	78.3	
24.2	4.75	2,530	257	2,900	402	2,520	80.5	610UB
24.6	4.87	2,880	301	3,290	469	2,970	115	
24.9	4.96	3,220	343	3,680	536	3,440	157	
27.2	5.24	3,480	346	3,990	542	4,790	118	690UB
27.6	5.39	3,980	408	4,560	638	5,710	170	
30.0	5.40	4,480	412	5,160	647	7,380	162	760UB
30.5	5.57	5,380	514	6,200	808	9,360	270	
30.9	5.71	6,240	610	7,170	959	11,300	407	
31.0	5.76	6,960	689	8,040	1,090	12,900	563	
31.2	5.81	7,730	773	8,950	1,220	14,700	763	

01. H Section H형강

Dimensions and Sectional Properties 치수 및 단면성능



(10) Australian/New Zealand Universal Columns (AS/NZS) – UC

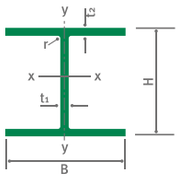
AS/NZS

Dimension : AS/NZS 3679.1:2016
Dimensional Tolerance : AS/NZS 3679.1:2016
Surface Condition : AS/NZS 3679.1:2016

호칭치수 Designation		단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Designation
		W	H	B	t_1	t_2	r	A	Ix	Iy	ix	iy	Sx	Sy	Zx	Zy	Cw	J	
100UC	15	14.8	97.0	99.0	5.0	7.0	10.0	18.87	318	114	4.11	2.45	65.6	22.9	74.4	35.2	2.29	3.61	100UC
150UC	23	23.4	152.4	152	6.1	6.8	8.9	29.82	1,260	399	6.50	3.66	165	52.4	185	80.2	21.1	5.40	150UC
	30	30.0	157.6	153	6.6	9.4	8.9	38.60	1,760	562	6.75	3.81	223	73.4	250	112	30.8	11.1	
	37	37.2	161.8	154	8.1	11.5	8.9	47.34	2,220	701	6.85	3.85	274	91.0	310	139	39.5	20.1	
200UC	46	46.2	203.4	203.0	7.3	11.0	11.4	59.02	4,590	1,530	8.82	5.09	451	151	500	230	142	23.0	200UC
	52	52.2	206.4	204.0	8.0	12.5	11.4	66.63	5,280	1,770	8.90	5.15	512	174	570	264	166	32.8	
	59	59.5	209.8	205.0	9.3	14.2	11.4	76.21	6,130	2,040	8.97	5.17	584	199	656	303	195	48.2	
250UC	73	72.9	253.8	254.0	8.6	14.2	14	93.20	11,400	3,880	11.1	6.45	898	306	992	464	557	58.6	250UC
	89	89.5	260.0	256.0	10.5	17.3	14	113.9	14,300	4,840	11.2	6.52	1,100	378	1,230	575	712	105	
310UC	97	96.8	308.0	305.0	9.9	15.4	16.5	123.7	22,300	7,290	13.4	7.68	1,450	478	1,600	725	1,560	93.3	310UC
	118	118	314.6	307.0	11.9	18.7	16.5	150.1	27,700	9,020	13.6	7.75	1,760	588	1,960	893	1,970	164	
	137	137	320.6	309.0	13.8	21.7	16.5	174.7	32,900	10,700	13.7	7.83	2,050	693	2,300	1,050	2,380	254	
	158	158	327.2	311.0	15.7	25.0	16.5	201.4	38,800	12,500	13.9	7.88	2,370	804	2,680	1,230	2,860	384	

02. Steel H Pile H형강 말뚝

Dimensions and Sectional Properties 치수 및 단면성능



(1) Metric Series

HP

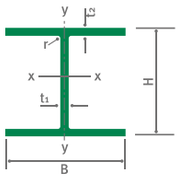
Dimension : KS F 4603:2016
Dimensional Tolerance : KS F 4603:2016
Surface Condition : KS F 4603:2016

호칭치수 Division (depth x width)	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)	
	W	H	B	t_1	t_2	r	A	Ix	Iy
200 x 200	56.2	200	204	12	12	13	71.53	4,980	1,700
250 x 250	64.4	244	252	11	11	16	82.06	8,790	2,940
	82.2	250	255	14	14	16	104.7	11,500	3,880
300 x 300	84.5	294	302	12	12	18	107.7	16,900	5,520
	94.0	300	300	10	15	18	119.8	20,400	6,750
	106	300	305	15	15	18	134.8	21,500	7,100
350 x 350	106	338	351	13	13	20	135.3	28,200	9,380
	131	344	354	16	16	20	166.6	35,300	11,800
	137	350	350	12	19	20	173.9	40,300	13,600
	156	350	357	19	19	20	191.4	42,800	14,400
400 x 400	140	388	402	15	15	22	178.5	49,000	16,300
	168	394	405	18	18	22	214.4	59,700	20,000
	172	400	400	13	21	22	218.7	66,600	22,400
	197	400	408	21	21	22	250.7	70,900	23,800
	232	414	405	18	28	22	295.4	92,800	31,000
	283	428	407	20	35	22	360.7	119,000	39,400

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Division (depth x width)
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
8.35	4.88	498	167	566	257	150	43.6	200 x 200
10.3	5.98	720	233	805	358	398	44.6	250 x 250
10.5	6.09	919	304	1,040	468	539	87.3	
12.5	7.16	1,150	365	1,280	560	1,100	69.1	300 x 300
13.1	7.51	1,360	450	1,500	684	1,370	89.0	
12.6	7.26	1,440	466	1,610	716	1,440	128	
14.4	8.33	1,670	535	1,850	818	2,470	101	350 x 350
14.6	8.43	2,050	669	2,300	1,030	3,180	180	
15.2	8.84	2,300	776	2,550	1,180	3,720	200	
14.7	8.53	2,450	809	2,760	1,240	3,950	294	
16.6	9.54	2,520	809	2,800	1,240	5,650	174	400 x 400
16.7	9.65	3,030	985	3,390	1,510	7,040	290	
17.5	10.1	3,330	1,120	3,670	1,700	8,040	304	
16.8	9.75	3,540	1,170	3,990	1,790	8,540	450	
17.7	10.2	4,480	1,530	5,030	2,330	11,500	721	
18.2	10.4	5,570	1,930	6,310	2,940	15,200	1,320	

02. Steel H Pile H형강 말뚝

Dimensions and Sectional Properties 치수 및 단면성능



(2) ASTM

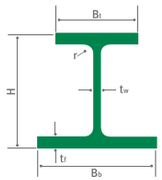
HP

Dimension : ASTM A6-14
Dimensional Tolerance : ASTM A6-14
Surface Condition : ASTM A6-14

호칭치수 Division (depth x width)	단위무게 Unit Weight (lbs/ft)	표준단면치수 Standard Sectional Dimension (in)					단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm^2)	단면 2차 모멘트 Moment of Inertia (cm^4)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm^3)		소성단면계수 Plastic Modulus (cm^3)		뒤틀림상수 Warping Constant (cm^6,x10^3)	비틀림상수 Torsional Constant (cm^4)	호칭치수 Division (depth x width)
	W	H	B	t_1	t_2	r	M	H	B	t1	t2	r	A	Ix	Iy	ix	iy	Sx	Sy	Zx	Zy	Cw	J	
HP8 x 8	36	8.02	8.155	0.445	0.445	0.40	53.5	203.7	207.1	11.3	11.3	10.2	68.16	4,970	1,680	8.54	4.96	488	162	551	249	155	34.4	HP8 x 8
HP10 x 10	42	9.70	10.075	0.420	0.415	0.50	62.6	246.4	255.9	10.5	10.7	12.7	79.77	8,770	2,990	10.5	6.12	712	234	794	358	415	36.7	HP10 x 10
	57	9.99	10.225	0.565	0.565	0.50	85.3	253.7	259.7	14.4	14.4	12.7	108.6	12,300	4,210	10.6	6.23	970	324	1,090	499	602	88.7	
HP12 x 12	53	11.78	12.045	0.435	0.435	0.60	78.3	299.2	305.9	11.0	11.0	15.2	99.77	16,300	5,250	12.8	7.25	1,090	343	1,210	525	1,090	50.6	HP12 x 12
	63	11.94	12.125	0.515	0.515	0.60	93.4	303.3	308.0	13.1	13.1	15.2	119.0	19,700	6,390	12.9	7.33	1,300	415	1,450	635	1,340	82.9	
	74	12.13	12.215	0.610	0.605	0.60	111	308.1	310.3	15.4	15.5	15.2	140.8	23,700	7,730	13.0	7.41	1,540	498	1,730	765	1,650	134	
	84	12.28	12.295	0.685	0.685	0.60	125	311.9	312.3	17.4	17.4	15.2	158.9	27,000	8,850	13.0	7.46	1,730	567	1,960	872	1,920	189	
HP14 x 14½	73	13.61	14.585	0.505	0.505	0.60	108	345.7	370.5	12.8	12.8	15.2	137.8	30,300	10,900	14.8	8.89	1,750	588	1,940	893.6	3,010	89.4	HP14 x 14½
	89	13.83	14.695	0.615	0.615	0.60	132	351.3	373.3	15.6	15.6	15.2	168.4	37,600	13,500	14.9	8.95	2,140	723	2,390	1,110	3,810	159	
	102	14.01	14.785	0.705	0.705	0.60	152	355.9	375.5	17.9	17.9	15.2	193.7	43,800	15,800	15.0	9.03	2,460	842	2,760	1,290	4,510	238	
	117	14.21	14.885	0.805	0.805	0.60	174	360.9	378.1	20.4	20.4	15.2	221.5	50,800	18,400	15.1	9.11	2,820	973	3,180	1,490	5,330	350	

03. Asymmetric H - Beam 비대칭 H형강

Dimensions and Sections Properties 치수 및 단면성능



호칭치수 Designation	표준단면치수 Standard Sectional Dimension (mm)				단위무게 Unit Weight (kg/m)	단면적 Sectional Area (cm²)	단면 2차 모멘트 Moment of Inertia (cm⁴)		단면 2차 반경 Radius of Gyration (cm)	
	H x Bt x Bb	tw	tf	r	W	A	Ix	Iy	ix	iy
312 x 234 x 344	312 x 234 x 344	12	18	22	111	141.3	24,751	8,038	13.2	7.5
320 x 236 x 346	320 x 236 x 346	14	22	22	134	170.8	30,907	10,017	13.5	7.7
328 x 238 x 348	328 x 238 x 348	16	26	22	158	200.7	37,437	12,069	13.7	7.8
336 x 240 x 350	336 x 240 x 350	18	30	22	181	230.8	44,354	14,197	13.9	7.8

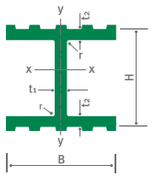
ASY

Dimension : KS D 3502:2016
Dimensional Tolerance : KS D 3502:2016
Surface Condition : KS D 3502:2016

탄성중립축 Elestic Neutral Axis Position (cm)	탄성단면계수 Modulus of Elastic (cm³)			소성중립축 Plastic Neutral Axis Position (cm)	소성단면계수 Modulus of Plastic (cm³)		뒤틀림상수 Warping Constant (cm⁶)	비틀림상수 Torisonal Constant (cm⁴)
ye	Sxt	Sxb	Sy	yp	Zx	Zy	H	J
13.5	1,402	1,828	467	7.3	1,732	793	1,263,539	153
13.9	1,707	2,225	579	7.4	2,125	983	1,624,487	265
14.2	2,018	2,627	694	7.5	2,533	1,178	2,018,371	424
14.6	2,336	3,035	811	7.6	2,955	1,379	2,447,064	636

04. Checkered H-Beam 무늬 H형강(복공용)

Dimensions and Sections Properties 치수 및 단면성능



호칭치수 Designation	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm²)	단면 2차 모멘트 Moment of Inertia (cm⁴)	
	W	H	B	t_1	t_2	r	A	Ix	Iy
190 x 197	32.6	190	197	5	7	13	41.60	2,998	1,037

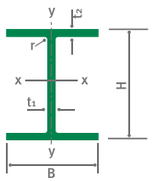
CH.HB

Dimension : KS D 3502:2016
Dimensional Tolerance : KS D 3502:2016
Surface Condition : KS D 3502:2016

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm³)		소성단면계수 Plastic Modulus (cm³)		뒤틀림상수 Warping Constant (cm⁶)	비틀림상수 Torsional Constant (cm⁴)	호칭치수 Designation
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
8.49	4.99	312	105	303	138	74.7	7.10	190 x 197

05. Junior Beam 경량 H형강

Dimensions and Sectional Properties 치수 및 단면성능



JB

Dimension : KS D 3502:2016
Dimensional Tolerance : KS D 3502:2016
Surface Condition : KS D 3502:2016

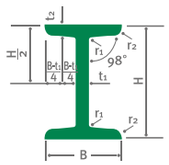
호칭치수 Division (depth x width)	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)						단면적 Sectional Area (cm²)	단면 2차 모멘트 Moment of Inertia (cm⁴)	
	W	H	B	t_1	t_2	r1	r2	A	Ix	Iy
150 x 75	9.01	150	75	3.2	4.5	5	–	11.48	442	31.7
150 x 100	10.8	150	100	3.2	4.5	5	–	13.73	562	75.1
175 x 90	10.7	175	90	3.2	4.5	5	–	13.63	725	54.7
200 x 100	12.0	200	100	3.2	4.5	5	–	15.33	1,070	75.1
	14.3	200	100	3.2	6.0	5	–	18.23	1,330	100
200 x 150	15.6	200	150	3.2	4.5	5	–	19.83	1,500	253
250 x 125	15.1	250	125	3.2	4.5	5	–	19.18	2,100	147
	20.4	250	125	4.5	6.0	5	–	25.92	2,770	196
300 x 150	24.5	300	150	4.5	6.0	5	–	31.17	4,830	338
350 x 175	28.6	350	175	4.5	6.0	5	–	36.42	7,720	536

단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm³)		소성단면계수 Plastic Modulus (cm³)		뒤틀림상수 Warping Constant (cm⁶x10³)	비틀림상수 Torsional Constant (cm⁴)	호칭치수 Division (depth x width)
ix	iy	Sx	Sy	Zx	Zy	Cw	J	
6.21	1.66	59.0	8.50	66.5	13.1	1.67	0.71	150 x 75
6.40	2.34	74.9	15.0	82.9	22.9	3.97	0.86	150 x 100
7.29	2.00	82.9	12.2	92.9	18.7	3.97	0.83	175 x 90
8.35	2.21	107	15.0	119	23.0	7.17	0.91	200 x 100
8.54	2.34	133	20.0	147	30.5	9.41	1.73	
8.70	3.57	150	33.8	163	51.2	24.2	1.22	200 x 150
10.5	2.76	168	23.5	187	35.8	22.1	1.12	250 x 125
10.3	2.75	222	31.3	249	48.2	29.1	2.72	
12.4	3.29	322	45.0	361	69.0	72.9	3.23	300 x 150
14.6	3.84	441	61.3	493	93.7	159	3.75	350 x 175

Note : 위 제품은 수요자 주문 사양으로 별도주문판매(These sizes are not included in regular rolling schedules.)

06. I-Beam I형강

Dimensions and Sectional Properties 치수 및 단면성능



IB

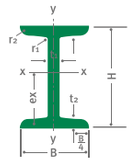
Dimension : KS D 3502:2016 JIS G 3192:2008
Dimensional Tolerance : KS D 3502:2016 JIS G 3192:2008
Surface Condition : KS D 3502:2016 JIS G 3192:2008

호칭치수 Division (depth x width)	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)						단면적 Sectional Area (cm²)	단면 2차 모멘트 Moment of Inertia (cm⁴)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm³)		호칭치수 Division (depth x width)
	W	H	B	t1	t2	r1	r2	A	Ix	Iy	ix	iy	Sx	Sy	
100 x 75*	12.9	100	75	5	8	7	3.5	16.43	281	47.3	4.14	1.70	56.2	12.6	100 x 75*
125 x 75*	16.1	125	75	5.5	9.5	9	4.5	20.45	538	57.5	5.13	1.68	86.0	15.3	125 x 75*
150 x 75	17.1	150	75	5.5	9.5	9	4.5	21.83	819	57.5	6.12	1.62	109	15.3	150 x 75
200 x 100	26.0	200	100	7	10	10	5	33.06	2,170	138	8.10	2.05	217	27.7	200 x 100
250 x 125	38.3	250	125	7.5	12.5	12	6	48.79	5,180	337	10.3	2.63	414	53.9	250 x 125
300 x 150	65.5	300	150	10	18.5	19	9.5	83.47	12,700	886	12.3	3.26	849	118	300 x 150
300 x 150*	76.8	300	150	11.5	22	23	11.5	97.88	14,700	1,080	12.3	3.32	978	143	300 x 150*
350 x 150	87.2	350	150	12	24	25	12.5	111.1	22,400	1,180	14.2	3.26	1,280	158	350 x 150
400 x 150	95.8	400	150	12.5	25	27	13.5	122.1	31,700	1,240	16.1	3.19	1,580	165	400 x 150
450 x 175	115	450	175	13	26	27	13.5	146.1	48,800	2,020	18.3	3.72	2,170	231	450 x 175

Note : * 는 별도주문판매 (These sizes indicated by an asterisk(*) are not included in regular rolling schedules.)

07. I-Beam For Mine Support 광산지보용 I형강

Dimensions and Sectional Properties 치수 및 단면성능



GI

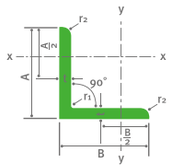
Dimension : KS E 4002
Dimensional Tolerance : KS E 4002

호칭치수 Division (depth x width)	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)				단면적 Sectional Area (cm²)
H x B	W	t_1	t_2	r_1	r_2	A
100 x 80	20.7	9	12.5	13	4	26.4
130 x 100	35.0	12	17	16	7	44.6

단면 2차 모멘트 Moment of Inertia (cm⁴)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm³)		호칭치수 Division (depth x width)
Ix	Iy	ix	iy	Sx	Sy	H x B
403	80.5	3.91	1.75	80.7	20.1	100 x 80
1,130	211	5.05	2.18	175	42.3	130 x 100

08. Equal Angle 등변 ㄱ형강

Dimensions and Sectional Properties 치수 및 단면성능 – KS, JIS



L

Dimension : KS D 3502:2016 JIS G 3192:2008
Dimensional Tolerance : KS D 3502:2016 JIS G 3192:2008
Surface Condition : KS D 3502:2016 JIS G 3192:2008

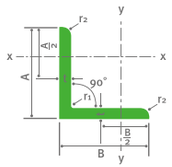
표준단면치수 Standard Sectional Dimension (mm)				단위무게 Unit Weight (kg/m)	단면적 Sectional Area (cm²)	중심의 위치 Center of Gravity (cm)	
A x B	t	r_1	r_2	W	A	Cx=Cy	Ix=Iy
25 x 25	3	4	2	1.12	1.427	0.719	0.797
30 x 30	3	4	2	1.36	1.727	0.844	1.42
40 x 40	5	4.5	3	2.95	3.755	1.17	5.42
45 x 45	4	6.5	3	2.74	3.492	1.24	6.50
45 x 45	5	6.5	3	3.38	4.302	1.28	7.91
50 x 50	4	6.5	3	3.06	3.892	1.37	9.06
50 x 50	5	6.5	3	3.77	4.802	1.41	11.1
50 x 50	6	6.5	4.5	4.43	5.644	1.44	12.6
60 x 60	4	6.5	3	3.68	4.692	1.61	16.0
60 x 60	5	6.5	3	4.55	5.802	1.66	19.6
60 x 60	*6	6.5	4.5	5.37	6.844	1.69	22.6
65 x 65	5	8.5	3	5.00	6.367	1.77	25.3
65 x 65	6	8.5	4	5.91	7.527	1.81	29.4
65 x 65	8	8.5	6	7.66	9.761	1.88	36.8
70 x 70	6	8.5	4	6.38	8.127	1.93	37.1
75 x 75	6	8.5	4	6.85	8.727	2.06	46.1
75 x 75	9	8.5	6	9.96	12.69	2.17	64.4
75 x 75	12	8.5	6	13.0	16.56	2.29	81.9
80 x 80	6	8.5	4	7.32	9.327	2.18	56.4
80 x 80	*7	8.5	4	8.48	10.797	2.23	64.2
80 x 80	*8	8.5	4	9.60	12.2	2.26	72.82
90 x 90	6	10	5	8.28	10.55	2.42	80.7
90 x 90	7	10	5	9.59	12.22	2.46	93.0
90 x 90	*8	10	7	10.8	13.764	2.50	104
90 x 90	*9	10	7	12.1	15.394	2.54	114
90 x 90	10	10	7	13.3	17.00	2.57	125
90 x 90	13	10	7	17.0	21.71	2.69	156

단면 2차 모멘트 Moment of Inertia (cm⁴)		단면 2차 반경 Radius of Gyration (cm)			단면계수 Modulus of Section (cm³)	생산불가길이 Not Available Length
Max. Iu	Min. Iy	ix=iy	Max. iu	Min. iy	Zx=Zy	m
1.26	0.332	0.747	0.940	0.483	0.448	
2.26	0.59	0.908	1.14	0.585	0.661	
8.59	2.25	1.20	1.51	0.774	1.91	
10.3	2.69	1.36	1.72	0.880	2.00	
12.5	3.29	1.36	1.71	0.874	2.46	
14.4	3.76	1.53	1.92	0.983	2.49	
17.5	4.58	1.52	1.91	0.976	3.08	
20.0	5.23	1.50	1.88	0.963	3.55	
25.4	6.62	1.85	2.33	1.19	3.66	
31.2	8.09	1.84	2.32	1.18	4.52	
35.9	9.30	1.82	2.29	1.17	5.24	10.5
40.1	10.5	1.99	2.51	1.28	5.36	7.5/8.5/9.5/10.5/11/11.5
46.6	12.2	1.98	2.49	1.27	6.26	
58.3	15.3	1.94	2.44	1.25	7.96	
58.9	15.3	2.14	2.69	1.37	7.33	
73.2	19.0	2.30	2.90	1.48	8.47	
102	26.7	2.25	2.84	1.45	12.1	10.5(JIS)/11/11.5(KS)
129	34.5	2.22	2.79	1.44	15.7	8(JIS)/8.5/11/11.5/12
89.6	23.2	2.46	3.10	1.58	9.70	11.5(JIS)
102.4	26.8	2.44	3.08	1.58	11.12	
114.8	29.7	2.44	3.06	1.56	12.69	11(JIS)/11.5
128	33.4	2.77	3.48	1.78	12.3	
148	38.3	2.76	3.48	1.77	14.2	11(JIS)/11.5
165	42.8	2.74	3.46	1.76	16.0	10/10.5
182	47.3	2.72	3.44	1.75	17.65	9/11.5(JIS)/12
199	51.7	2.71	3.42	1.74	19.5	8/8.5(KS)/10.5(JIS)/11**/11.5/12
248	65.3	2.68	3.38	1.73	24.8	6.5/8.5/9/9.5/10(KS)

* 는 KS 및 JIS에 없는 규격
** A90 x 10t 11m는 25톤 이하 10m와 함께 들어올 시 생산가능
These sizes indicated by an asterisk(*) are not included in regular rolling schedules.

08. Equal Angle 등변 ㄱ형강

Dimensions and Sectional Properties 치수 및 단면성능 – KS, JIS



표준단면치수 Standard Sectional Dimension (mm)				단위무게 Unit Weight (kg/m)	단면적 Sectional Area (cm²)	중심의 위치 Center of Gravity (cm)	
A x B	t	r_1	r_2	W	A	Cx=Cy	Ix=Iy
100 x 100	7	10	5	10.7	13.62	2.71	129
100 x 100	*8	10	8	12.1	15.36	2.75	144
100 x 100	10	10	7	14.9	19.0	2.82	175
100 x 100	13	10	7	19.1	24.31	2.94	220
120 x 120	8	12	5	14.7	18.76	3.24	258
130 x 130	9	12	6	17.9	22.74	3.53	366
130 x 130	*10	12	6	19.7	25.16	3.57	403
130 x 130	12	12	8.5	23.4	29.76	3.64	467
130 x 130	15	12	8.5	28.8	36.75	3.76	568
150 x 150	*10	14	7	22.9	29.21	4.06	627
150 x 150	12	14	7	27.3	34.77	4.14	740
150 x 150	15	14	10	33.6	42.74	4.24	888
150 x 150	19	14	10	41.9	53.38	4.40	1,090
175 x 175	12	15	11	31.8	40.52	4.73	1,170
175 x 175	15	15	11	39.4	50.21	4.85	1,440
200 x 200	15	17	12	45.3	57.75	5.46	2,180
200 x 200	20	17	12	59.7	76.00	5.67	2,820
200 x 200	25	17	12	73.6	93.75	5.86	3,420
250 x 250	25	24	12	93.7	119.4	7.10	6,950
250 x 250	35	24	18	128	162.6	7.45	9,110

* 는 KS 및 JIS에 없는 규격

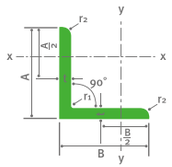
L

Dimension : KS D 3502:2016 JIS G 3192:2008
Dimensional Tolerance : KS D 3502:2016 JIS G 3192:2008
Surface Condition : KS D 3502:2016 JIS G 3192:2008

단면 2차 모멘트 Moment of Inertia (cm⁴)		단면 2차 반경 Radius of Gyration (cm)			단면계수 Modulus of Section (cm³)	생산불가길이 Not Available Length
Max. Iu	Min. Iy	ix=iy	Max. iu	Min. iy	Zx=Zy	m
205	53.2	3.08	3.88	1.98	17.7	
229	59.4	3.06	3.86	1.97	19.86	
278	72.0	3.04	3.83	1.95	24.4	
348	91.1	3.00	3.78	1.94	31.1	
410	106	3.71	4.67	2.38	29.5	
583	150	4.01	5.06	2.57	38.7	
641	165	4.00	5.05	2.56	42.8	
743	192	3.96	5.00	2.54	49.9	
902	234	3.93	4.95	2.53	61.5	
997	258	4.63	5.84	2.97	57.3	
1,180	304	4.61	5.82	2.96	68.1	
1,410	365	4.56	5.75	2.92	82.6	
1,730	451	4.52	5.69	2.91	103	
1,860	480	5.38	6.78	3.44	91.8	
2,290	589	5.35	6.75	3.42	114	
3,470	891	6.14	7.75	3.93	150	
4,490	1,160	6.09	7.68	3.90	197	
5,420	1,410	6.04	7.61	3.88	242	
11,000	2,860	7.63	9.62	4.90	388	
14,400	3,790	7.49	9.42	4.83	519	

08. Equal Angle 등변 ㄱ형강

Dimensions and Sectional Properties 치수 및 단면성능 – EN



표준단면치수 Standard Sectional Dimension (mm)				단위무게 Unit Weight (kg/m)	단면적 Sectional Area (cm²)	중심의 위치 Center of Gravity (cm)	
A x B	t	r_1	r_2	W	A	Cx=Cy	Ix=Iy
25 x 25	3	4	2	1.12	1.427	0.72	0.797
30 x 30	3	4	2	1.36	1.727	0.84	1.42
40 x 40	5	4.5	3	2.97	3.755	1.17	5.42
45 x 45	4	6.5	3	2.74	3.492	1.24	6.50
45 x 45	5	6.5	3	3.38	4.302	1.28	7.91
50 x 50	4	6.5	3	3.06	3.892	1.37	9.06
50 x 50	5	6.5	3	3.77	4.082	1.41	11.1
50 x 50	6	6.5	4.5	4.47	5.644	1.44	12.6
60 x 60	4	6.5	3	3.70	4.692	1.61	16.0
60 x 60	5	6.5	3	4.57	5.802	1.66	19.6
60 x 60	6	6.5	4.5	5.42	6.844	1.69	22.6
65 x 65	5	8.5	3	4.97	6.367	1.77	25.3
65 x 65	6	8.5	4	5.91	7.527	1.81	29.4
65 x 65	8	8.5	6	7.73	9.761	1.88	36.8
70 x 70	6	8.5	4	6.38	8.127	1.93	37.1
75 x 75	6	8.5	4	6.85	8.727	2.06	46.1
75 x 75	9	8.5	6	10.03	12.69	2.17	64.4
80 x 80	6	8.5	4	7.34	9.327	2.18	56.4
80 x 80	7	8.5	4	8.49	10.797	2.23	64.2
90 x 90	6	10	5	8.3	10.55	2.42	80.7
90 x 90	7	10	5	9.61	12.22	2.46	93.0
90 x 90	8	10	7	10.9	13.764	2.50	104
90 x 90	9	10	7	12.2	15.394	2.54	114
90 x 90	10	10	7	13.4	17.00	2.57	125
90 x 90	13	10	7	17.0	21.71	2.69	156

** A90 x 10t 11m는 25톤 이하 10m와 함께 들어올 시 생산가능
These sizes indicated by an asterisk(*) are not included in regular rolling schedules.

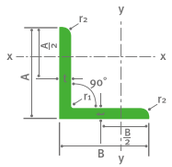
L

Dimension : EN 10056-1:2017
Dimensional Tolerance : EN 10056-2:1993
Surface Condition : EN 10163-3:2004 CLASS C

단면 2차 모멘트 Moment of Inertia (cm⁴)		단면 2차 반경 Radius of Gyration (cm)			단면계수 Modulus of Section (cm³)	생산불가길이 Not Available Length
Max. Iu	Min. Iy	ix=iy	Max. iu	Min. iy	Zx=Zy	m
1.26	0.332	0.747	0.94	0.48	0.448	
2.26	0.59	0.908	1.14	0.59	0.661	
8.59	2.25	1.20	1.51	0.77	1.91	
10.3	2.69	1.36	1.72	0.88	2.00	
12.5	3.29	1.36	1.71	0.874	2.46	
14.4	3.76	1.53	1.92	0.983	2.49	
17.5	4.58	1.52	1.91	0.976	3.08	
20.0	5.23	1.50	1.88	0.963	3.55	
25.4	6.62	1.85	2.33	1.19	3.66	
31.2	8.09	1.84	2.32	1.18	4.52	
35.9	9.30	1.82	2.29	1.17	5.24	10.5
40.1	10.5	1.99	2.51	1.28	5.36	7.5/8.5/9.5/10.5/11/11.5
46.6	12.2	1.98	2.49	1.27	6.26	
58.3	15.3	1.94	2.44	1.25	7.96	
58.9	15.3	2.14	2.69	1.37	7.33	
73.2	19.0	2.30	2.90	1.48	8.47	
102	26.7	2.25	2.84	1.45	12.1	10.5(JIS)/11/11.5(KS)
89.6	23.2	2.46	3.10	1.58	9.70	11.5(JIS)
102.4	26.8	2.44	3.08	1.58	11.1	
128	33.4	2.77	3.48	1.78	12.3	
148	38.3	2.76	3.48	1.77	14.2	11(JIS)/11.5
165	42.8	2.74	3.46	1.76	16.0	10/10.5
182	47.3	2.72	3.44	1.75	17.7	9/11.5(JIS)/12
199	51.7	2.71	3.42	1.74	19.5	8/8.5(KS)/10.5(JIS)/11**/11.5/12
248	65.3	2.68	3.38	1.73	24.8	6.5/8.5/9/9.5/10(KS)

08. Equal Angle 등변 ㄱ형강

Dimensions and Sectional Properties 치수 및 단면성능 – EN



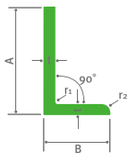
Dimension : EN 10056-1:2017
Dimensional Tolerance : EN 10056-2:1993
Surface Condition : EN 10163-3:2004 CLASS C

표준단면치수 Standard Sectional Dimension (mm)				단위무게 Unit Weight (kg/m)	단면적 Sectional Area (cm^2)	중심의 위치 Center of Gravity (cm)	
A x B	t	r_1	r_2	W	A	Cx=Cy	Ix=Iy
100 x 100	7	10	5	10.73	13.62	2.71	129
100 x 100	8	10	8	12.2	15.36	2.75	144
100 x 100	10	10	7	15	19.00	2.82	175
100 x 100	13	10	7	19.2	24.31	2.94	220
120 x 120	8	12	5	14.71	18.76	3.24	258
120 x 120	10	12	5	18.2	23.20	3.31	313
120 x 120	12	12	5	21.6	27.50	3.40	368
120 x 120	15	12	5	26.6	33.90	3.51	445
130 x 130	9	12	6	17.9	22.74	3.53	366
130 x 130	10	12	6	19.79	25.16	3.57	403
130 x 130	12	12	8.5	23.6	29.76	3.64	467
130 x 130	15	12	8.5	29.01	36.75	3.76	568
150 x 150	10	14	7	23	29.21	4.06	627
150 x 150	12	14	7	27.3	34.77	4.14	740
150 x 150	15	14	10	33.8	42.74	4.24	888
150 x 150	18	14	10	40.1	51.00	4.37	1,080
150 x 150	19	14	10	42.13	53.38	4.40	1,090
175 x 175	12	15	11	32.11	40.52	4.73	1,170
175 x 175	15	15	11	39.72	50.21	4.85	1,440
180 x 180	12	15	11	32.11	40.52	4.73	1,170
180 x 180	15	15	11	39.72	50.21	4.85	1,440
200 x 200	15	17	12	45.61	57.75	5.46	2,180
200 x 200	20	17	12	59.9	76.00	5.67	2,820
200 x 200	25	17	12	73.87	93.75	5.86	3,420
250 x 250	25	24	12	93.49	119.4	7.10	6,950
250 x 250	35	24	18	128	162.6	7.45	9,110

단면 2차 모멘트 Moment of Inertia (cm^4)		단면 2차 반경 Radius of Gyration (cm)			단면계수 Modulus of Section (cm^3)	생산불가길이 Not Available Length
Max. Iu	Min. Iy	ix=iy	Max. iu	Min. iy	Zx=Zy	m
205	53.2	3.08	3.88	1.98	17.7	
229	59.4	3.06	3.86	1.97	19.9	
278	72.0	3.04	3.83	1.95	24.4	
348	91.1	3.00	3.78	1.94	31.1	
410	106	3.71	4.67	2.38	29.5	
498	128	3.67	4.63	2.35	36.0	
584	151	3.65	4.61	2.34	42.7	
706	184	3.62	4.56	2.33	52.4	
583	150	4.01	5.06	2.57	38.7	
641	165	4.00	5.05	2.56	42.8	
743	192	3.96	5.0	2.54	49.9	
902	234	3.93	4.95	2.53	61.5	
997	258	4.63	5.84	2.97	57.3	
1,180	304	4.61	5.82	2.96	68.0	
1,410	365	4.56	5.75	2.92	82.6	
1,666	434	4.54	5.71	2.92	98.7	
1,730	451	4.52	5.69	2.91	103	
1,860	480	5.38	6.78	3.44	91.8	
2,290	589	5.35	6.75	3.42	114	
1,860	480	5.38	6.78	3.44	91.8	
2,290	589	5.35	6.75	3.42	114	
3,470	891	6.14	7.75	3.93	150	
4,490	1,160	6.09	7.68	3.90	197	
5,420	1,410	6.04	7.61	3.88	242	
11,000	2,860	7.63	9.62	4.90	388	
14,400	3,790	7.49	9.42	4.83	519	

09. Unequal Angle 부등변 ㄱ형강

Dimensions and Sectional Properties 치수 및 단면성능



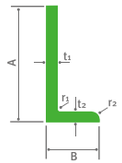
UA

Dimension : KS D 3502:2016 JIS G 3192:2008
Dimensional Tolerance : KS D 3502:2016 JIS G 3192:2008
Surface Condition : KS D 3502:2016 JIS G 3192:2008

호칭치수 Designation	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)					단면적 Sectional Area (cm²)	중심의 위치 Center of Gravity (cm)		단면 2차 모멘트 Moment of Inertia (cm⁴)			단면 2차 반경 Radius of Gyration (cm)				tan α	단면계수 Modulus of Section (cm³)		호칭치수 Designation
	W	A	B	t	r₁	r₂	A	Cx	Cy	Iy	Max. Iu	Min. Iy	ix	iy	Max. iu	Min. iy		Zx	Zy	
100 x 75	9.32	100	75	7	10	5	11.87	3.06	1.83	118	56.9	144	30.8	3.15	2.19	3.49	1.61	0.548	17.0	10.0	100 x 75
	13.0	100	75	10	10	7	16.50	3.17	1.94	159	76.1	194	41.3	3.11	2.15	3.43	1.58	0.543	23.3	13.7	
125 x 75	10.7	125	75	7	10	5	13.62	4.10	1.64	219	60.4	243	36.4	4.01	2.11	4.23	1.64	0.362	26.1	10.3	125 x 75
	13.6	125	75	*9	10	7	17.30	4.23	1.70	278	73.8	307	44.9	4.01	2.06	4.21	1.61	0.352	32.8	13.6	
	14.9	125	75	10	10	7	19.00	4.22	1.75	299	80.8	330	49.0	3.96	2.06	4.17	1.61	0.357	36.1	14.1	
	19.1	125	75	13	10	7	24.31	4.35	1.87	376	101	415	61.9	3.93	2.04	4.13	1.60	0.352	46.1	17.9	
150 x 90	16.4	150	90	9	12	6	20.94	4.95	1.99	485	133	537	80.4	4.81	2.52	5.06	1.96	0.361	48.5	19.0	150 x 90
	18.2	150	90	*10	12	6	23.23	5.03	2.03	541	146	598	88.7	4.82	2.51	5.07	1.95	0.356	53.1	22.5	
	21.5	150	90	12	12	8.5	27.36	5.07	2.10	619	167	685	102	4.76	2.47	5.00	1.93	0.357	62.3	24.3	

10. Inverted Angle 부등변 부등후ㄱ형강

Dimensions and Sectional Properties 치수 및 단면성능



IA

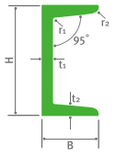
Dimension : KS D 3502:2016 JIS G 3192:2008
Dimensional Tolerance : KS D 3502:2016 JIS G 3192:2008
Surface Condition : KS D 3502:2016 JIS G 3192:2008

호칭치수 Designation	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)						단면적 Sectional Area (cm²)	중심의 위치 Center of Gravity (cm)		단면 2차 모멘트 Moment of Inertia (cm⁴)			단면 2차 반경 Radius of Gyration (cm)				tan α	단면계수 Modulus of Section (cm³)		호칭치수 Designation
	W	A	B	t₁	t₂	r₁	r₂	A	Cx	Cy	Iy	Max. Iu	Min. Iy	ix	iy	Max. iu	Min. iy		Zx	Zy	
200 x 90	24.7	200	90	*10	14	14	7	29.66	6.36	2.15	1,210	200	1,290	125	6.39	2.60	6.58	2.05	0.263	88.7	29.2	200 x 90
250 x 90	29.4	250	90	10	15	17	8.5	37.47	8.61	1.92	2,440	223	2,520	147	8.08	2.44	8.20	1.98	0.182	149	31.5	250 x 90
	33.7	250	90	12	16	17	8.5	42.95	8.99	1.89	2,790	238	2,870	160	8.07	2.35	8.18	1.93	0.173	174	33.5	
300 x 90	36.3	300	90	11	16	19	9.5	46.22	11.0	1.76	4,370	245	4,440	168	9.72	2.30	9.80	1.90	0.136	229	33.8	300 x 90
	41.3	300	90	13	17	19	9.5	52.67	11.3	1.75	4,940	259	5,020	181	9.68	2.22	9.76	1.85	0.128	265	35.8	
350 x 100	45.3	350	100	12	17	22	11	57.74	13.0	1.87	7,440	362	7,550	251	11.3	2.50	11.4	2.08	0.124	338	44.5	350 x 100
400 x 100	48.0	400	100	*11.5	16	24	12	61.08	15.28	1.71	10,284	349	–	–	12.97	2.39	–	–	–	416	42.1	400 x 100
	53.8	400	100	13	18	24	12	68.59	15.4	1.77	11,500	388	11,600	277	12.9	2.38	13	2.01	0.0996	467	47.1	

* 는 KS 및 JIS에 없는 규격

11. Channel ㄷ형강

Dimensions and Sectional Properties 치수 및 단면성능



CN

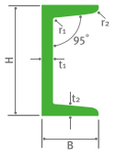
Dimension : KS D 3502:2016 JIS G 3192:2008
Dimensional Tolerance : KS D 3502:2016 JIS G 3192:2008
Surface Condition : KS D 3502:2016 JIS G 3192:2008

호칭치수 Designation	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)						단면적 Sectional Area (cm²)	중심의 위치 Center of Gravity (cm)	단면 2차 모멘트 Moment of Inertia (cm⁴)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm³)		호칭치수 Designation
	W	H	B	t_1	t_2	r_1	r_2	A	Cy	Ix	Iy	ix	iy	Zx	Zy	
75 x 40	6.92	*75	40	5	7	8	4	8.818	1.28	75.3	12.2	2.92	1.17	20.1	4.47	75 x 40
100 x 50	9.36	*100	50	5	7.5	8	4	11.92	1.54	188	26.0	3.97	1.48	37.6	7.52	100 x 50
125 x 65	13.4	125	65	6	8	8	4	17.11	1.90	424	61.8	4.98	1.90	67.8	13.4	125 x 65
150 x 75	18.6	150	75	6.5	10	10	5	23.71	2.28	861	117	6.03	2.22	115	22.4	150 x 75
200 x 80	24.6	200	80	7.5	11	12	6	31.33	2.21	1,950	168	7.88	2.32	195	29.1	200 x 80
200 x 90	30.3	200	90	8	13.5	14	7	38.65	2.74	2,490	277	8.02	2.68	249	44.2	200 x 90
250 x 90	34.6	250	90	9	13	14	7	44.07	2.40	4,180	294	9.74	2.58	334	44.5	250 x 90
300 x 90	38.1	300	90	9	13	14	7	48.57	2.22	6,440	309	11.5	2.52	429	45.7	300 x 90
380 x 100	54.5	380	100	10.5	16	18	9	69.39	2.41	14,500	535	14.5	2.78	763	70.5	380 x 100
	67.3	*380	100	13	20	24	12	85.71	2.54	17,600	655	14.3	2.76	926	87.8	

Note : * 는 별도주문판매 (These sizes indicated by an asterisk(*) are not included in regular rolling schedules.)

11. Channel ㄷ형강

Dimensions and Sectional Properties 치수 및 단면성능



호칭치수 Designation	단위무게 Unit Weight (lbs/ft)	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)						단면적 Sectional Area (cm²)
		W	H	B	t_1	t_2	r_1	r_2	A
6"	8.2	12.2	152	48	5.1	8.7	-	-	15.50
	10.5	15.6	152	51	8	8.7	-	-	19.90
	13	19.3	152	54	11.1	8.7	-	-	24.70
8"	11.5	17.1	203	57	5.6	9.9	-	-	21.80
	13.75	20.5	203	59	7.7	9.9	-	-	26.10
	18.75	27.9	203	64	12.4	9.9	-	-	35.50
10"	15.3	22.8	254	65	6.1	11.1	-	-	29.00
	20	30.0	254	69	9.6	11.1	-	-	37.90
	25	37.0	254	73	13.4	11.1	-	-	47.40
	30	45.0	254	76	17.1	11.1	-	-	56.90
12"	20.7	30.8	305	74	7.2	12.7	-	-	39.30
	25	37.0	305	77	9.8	12.7	-	-	47.40
	30	45.0	305	80	13	12.7	-	-	56.90
15"	33.9	50.4	381	86	10.2	16.5	-	-	64.30
	40	60.0	381	89	13.2	16.5	-	-	76.10
	50	74.0	381	94	18.2	16.5	-	-	94.80

※ Actual flange and web thicknesses vary due to mill rolling practices: however permitted variations for such dimensions are not addressed.

CN

Dimension : ASTM A6-14
Dimensional Tolerance : ASTM A6-14
Surface Condition : ASTM A6-14

중심의 위치 Center of Gravity (cm)	단면 2차 모멘트 Moment of Inertia (cm⁴)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm³)		호칭치수 Designation
Cy	Ix	Iy	ix	iy	Zx	Zy	
1.26	548	29.2	5.94	1.37	72	8.3	6"
1.24	630	36	5.63	1.35	82.68	9.36	
1.28	721	42.4	5.41	1.31	94.59	10.3	
1.44	1,340	53.8	7.86	1.57	132	12.6	8"
1.39	1,490	62	7.57	1.54	147	13.7	
1.43	1,820	81.7	7.15	1.51	179	16.4	
1.58	2,770	91.2	9.81	1.78	218	18.5	10"
1.53	3,260	114	9.29	1.74	257	21.2	
1.56	3,790	138	8.93	1.70	298	24	
1.63	4,270	158	8.68	1.67	336	26.5	
1.74	5,340	157	11.7	2.00	350	27.7	12"
1.70	5,970	183	11.2	1.97	391	30.5	
1.70	6,720	209	10.9	1.92	441	33.2	
1.99	13,100	337	14.3	2.28	688	50.5	15"
1.97	14,400	379	13.8	2.24	758	54.7	
2.02	16,700	454	13.3	2.19	877	61.5	

Dimensions and Sectional Properties 치수 및 단면성능

호칭치수 Designation	단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)						단면적 Sectional Area (cm²)
	W	H	B	t_1	t_2	r_1	r_2	A
UPN200	25.3	200	75	8.5	11.5	11.5	6	32.2
UPN240	33.2	240	85	9.5	13	13	6.5	44.07
UPN300	46.2	300	100	10	16	16	8	48.57

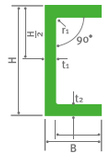
UPN

Dimension : DIN 1026-1:2000
Dimensional Tolerance : EN 10279:2000
Surface Condition : EN 10163-3:2004 CLASS C Subclass 1

중심의 위치 Center of Gravity (cm)	단면 2차 모멘트 Moment of Inertia (cm⁴)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm³)		호칭치수 Designation
Cy	Ix	Iy	ix	iy	Zx	Zy	
2.01	1,910	148	7.70	2.14	191	27	UPN200
2.23	3,600	248	9.22	2.42	300	39.6	UPN240
2.70	8,030	495	11.7	2.90	535	67.8	UPN300

12. Parallel Flange Channel 평행채널

Dimensions and Sectional Properties 치수 및 단면성능



PFC

Dimension : KS D 3502:2016 EN 10365:20175 AS/NZS 3679.1:2016
Dimensional Tolerance : KS D 3502:2016 EN 10034:1993 AS/NZS 3679.1:2016
Surface Condition : KS D 3502:2016 EN 10163-3:2004 CLASS C Subclass 1 AS/NZS 3679.1:2010

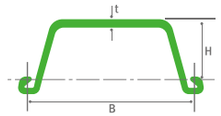
호칭치수 Designation		단위무게 Unit Weight (kg/m)	표준단면치수 Standard Sectional Dimension (mm)						단면적 Sectional Area (cm²)
		W	H	B	t_1	t_2	r_1	r_2	A
KS (KS D3502)	150 x 75	18.2	150	75	6	10	10	-	23.2
	200 x 80	24.0	200	80	6.5	11.5	12	-	30.5
BS (BS 4-1)	150 x 75	17.9	150	75	5.5	10	12	-	22.77
	200 x 75	23.4	200	75	6	12.5	12	-	29.87
AS/NZS (AS/NZS 3679)	150 x 75	17.7	150	75	6	9.5	10	-	22.5
	200 x 75	22.9	200	75	6	12	12	-	29.2
	230 x 75	25.1	230	75	6.5	12	12	-	32
	250 x 90	35.5	250	90	8	15	12	-	45.2
	300 x 90	40.1	300	90	8	16	14	-	51.1

중심의 위치 Center of Gravity (cm)	단면 2차 모멘트 Moment of Inertia (cm⁴)		단면 2차 반경 Radius of Gyration (cm)		단면계수 Modulus of Section (cm³)		호칭치수 Designation	
Cy	Ix	Iy	ix	iy	Zx	Zy		
2.54	864	131.3	6.1	2.4	115.1	26.5	150 x 75	KS (KS D3502)
2.55	1,984	192.5	8.1	2.5	198.4	35.3	200 x 80	
2.58	861	131	6.2	2.4	114.8	26.6	150 x 75	BS (BS 4-1)
2.48	1,963	170	8.1	2.4	196.3	33.8	200 x 75	
2.49	834	129	6.1	2.4	129.0	46	150 x 75	AS/NZS (AS/NZS 3679)
2.44	1,910	165	8.1	2.4	221.0	58.9	200 x 75	
2.26	2,680	176	9.1	2.4	271.0	61	230 x 75	
2.86	4,510	364	10.0	2.8	421.0	107	250 x 90	
2.72	7,240	404	11.9	2.8	564.0	117	300 x 90	

13. Sheet Pile 강널말뚝

SP

Dimensions and Sectional Properties 치수 및 단면성능



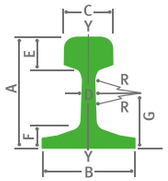
Dimension : KS F 4604 & JIS A 5528
Dimensional Tolerance : KS F 4604 & JIS A 5528
Surface Condition : KS D 3502 & JIS G 3192

종류 Section Type	표준단면치수 Dimension			단위무게 Unit Weight		단면적 Sectional Area		단면 2차 모멘트 Moment of Inertia		단면계수 Modulus of Section		종류 Section Type
	B	H	t	Per Pile	Per Wall Width	Per Pile	Per Wall Width	Per Pile	Per Wall Width	Per Pile	Per Wall Width	
	mm	mm	mm	kg/m	kg/m²	cm²	cm²/m	cm⁴	cm⁴/m	cm³	cm³/m	
SP-II	400	100	10.5	48.0	120	61.2	153.0	1,240	8,740	152	874	SP-II
SP-III	400	125	13.0	60.0	150	76.4	191.0	2,220	16,800	223	1,340	SP-III
SP-IIIA(E)	400	150	13.1	58.4	146	74.4	186.0	2,790	22,800	250	1,520	SP-IIIA(E)
SP-IIIA(D)	400	150	13.0	60.0	150	76.4	191.0	3,060	22,600	278	1,510	SP-IIIA(D)
SP-IV	400	170	15.5	76.1	190	96.9	242.5	4,634	38,610	360	2,271	SP-IV
SP-VM	500	175	16.5	86.0	172	109.6	219.2	5,345	40,290	383	2,310	SP-VM
SP-VA	500	200	19.5	105.0	210	133.8	267.6	8,100	63,000	520	3,150	SP-VA
SP-IIw	600	130	10.3	61.8	103	78.7	131.2	2,445	13,640	231	1,018	SP-IIw
SP-IIIw	600	180	13.4	81.6	136	103.9	173.2	5,124	32,802	371	1,822	SP-IIIw

14. Railway Rail 철도레일

RL

1) Dimensions and Sectional Properties 치수 및 단면성능



규격 Specifications	항목 Items	표준단면치수 Standard Sectional Dimension									단위무게 Unit Weight		단면적 Sectional Area		중심축의 거리 Distance from Rail Base to Neutral Axis		단면2차모멘트 Moment of Inertia		단면계수 Modulus of Section		규격 Specifications
		단위 Unit	A	B	C	D	E	F	G	R	W		S		Yd		J		Z		
											kg/m	lb/yd	cm²	in²	mm	in	cm⁴	in⁴	cm³	in³	
KS, JIS	37A	mm	122.24	122.24	62.71	13.49	36.12	21.43	53.78	304.8	37.2	–	47.3	–	53.78	–	952	–	163	–	KS, JIS
KS R 9106 JIS E 1101	50N	mm	153.0	127.0	65.0	15.0	49.0	30.0	76.0	500.0	50.4	–	64.2	–	71.6	–	1,960	–	242	–	KS R 9106 JIS E 1101
	60	mm	174.0	145.0	65.0	16.5	49.0	30.1	77.5	500.0	60.8	–	77.45	–	77.8	–	3,090	–	321	–	
KS R 9110 JIS E 1120	60K	mm	174.0	145.0	65.0	16.5	49.0	30.1	77.5	500.0	60.7	–	77.3	–	77.6	–	3,064	–	395	–	
	70s	mm	148	140	65.3	35	52	28	62.2	–	69.5	–	88.5	–	62.2	–	2,120	–	341	–	
AREMA	90lbs*	in	5-5/8	5-1/8	2-9/16	9/16	1-15/32	1	2-29/32	14	44.64	90.0	–	8.82	–	2.54	–	38.7	–	15.2	AREMA
	100lbs*	in	6	5-3/8	2-11/16	9/16	1-21/32	1-1/16	2-31/32	14	50.35	101.5	–	9.94	–	2.75	–	49.0	–	17.8	
	115lbs*	in	6-5/8	5-1/2	2-23/32	5/8	1-11/16	1-1/8	3-1/4	14	56.90	114.7	–	11.23	–	2.68	–	65.6	–	22.0	
	119lbs*	in	6-13/16	5-1/2	2-21/32	5/8	1-7/8	1-1/8	3-1/4	14	58.93	118.8	–	11.64	–	3.12	–	71.4	–	22.9	
	132lbs*	in	7-1/8	6	3	21/32	1-3/4	1-3/16	3-7/8	14	65.52	132.1	–	12.94	–	3.20	–	88.2	–	27.6	
	136lbs*	in	7-5/16	6	2-15/16	11/16	1-15/16	1-3/16	3-7/8	20	67.56	136.2	–	13.34	–	3.347	–	94.9	–	28.3	
BS 11	75R	mm	128.59	122.24	61.91	13.1	39.69	18.65	53.98	304.8	37	–	47.19	–	61.8	–	1,061	–	159.09	–	BS 11
		in	5-1/16	4-13/16	2-7/16	32/64	1-9/16	47/64	2-1/8	12.0	–	80.1	–	7.31	–	2.43	–	–	–	–	
	75A*	mm	128.59	114.3	61.91	12.7	42.07	23.81	64.29	508.0	37.5	–	47.71	–	64.81	–	1,049	–	161.8	–	
		in	5-1/16	4-1/2	2-7/16	1/2	1-21/32	15/16	2-17/32	20.0	–	75.5	–	7.40	–	2.55	–	–	–	–	
	90A*	mm	142.88	127.0	66.67	13.89	46.04	26.19	71.44	508.0	45.1	–	57.45	–	72.79	–	1,564	–	214.8	–	
		in	5-5/8	5.0	2-5/8	35/64	1-13/16	1-1/32	2-13/16	20.0	–	90.9	–	8.90	–	2.87	–	–	–	–	
UIC 860	UIC 54*	mm	159	140	70	16	49.4	30.2	76.2	508.0	54.43	–	69.34	–	74.97	–	2,346	–	307.87	–	UIC 860
	UIC 60	mm	172	150	74.3	16.5	51	31.5	–	120	60.34	–	76.86	–	80.95	–	3,055	–	377.4	–	
	UIC 60 (KHRC)	mm	172	150	74.3	16.5	51	31.5	–	120	60.34	–	76.86	–	80.95	–	3,055	–	377.4	–	
EN 13674-1 : 2003	50E4 (UIC 50)*	mm	152	125	70	15	49.4	28	75.1	508.0	50.46	–	64.28	–	75.36	–	1,934	–	256.6	–	EN 13674-1 : 2003
	54E1 (UIC 54)*	mm	159	140	70	16	49.4	30.2	76.2	508.0	54.43	–	69.33	–	74.97	–	2,346	–	307.87	–	
	60E1(UIC 60)	mm	172	150	72	16.5	51	31.5	–	120.0	60.34	–	76.7	–	80.95	–	3,055	–	377.4	–	
HS	73	mm	135	140.0	100	32.0	43.0	26.5	100	100	73.3	–	93.39	–	66.9	–	2,000	–	294	–	HS

* 는 별도주문판매 (These sizes indicated by an asterisk(*) are not included in regular rolling schedules.)

14. Railway Rail 철도레일

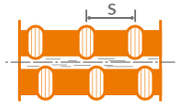
RL

2) Chemical Composition & Mechanical Property

규격 Specification	강종 Grade		화학적성질 Chemical Composition (wt, %)														기계적 성질 Mechanical Property		
			C	Si	Mn	P	S	Al	Cr	Mo	Ni	Cu	Sn	Sb	Ti	Nb	V	인장강도 Tensile Strength Min. (N/mm²)	항복강도 (Min.) Yield Strength (N/mm²)	연신율 (Min.) Elongation (%)
			x100			x1000			x100				x100	ppm	x100					
KS, JIS KS R 9106 JIS E 1101	37KG		55/70	10/35	60/95	45↓	50↓	–	–	–	–	–	–	–	–	–	–	690	–	9
	50KGN, 60KG		63/75	15/30	70/110	30↓	25↓	–	–	–	–	–	–	–	–	–	–	800	–	10
KS, JIS KS R 9110 JIS E 1120	HH340		72/82	10/55	70/110	30↓	20↓	–	20↓	–	–	–	–	–	–	–	30↓	–	1,080	–	8
	HH370		72/82	10/65	80/120	30↓	20↓	–	25↓	–	–	–	–	–	–	–	30↓	–	1,130	–	8
KHRC	UIC60		68/80	15/58	70/120	25↓	8/25	4↓	15↓	2↓	10↓	15↓	40↓	20↓	25↓	10↓	30↓	20↓	90↓	2.5↓	880	–	10
UIC860-0	900A(B)		60/80	10/50	80/130	40↓	40↓	–	–	–	–	–	–	–	–	–	–	–	–	–	880	–	10
	1100		60/82	30/90	80/130	30↓	30↓	–	80/130	–	–	–	–	–	–	–	–	–	–	–	1,080	–	9
EN 13674-1	R260		62/80	15/58	70/120	25↓	25↓	4↓	15↓	2↓	10↓	15↓	30↓	20↓	25↓	10↓	30↓	20↓	90↓	2.5↓	880	–	10
	R350RT		72/80	15/58	70/120	20↓	25↓	4↓	15↓	2↓	10↓	15↓	30↓	20↓	25↓	40↓	30↓	20↓	90↓	2.5↓	1,175	–	9
BS11(1985)			65/80	10/50	80/130	40↓	40↓	–	–	–	–	–	–	–	–	–	–	–	–	–	680	–	8
AREMA(1996)	Chemistry Rail	표준	74/86	10/60	75/125	20↓	20↓	10↓	30↓	6↓	25↓	–	–	–	–	–	10↓	–	–	–	983	510	10
		고강도	74/86	10/60	75/125	20↓	20↓	10↓	30↓	6↓	25↓	–	–	–	–	–	10↓	–	–	–	1,180	827	10
	Low Alloy Rail	표준	72/82	10/50	80/110	20↓	20↓	5↓	25/40	5↓	15↓	40↓	–	–	–	–	10↓	–	–	–	983	510	10
		중간	72/82	10/100	70/125	20↓	20↓	5↓	40/70	5↓	15↓	40↓	–	–	–	–	10↓	–	–	–	1,014	552	8
		고강도	72/82	10/100	70/125	20↓	20↓	5↓	40/70	5↓	15↓	40↓	–	–	–	–	10↓	–	–	–	1,180	827	10

15. Reinforcing Bar 철근

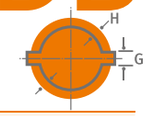
1) Dimensions and Weight 치수 및 중량



규격명 Standard	호칭명 Designation	단위무게 Unit Weight	공칭치수 Nominal Dimensions		
			직경 Diameter	단면적 Sectional Area	둘레 Perimeter
	mm	kg/m	mm	cm²	cm
KS D 3504 JIS G 3112	D10	0.560	9.53	0.713 3	3.0
	D13	0.995	12.7	1.267	4.0
	D16	1.56	15.9	1.986	5.0
	D19	2.25	19.1	2.865	6.0
	D22	3.04	22.2	3.871	7.0
	D25	3.98	25.4	5.067	8.0
	D29	5.04	28.6	6.424	9.0
	D32	6.23	31.8	7.942	10.0
	D35	7.51	34.9	9.566	11.0
	D38	8.95	38.1	11.40	12.0
	D41	10.5	41.3	13.40	13.0
	D43	11.4	43.0	14.52	13.5
	D51	15.9	50.8	20.27	16.0
	D57	20.3	57.3	25.79	18.0

DB

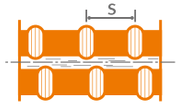
Dimension : KS D 3504 / JIS G 3112
Dimensional Tolerance : KS D 3504 / JIS G 3112
Surface Condition : KS D 3504 / JIS G 3112



마디 및 리브의 치수 Deformation Requirements				호칭명 Designation
마디의 평균간격 최대치 Max. Average Spacing	마디높이 최소치 Min. Height	마디높이 최대치 Max. Height	마디틈 합계의 최대치 Max. Gap	
mm	mm	mm	mm	mm
6.7	0.4	0.8	7.5	D10
8.9	0.5	1.0	10.0	D13
11.1	0.7	1.4	12.5	D16
13.4	1.0	2.0	15.0	D19
15.5	1.1	2.2	17.5	D22
17.8	1.3	2.6	20.0	D25
20.0	1.4	2.8	22.5	D29
22.3	1.6	3.2	25.0	D32
24.4	1.7	3.4	27.5	D35
26.7	1.9	3.8	30.0	D38
28.9	2.1	4.2	32.5	D41
30.1	2.2	4.4	33.8	D43
35.6	2.5	5.0	40.0	D51
40.1	2.9	5.8	45.0	D57

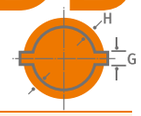
15. Reinforcing Bar 철근

1) Dimensions and Weight 치수 및 중량



Dimension : ASTM A615
Dimensional Tolerance : ASTM A615
Surface Condition : ASTM A615

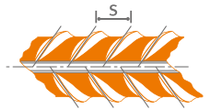
DB



규격명 Standard	호칭명 Designation	단위무게 Unit Weight		공칭치수 Nominal Dimensions			마디 및 리브의 치수 Deformation Requirements			호칭명 Designation
				직경 Diameter	단면적 Sectional Area	둘레 Perimeter	마디의 평균간격 최대치 Max. Average Spacing	마디높이 최소치 Min. Height	마디틈 합계의 최대치 Max. Gap	
	No.	lb/ft	kg/m	mm	cm²	mm	mm	mm	mm	No.
ASTM A615	3	0.376	0.560	9.5	0.71	29.9	6.7	0.38	3.6	3
	4	0.668	0.994	12.7	1.29	39.9	8.9	0.51	4.9	4
	5	1.043	1.552	15.9	1.99	49.9	11.1	0.71	6.1	5
	6	1.502	2.235	19.1	2.84	59.8	13.3	0.97	7.3	6
	7	2.044	3.042	22.2	3.87	69.8	15.5	1.12	8.5	7
	8	2.670	3.973	25.4	5.1	79.8	17.8	1.27	9.7	8
	9	3.400	5.060	28.7	6.45	90.0	20.1	1.42	10.9	9
	10	4.303	6.404	32.3	8.19	101.3	22.6	1.63	12.4	10
	11	5.313	7.907	35.8	10.06	112.5	25.1	1.80	13.7	11
	14	7.65	11.38	43.0	14.52	135.1	30.1	2.16	16.5	14
	18	13.60	20.24	57.3	25.81	180.1	40.1	2.86	21.9	18

15. Reinforcing Bar 철근

1) Dimensions and Weight 치수 및 중량



DB

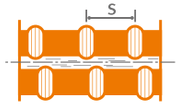
Dimension : BS 4449 : 2005
Dimensional Tolerance : BS 4449 : 2005
Surface Condition : BS 4449 : 2005

규격명 Standard	호칭명 Designation	단위무게 Unit Weight	공칭치수 Nominal Dimensions	
			직경 Diameter	단면적 Sectional Area
	mm	kg/m	mm	mm²
BS 4449 (B500B)	10	0.617	10.0	78.5
	12	0.888	12.0	113
	13(Singapore)	1.042	13.0	133
	16	1.58	16.0	201
	20	2.47	20.0	314
	25	3.85	25.0	491
	32	6.31	32.0	804
	40	9.86	40.0	1,257
	50	15.4	50.0	1,963

마디 및 리브의 치수 Deformation Requirements				호칭명 Designation
둘레 Perimeter	마디 평균간격 Average Spacing	마디높이 평균 Average Height	상대마디면적 Relative Rib Area	
mm	mm	mm	–	mm
–	4~12	0.3~1.5	0.040	10
–	4.8~14.4	0.36~1.8	0.040	12
–	5.2~15.6	0.39~1.95	0.056	13(Singapore)
–	6.4~19.2	0.48~2.4	0.056	16
–	8~24	0.6~3	0.056	20
–	10~30	0.75~3.75	0.056	25
–	12.8~38.4	0.96~4.8	0.056	32
–	16~48	1.2~6	0.056	40
–	20~60	1.5~7.5	0.056	50

15. Reinforcing Bar 철근

1) Dimensions and Weight 치수 및 중량

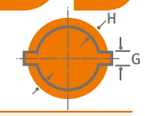


규격명 Standard	호칭명 Designation	단위무게 Unit Weight	공칭치수 Nominal Dimensions		
			직경 Diameter	단면적 Sectional Area	둘레 Perimeter
	mm	kg/m	mm	cm²	mm
CSA-G30 18-M92	10	0.785	11.3	1	35.5
	15	1.57	16	2	50.1
	20	2.355	19.5	3	61.3
	25	3.925	25.2	5	79.2
	30	5.495	29.9	7	93.9
	35	7.85	35.7	10	112.2

Dimension : SSA 2/1979
Dimensional Tolerance : SSA 2/1979
Surface Condition : SSA 2/1979

규격명 Standard	호칭명 Designation	단위무게 Unit Weight	단면적 Sectional Area
	mm	kg/m	cm²
SSA 2/1979	10	0.617	0.785
	12	0.888	0.13
	14	1.21	1.54
	16	1.58	2.01
	18	2.00	2.54
	20	2.47	3.14
	22	2.98	3.81
	25	3.85	4.91
	32	6.31	8.04
	40	9.87	12.60
	50	15.40	19.60

DB



Dimension : CSA-G30, 18-M92
Dimensional Tolerance : CSA-G30, 18-M92
Surface Condition : CSA-G30, 18-M92

마디 및 리브의 치수 Deformation Requirements			호칭명 Designation
마디의 평균간격 최대치 Max. Average Spacing	마디높이의 평균 최소치 Min. Average Height	공칭둘레 12.5%의 최대 마디간격 Max. Gapchord of 12.5% of Nominal Perimeter	
mm	mm	mm	mm
7.9	0.45	4.4	10
11.2	0.72	6.3	15
13.6	0.98	7.7	20
17.6	1.26	9.9	25
20.9	1.48	11.7	30
25.0	1.79	14.0	35

15. Reinforcing Bar 철근

2) 이형봉강포장(이론중량) 조견표(KS D 3504)

(1) 1톤 단위

환산중량 단중 : KS D 3504 기준
1본중량 : 단중×1본길이(소수2자리 맺음)
포장중량 : 1본중량×포장본수(kg단위로 맺음)

호칭명 Designation	단위중량 Unit Weight (kg/m)	구분 Classification / 길이 Length (m)	6.0	6.5	7.0	7.5	8.0	9.0	10.0	11.0	12.0	호칭명 Designation
D10	0.560	1본중량	3.36	3.64	3.92	4.20	4.48	5.04	5.60	6.16	6.72	D10
		총본수	280	280	245	245	210	210	180	150	150	
		중량	941	1,019	960	1,029	941	1,058	1,008	924	1,008	
D13	0.995	1본중량	5.97	6.47	6.97	7.46	7.96	8.96	9.95	10.95	11.94	D13
		총본수	168	144	140	140	120	120	100	100	80	
		중량	1,003	931	976	1,045	955	1,075	995	1,095	955	
D16	1.56	1본중량	9.36	10.14	10.92	11.70	12.48	14.04	15.60	17.16	18.72	D16
		총본수	105	105	90	90	75	75	60	60	60	
		중량	983	1,065	983	1,053	936	1,053	936	1,030	1,123	
D19	2.25	1본중량	13.50	14.63	15.75	16.88	18.00	20.25	22.50	24.75	27.00	D19
		총본수	70	70	60	60	60	50	50	40	40	
		중량	945	1,024	945	1,013	1,080	1,013	1,125	990	1,080	
D22	3.04	1본중량	18.24	19.76	21.28	22.80	24.32	27.36	30.40	33.44	36.48	D22
		총본수	55	51	47	44	41	37	33	30	27	
		중량	1,003	1,008	1,000	1,003	997	1,012	1,003	1,003	985	
D25	3.98	1본중량	23.88	25.87	27.86	29.85	31.84	35.82	39.80	43.78	47.76	D25
		총본수	42	39	36	33	32	28	25	23	21	
		중량	1,003	1,009	1,003	985	1,019	1,003	995	1,007	1,003	
D29	5.04	1본중량	30.24	32.76	35.28	37.80	40.32	45.36	50.40	55.44	60.48	D29
		총본수	33	31	28	26	25	22	20	18	17	
		중량	998	1,016	988	983	1,008	998	1,008	998	1,028	
D32	6.23	1본중량	37.38	40.50	43.61	46.73	49.84	56.07	62.30	68.53	74.76	D32
		총본수	27	25	23	21	20	18	16	15	13	
		중량	1,009	1,012	1,003	981	997	1,009	997	1,028	972	

15. Reinforcing Bar 철근

2) 이형봉강포장(이론중량) 조견표(KS D 3504)

(1) 1톤 단위

환산중량 단중 : KS D 3504 기준
1본중량 : 단중×1본길이(소수2자리 맺음)
포장중량 : 1본중량×포장본수(kg단위로 맺음)

호칭명 Designation	단위중량 Unit Weight (kg/m)	구분 Classification / 길이 Length (m)	6.0	6.5	7.0	7.5	8.0	9.0	10.0	11.0	12.0	호칭명 Designation
D35	7.51	1본중량	45.06	48.82	52.57	56.33	60.08	67.59	75.10	82.61	90.12	D35
		총본수	22	20	19	18	17	15	13	12	11	
		중량	991	976	999	1,014	1,021	1,014	976	991	991	
D38	8.95	1본중량	53.70	58.18	62.65	67.12	71.60	80.55	89.50	98.45	107.40	D38
		총본수	19	17	16	15	14	12	11	10	9	
		중량	1,020	989	1,002	1,007	1,002	967	984	985	967	
D41	10.5	1본중량	63.00	68.25	73.50	78.75	84.00	94.50	105.00	115.50	126.00	D41
		총본수	16	15	14	13	12	11	10	9	8	
		중량	1,008	1,024	1,029	1,024	1,008	1,040	1,050	1,040	1,008	
D43	11.4	1본중량	68.40	74.10	79.80	85.50	91.20	102.60	114.00	125.40	136.80	D43
		총본수	14	14	14	12	11	10	9	8	7	
		중량	958	1,037	1,117	1,026	1,003	1,026	1,026	1,003	958	
D51	15.9	1본중량	95.40	103.35	111.30	119.25	127.20	143.10	159.00	174.90	190.80	D51
		총본수	11	10	10	9	16	14	13	11	10	
		중량	1,049	1,034	1,113	1,073	2,035	2,003	2,067	1,924	1,908	

15. Reinforcing Bar 철근

2) 이형봉강포장(이론중량) 조견표(KS D 3504)

(2) 2톤 단위

환산중량 단중 : KS D 3504 기준
1본중량 : 단중×1본길이(소수2자리 맺음)
포장중량 : 1본중량×포장본수(kg단위로 맺음)

호칭명 Designation	단위중량 Unit Weight (kg/m)	구분 Classification / 길이 Length (m)	6.0	6.5	7.0	7.5	8.0	9.0	10.0	11.0	12.0	호칭명 Designation
D10	0.560	1본중량	3.36	3.64	3.92	4.20	4.48	5.04	5.60	6.16	6.72	D10
		소속본수	70	70	70	70	70	70	60	60	60	
		소속수	8	8	7	7	6	6	6	5	5	
		총본수	560	560	490	490	420	420	360	300	300	
		중량	1,882	2,038	1,921	2,058	1,882	2,116	2,016	1,848	2,016	
D13	0.995	1본중량	5.97	6.47	6.97	7.46	7.96	8.96	9.95	10.95	11.94	D13
		소속본수	48	48	40	40	40	40	40	40	40	
		소속수	7	6	7	7	6	6	5	5	4	
		총본수	336	288	280	280	240	240	200	200	160	
		중량	2,006	1,863	1,952	2,089	1,910	2,150	1,990	2,190	1,910	
D16	1.56	1본중량	9.36	10.14	10.92	11.70	12.48	14.04	15.60	17.16	18.72	D16
		소속본수	35	35	30	30	25	25	30	30	30	
		소속수	6	6	6	6	6	6	4	4	4	
		총본수	210	210	180	180	150	150	120	120	120	
		중량	1,966	2,130	1,966	2,106	1,872	2,106	1,872	2,060	2,246	
D19	2.25	1본중량	13.50	14.63	15.75	16.88	18.00	20.25	22.50	24.75	27.00	D19
		총본수	140	140	126	120	112	98	88	80	80	
		중량	1,890	2,048	1,984	2,025	2,016	1,984	1,980	1,980	2,160	
D22	3.04	1본중량	18.24	19.76	21.28	22.80	24.32	27.36	30.40	33.44	36.48	D22
		총본수	110	102	94	88	82	74	66	60	54	
		중량	2,006	2,016	2,000	2,006	1,994	2,024	2,006	2,006	1,970	
D25	3.98	1본중량	23.88	25.87	27.86	29.85	31.84	35.82	39.80	43.78	47.76	D25
		총본수	84	78	72	66	64	56	50	46	42	
		중량	2,006	2,018	2,006	1,970	2,038	2,006	1,990	2,014	2,006	
D29	5.04	1본중량	30.24	32.76	35.28	37.80	40.32	45.36	50.40	55.44	60.48	D29
		총본수	66	62	56	52	50	44	40	36	34	
		중량	1,996	2,032	1,976	1,966	2,016	1,996	2,016	1,996	2,056	
D32	6.23	1본중량	37.38	40.50	43.61	46.73	49.84	56.07	62.30	68.53	74.76	D32
		총본수	54	50	46	42	40	36	32	30	26	
		중량	2,018	2,026	2,006	1,962	1,994	2,018	1,994	2,056	1,944	

15. Reinforcing Bar 철근

2) 이형봉강포장(이론중량) 조견표(KS D 3504)

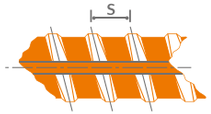
(2) 2톤 단위

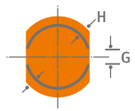
환산중량 단중 : KS D 3504 기준
1본중량 : 단중×1본길이(소수2자리 맺음)
포장중량 : 1본중량×포장본수(kg단위로 맺음)

호칭명 Designation	단위중량 Unit Weight (kg/m)	구분 Classification / 길이 Length (m)	6.0	6.5	7.0	7.5	8.0	9.0	10.0	11.0	12.0	호칭명 Designation
D35	7.51	1본중량	45.06	48.82	52.57	56.33	60.08	67.59	75.10	82.61	90.12	D35
		총본수	44	40	38	36	34	30	26	24	22	
		중량	1,983	1,952	1,998	2,028	2,043	2,028	1,953	1,983	1,983	
D38	8.95	1본중량	53.70	58.18	62.65	67.12	71.60	80.55	89.50	98.45	107.40	D38
		총본수	38	34	32	30	28	24	22	20	18	
		중량	2,041	1,978	2,005	2,014	2,005	1,933	1,969	1,969	1,933	
D41	10.5	1본중량	63.00	68.25	73.50	78.75	84.00	94.50	105.00	115.50	126.00	D41
		총본수	32	30	28	26	24	22	20	18	16	
		중량	2,016	2,048	2,058	2,048	2,016	2,079	2,100	2,079	2,016	
D43	11.4	1본중량	68.40	74.10	79.80	85.50	91.20	102.60	114.00	125.40	136.80	D43
		총본수	28	28	27	24	22	20	18	16	15	
		중량	1,915	2,075	2,155	2,052	2,006	2,052	2,052	2,006	2,052	
D51	15.9	1본중량	95.40	103.35	111.30	119.25	127.20	143.10	159.00	174.90	190.80	D51
		총본수	21	20	18	17	16	14	13	11	10	
		중량	2,003	2,067	2,003	2,027	2,035	2,003	2,067	1,924	1,908	
D57	20.3	1본중량	121.80	131.95	142.10	152.25	162.40	182.70	203.00	223.30	243.60	D57
		총본수	16	15	14	13	12	11	10	9	8	
		중량	1,949	1,979	1,989	1,979	1,949	2,010	2,030	2,010	1,949	

16. Thread Bar 나사형 철근

Dimensions and Weight 치수 및 중량





규격명 Standard	호칭명 Designation	단위무게 Unit Weight	공칭치수 Nominal Dimensions			마디치수 Deformation Requirements				호칭명 Designation
			직경 Diameter	단면적 Sectional Area	둘레 Perimeter	마디간격의 최대치 Max. Pitch	마디높이의 최소치 Min. Height	마디높이의 최대치 Max. Height	마디제외 최대직경 Max. Core Diameter	
	mm	kg/m	mm	cm²	cm	mm	mm	mm	mm	mm
KS D 3504 JIS G 3112	D19	2.25	19.1	2.865	–	10.3	–	2.0	19.0	D19
	D22	3.04	22.2	3.871	–	11.3	–	2.2	22.0	D22
	D25	3.98	25.4	5.067	–	12.4	–	2.3	25.0	D25
	D29	5.04	28.6	6.424	–	13.2	–	2.7	28.0	D29
	D32	6.23	31.8	7.942	–	14.3	–	2.9	30.9	D32
	D35	7.51	34.9	9.566	–	16.6	–	3.0	34.1	D35
	D38	8.95	38.1	11.401	–	17.5	–	3.2	37.2	D38
	D41	10.5	41.3	13.396	–	18.7	–	3.4	40.4	D41
	D51	15.9	50.8	20.270	–	21.0	–	3.8	50.0	D51

Chemical Composition 강재 성분표

1) Shapes (형강) 구KS, JIS

규격 Standard	명칭 Designation	종류의 기호 Grade	화학성분 Chemical Composition (%)						비고 Remarks	규격 Standard
			C	Si	Mn	P. Max.	S. Max.	CEV. Max.		
KS D 3503 JIS G 3101	일반구조용 압연강재 Rolled Steel for General Structure	SS400 SS490 SS540	– – 0.30 max.	– – –	– – 1.60 max.	0.050 0.050 0.040	0.050 0.050 0.040	0.050 0.050 0.040	–	KS D 3503 JIS G 3101
KS D 3515 JIS G 3106	용접구조용 압연강재 Rolled Steel for Welded Structure	SM400A SM400B SM490A SM490B SM490YA SM490YB SM520B SM570	0.23 max. 0.20 max. 0.20 max. 0.18 max. 0.20 max. 0.20 max. 0.20 max. 0.18 max.	– 0.35 max. 0.55 max. 0.55 max. 0.55 max. 0.55 max. 0.55 max. 0.55 max.	2.5 x C min. 0.06~1.40 1.60 max. 1.60 max. 1.60 max. 1.60 max. 1.60 max. 1.60 max.	0.035 0.035 0.035 0.035 0.035 0.035 0.035 0.035	0.035 0.035 0.035 0.035 0.035 0.035 0.035 0.035	0.035 0.035 0.035 0.035 0.035 0.035 0.035 0.035	Ceq=SM570 : 0.44 max. PCM=SM570 : 0.28 max. $Ceq = C + \frac{Mn}{6} + \frac{Si}{24} + \frac{Ni}{40} + \frac{Cr}{5} + \frac{Mo}{4} + \frac{V}{14}$ $P_{cm} = C + \frac{Si}{30} + \frac{Mn}{20} + \frac{Cu}{20} + \frac{Ni}{60} + \frac{Cr}{20} + \frac{Mo}{15} + \frac{V}{10} + 5B$ ※ SM570의 Ceq 적용은 퀜칭·템퍼링의 강재로 한다.	KS D 3515 JIS G 3106
KS D 3866	건축구조용 열간압연 H형강 Hot Rolled H-beam for Building Structure	SHN400 SHN490 SHN520 SHN570	0.20 max.	0.40 max.	0.50~1.00 max. 0.50~1.50 max. 0.50~1.50 max. 0.50~1.50 max.	0.035	0.030	0.030	Cu: 0.60 max. Ni: 0.45 max. Cr: 0.35 max. Mo: 0.15 max. Mn/S=20 min. V: 0.110 max. Nb: 0.050 max. Nb+V 0.15% (for SHN490, 520, 570) Ceq=0.40 max. (for SHN400) Ceq=0.45 max. (for SHN490, 520, 570) $Ceq = C + \frac{Mn}{6} + \frac{Cr+V+Mo}{5} + \frac{Cu+Ni}{15}$	KS D 3866
KS D 3861 JIS G 3136	건축구조용 압연 강재 Rolled steels for Building Structure	SN400A SN400B SN400C SN490B SN490C	0.24 max. 0.20 max. 0.20 max. 0.18 max. 0.18 max.	– 0.35 max. 0.35 max. 0.55 max. 0.55 max.	– 0.60~1.550 0.60~1.550 1.65 max. 1.65 max.	0.050 0.030 0.020 0.030 0.020	0.050 0.015 0.008 0.015 0.008	– 0.36 0.36 0.44 0.44	$Ceq = C + \frac{Mn}{6} + \frac{Si}{24} + \frac{Ni}{40} + \frac{Cr}{5} + \frac{Mo}{4} + \frac{V}{14}$	KS D 3861 JIS G 3136
KS F 4603	H형강 말뚝 Steel H Pile	SHP 400 SHP 400W SHP 490W SHP 550W	– 0.23 max. 0.20 max. 0.22 max.	– – 0.55 max. 0.55 max.	– 2.5 x C min. 1.50 max. 1.60 max.	0.050 0.040 0.040 0.040	0.050 0.040 0.040 0.040	0.050 0.040 0.040 0.040	–	KS F 4603

( )안의 값은 제품분석의 경우에 적용한다.
※ 강재의 화학성분은 용강분석지(또는 래들분석지)로서 나타낸다.

Chemical Composition 강재 성분표

1) Shapes (형강) 신KS

규격 Standard	명칭 Designation	종류의 기호 Grade	화학성분 Chemical Composition (%) C	Si	Mn	P. Max.	S. Max.	CEV. Max	PCM. Max	비고 Remarks	규격 Standard
KS D 3503	일반구조용 압연강재 Rolled Steel for General Structure	SS275 SS315 SS410 SS450	0.25 max. 0.28 max. 0.30 max. 0.30 max.	0.45 max. 0.50 max. 0.55 max. 0.55 max.	1.40 max. 1.50 max. 1.60 max. 1.60 max.	0.050 0.050 0.040 0.040	0.050 0.050 0.040 0.040	–	–	Al: 0.300 max. Cu: 0.40 max. Mo: 0.08 max. Cr: 0.30 max. Pb: 4.00 max. B: 0.0008 max.	KS D 3503 JIS G 3101
KS D 3515	용접구조용 압연강재 Rolled Steel for Welded Structure	SM275A SM275B SM275C SM275C SM355A SM355B SM355C SM355D SM420A SM420B SM420C SM420D SM460B SM460C	0.23 max. 0.20 max. 0.18 max. 0.18 max. 0.20 max. 0.18 max. 0.18 max. 0.18 max. 0.20 max. 0.20 max. 0.18 max. 0.18 max. 0.18 max. 0.18 max.	– 0.35 max. 0.35 max. 0.35 max. 0.55 max. 0.55 max. 0.55 max. 0.55 max. 0.55 max. 0.55 max. 0.55 max. 0.55 max. 0.55 max. 0.55 max.	2.5 x C min. 0.05~1.40 1.40 max. 1.40 max. 1.60 max. 1.60 max. 1.60 max. 1.60 max. 1.60 max. 1.60 max. 1.60 max. 1.60 max. 1.70 max. 1.70 max.	0.035 0.030 0.025 0.020 0.035 0.030 0.025 0.020 0.035 0.030 0.025 0.020 0.030 0.025	0.035 0.030 0.025 0.020 0.035 0.030 0.025 0.020 0.035 0.030 0.025 0.020 0.030 0.025	0.42 0.42 0.42 0.42 0.47 0.47 0.47 0.47 0.48 0.48 0.48 0.48 0.49 0.49	0.26 0.26 0.26 0.26 0.27 0.27 0.27 0.27 0.28 0.28 0.28 0.28 0.30 0.30	탄소 당량(%) = $C + \frac{Mn}{6} + \frac{(Cr+Mo+V)}{5} + \frac{(Ni+Cu)}{15}$ 용접 균열 감수성 (%) = $C + \frac{Si}{30} + \frac{Mn}{20} + \frac{Cu}{20} + \frac{Ni}{60} + \frac{Cr}{20} + \frac{Mo}{15} + \frac{V}{10} + 5B$	KS D 3515 JIS G 3106
KS D 3866	건축구조용 열간압연 H형강 Hot Rolled H-beam for Building Structure	SHN275 SHN355 SHN420 SHN460	0.20 max.	0.40 max.	2.5 x C min. 0.05~1.50 0.05~1.50 1.00~1.60	0.035	0.030	0.40 0.45 0.45 0.45	0.25 0.26 0.27 0.29	Cu: 0.60 max. Ni: 0.45 max. Cr: 0.35 max. Mo: 0.15 max. Mn/S=20 min. V: 0.110 max. Nb: 0.050 max. Nb+V < 0.15% (for SHN490, 520, 570)	KS D 3866
KS F 4603	H형강 말뚝 Steel H Pile	SHP275 SHP275W SHP355W SHP450W	– 0.23 max. 0.20 max. 0.22 max.	– – 0.55 max. 0.55 max.	– 2.5 x C min 1.50 max. 1.60 max.	0.050 0.040 0.040 0.040	0.050 0.040 0.040 0.040	0.40 0.36 0.45 0.45	–	Cu: 0.25~0.50	KS F 4603

( )안의 값은 제품분석의 경우에 적용한다.
※ 강재의 화학성분은 용강분석지(또는 래들분석지)로서 나타낸다.

Chemical Composition 강재 성분표

1) Shapes (형강) KS, JIS

규격 Standard	명칭 Designation	종류의 기호 Grade	화학성분 Chemical Composition (%)					비고 Remarks	규격 Standard
			C	Si	Mn	P. Max.	S. Max.		
KS E 4002	광산지보용 I형강 I-Beam for Mine Support	SG-1 SG-2	- -	- -	- -	0.050 0.050	0.050 0.050	-	KS E 4002
KS F 4604 JIS A 5528	열간압연 강널말뚝 Sheet Pile	SY 300 SY 400	- -	- -	- -	0.040 0.040	0.040 0.040	Cu: 0.23~0.55.	KS F 4604 JIS A 5528
		SY 295 SY 390	- -	- -	- -	0.040 0.040	0.040 0.040	-	
KS F 4604 JIS A 5523	용접용 열간압연 강널말뚝 Weldable Hot Rolled Steel Sheet Pile	SY 300W SY 400W	0.18 max. 0.20 max.	0.55 max. 0.55 max.	1.60 max. 1.60 max.	0.035 0.035	0.035 0.035	Cu: 0.23~0.55. CEQ= SY300W: 0.44 max. SY400W: 0.46 max. $Ceq = C + \frac{Mn}{6} + \frac{Si}{24} + \frac{Ni}{40} + \frac{Cr}{5} + \frac{Mo}{4} + \frac{V}{14}$	KS F 4604 JIS A 5523
		SYW295 SYW390 SYW430	0.18 max. 0.18 max. 0.18 max.	0.55 max. 0.55 max. 0.55 max.	1.50 max. 1.50 max. 1.50 max.	0.040 0.040 0.040	0.040 0.040 0.040	Free N2: 0.0060 max. CEQ=SYW295: 0.44 max. SYW390: 0.45 max. SYW430: 0.46 max. $Ceq = C + \frac{Mn}{6} + \frac{Si}{24} + \frac{Ni}{40} + \frac{Cr}{5} + \frac{Mo}{4} + \frac{V}{14}$	
KS R 9110	열처리레일 Head Hardened Rail	HH 340 HH 370	0.72~0.82 0.72~0.82	0.10~0.55 0.10~0.65	0.70~1.10 0.80~1.20	0.030 0.030	0.020 0.020	Cr: 0.20 max., V: 0.030 max. Cr: 0.25 max., V: 0.030 max.	KS R 9110
KS R 9106	철도레일 Railway Rail	30A 37A 50PS 40N, 50N 60 60K	0.50~0.70 0.55~0.70 0.60~0.75 0.63~0.75 0.63~0.75 0.68~0.80	0.10~0.35 0.10~0.35 0.10~0.35 0.15~0.30 0.15~0.30 0.15~0.58	0.60~0.95 0.60~0.95 0.60~0.95 0.70~1.10 0.70~1.10 0.70~1.20	0.045 0.045 0.045 0.030 0.030 0.025	0.050 0.050 0.050 0.025 0.025 0.025	-	KS R 9106

※ 강재의 화학성분은 용강분석지(또는 래들분석지)로서 나타낸다.

Chemical Composition 강재 성분표

2) Shapes (형강) ASTM, AS/NZS

규격 Standard	명칭 Designation	종류의 기호 Grade	화학성분 Chemical Composition (%)								비고 Remarks	규격 Standard
			C	Si	Mn	P. Max.	S. Max.	Cu Max.	CEV	N2 ppm		
ASTM A36	Standard Specification for Carbon Structural Steel	ASTM A36	0.26 max.	0.40 max.	–	0.040	0.050	–	–	–	–	ASTM A36
ASTM A572	Standard Specification for Hign-Strength Low-Alloy Columbium-Vanadium Structural Steel	G50 G60	0.23 max. 0.26 max.	0.40 max.	1.35 max.	0.040	0.050	–	–	–	C: 0.01% point ↑ → Mn: 0.06% point ↑ (Max.1.50%) V: 0.01-0.15 or Nb: 0.005-0.05 or V+Nb: 0.02~0.15	ASTM A572
ASTM A992	Standard Specification for Structural Steel Shape	ASTM A992	0.23 max.	0.40 max.	0.50~1.50	0.035	0.045	–	–	–	Cu: 0.60 max. Ni: 0.45 max. Cr: 0.35 max. Mo: 0.15 max. N2: 0.0150 max. Nb+V < 0.15% Mn/S=20 min.	ASTM A992
A572 G50/A992/ CSA345WM		A572 G50/ A992/ CSA345WM (TRIPLE)	0.23 max.	0.40 max.	0.50~1.35	0.035	0.045	–	–	–	Cu: 0.60 max. Ni: 0.45 max. Cr: 0.35 max. Mo: 0.15 max. N2: 0.0150 max. V: 0.01~0.15 or Nb: 0.005~0.05 or V+Nb: 0.02~0.15 Mn/S=20 min.	A572 G50/A992/ CSA345WM
AS/NZS 3679.1	Structural Steel-Hot Rolled Bars and Section	300 300S0	0.25 max.	0.50 max.	1.60 max.	0.040	0.040	0.50	0.44	–	Ni: 0.50 max. Cr: 0.30 max. Mo: 0.10 max. V: 0.030 max. Nb: 0.020 max. V+Nb: 0.030 max. B: 0.0008 max.	AS/NZS 3679.1

( )안의 값은 제품분석의 경우에 적용한다.
※ 강재의 화학성분은 용강분석지(또는 래들분석지)로서 나타낸다.

Chemical Composition 강재 성분표

3) Shapes (형강) EN

규격 Standard	명칭 Designation	종류의 기호 Grade	화학성분 Chemical Composition (%)					Cu Max.	CEV	N_2 ppm	비고 Remarks	규격 Standard
			C	Si	Mn	P. Max.	S. Max.					
EN 10248-1	Hot Rolled sheet piling of non-allot steel	S270GP	0.24 max.	-	-	0.045	0.045	-	-	90 max.	If it is total Al min 0.020%, the max. value for N_2 does not apply For S450J0 grade, Nb 0.050% max. V 0.130% max.	EN 10248-1
EN10025-2	Hot Rolled Products for Structural Steel	S235JR	0.17 max.	-	1.40 max.	0.035	0.035	0.55	0.35	120 max.		EN10025-2
		S235J0	0.17 max.	-	1.40 max.	0.030	0.030	0.55	0.35	120 max.		
		S235J2	0.17 max.	-	1.40 max.	0.025	0.025	0.55	0.35	-		
		S275JR	0.21 max.	-	1.50 max.	0.035	0.035	0.55	0.40	120 max.		
		S275J0	0.18 max.	-	1.50 max.	0.030	0.030	0.55	0.40	120 max.		
		S275J2	0.18 max.	-	1.50 max.	0.025	0.025	0.55	0.40	-		
		S355JR	0.24 max.	0.55 max.	1.60 max.	0.035	0.035	0.55	0.45	120 max.		
		S355J0	0.20 max.	0.55 max.	1.60 max.	0.030	0.030	0.55	0.45	120 max.		
		S355J2	0.20 max.	0.55 max.	1.60 max.	0.025	0.025	0.55	0.45	-		
		S355K2	0.20 max.	0.55 max.	1.60 max.	0.025	0.025	0.55	0.45	-		
		S450J0	0.20 max.	0.55 max.	1.70 max.	0.030	0.030	0.55	0.47	250 max.		
EN10225	Weldable Structural Steels for Fixed Offshore Structures - Technical Delivery Conditions	S355G1 (1)(2)	0.20 max	0.50 max	0.90~1.65	0.035	0.030	0.35	0.43 max	150 max	Cr 0.30 max, Mo 0.10 max, Ni 0.50 max, Al 0.02 min, Nb 0.050 max, Ti 0.030 max, V 0.120 max	EN10225
		S355G4 (1)(2) S355G4+M (1)(2)	0.16 max	0.50 max	1.60 max	0.035	0.030	0.35	0.43 max	150 max	Mo 0.20 max, Ni 0.30 max, Al 0.02 min, Nb 0.050 max, Ti 0.050 max, V 0.100 max	
		S355G11 (1)(2) S355G11+M (1)(2)	0.14 max	0.55 max	1.65 max	0.025	0.015	0.30	0.43 max	120 max	Cr 0.25 max, Mo 0.08 max, Ni 0.50 max, Al 0.015~0.055, Nb 0.040 max, Ti 0.025 max, V 0.060 max, Cr+Mo+Ni+Cu 0.80 max, Nb+V 0.06 max, Nb+V+Ti 0.08 max	
		S355G11 (1)(2) S355G12+M (1)(2)	0.14 max	0.55 max	1.65 max	0.020	0.007	0.30	0.43 max	120 max	Cr 0.25 max, Mo 0.08 max, Ni 0.50 max, Al 0.015~0.055, Nb 0.040 max, Ti 0.025 max, V 0.060 max, Cr+Mo+Ni+Cu 0.80 max, Nb+V 0.06 max, Nb+V+Ti 0.08 max	

(1) Total Al to N ratio shall be a minimum of 2:1. When other N binding elements are used, the min Al and Al/N-ratio do not apply.

(2) $Pcm = C + \frac{Si}{30} + \frac{Mn+Cu+Cr}{20} + \frac{Ni}{60} + \frac{Mo}{15} + \frac{V}{10} + 5B \leq 0.24$

Chemical Composition 강재 성분표

4) Steel Bars for Concrete Reinforcement 철근 콘크리트용 봉강

규격 Standard	종류의 기호 Grade	화학성분 Chemical Composition (%)					비고 Remarks	규격 Standard
		C	Si	Mn	P. Max.	S. Max.		
KS D 3504	SD300 SD400 SD500 SD600 SD700	– – – – –	– – – – –	– – – – –	0.050 0.045 0.040 0.040 0.040	0.050 0.045 0.040 0.040 0.040	일반용 철근 SD600, SD700 $C+\frac{Mn}{6}+\frac{Cr+V+Mo}{5}+\frac{Cu+Ni}{15} \le 0.63\%$	KS D 3504
	SD400W SD500W	0.22 max.	0.60 max.	1.60 max.	0.040	0.040	용접용 철근 N 0.012 Max. $C+\frac{Mn}{6}+\frac{Cr+V+Mo}{5}+\frac{Cu+Ni}{15} \le 0.50\%\ (0.52\%)$	
	SD400S SD500S SD600S	0.29 max. 0.32 max. 0.37 max.	0.30 max. 0.30 max. 0.30 max.	1.50 max. 1.80 max. 1.80 max.	0.040 0.040 0.040	0.040 0.040 0.040	특수 내진용 철근 Cu 0.20 Min. $C+\frac{Mn}{6}+\frac{Cr+V+Mo}{5}+\frac{Cu+Ni}{15} \le 0.55\%\ (SD400S)$ $C+\frac{Mn}{6}+\frac{Cr+V+Mo}{5}+\frac{Cu+Ni}{15} \le 0.60\%\ (SD500S)$ $C+\frac{Mn}{6}+\frac{Cr+V+Mo}{5}+\frac{Cu+Ni}{15} \le 0.67\%\ (SD600S)$	
JIS G 3112	SD295A SD295B SD345 SD390 SD490	– 0.27 max. 0.27 max. 0.29 max. 0.32 max.	– 0.55 max. 0.55 max. 0.55 max. 0.55 max.	– 1.50 max. 1.60 max. 1.80 max. 1.80 max.	0.050 0.040 0.040 0.040 0.040	0.050 0.040 0.040 0.040 0.040	이형철근 Deformed Bar $C+\frac{Mn}{6}+ \le 0.50\%\ (SD345)$ $C+\frac{Mn}{6}+ \le 0.55\%\ (SD390)$ $C+\frac{Mn}{6}+ \le 0.60\%\ (SD490)$	JIS G 3112
ASTM A615	Grade40 Grade60	– –	– –	– –	0.060 0.060	– –	–	ASTM A615
BS 4449	Grade460 Grade460B GradeB500B	0.25 max. 0.25 max. 0.22 max.	– – –	– – –	0.055 0.055 0.055	0.055 0.055 0.055	Plain Round Steel Bar Bs4449 Deformed High Yield Steel Bar $C+\frac{Mn}{6}+\frac{Cr+V+Mo}{5}+\frac{Cu+Ni}{15} \le 0.51\%$	BS 4449
CSA-G30 18-09	G400W	0.30 max.	0.50 max.	1.60 max.	0.035	0.045	–	CSA-G30 18-09

※ SD400 W와 SD500 W에서 치수가 호칭명 D 32를 초과하는 것에 대해서는 탄소 함량 0.25% 이하, 탄소당량은 0.55 % 이하로 한다.
또한 SD600 S에서 치수가 호칭명 D 35를 초과하는 것에 대해서는 탄소함량 0.40 % 이하, 탄소당량은 0.70 % 이하로 한다.
※ 강재의 화학성분은 용강분석지(또는 래들분석지)로서 나타낸다.

Chemical Composition 강재 성분표

5) The Other 기타 강재

명칭 Spec.	종류의 기호 Grade	화학성분 Chemical Composition (%)					비고 Remarks	명칭 Spec.
		C	Si	Mn	P. Max.	S. Max.		
기계구조용 탄소강재 Carbon Steel for Machine Structural Use	SM 10C	0.08~0.13	0.15~0.35	0.30~0.60	0.030	0.035	-	기계구조용 탄소강재 Carbon Steel for Machine Structural Use
	SM 15C	0.13~0.18	0.15~0.35	0.30~0.60	0.030	0.035		
	SM 20C	0.18~0.23	0.15~0.35	0.30~0.60	0.030	0.035		
	SM 25C	0.22~0.28	0.15~0.35	0.30~0.60	0.030	0.035		
	SM 30C	0.27~0.33	0.15~0.35	0.60~0.90	0.030	0.035		
	SM 35C	0.32~0.38	0.15~0.35	0.60~0.90	0.030	0.035		
	SM 38C	0.35~0.41	0.15~0.35	0.60~0.90	0.030	0.035		
	SM 40C	0.37~0.43	0.15~0.35	0.60~0.90	0.030	0.035		
	SM 45C	0.42~0.48	0.15~0.35	0.60~0.90	0.030	0.035		
	SM 50C	0.47~0.53	0.15~0.35	0.60~0.90	0.030	0.035		
	SM 55C	0.52~0.58	0.15~0.35	0.60~0.90	0.030	0.035		
	SM 58C	0.55~0.61	0.15~0.35	0.60~0.90	0.030	0.035		
	A 105	0.35 max.	0.35 max.	0.60~1.05	0.040	0.050		
기계구조용 합금강 Alloy Steel for Machine Structural Use	SCr415	0.13~0.18	0.15~0.35	0.60~0.90	0.03	0.03	-	기계구조용 합금강 Alloy Steel for Machine Structural Use
	SCr420	0.18~0.23	0.15~0.35	0.60~0.90	0.03	0.03		
	SCr435	0.33~0.38	0.15~0.35	0.60~0.90	0.03	0.03		
	SCr440	0.38~0.43	0.15~0.35	0.60~0.90	0.03	0.03		
	SCr445	0.43~0.48	0.15~0.35	0.60~0.90	0.03	0.03		
	SCM415	0.13~0.18	0.15~0.35	0.60~0.90	0.03	0.03		
	SCM420	0.18~0.23	0.15~0.35	0.60~0.90	0.03	0.03		
	SCM435	0.33~0.38	0.15~0.35	0.60~0.90	0.03	0.03		
	SCM440	0.38~0.43	0.15~0.35	0.60~0.90	0.03	0.03		
	SCM445	0.43~0.48	0.15~0.35	0.60~0.90	0.03	0.03		
중기용 For Heavy Construction Equipment	S43BC	0.43~0.48	0.15~0.35	0.67~0.90	0.03	0.015	-	중기용 For Heavy Construction Equipment
	15B23M	0.21~0.25	0.15~0.30	1.00~1.10	0.03	0.015		
	15B37M	0.32~0.36	0.15~0.30	1.00~1.40	0.03	0.025		
	10B35M	0.32~0.36	0.15~0.30	1.00~1.30	0.03	0.025		
	30MnB4	0.32~0.36	0.15~0.30	1.20~1.50	0.03	0.025		
	SCr440B	0.39~0.43	0.15~0.30	0.67~0.85	0.03	0.025		
체인용 For Chain	SBC70	0.33 max.	0.15~0.35	1.00~1.90	0.035	0.035	-	체인용 For Chain

※ 강재의 화학성분은 용강분석치(또는 래들분석치)로서 나타낸다.

Mechanical Properties 기계적 성질

1) Rolled Steel for General Structure 일반구조용 강재

규격 Standard	종류의 기호 Symbol of Grade	인장시험 Tensile Test					굽힘시험 Bend Test			종류의 기호 Symbol of Grade
		항복점 또는 내력 (Min.) Yield Point or Yield Strength (N/mm²)			인장강도 Tensile Strength (N/mm²)	연신율 Elongation	연신율 Elongation		굽힘각도 Angle of Bending	안쪽반지름 Inside Radius	시험편 Test Piece	
		두께 Thickness (mm)				두께 Thickness (mm)	인장 시험편 Test Piece	Min. (%)				
		t ≤ 16	16 < t ≤ 40	40 < t								
KS D 3503	SS275 (구SS400)	275	265	245	410~550	Steel Plate and Sheets, Steel Strip in Coil, Flat and Section t ≤ 5	No. 5	21	180°	1.5 x Thickness	No. 1A	SS275 (구SS400)
						Steel Plate and Sheets, Steel Strip in Coil, Flat and Section 5 < t ≤ 16	No. 1A	18				
						Steel Plate and Sheets, Steel Strip in Coil, Flat and Section 16 < t ≤ 40	No. 1A	21				
						Steel Plate and Sheets, Flat and Section 40 < t	No. 4	23				
	SS315 (구SS490)	315	305	295	490~630	Steel Plate and Sheets, Steel Strip in Coil, Flat and Section t ≤ 5	No. 5	19	180°	2.0 x Thickness	No. 1A	SS315 (구SS490)
						Steel Plate and Sheets, Steel Strip in Coil, Flat and Section 5 < t ≤ 16	No. 1A	16				
						Steel Plate and Sheets, Steel Strip in Coil, Flat and Section 16 < t ≤ 40	No. 1A	19				
						Steel Plate and Sheets, Flat and Section 40 < t	No. 4	21				
	SS410 (구SS540)	410	400	–	540 이상	Steel Plate and Sheets, Steel Strip in Coil, Flat and Section t ≤ 5	No. 5	16	180°	2.0 x Thickness	No. 1A	SS410 (구SS540)
						Steel Plate and Sheets, Steel Strip in Coil, Flat and Section 5 < t ≤ 16	No. 1A	14				
						Steel Plate and Sheets, Steel Strip in Coil, Flat and Section 16 < t ≤ 40	No. 1A	17				
	SS450	450	440	–	590 이상	Steel Plate and Sheets, Steel Strip in Coil, Flat and Section t ≤ 5	No. 5	14	180°	2.0 x Thickness	No. 1A	SS450
						Steel Plate and Sheets, Steel Strip in Coil, Flat and Section 5 < t ≤ 16	No. 1A	12				
						Steel Plate and Sheets, Steel Strip in Coil, Flat and Section 16 < t ≤ 40	No. 1A	15				

Mechanical Properties 기계적 성질

2) Rolled Steel for Welded Structure 용접구조용 강재

규격 Standard	종류의 기호 Symbol of Grade	인장시험 Tensile Test						연신율 Elongation		충격시험 Impact Test			종류의 기호 Symbol of Grade
		항복점 또는 내력 (Min.) Yield Point or Yield Strength (N/mm²)				인장강도 Tensile Strength (N/mm²)	연신율 Elongation			시험온도 Test Temp. (℃)	샤르피 흡수에너지 Charpy Absorbed Energy (Joule)	시험편 Test Piece	
		두께 Thickness (mm)				두께 Thickness (mm)	두께 Thickness (mm)	시험편 Test Piece	Min. (%)				
		t ≤ 16	16 < t ≤ 40	40 < t ≤ 75	75 < t	t ≤ 100							
KS D 3515	SM 275A SM 275B SM 275C SM 275D (구SM 400)	275	265	255	245	400~510	t ≤ 5 5 < t ≤ 16 16 < t ≤ 40 40 < t	No. 5 No. 1A No. 1A No. 4	23 18 22 24	20 0 −20 −40	27 min 27 min 27 min 27 min	V-notch in rolled direction	SM 275A SM 275B SM 275C SM 275D (구SM 400)
	SM 355A SM 355B SM 355C SM 355D (구SM 490)	355	345	335	325	490~610	t ≤ 5 5 < t ≤ 16 16 < t ≤ 40 40 < t	No. 5 No. 1A No. 1A No. 4	22 17 19 23	20 0 −20 −40	27 min 27 min 27 min 27 min	V-notch in rolled direction	SM 355A SM 355B SM 355C SM 355D (구SM 490)
	SM 420A SM 420B SM 420C SM 420D (구SM 520)	420	410	400	390	490~610	t ≤ 5 5 < t ≤ 16 16 < t ≤ 40 40 < t	No. 5 No. 1A No. 1A No. 4	19 15 19 21	20 0 −20 −40	27 min 27 min 27 min 27 min	V-notch in rolled direction	SM 420A SM 420B SM 420C SM 420D (구SM 520)
	SM 460B SM 460C (구SM 570)	460	450	430	420	520~720	t ≤ 16 16 < t ≤ 40 40 < t	No. 5 No. 1A No. 4	19 17 20	0 −20	47 min 27 min	V-notch in rolled direction	SM 460B SM 460C (구SM 570)

3) Hot Rolled Steel Sections for Building Structure 건축구조용 열간압연 형강

규격 Standard	종류의 기호 Symbol of Grade	인장시험 Tensile Test			연신율 Elongation			충격시험 Impact Test		종류의 기호 Symbol of Grade
		항복점 또는 내력 Yield Point or Yield Strength (N/mm²)	인장강도 Tensile Strength (N/mm²)	항복비 Yield Ratio Max. (%)	두께 Thickness (mm)	시험편 Test Piece	Min. (%)	시험온도 Test Temp. (℃)	샤르피 흡수에너지 Charpy Absorbed Energy (Joule)	
KS D 3866	SHN 275 (구SHN 400)	275~395	410~520	85	t ≤ 40 40 < t	No. 1A No. 4	21 24	0	27 min	SHN 275 (구SHN 400)
	SHN 355 (구SHN 490)	355~475	490~610	85	t ≤ 40 40 < t	No. 1A No. 4	21 23	0	27 min	SHN 355 (구SHN 490)
	SHN 420 (구SHN 520)	420~540	520~640	85	t ≤ 40 40 < t	No. 1A No. 4	19 22	−5	47 min	SHN 420 (구SHN 520)
	SHN 460 (구SHN 570)	460	570~720	85	t ≤ 40 40 < t	No. 1A No. 4	17 20	−5	47 min	SHN 460 (구SHN 570)

Mechanical Properties 기계적 성질

4) Rolled Steel for Building Structure 건축구조용 압연강재(신KS 형강 제외)

규격 Standard	종류의 기호 Grade	인장시험 Tensile Test						충격시험 Impact Test			종류의 기호 Grade
		항복점 또는 내력 (Min.) Yield Point or Yield Strength (N/mm²)				인장강도 Tensile Strength (N/mm²)	항복비 Yield Ratio Max. (%)	연신율 Elongation Min. (%)		시험온도 Test Temp. (℃)	샤르피 흡수에너지 Charpy Absorbed Energy (Joule)	시험편 Test Piece	
		두께 Thickness (mm)				두께 Thickness (mm)		시험편 Test Piece	두께 Thickness (mm)				
		6 ≤ t < 12	12 ≤ t < 16	16	16 < t ≤ 40	t ≤ 100			6 ≤ t ≤ 16 / 16 < t ≤ 50				
KS D 3861 JIS G 3136	SN400A	235	235	235	235	400~510	-	No. 1A	17 / 21	-	-	V-notch in rolled direction	SN400A
	SN400B	235	235~355	235~355	235~355	400~510	80	No. 1A	18 / 22	0	27 min.	V-notch in rolled direction	SN400B
	SN400C	-	-	235~355	235~355	400~510	80	No. 1A	18 / 22	0	27 min.	V-notch in rolled direction	SN400C
	SN490B	325	325~445	325~445	325~445	490~610	80	No. 1A	17 / 21	0	27 min.	V-notch in rolled direction	SN490B
	SN490C	-	-	325~445	325~445	490~610	80	No. 1A	17 / 21	0	27 min.	V-notch in rolled direction	SN490C

Mechanical Properties 기계적 성질

5) EN10025-2:2004 강재

규격 Standard	종류의 기호 Grade	인장시험 Tensile Test			충격시험 Impact Test			종류의 기호 Grade
		두께 Thickness (mm)	인장강도 Tensile Strength (N/mm²)	항복점 또는 내력 Yield Point or Yield Strength (N/mm²)	연신율 Elongation Min. (%)	시험온도 Test Temp. (℃)	샤르피 흡수에너지 Charpy Absorbed Energy (Joule)	
EN10025-2:2004	S235JR	t ≤ 16 16 < t ≤ 40 40 < t ≤ 63	360~510	235 225 215	26 26 25	20	27 min.	S235JR
	S235J0	t ≤ 16 16 < t ≤ 40 40 < t ≤ 63	360~510	235 225 215	26 26 25	0	27 min.	S235J0
	S235J2	t ≤ 16 16 < t ≤ 40 40 < t ≤ 63	360~510	235 225 215	24 24 23	-20	27 min.	S235J2
	S275JR	t ≤ 16 16 < t ≤ 40 40 < t ≤ 63	410~560	275 265 255	23 23 22	20	27 min.	S275JR
	S275J0	t ≤ 16 16 < t ≤ 40 40 < t ≤ 63	410~560	275 265 255	23 23 22	0	27 min.	S275J0
	S275J2	t ≤ 16 16 < t ≤ 40 40 < t ≤ 63	410~560	275 265 255	21 21 20	-20	27 min.	S275J2
	S355JR	t ≤ 16 16 < t ≤ 40 40 < t ≤ 63	470~630	355 345 335	22 22 21	20	27 min.	S355JR
	S355J0	t ≤ 16 16 < t ≤ 40 40 < t ≤ 63	470~630	355 345 335	22 22 21	0	27 min.	S355J0
	S355J2	t ≤ 16 16 < t ≤ 40 40 < t ≤ 63	470~630	355 345 335	22 22 21	-20	27 min.	S355J2
	S355K2	t ≤ 16 16 < t ≤ 40 40 < t ≤ 63	470~630	355 345 335	20 20 19	-20 (-30)	40 min. (27 min.)	S355K2
	S450J0	t ≤ 16 16 < t ≤ 40 40 < t ≤ 63	550~720	450 430 410	17 17 17	0	27 min.	S450J0

Mechanical Properties 기계적 성질

6) EN10225 강재

규격 Standard	종류의 기호 Grade	인장시험 Tensile Test				충격시험 Impact Test				종류의 기호 Grade
		두께 Thickness (mm)	인장강도 Tensile Strength (N/mm²)	항복점 또는 내력 Yield Point or Yield Strength (N/mm²)	항복비 Yield to Tensile Strength Ratios Max. (%)	연신율 Elongation Min. (%)	방향 Direction	시험온도 Test Temp. (℃)	샤르피 흡수에너지 Charpy Absorbed Energy (Joule)	
EN10225	S355G1(1)	t ≤ 16 16 < t ≤ 40	470~630	355 345(1)	0.87	22	Longitudinal	-20℃	50J min	S355G1(1)
	S355G4(1) S355G4+M	t ≤ 16 16 < t ≤ 40	450~610	355 345(1)	0.87	22	Longitudinal	-20℃	50J min	S355G4(1) S355G4+M
	S355G11(1) S355G11+M	t ≤ 16 16 < t ≤ 40	460~620	355 345	0.87	22	Longitudinal	-40℃(2)	50J min	S355G11(1) S355G11+M
	S355G12(1) S355G12+M	t ≤ 16 16 < t ≤ 40	460~620	355 345	0.87	22	Transverse	-40℃(2)	50J min(3)	S355G12(1) S355G12+M

(1) As-rolled 생산범위: Flange 두께 25mm 이하
(2) Flange 두께 25mm 이하 규격은 -20℃에서 테스트 실시
(3) EN10225 Option 26 참조

Mechanical Properties 기계적 성질

7) ASTM 강재

종류의 기호 Grade	인장시험 Tensile Test		
	항복점 또는 내력 Yield Point or Yield Strength (N/mm²)	인장강도 Tensile Strength (N/mm²)	연신율 Elongation Min. (%)
ASTM A36	250 Min.	400~550	20
G50 (G345) G60	345 Min. 415 Min.	450 Min. 520 Min.	18 16
ASTM A992	345~450	450 Min.	19
ASTM A572 G50/A992 /CSA345WM (TRIPLE)	345~450	450~650	19

8) AS/NZS 3679.1:2010 강재

종류의 기호 Grade	인장시험 Tensile Test			
	두께 Thickness (mm)	항복점 또는 내력 Yield Point or Yield Strength (N/mm²)	인장강도 Tensile Strength (N/mm²)	연신율 Elongation Min. (%)
300	t < 11 11 ≤ t ≤ 17 17 < t < 40	320 Min. 300 Min. 280 Min.	440 Min.	22
300 S0	t < 11 11 ≤ t ≤ 17 17 < t < 40	320~426(상항복점) 300~399(상항복점) 280~372(상항복점)	440 Min.	25

9) Sheet Pile 강널말뚝

규격 Standard	종류의 기호 Grade	인장강도 Tensile Strength Min. (N/mm²)	항복점 Yield Point Min. (N/mm²)	연신율 Elongation Min. (%)
KS F 4604	SY300	500	300	17
	SY400	550	400	15
	SY300W	500	300	17
	SY400W	550	400	15
JIS A 5528	SY295	450	295	18
	SY390	490	390	16
JIS A 5523	SYW295	450	295	18
	SYW390	490	390	16
	SYW430	510	430	14
EN 10248-1	S270GP	410	270	24

10) The Others 기타 강재

명칭 Designation	종류의 기호 Grade	인장강도 Tensile Strength Min. (N/mm²)	항복점 Yield Point Min. (N/mm²)	연신율 Elongation Min. (%)		경도 Hardness
철도레일 Railway Rail	30A, 37A	690	-	9		-
	50PS	710	-	8		-
	40N, 50N, 60	800	-	10		HB 235 Min.
	UIC 60	880	-	10		HB 260~300
열처리레일 Head Hardened Rail	HH 340	1,080	-	8		표면경도 HSC: 47~53 심부경도 HB311 Min.
	HH 370	1,130	-	8		표면경도 HSC: 49~56 심부경도 HB331 Min.
광산지보용 I형강 I Beam for Mine Support	SG-1	490	-	20		-
H형강 말뚝 Steel H Pile	SHP 275	410~550	275	17	t ≤ 16	-
			265	21	16 < t	-
	SHP 275W	410~550	275	18	t ≤ 16	-
			265	22	16 < t	-
	SHP 355W	490~630	355	17	t ≤ 16	-
			345	21	16 < t	-
	SHP 450W	550~700	450	17	t ≤ 16	-
			440	17	16 < t	-

Mechanical Properties 기계적 성질

11) Steel Bars for Concrete Reinforcement 철근

규격 Standard	종류의 기호 Grade	인장시험 Tensile Test			굽힘시험 Bend Test			종류의 기호 Grade
		항복점 또는 0.2% 항복강도 Yield Point or 0.2% Yield Strength (N/mm²)	인장강도 Tensile Strength (N/mm²)	연신율 Elongation 시험편 Test Piece	Min. (%)	굽힘각도 Bending Angle	안쪽반지름 Inside Radius of Bending	
KS D 3504	SD300	300 ~ 420	YP X 1.15 min.	2호에 준한 것	16	180°	D ≤ 16	1.5d	SD300
				3호에 준한 것	18	180°	16 < D	2.0d	
	SD400	400 ~ 520	YP X 1.15 min.	2호에 준한 것	16	180°	–	2.5d	SD400
				3호에 준한 것	18	180°	–	2.5d	
	SD500	500 ~ 650	YP X 1.08 min.	2호에 준한 것	12	90°	D ≤ 25	2.5d	SD500
				3호에 준한 것	14	90°	25 < D	3.0d	
	SD600	600 ~ 780	YP X 1.08 min.	2호에 준한 것	10	90°	D ≤ 25	2.5d	SD600
				3호에 준한 것	10	90°	25 < D	3.0d	
	SD700	700 ~ 910	YP X 1.08 min.	2호에 준한 것	10	90°	D ≤ 25	2.5d	SD700
				3호에 준한 것	10	90°	25 < D	3.0d	
	SD400W	400 ~ 520	YP X 1.15 min.	2호에 준한 것	16	180°	–	2.5d	SD400W
				3호에 준한 것	18	180°	–	2.5d	
	SD500W	500 ~ 650	YP X 1.15 min.	2호에 준한 것	12	180°	D ≤ 25	2.5d	SD500W
				3호에 준한 것	14	180°	25 < D	3.0d	
	SD400S	400 ~ 520	YP X 1.25 min.	2호에 준한 것	16	180°	–	2.5d	SD400S
				3호에 준한 것	18	180°	–	2.5d	
	SD500S	500 ~ 620	YP X 1.25 min.	2호에 준한 것	12	180°	D ≤ 25	2.5d	SD500S
				3호에 준한 것	14	180°	25 < D	3.0d	
	SD600S	600 ~ 720	YP X 1.25 min.	2호에 준한 것	10	90°	D ≤ 25	2.5d	SD600S
				3호에 준한 것	10	90°	25 < D	3.0d	
JIS G3112	SD295A	295 min.	440~600	No. 2 or equivalent No. 14A or equivalent	D10~22: 16 D25~32: 17 D35 : 15 D38~51: 13	180°	D ≤ 16 16 < D	1.5d 2.0d	SD295A
	SD345	345~440	490 min.	No. 2 or equivalent No. 14A or equivalent	D10~22: 18 D25~32: 19 D35 : 17 D38~51: 15	180°	D ≤ 16 16 < D ≤ 41 D51	1.5d 2.0d 2.5d	SD345
	SD390	390~510	560 min.	No. 2 or equivalent No. 14A or equivalent	D10~22: 16 D25~32: 17 D35 : 15 D38~51: 13	180°	–	2.5d	SD390

※ 이형 봉강에서 치수가 D 32를 초과하는 것에 대해서는 호칭명 3을 증가할 때마다 표 3의 연신율의 값에서 각각 2를 감한다. 다만, 감하는 한도는 4로 한다.

d=nominal diameter of specimen.

Mechanical Properties 기계적 성질

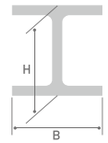
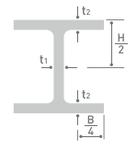
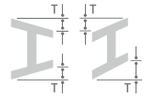
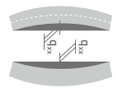
11) Steel Bars for Concrete Reinforcement 철근

규격 Standard	종류의 기호 Grade	인장시험 Tensile Test			굽힘시험 Bend Test				종류의 기호 Grade
		항복점 또는 0.2% 항복강도 Yield Point or 0.2% Yield Strength (N/mm²)	인장강도 Tensile Strength (N/mm²)	연신율 Elongation 시험편 Test Piece	Min. (%)	굽힘각도 Bending Angle	안쪽지름 Pin Diameter		
ASTM A615	G40	280 min.	420 min.	–	#3 : 11 #4 ≥ : 12	180°	#3~#5 #6~	3.5d 5d	G40
	G60	420 min.	620 min.	–	#3~6 : 9 #7~8 : 8 #9 ≥ : 7 #14, #18 : 10	180° 180° 180° 90°	#3~#5 #6~#8 #9~#11 #14, #18	3.5d 5d 7d 9d	G60
BS 4449	G460	460 min.	YP × 1.1	–	12	180° 45°→23°	Bend R/Bend	3d 5d	G460
	G460B	460 min.	YP × 1.08	–	14 Agt(%) : 5	45°→23°	R/Bend: D16 이하 D16 초과	 5d 7d	G460B
	B500B	500~650	YP × 1.08	–	Agt(%) : 5	90°→20° (BACK)	R/Bend: D16 이하 D16 초과	 4d 7d	B500B

d=nominal diameter of specimen.

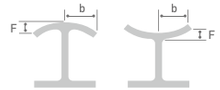
Dimensional Tolerance 치수 허용차

1) H Section H형강

항목 Item		KS D 3502 (2016)		JIS G 3192 (1994)		JIS G 3192 (2008)		비고 Remarks
		구분 Dimension	단위(Unit): mm	구분 Dimension	단위(Unit): mm	구분 Dimension	단위(Unit): mm	
폭 Width (B)		B < 100 100 ≤ B < 200 200 ≤ B	±2.0 ±2.5 ±3.0	Nominal B < 100 100 ≤ Nominal B < 200 200 ≤ Nominal B	±2.0 ±2.5 ±3.0	B ≤ 400 B > 400	±2.0 ±3.0	
높이 Depth (H)		H < 200 200 ≤ H < 400 400 ≤ H < 600 600 ≤ H	±2.0 ±2.5 ±3.0 ±4.0	Nominal H < 400 400 ≤ Nominal H < 600 600 ≤ Nominal H	±2.0 ±3.0 ±4.0	H < 800 & B ≤ 400 H ≥ 800	±2.0 ±3.0	
두께 Thickness	t_1	t_1 < 16 16 ≤ t_1 < 25 25 ≤ t_1 < 40 40 ≤ t_1	±0.7 ±1.0 ±1.5 ±2.0	t_1 < 16 16 ≤ t_1 < 25 25 ≤ t_1 < 40 40 ≤ t_1	±0.7 ±1.0 ±1.5 ±2.0	t_1 < 16 16 ≤ t_1 < 25 25 ≤ t_1 < 40 40 ≤ t_1	±0.7 ±1.0 ±1.5 ±2.0	
	t_2	t_1 < 16 16 ≤ t_1 < 25 25 ≤ t_1 < 40 40 ≤ t_1	±1.0 ±1.5 ±1.7 ±2.0	t_2 < 16 16 ≤ t_2 < 25 25 ≤ t_2 < 40 40 ≤ t_1	±1.0 ±1.5 ±1.7 ±2.0	t_1 < 16 16 ≤ t_1 < 25 25 ≤ t_1 < 40 40 ≤ t_1	±1.0 ±1.5 ±1.7 ±2.0	
직각도 Out-of-Square (T)		H ≤ 300 300 < H	B x 1.0 % 이하 (최소값 1.5mm) B x 1.2 % 이하 (최소값 1.5mm)	Nominal H ≤ 300 Nominal H > 300	T or T' = (B) x 1.0% 이하 (최소치 1.5mm) T or T' = (B) x 1.2% 이하 (최소치 1.5mm)	H ≤ 300 H > 300	T or T' = (B) x 1.0% 이하 (최소치 1.5mm) T or T' = (B) x 1.2% 이하 (최소치 1.5mm)	
편심 Web off Center (S)		B ≤ 200 200 < B	±2.5 ±3.5	Nominal H ≤ 300 Nominal H > 300	2.5 Max. 3.5 Max.	B ≤ 400 B > 400	2.0 max. 3.5 max.	
굴곡 Bend		H ≤ 300 300 < H	L x 0.20% 이하 L x 0.10% 이하	Nominal H ≤ 300 Nominal H > 300	L x 0.15% 이하 L x 0.10% 이하	H ≤ 300 H > 300	L x 0.15% 이하 L x 0.10% 이하	
절단면 직각도 Sectional Squareness		-	(B, H) x 1.6% 이하 (최소치 3.0mm)	-	(B, H) x 1.6% 이하 (최소치 3.0mm)	-	(B, H) x 1.6% 이하 (최소치 3.0mm)	

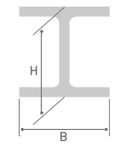
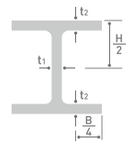
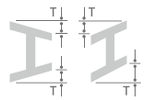
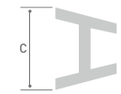
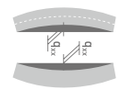
Dimensional Tolerance 치수 허용차

1) H Section H형강

항목 Item	KS D 3502 (2016)		JIS G 3192 (1994)		JIS G 3192 (2008)		비고 Remarks
	구분 Dimension	단위(Unit): mm	구분 Dimension	단위(Unit): mm	구분 Dimension	단위(Unit): mm	
중량 Tolerance on Weight	t < 10 t ≥ 10	±5.0% ±4.0%	t < 10 t ≥ 10	±5.0% ±4.0% (주문 시 무게 허용차 적용 요구 시에만)	t < 10 t ≥ 10	±5.0% ±4.0% (주문 시 무게 허용차 적용 요구 시에만)	-
길이 Length	L ≤ 7m L > 7m	+40, −0 7.0m 이상 40 + (L − 7m) x 5mm	L ≤ 7m L > 7m	+40, −0 Add 5mm to the plus side tolerance given in the above column for every 1m increase in length or its fraction, −0	L ≤ 7m L > 7m	+40, −0 Add 5mm to the plus side tolerance given in the above column for every 1m increase in length or its fraction, −0	-
웨브의 굽음 Concavity of Web (W)	H < 350 350 ≤ H < 550 550 ≤ H	2.0 Max. 2.5 Max. 3.0 Max.	Nominal H < 400 400 ≤ Nominal H < 600 600 ≤ Nominal H	2.0 Max. 2.5 Max. 3.0 Max.	H ≤ 350 350 < H < 550 550 ≤ H	2.0 Max. 2.5 Max. 3.0 Max.	
프랜지의 굽음 Flange Fold (F)	B < 300 300 ≤ B	b x 1.5 % 이하 (최소값 1.5mm) b x 1.5 % 이하 (최소값 3.0mm)	-	-	B ≤ 400	b x 1.5% 이하 (최대치 1.5mm)	
곡률 반지름 Radius (r)	r ≤ 10 10 < r ≤ 20 20 < r	±1.0 ±2.0 ±3.0	-	-	-	-	

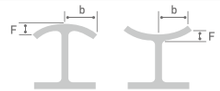
Dimensional Tolerance 치수 허용차

1) H Section H형강

항목 Item		ASTM A6		EN10034: 1993		비고 Remarks
		구분 Dimension	단위(Unit): inch	구분 Dimension	단위(Unit): mm	
폭 Width (B)		전 규격	+1/4", −3/16" (+6.35 −4.76mm)	B ≤ 110 110 < B ≤ 210 210 < B ≤ 325 325 < B	+4.0, −1.0 +4.0, −2.0 ±4.0 +6.0, −5.0	
높이 Depth (H)		전 규격	±1/8" (±3.17mm)	H ≤ 180 180 < H ≤ 400 400 < H ≤ 700 700 < H	+3.0, −2.0 +4.0, −2.0 +5.0, −3.0 ±5.0	
두께 Thickness	t_1	−	−	t_1 < 7 7 ≤ t_1 < 10 10 ≤ t_1 < 20 20 ≤ t_1 < 40 40 ≤ t_1 < 60 60 < t_1	±0.7 ±1.0 ±1.5 ±2.0 ±2.5 ±3.0	
	t_2	−	−	t_2 < 6.5 6.5 ≤ t_2 < 10 10 ≤ t_2 < 20 20 ≤ t_2 < 30 30 ≤ t_2 < 40 40 ≤ t_2 < 60 60 ≤ t_2	+1.5, −0.5 +2.0, −1.0 +2.5, −1.5 +2.5, −2.0 ±2.5 ±3.0 ±4.0	
직각도 Out-of-Square (T)		H ≤ 12" (H ≤ 310mm) H > 12" (H > 310mm)	1/4" (6.35mm) 이하 5/16" (7.93mm) 이하	B ≤ 110 B > 110	T+T'=1.5mm T+T'=2% x (B) (최대 6.5mm)	
직각도에 따른 최대 높이 Max. Depth (C)		전 규격	+1/4" (+6.35mm)	−	−	
편심 Web off Center (S)		전 규격 (B/2±E)	3/16" (4.76mm) 이하	B ≤ 110 110 < B ≤ 325 325 < B (t < 40) 325 < B (t ≥ 40)	2.5 max. 3.5 max. 5.0 max. 8.0 max.	
굴곡 Bend		전 규격 1/8"×(Feet수/10) − CAMBER & SWEEP 다만 FLANGE 6"미만의 경우 SWEEP=1/8"×(Feet/5) ※ FLANGE폭과 DEPTH가 동일 또는 유사한 경우 ·길이 45Ft 이하 : 1/8"×(Ft수/10) [MAX 3/8"] ·길이 45Ft 초과 : 3/8"+{1/8"×[(Ft수−45)/11]}		Nominal H ≤ 180 180 < H ≤ 360 360 < H	L x 0.30% 이하 L x 0.15% 이하 L x 0.10% 이하	
절단면 직각도 Sectional Squareness		전 규격	1/64" X H 또는 B(INCH) (0.016 X H 또는 B(mm))	−	−	

Dimensional Tolerance 치수 허용차

1) H Section H형강

항목 Item	ASTM A6		EN10034: 1993		비고 Remarks
	구분 Dimension	단위(Unit): inch	구분 Dimension	단위(Unit): mm	
중량 Tolerance on Weight	전 규격	±2.5%	전 규격	±4.0%	–
길이 Length	길이 / 높이	30ft 이하 (9m 이하)	30ft 초과 (9m 초과)		
	24' 이하 (610mm 이하)	±3.8' (10mm)	±3.8'(10m) +5ft(1m) 증가 시마다 플러스 치수에서 1/16'(1mm) 가산	전 규격	±50 or +100, −0 (min. lengths are required)	–
	24' 초과 (610mm 초과)	±1.2' (13mm)	±1.2'(13m) +5ft(1m) 증가 시마다 플러스 치수에서 1/16'(1mm) 가산		
웨브의 휨 Concavity of Web (W)		–	–	–	–	
프랜지의 휨 Flange Fold (F)		–	–	–	–	

Dimensional Tolerance 치수 허용차

1) H Section H형강

AS/NZS 3679.1: 2010

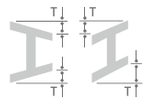
규격 Nominal Size	단중 Nominal Mass (Kg/m)	치수 허용차 Dimensional Tolerance (mm)				치수 허용차 Dimensional Tolerance (mm)					비고 Remarks
		높이 Pemissible Variation of Depth (H)	변 Pemissible Variation of Flange Width (B)	두께 Thickness		FLANGE 차 Max. Difference of Flange Over Four Flanges (4개변의 차)	직각도 Pemissible Out-of-Square		편심 Pemissible Web Off-Center (e)	최대높이 Pemissible Overall Depth Over Specified Depth (C)	
				(t_{web})	(t_{Flange})		T 또는 T'	T+T'			
150UB	14.0	+2.5 −1.5	±3.0	±0.7	±1.0	1.0	1.5	2.5	2.5	4.0	※ 중량(Weight) % : ±2.5% ※ 길이(length) 7m 이하(under) : +50, −0 7~12m : +75, −0 12m 초과(over) : +100,−0 ※ 직선도(straight) − 변 150mm 미만 ·Camper: L x 0.1% 이하 ·Sweep: L x 0.2% 이하 − 기타 좌우, 상하 : 0.1% * UC 의 경우 14m 이하 : L x 0.10% 이하 (최대 10mm) 14m 초과 : 10+(L−14000) x 0.10% 이하
	18.0	+2.5 −1.5	±3.0	±0.7	±1.0	1.0	1.5	2.5	2.5	4.0	
180UB	16.1	+2.5 −1.5	±3.0	±0.7	±1.0	1.0	2.0	2.5	2.5	4.0	
	18.1	+2.5 −1.5	±3.0	±0.7	±1.0	1.0	2.0	2.5	2.5	4.0	
	22.2	+2.5 −1.5	±3.0	±0.7	±1.0	1.0	2.0	2.5	2.5	4.0	
200UB	18.2	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	
	22.3	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	
	25.4	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	
	29.8	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	
250UB	25.7	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	
	31.4	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	
	37.3	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	5.0	8.0	5.0	6.0	
310UB	32.0	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	5.0	8.0	5.0	6.0	
	40.4	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	5.0	8.0	5.0	6.0	
	46.2	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	5.0	8.0	5.0	6.0	
360UB	44.7	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	5.0	8.0	5.0	6.0	
	50.7	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	5.0	8.0	5.0	6.0	
	56.7	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	5.0	8.0	5.0	6.0	
410UB	53.7	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	5.0	8.0	5.0	6.0	
	59.7	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	5.0	8.0	5.0	6.0	

Dimensional Tolerance 치수 허용차

1) H Section H형강

AS/NZS 3679.1: 2010

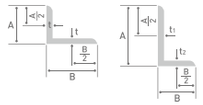
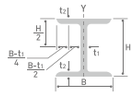
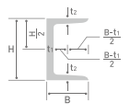
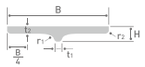
규격 Nominal Size	단중 Nominal Mass (Kg/m)	치수 허용차 Dimensional Tolerance (mm)				치수 허용차 Dimensional Tolerance (mm)					비고 Remarks
		높이 Pemissible Variation of Depth (H)	변 Pemissible Variation of Flange Width (B)	두께 Thickness		FLANGE 차 Max. Difference of Flange Over Four Flanges (4개변의 차)	직각도 Pemissible Out-of-Square		편심 Pemissible Web Off-Center (e)	최대높이 Pemissible Overall Depth Over Specified Depth (C)	
				(t_{web})	(t_{Flange})		T 또는 T'	T+T'			
460UB	67.1	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	5.0	8.0	5.0	6.0	※ 직각도
	74.6	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	5.0	8.0	5.0	6.0	
	82.1	±3.0	+6.0 −5.0	±0.7	±1.5	1.5	5.0	8.0	5.0	6.0	
530UB	82.0	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	5.0	8.0	5.0	6.0	
	92.4	±3.0	+6.0 −5.0	±0.7	±1.5	1.5	5.0	8.0	5.0	6.0	
610UB	101.0	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	5.0	8.0	5.0	6.0	
	113.0	±3.0	+6.0 −5.0	±0.7	±1.5	1.5	5.0	8.0	5.0	6.0	
	125.0	±3.0	+6.0 −5.0	±0.7	±1.5	1.5	5.0	8.0	5.0	6.0	* 한쪽만 적용
100UC	14.8	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	T 또는 T'
150UC	23.4	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	* 양쪽 합 적용
	30.0	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	T+T'
	37.2	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	
200UC	46.2	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	
	52.2	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	
	59.5	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	
250UC	72.9	±3.0	+6.0 −5.0	±0.7	±1.0	1.0	4.0	6.0	5.0	6.0	
	89.5	±3.0	+6.0 −5.0	±0.7	±1.5	1.5	4.0	6.0	5.0	6.0	
310UC	96.8	±3.0	+6.0 −5.0	±0.7	±1.5	1.5	5.0	8.0	5.0	6.0	
	118.0	±3.0	+6.0 −5.0	±0.7	±1.5	1.5	5.0	8.0	5.0	6.0	
	137.0	±3.0	+6.0 −5.0	±0.7	±1.5	1.5	5.0	8.0	5.0	6.0	
	158.0	±3.0	+6.0 −5.0	±1.0	±1.5	1.5	5.0	8.0	5.0	6.0	



Dimensional Tolerance 치수 허용차

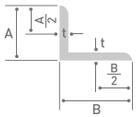
2) Angle, Channel, I-Beam ㄱ형강, ㄷ형강, I 형강

KS D 3502, JIS G 3192 치수단위(Unit) : mm

항목 Item			허용차 Tolerance	비고 Remarks
변 Leg (A or B)	< 50 50 ≤ B < 100 100 ≤ B < 200 200 ≤ B		±1.5 ±2.0 ±3.0 ±4.0	
높이 Height (H)	< 100 100 ≤ H < 200 200 ≤ H < 400 400 ≤ H		±1.5 ±2.0 ±3.0 ±4.0	
두께 Thickness (t1, t2)	Flange A (B for T-Shape) or Height Under 130	< 6.3 6.3~10 10~16 16 ≤	±0.6 ±0.7 ±0.8 ±1.0	
	Flange A (B for T-Shape) or Height 130 & Over	< 6.3 6.3~10 10~16 16~25 25 ≤	±0.7 ±0.8 ±1.0 ±1.2 ±1.5	
길이 Length	≤ 7m		+40 0	
	7m <		Add 5mm to the above plus size Over 7m tolerance for each additional 1m or fraction thereof.	
직각도 Out-of Square (T)	I -Beam & T-Shape		Not more than 1.5% of Flange B	
	Shapes Excluding I -Beam & T-Shapes		Not more than 2.0% of Flange B	
중량 Tolerance on Weight	t < 10 10 ≤ t		±5.0% ±4.0% (주문 시 무게 허용차 적용 요구 시에만)	-
굴곡 Camber and Sweep	I -Beam & T-Shapes		Not more than 0.2% of length	To be applied to warp upward and downward, right and left.
	Shapes excluding I -Beam & T-Shapes		Not more than 0.3% of length	

3) Other Angle 기타 ㄱ형강

EN10056-2: 1993 치수단위(Unit) : mm

항목 Item			허용차 Tolerance	비고 Remarks
변 Leg (A or B)	< 50 50~100 100~150 150~200 200 <		±1.0 ±2.0 ±3.0 ±4.0 +6, −4	
두께 Thickness (t1, t2)	≤ 5 5~10 10~15 15 <		±0.5 ±0.75 ±1.0 ±1.2	
길이 Length	-		±50 or +100, −0 (min. lengths are required)	
직각도 Out-of Square (T)	Leg A ≤ 100 100~150 150~200 200 <		1.0 max. 1.5 max. 2.0 max. 3.0 max.	
중량 Tolerance on Weight	t ≤ 4 4 < t		±6.0% ±4.0%	-
굴곡 Straightness	제품전장 (Over Full Length)	Leg A ≤ 150 150~200 200 <	Not more than 0.4% of length Not more than 0.2% of length Not more than 0.1% of length	To be applied to warp upward and downward, right and left.
	국분적 (Over Any Length)	Leg A ≤ 150 150~200 200 <	6mm for 1.5m 3mm for 2m 3mm for 3m	

Dimensional Tolerance 치수 허용차

4) Other Channel 기타 ㄷ형강

항목 Item		ASTM A6			EN 10279 : 2000 (UPN)			AS/NZS 3679.1: 2010 (PFC, TFC)		비고 Remarks
		구분 Dimension		단위(Unit): mm	구분 Dimension		단위(Unit): mm	구분 Dimension	단위(Unit): mm	
폭 Width (B)		H ≤ 38.1 38.1 < H < 76.2 76.2 ≤ H ≤ 177.8 177.8 < H ≤ 355.6 355.6 < H		±0.79 ±1.59 ±3.18 +3.18, −3.97 +3.18, −4.76	B ≤ 50 50 < B ≤ 100 100 < B ≤ 125 125 < B		±1.5 ±2.0 ±2.5 ±3.0	35 < B ≤ 55 55 < B ≤ 80 80 < B ≤ 105	±3.0 ±3.0 +3.0, −4.0	
높이 Depth (H)		H ≤ 38.1 38.1 < H < 76.2 76.2 ≤ H ≤ 177.8 177.8 < H ≤ 355.6 355.6 < H		±0.79 ±1.59 +2.38, −1.59 +3.18, −2.38 +4.76, −3.18	H ≤ 65 65 < H ≤ 200 200 < H ≤ 400 400 < H		±1.5 ±2.0 ±3.0 ±4.0	75 < H ≤ 120 120 < H ≤ 360 360 < H ≤ 390	+3.0, −1.5 +3.0, −1.5 +5.0, −3.0	
두께 Thickness	S	S ≤ 5 mm	H ≤ 38.1 38.1 < H < 76.2 76.2 ≤ H ≤ 177.8 177.8 < H ≤ 355.6 355.6 < H	−0.25 −0.38 – – –	S ≤ 10 10 < S ≤ 15 15 < S		±0.5 ±0.7 ±1.0	35 < B ≤ 55 55 < B ≤ 80 80 < B ≤105	±0.7 ±1.0 ±1.0	
		5 mm < S	H ≤ 38.1 38.1 < H < 76.2 76.2 ≤ H ≤ 177.8 177.8 < H ≤ 355.6 355.6 < H	−0.38 −0.51 – – –	S ≤ 10 10 < S ≤ 15 15 < S		±0.5 ±0.7 ±1.0	35 < B ≤ 55 55 < B ≤ 80 80 < B ≤ 105	±0.7 ±1.0 ±1.0	
	t	–		–	t ≤ 10 10 < t ≤ 15 15 < t		−0.5 −1.0 −1.5	75 ≤ H ≤ 120 120 < H ≤ 360 360 < H ≤ 390	±0.7 ±1.0 ±1.0	
직각도 Out-of-Square (k+k1)		All Sizes		0.03 x B	B ≤ 100 100 < B		2.0 2.5% of B	Size / t or t' / t + t' 75 ≤ d ≤ 120 / 1.0 / B1 x 0.03 120 < d ≤ 360 / 1.5 / B1 x 0.03 360 < d ≤ 390 / 2.0 / B1 x 0.03		
Web평탄도 Web Flatness (f)		–		–	H ≤ 100 100 < H ≤ 200 200 < H ≤ 400 400 < H		±0.5 ±1.0 ±1.5 ±1.5	–	–	
굴곡 Straightness		(A or B 중 장변)	Camber	Sweep		Camber	Sweep	All Sizes	L/500 (Camber)	
		< 76.2mm	1/4" x (ft수/5)	by agreement	h ≤ 150	±0.3% of L	±0.5% of L			
		76.2mm ≤	1/8" x (ft수/5)	by agreement	150 < h ≤ 300	±0.2% of L	±0.3% of L			
					300 < h	±0.15% of L	±0.2% of L			

Dimensional Tolerance 치수 허용차

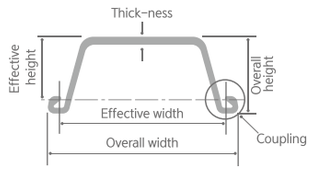
4) Other Channel 기타 ㄷ형강

항목 Item	ASTM A6			EN 10279 : 2000 (UPN)		AS/NZS 3679.1: 2010 (PFC, TFC)		비고 Remarks
	구분 Dimension		단위(Unit): mm	구분 Dimension	단위(Unit): mm	구분 Dimension	단위(Unit): mm	
절단면 직각도 Sectional Squareness	–		–	–	–	All Sizes	H x 0.03	
중량 Tolerance on Weight	All Sizes		±2.5%	H ≤ 125 100 < H	±6.0% ±4.0%	All Sizes	±2.5%	–
길이 Length	(A or B 중 장변)	L ≤ 40 ft	40 ft < L	All Sizes	+100, −0 (All) ±50 mm (by agreement)	L ≤ 7m 7 < L ≤ 12m 12 < L	+50, −0 +75, −0 +100, −0	–
	< 76.2mm	+50.8, −0	+63.5, −0					
	76.2mm ≤	+57.2, −0	+69.9, −0					
곡률 반지름 Radius (r)	–		–	All Sizes	r3 ≤ 0.3t	–	–	–

5) Sheet Pile 강널말뚝

JIS A 5528:2012, KS F 4604:2012 치수단위(Unit) : mm

항목 Item		허용차 Tolerance	비고 Remarks
폭 Width (B)		+10, −5	
높이 Height (H)		±4.0% of Overall height (전 높이)	
두께 Thickness (t)	t < 10mm	±1.0	
	10mm ≤ t < 16mm	±1.2	
	16mm ≤ t	±1.5	
길이 Length		+ : Not specified, − : 0	
굽힘 Deflection	≤ 10mm	Overall length (m) X 0.12% max.	
	10mm <	[(Overall length (m) − 10 m) X 0.10% + 12 mm] max.	
휨 Camber	≤ 10mm	Overall length (m) X 0.25% max.	
	10mm <	[(Overall length (m) − 10 m) X 0.20% + 25 mm] max.	
단면의 절단 직각차 Difference in Vertically Cut Section		4% of width max. (너비의 4% 이하)	



※JIS A 5523 결합각도 ±6° 이상

Dimensional Tolerance 치수 허용차

6) Steel Bars for Concrete Reinforcement 철근

KS D 3504

항목 Item		허용차 Tolerance		비고 Remarks
		Min.	Max.	
마디높이 Height of Knot	≤ D13 D13~D19 D19 ≤	4.0% of Nominal Dia. 4.5% of Nominal Dia. 5.0% of Nominal Dia.	Min. Value x 2 Min. Value x 2 Min. Value x 2	Refer to “Steel Bar for Concrete Reinforcement” “Dimensions and Weight”
길이 Length	≤ 7m	+40mm 0		-
	7m <	Add 5mm to the above plus size tolerance for each additional 1m or fraction thereof. However, the max. value shall be limited to 120mm		-

Note : The following standards are also applicable JIS G3112, ASTM A615, BS4449, SSA 2.

Tolerance On Weight 중량 허용차

Steel Bars for Concrete Reinforcement 철근

KS D 3504

표준규격 Standards	항목 Item	허용차 Tolerance	
		Single Piece wt.	One Lot wt.
KS D 3504 JIS G 3112	D10 ≤ d < D16 D16 ≤ d < D29 D29 ≤ d	±6% ±5% ±4%	±5% ±4% ±3.5%

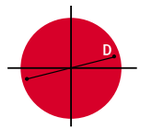
d=nominal diameter

17. Special Steel 특수강

1) Dimensions and Weight 치수 및 중량

○봉강 (Round Bar)

직경 Dia.(mm)	단면적 Sectional Area (cm²)	단위중량 Unit Weight (kg/m)
16	2.0	1.6
17	2.3	1.8
19	2.8	2.2
20	3.1	2.5
21	3.5	2.7
22	3.8	3.0
23	4.2	3.3
24	4.5	3.6
25	4.9	3.9
26	5.3	4.2
27	5.7	4.5
28	6.2	4.8
29	6.6	5.2
30	7.1	5.5
31	7.5	5.9
32	8.0	6.3
33	8.6	6.7
34	9.1	7.1
35	9.6	7.6
36	10.2	8.0
37	10.8	8.4
38	11.3	8.9
40	12.6	9.9
41	13.2	10.4
42	13.9	10.9
43	14.5	11.4
44	15.2	11.9
45	15.9	12.5
46	16.6	13.0
47	17.3	13.6
48	18.1	14.2
49	18.9	14.8
50	19.6	15.4
51	20.4	16.0
52	21.2	16.7
53	22.1	17.3
54	22.9	18.0
55	23.8	18.7
56	24.6	19.3
57	25.5	20.0
58	26.4	20.7
59	27.3	21.5
60	28.3	22.2
62	30.2	23.7
63	31.2	24.5
65	33.2	26.0
66	34.2	26.9
67	35.3	27.7
68	36.3	28.5
70	38.5	30.2
71	39.6	31.1
72	40.7	32.0
75	44.2	34.7
78	47.8	37.5
80	50.3	39.5
83	54.1	42.5
85	56.7	44.5
87	59.4	46.7
90	63.6	49.9
93	67.9	53.3
95	70.9	55.6
97	73.9	58.0
98	75.4	59.2
100	78.5	61.7
103	83.3	65.4
105	86.6	68.0
107	89.9	70.6
110	95.0	74.6
113	100.3	78.7
114.3	102.6	80.5
115	103.9	81.5
117	107.5	84.4
120	113.1	88.8
125	122.7	96.3
130	132.7	104.2
135	143.1	112.4
140	153.9	120.8
150	176.7	138.7
160	201.1	157.8
170	227.0	178.2
178	248.8	195.3
180	254.5	199.8
185	268.8	211.0
190	283.5	222.6
200	314.2	246.6
210	346.4	271.9
215	363.1	285.0
220	380.1	298.4
230	415.5	326.1
240	452.4	355.1
250	490.9	385.3
260	530.9	416.8
270	572.6	449.5
280	615.8	483.4
290	660.5	518.5
300	706.9	554.9
310	754.8	592.5
320	804.2	631.3
330	855.3	671.4
340	907.9	712.7
350	962.1	755.3



○선재 (Wire Rod)

직경 Dia.(mm)	단면적 Sectional Area (cm²)	단위중량 Unit Weight (kg/m)
5.5	0.2	0.2
6	0.3	0.2
6.5	0.3	0.3
7	0.4	0.3
7.5	0.4	0.3
8	0.5	0.4
8.5	0.6	0.4
9	0.6	0.5
9.5	0.7	0.6
10	0.8	0.6
10	0.8	0.6
11	1.0	0.7
11.5	1.0	0.8
12	1.1	0.9
12.5	1.2	1.0
13	1.3	1.0
13.5	1.4	1.1
14	1.5	1.2
14.5	1.7	1.3
15	1.8	1.4
15.5	1.9	1.5
16	2.0	1.6
17	2.3	1.8
18	2.5	2.0
19	2.8	2.2
20	3.1	2.5
21	3.5	2.7
22	3.8	3.0
23	4.2	3.3
24	4.5	3.6
25	4.9	3.9
26	5.3	4.2
27	5.7	4.5
28	6.2	4.8
29	6.6	5.2
30	7.1	5.5
31	7.5	5.9
31	7.5	5.9
33	8.6	6.7
34	9.1	7.1
35	9.6	7.6
36	10.2	8.0
37	10.8	8.4
38	11.3	8.9
39	11.9	9.4
40	12.6	9.9
42	13.9	10.9
44	15.2	11.9
45	15.9	12.5
48	18.1	14.2
49	18.9	14.8
50	19.6	15.4
53	22.1	17.3
55	23.8	18.7
56	24.6	19.3
58	26.4	20.7
60	28.3	22.2

○각강 (Square Bar)

직경 Dia.(mm)	단면적 Sectional Area (cm²)	단위중량 Unit Weight (kg/m)
83	68.9	54.1
85	72.3	56.7
87	75.7	59.4
90	81.0	63.6
100	100.0	78.5
103	106.1	83.3
105	110.3	86.5
110	121.0	95.0
113	127.7	100.2
115	132.3	103.8
120	144.0	113.0
125	156.3	122.7
130	169.0	132.7
131	171.6	134.7
139	193.2	151.7
150	225.0	176.6
160	256.0	201.0
180	324.0	254.3

17. Special Steel 특수강

2) Special Steel Group 특수강 강종별 분류

○봉강 (Round Bar)

강종 Steel Group	종류의 기호 Grade
탄소강 Carbon Steel	S10C, S10CH, S15C, S20C, S20CA, S20CB, S25C, S25CA, S30C, S35C, S38C, S40C, S43C, S45C, S45C-M2, S45C-M3, S45CS, S45CA, S45CH, S45CB, S48C, S48CM, S48CM1, S50C, S50CS, S53C, S53CM, S55C, S48CCF, S53CHF, S53CCF, 1050MJ, 1524HM, A105, A350LF2, SAE1050M, S355JO-N, SAE1552MOD, TB630W, G60
합금강 Low Alloy Steel	SCR420H, SCR420H0, SCR420HD, SCR420H1, SCR420H1V, SCR420HB, SCR440H, SCM415H, SCM420H, SCM420H1, SCM420HD, SCM420HB, SCM440HM1, SCM440S, SCM820PRH, SCM822H, SCM822HST, SCM822HD1, SCM920HVSI, SCM440, SCM440H, SCMH1, SCMH1MD, SCMH1ST, SCMH2D, SNCM439
보론강 Boron Steel	SAE10B38M2, 15B36CR, SAE51B35, 15B35CRM, 15B36M1, 15B37M, 15B37MJ, S43BCH-A, S43BCH-B, S43BCH-AJ, S43BCH-BJ, 30MnB4, SCR435BJ, SCR440B, SCR440BJ
비조질강 Micro Alloy Steel	S30CVT, S36CVS2, S40CVS-HB, S40MS1V, 44MNSIVS6, S70CVS1, S36CVSTIS2, 15V24, S25CVMNS1, 38MNSIVS5, 38MNSIVS5MOD2, 38MNVS5, 38MNVS6, S43CNBS1, S45CVMN, S40CV
베어링강 Bearing Steel	S55CR, SUJ2, SUJ2Z, SUJ2R
쾌삭강	SUM43
체인강 Chain Steel	SBC70

○선재 (Wire Rod)

강종 Steel Group	종류의 기호 Grade
탄소강 Carbon Steel	SWRCH10A, SWRCH18A, SWRCH25K, SWRCH35K, SWRCH45K, SWRCH45KS, SWRCH45CR, SWRCH45FCR, S20C, S25C, S35C, S45C
합금강 Low Alloy Steel	SCR420H1V, SCR420HB, SCM415H, SCM420H, SCM435, SCM435H, SCM440, SCM440H, SAE4140
보론강 Boron Steel	S1021B, S5120BH, SAE10B38M1
비조질강 Micro Alloy Steel	SWRCH45VS2
베어링강 Bearing Steel	SUJ2, SUJ2Z, SUJ2R
스프링강 Spring Steel	SUPM12C, SUPM125, SAE9254, SUP9D

○각강 (Square Bar)

강종 Steel Group	종류의 기호 Grade
탄소강 Carbon Steel	S45C
합금강 Low Alloy Steel	SCM440H
비조질강 Micro Alloy Steel	S40MS1V, 44MNSIVS6
스프링강 Spring Steel	SAE9254, SUP9D, SUP9A, SUP11A

17. Special Steel 특수강

3) Table for Chemical Composition 특수강 강종별 화학성분표

기본 규격임 사전 주문에 한함

강종 Steel Group	종류의 기호 Grade	규격 Standard	C ×100	Si	Mn	P ×1000	S	Ni ×100	Cr	Mo ×100	Cu	Al ×1000	Sn	V	Nb	Ti	B ×PPM	종류의 기호 Grade	강종 Steel Group
탄소강 Carbon Steel	S10C	JIS G 4051	08/13	15/35	30/60	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S10C	탄소강 Carbon Steel
	S10CH	USER	08/13	15/35	30/60	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S10CH	
	S15C	JIS G 4051	13/18	15/35	30/60	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S15C	
	A350LF2	ASTM A 350	20↓	20/30	105/120	30↓	35↓	30↓	20↓	10↓	30↓	10/30	–	25↓	18↓	–	–	A350LF2	
	S20C	JIS G 4051	18/23	15/35	30/60	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S20C	
	S20CA	USER	18/21	15/35	30/60	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S20CA	
	S20CB	USER	18/23	15/35	30/60	30↓	35↓	20↓	20↓	–	30↓		–	–	–	–	–	S20CB	
	S25C	JIS G 4051	22/28	15/35	30/60	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S25C	
	S25CA	USER	22/28	15/35	30/60	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S25CA	
	A105	ASTM A 105	35↓	10/35	60/105	35↓	40↓	40↓	30↓	12↓	40↓	–	–	80↓	–	–	–	A105	
	TB630W	USER	19/22	20/35	90/100	25↓	10↓	20↓	20↓	–	25↓	–	–	25/35	–	–	–	TB630W	
	S30C	JIS G 4051	27/33	15/35	60/90	30↓	35↓	20↓	20↓		30↓	–	–	–	–	–	–	S30C	
	S35C	JIS G 4051	32/38	15/35	60/90	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S35C	
	S38C	JIS G 4051	35/41	15/35	60/90	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S38C	
	S40C	JIS G 4051	37/43	15/35	60/90	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S40C	
	S43C	JIS G 4051	40/46	15/35	60/90	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S43C	
	S45C	JIS G 4051	42/48	15/35	60/90	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S45C	
	S45C-M2	USER	42/48	15/35	60/90	30↓	35↓	20↓	20↓	–	30↓	10/40	–	–	–	–	–	S45C-M2	
	S45C-M3	USER	42/48	15/35	60/90	30↓	35↓	20↓	20↓	–	30↓	10/40	–	–	–	–	–	S45C-M3	
	S45CH	USER	42/48	15/35	60/90	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S45CH	
	S45CA	USER	45/48	15/35	60/90	30↓	35↓	12↓	12↓	–	30↓	–	–	–	–	–	–	S45CA	
	S45CB	USER	42/48	15/35	60/90	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S45CB	
	S45Cr	USER	42/48	15/35	60/90	30↓	35↓	20↓	15/30	–	20↓	–	–	–	–	–	–	S45Cr	
	S45CS	USER	43/47	20/35	65/90	30↓	15/35	20↓	20↓	5↓	20↓	25↓	–	–	–	–	–	S45CS	
	S48C	JIS G 4051	45/51	15/35	60/90	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S48C	
	S48CM	USER	45/51	15/35	60/90	30↓	20/40	–	–	–	–	–	–	–	–	–	–	S48CM	
	S48CM1	USER	49/51	15/35	75/85	20↓	15↓	20↓	20↓	5↓	30↓	10/45	–	80↓	–	–	–	S48CM1	
	S50C	JIS G 4051	47/53	15/35	60/90	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S50C	
	S50CS	USER	47/53	15/35	60/90	30↓	5/20	20↓	20↓	–	30↓	–	–	–	–	–	–	S50CS	
	S53C	JIS G 4051	50/56	15/35	60/90	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S53C	

17. Special Steel 특수강

3) Table for Chemical Composition 특수강 강종별 화학성분표

기본 규격임 사전 주문에 한함

강종 Steel Group	종류의 기호 Grade	규격 Standard	C ×100	Si	Mn	P ×1000	S	Ni ×100	Cr	Mo ×100	Cu	Al ×1000	Sn	V	Nb	Ti	B ×PPM	종류의 기호 Grade	강종 Steel Group
탄소강 Carbon Steel	S55C	JIS G 4051	52/58	15/35	60/90	30↓	35↓	20↓	20↓	–	30↓	–	–	–	–	–	–	S55C	탄소강 Carbon Steel
	1524HM	USER	20/25	15/30	140/170	40↓	50↓	–	15/30	–	25↓	–	–	–	–	–	–	1524HM	
	SAE1050M	USER	48/55	15/30	90/110	40↓	15↓	20↓	20↓	6↓	30↓	–	–	–	–	–	–	SAE1050M	
	SAE1050MJ	USER	50/55	15/35	60/90	40↓	50↓	–	–	–	–	18↑	–	–	–	–	–	SAE1050MJ	
	S355JO-N	EN 10025	16/19	17/37	90/130	35↓	35↓	–	25↓	–	–	–	–	–	–	–	–	S355JO-N	
	SAE1552MOD	USER	50/55	15/30	135/165	30↓	50↓	25↓	20↓	6↓	–	–	–	–	–	–	–	SAE1552MOD	
	G60	ASTM A 615	–	–	–	60↓	–	–	–	–	–	–	–	–	–	–	–	G60	
	SWRCH10A	JIS G 3507	8/13	10↓	30/60	30↓	35↓	20↓	20↓		30↓	20↑						SWRCH10A	
	SWRCH18A	JIS G 3507	15/20	10↓	60/90	30↓	35↓	20↓	20↓		30↓	20↑						SWRCH18A	
	SWRCH25K	JIS G 3507	22/28	10/35	30/60	30↓	35↓	20↓	20↓		30↓							SWRCH25K	
	SWRCH35K	JIS G 3507	32/38	10/35	60/90	30↓	35↓	20↓	20↓		30↓							SWRCH35K	
	SWRCH45K	JIS G 3507	42/48	10/35	60/90	30↓	35↓	20↓	20↓		30↓							SWRCH45K	
	SWRCH45KS	USER	42/48	10/35	60/90	30↓	15/35	20↓	20↓		30↓							SWRCH45KS	
	SWRCH45CR	USER	43/48	15/35	60/90	30↓	35↓	20↓	20↓		20↓	10/70						SWRCH45CR	
	SWRCH45FCR	USER	42/48	15/35	60/90	30↓	35↓	20↓	20↓		20↓	10/70						SWRCH45FCR	
	S48CCF	USER	45/49	15/25	75/85	30↓	15↓	20↓	22/28		30↓							S48CCF	
	S53CHF	USER	52/56	15/35	70/90	30↓	35↓	20↓	12/20		30↓							S53CHF	
	S53CCF	USER	53/55	15/35	84/90	30↓	35↓	20↓	12/20		30↓							S53CCF	
	S53CM	USER	50/56	15/35	60/90	30↓	25/45	20↓	20↓	–	30↓	–	–	–	–	–	–	S53CM	
합금강 (H-Band) Low Alloy Steel	SCR420H	JIS G 4052	17/23	15/35	55/90	30↓	30↓	25↓	85/125	–	30↓	–	–	–	–	–	–	SCR420H	합금강 (H-Band) Low Alloy Steel
	SCR420H0	USER	17/23	15/35	55/90	25↓	25↓	25↓	85/125	–	25↓	–	–	–	–	–	–	SCR420H0	
	SCR420HD	USER	17/23	15/35	55/90	30↓	30↓	25↓	85/125	–	30↓	–	–	–	–	–	–	SCR420HD	
	SCR420H1	USER	17/23	15/35	55/90	25↓	25↓	25↓	85/125	–	25↓	–	–	–	–	–	–	SCR420H1	
	SCR420H1V	USER	17/23	15/35	55/90	20↓	20↓	25↓	85/125	–	30↓	–	–	–	–	–	–	SCR420H1V	
	SCR420HB	USER	17/23	15/35	55/90	20↓	20↓	25↓	85/125	–	30↓	–	–	–	15/35	–	10/30	SCR420HB	
	SCR440H	JIS G 4052	37/44	15/35	55/90	30↓	30↓	25↓	85/125	–	30↓	–	–	–	–	–	–	SCR440H	
	SCM415H	JIS G 4052	12/18	15/35	55/90	30↓	30↓	25↓	85/125	15/35	30↓	–	–	–	–	–	–	SCM415H	
	SCM420H	JIS G 4052	17/23	15/35	55/90	30↓	30↓	25↓	85/125	15/35	25↓	–	–	–	–	–	–	SCM420H	
	SCM420H1	USER	17/23	15/35	55/90	25↓	25↓	25↓	85/125	15/35	25↓	–	–	–	–	–	–	SCM420H1	
	SCM420HD	USER	17/23	15/35	55/90	30↓	30↓	25↓	85/125	15/35	30↓	–	–	–	–	–	–	SCM420HD	

17. Special Steel 특수강

3) Table for Chemical Composition 특수강 강종별 화학성분표

기본 규격임 사전 주문에 한함

강종 Steel Group	종류의 기호 Grade	규격 Standard	C ×100	Si	Mn	P ×1000	S	Ni ×100	Cr	Mo ×100	Cu	Al ×1000	Sn	V	Nb	Ti	B ×PPM	종류의 기호 Grade	강종 Steel Group
합금강 (H-Band) Low Alloy Steel	SCM420HB	USER	18/25	15/35	70/110	20↓	30↓	25↓	95/135	7/15	30↓				15/45		10/35	SCM420HB	합금강 (H-Band) Low Alloy Steel
	SCMH1	USER	20/25	15/35	60/100	30↓	30↓	20↓	90/130	20/40	30↓	15/50	–	–	–	–	–	SCMH1	
	SCMH1ST	USER	20/25	20/35	60/100	30↓	30↓	20↓	90/130	20/40	30↓	15/50	–	–	20/40	–	–	SCMH1ST	
	SCMH1MD	USER	20/25	15/35	70/110	30↓	30↓	25↓	95/135	8/15	30↓	–	–	–	–	–	–	SCMH1MD	
	SCM920HVSI	USER	17/21	15↓	60/85	20↓	30↓	25↓	125/145	55/65	30↓				15/35			SCM920HVSI	
	SCM820PRH	USER	17/23	50/70	45/75	20↓	30↓	25↓	195/225	33/43	30↓				15/35			SCM820PRH	
	SCMH2D	USER	17/23	15/35	75/110	30↓	30↓	40/80	85/125	25/45	30↓	–	–	–	–	–	–	SCMH2D	
	SCM822H	USER	19/25	15/35	55/90	30↓	30↓	25↓	85/125	35/45	30↓	–	–	–	–	–	–	SCM822H	
	SCM822HST	USER	20/24	20/35	75/85	20↓	20↓	20↓	105/115	36/45	20↓	25/50	20↓	–	30/35	–	–	SCM822HST	
	SCM822HD1	USER	19/25	15/35	55/90	30↓	30↓	25↓	85/125	35/45	30↓	–	–	–	–	–	–	SCM822HD1	
	SCM435	JIS G 4053	33/38	15/35	60/85	30↓	30↓	25↓	90/120	15/35	30↓	–	–	–	–	–	–	SCM435	
	SCM435H	JIS G 4052	32/39	15/35	55/90	30↓	30↓	25↓	85/125	15/35	30↓	–	–	–	–	–	–	SCM435H	
	SCM440	JIS G 4053	38/43	15/35	60/90	30↓	30↓	25↓	90/120	15/35	30↓	–	–	–	–	–	–	SCM440	
	SCM440H	JIS G 4052	37/44	15/35	55/90	30↓	30↓	25↓	85/125	15/35	30↓	–	–	–	–	–	–	SCM440H	
	SCM440HM1	USER	37/44	15/35	55/90	30↓	30↓	25↓	85/125	15/35	30↓	–	–	–	–	–	–	SCM440HM1	
	SCM440S	USER	37/44	15/35	55/90	30↓	30↓	25↓	85/125	15/35	30↓	–	–	–	–	–	–	SCM440S	
	SNCM439	JIS G 4053	36/43	15/35	60/90	30↓	30↓	160/200	60/100	15/30	30↓	–	–	–	–	–	–	SNCM439	
	SAE4140	SAE J 404	38/43	15/35	75/100	30↓	40↓	25↓	80/110	15/25	35↓	–	–	–	–	–	–	SAE4140	
보론강 (H-Band) Boron Steel	S43BCH-A	USER	42/48	15/35	60/80	30↓	15↓		20↓			20/50	–		–	15/50	15/40	S43BCH-A	보론강 (H-Band) Boron Steel
	S43BCH-B	USER	45/48	15/35	70/90	30↓	15↓		20↓			20/50	–		–	15/50	15/40	S43BCH-B	
	S43BCH-AJ	USER	43/48	15/35	50/90	35↓	35↓						–		–	–	5/40	S43BCH-AJ	
	S43BCH-BJ	USER	45/48	15/35	70/90	30↓	15↓		20↓			20/50	–		–	15/50	15/40	S43BCH-BJ	
	15B37MJ	USER	32/36	15/35	100/140	30↓	25↓	20↓	20↓	5↓	20↓	20/50	–	15/50	–	–	15/40	15B37MJ	
	15B37M	USER	32/36	15/35	100/140	30↓	25↓		20↓				–	15/50	–	–	15/40	15B37M	
	15B36Cr	USER	30/37	15/35	120/150	40↓	50↓		20/40			–	–		–	–	5/30	15B36Cr	
	15B35CRM	USER	32/36	20/35	120/150	25↓	25↓	20↓	20/35	5↓	30↓	15/35				10/40	5/30	15B35CRM	
	15B36M1	USER	32/36	20/30	120/150	25↓	25↓	20↓	10/20		30↓	15/35				10/40	5/30	15B36M1	
	30MnB4	USER	32/36	15/35	120/150	30↓	25↓	20↓	20/40	5↓	20↓	–	–	20/40	–	–	15/40	30MnB4	
	SAE10B38M1	USER	35/42	10/35	80/120	30↓	30↓	–	35↓	–	15↓	–	–	–	–	–	5/30	SAE10B38M1	
	SAE10B38M2	USER	36/39	10/40	70/110	35↓	10/30	–	–	–	25↓	20/60	–	–	–	30/60	8/50	SAE10B38M2	

17. Special Steel 특수강

3) Table for Chemical Composition 특수강 강종별 화학성분표

기본 규격임 사전 주문에 한함

강종 Steel Group	종류의 기호 Grade	규격 Standard	C ×100	Si	Mn	P ×1000	S	Ni ×100	Cr
보론강 (H-Band) Boron Steel	SAE51B35	USER	38/41	15/30	70/90	20↓	20↓	–	80/105
	S1021B	USER	18/23	30/50	50/80	30↓	20↓	–	10/30
	S5120BH	USER	17/22	15/35	70/90	30↓	20↓	–	70/90
	SCR435BJ	USER	35/39	15/35	85/105	25↓	30↓	25↓	90/100
	SCR440B	USER	39/43	15/35	67/85	30↓	25↓	–	97/120
	SCR440BJ	USER	39/43	15/35	67/85	30↓	25↓	–	97/120
비조질강 Micro Alloy Steel	15V24	USER	19/25	15/35	135/165	40↓	50↓	20↓	15↓
	S30CVT	USER	28/34	20/35	125/150	30↓	30↓	20↓	20↓
	S36CVS2	USER	34/38	60/75	95/105	45↓	65/85	20↓	25↓
	S36CVTiS2	USER	34/38	90/120	95/115	45↓	65/95	20↓	25↓
	S70CVS1	USER	67/73	15/35	45/55	45↓	55/70	4/12	10/20
	S40CVSHB	USER	38/42	15/35	75/90	30↓	20/40	25↓	10/20
	S40CV	USER	38/42	15/35	75/90	30↓	35↓	25↓	10/20
	S43CNbS1	USER	40/50	30/50	135/155	30↓	50/70	20↓	10/20
	S45CVMn	USER	43/47	15/35	110/130	30↓	40/70	20↓	10/20
	S25CVMnS1	USER	22/28	15/35	140/170	30↓	40/70	–	20/40
	S40MS1V	USER	40/46	55/70	140/160	30↓	40/70	20↓	10/20
	38MnSiVS5	USER	35/40	50/70	130/150	30↓	45/65	20↓	10/20
	38MnSiVS5Mod2	USER	35/40	50/75	130/150	35↓	20/40	15↓	10/20
	38MnVS5	USER	35/40	50/70	130/150	30↓	45/65	15↓	10/20
	38MnVS6	USER	36/40	60/75	130/150	25↓	20/40	15↓	10/20
	44MnSiVS6	USER	41/45	60/80	140/150	25↓	20/35	15↓	20/30
	SWRCH45VS2	USER	42/47	15/35	110/140	30↓	30/70	20↓	10/25
스프링강 Spring Steel	SUPM12C	USER	51/55	130/160	55/75	17↓	10↓	10/30	60/80
	SUPM125	USER	51/57	140/170	55/80	17↓	10↓	25/35	60/80
	SAE9254	SAE J 404	51/59	120/160	60/80	20↓	20↓		60/80
	SUP9D	USER	56/60	15/35	75/95	35↓	35↓		80/90
	SUP9A	JIS G 4801	56/64	15/35	70/100	35↓	35↓		70/100
	SUP11A	JIS G 4801	56/64	15/35	70/100	35↓	35↓		70/100

Mo ×100	Cu	Al ×1000	Sn	V	Nb	Ti	B ×PPM	종류의 기호 Grade	강종 Steel Group
–	–	–	–	–	–	–	5/30	SAE51B35	보론강 (H-Band) Boron Steel
–	–	–	–	–	–	20/50	10/40	S1021B	
–	–	–	–	–	–	20/50	10/40	S5120BH	
5↓	30↓	65/70	–	–	–	15/40	5/30	SCR435BJ	
–	–	20/50	–	–	–	15/40	15/40	SCR440B	
–	–	20/50	–	–	–	15/50	15/40	SCR440BJ	
–	25↓	20↑	–	20/200	–	–	–	15V24	비조질강 Micro Alloy Steel
–	30↓		–	40/100	–	5↑	–	S30CVT	
6↓	25↓	30↓		250/300				S36CVS2	
6↓	25↓	30↓		250/300		30/60		S36CVTiS2	
5↓		10↓		25/45				S70CVS1	
–	30↓		–	80/140	–	–	–	S40CVSHB	
–	30↓	80/140	–	–	–	35↓	–	S40CV	
6↓	25↓	30↓						S43CNbS1	
5↓	30↓	80/150	–	–	–	–	–	S45CVMn	
–	25↓	–	–	100/200	–	–	–	S25CVMnS1	
5↓		20↓		200/300				S40MS1V	
6↓	25↓	10/30	–	80/130	–		–	38MnSiVS5	
6↓	25↓	10/30		80/130		10/30		38MnSiVS5Mod2	
6↓	25↓	10/30		80/120		10↓		38MnVS5	
5↓	20↓	10/25		80/130		10/30		38MnVS6	
5↓	20↓	10/30	–	120/170	–	10/20	–	44MnSiVS6	
	30↓	10/70		40/70		40↓		SWRCH45VS2	
	10/30	20/60		50/100		10/40	50↓	SUPM12C	스프링강 Spring Steel
	25/35	1/40		50/150	15/45	10/40	5/25	SUPM125	
		–						SAE9254	
								SUP9D	
								SUP9A	
							5/25	SUP11A	

17. Special Steel 특수강

3) Table for Chemical Composition 특수강 강종별 화학성분표

기본 규격임 사전 주문에 한함

강종 Steel Group	종류의 기호 Grade	규격 Standard	C ×100	Si	Mn	P ×1000	S	Ni ×100	Cr	Mo ×100	Cu	Al ×1000	Sn	V	Nb	Ti	B ×PPM	종류의 기호 Grade	강종 Steel Group
베어링강 Bearing Steel	S55CR	USER	55/59	15/30	75/90	25↓	8↓		10/20	8↓	20↓	10/50				3↓		S55CR	베어링강 Bearing Steel
	SUJ2	JIS G 4805	95/105	15/30	25/45	25↓	8↓		135/160	8↓	25↓	50↓				3↓		SUJ2	
	SUJ2Z	USER	95/105	15/30	25/45	25↓	8↓		135/160	8↓	25↓	50↓				3↓		SUJ2Z	
	SUJ2R	USER	95/105	15/30	25/45	25↓	8↓	20↓	140/160	6↓	20↓	50↓				3↓		SUJ2R	
쾌삭강	SUM43	JIS G 4804	40/48	15/35	135/165	40↓	240/330	20↓	20↓		30↓							SUM43	쾌삭강
체인강 Chain Steel	SBC70	JIS G 3105	29/33	15/35	100/190	40↓	40↓	40↓	25↓	8↓	35↓	65↓	–	100↓	50↓	–	–	SBC70	체인강 Chain Steel

4) Heat Treatment & Mechanical Properties 열처리 및 기계적 성질

강종 Steel Group	KS 기호 (괄호안: 구기호)	JIS 기호	단조 (℃)	열처리 (℃) N	A	Q	T	기계적 성질 항복점 kgf/mm² (N/mm²)	인장강도 kgf/mm² (N/mm²)	연신율 (%)	감면율 (%)	샤르피 충격치 kgfm/cm² (J/cm²)	브리넬 경도 (HB)	용도
탄소강 Carbon Steel	SM10C	S10C	1,100~900	900~950 (공냉)	약 900 (로냉)	–	–	≥ 21 ; 불림 (≥ 206)	≥ 32 ; 불림 (≥ 314)	≥ 33 ; 불림	–	–	109~156 ; 불림	냉간가공 및 부품
	SM12C	S12C	1,100~900	880~930 (공냉)	약 880 (로냉)	–	–	≥ 24 ; 불림 (≥ 235)	≥ 38 ; 불림 (≥ 373)	≥ 30 ; 불림	–	–	109~149 ; 불림	냉간 Header, Bolt, Pin류로서 열처리하지 않고 사용하는 부품, 단조품으로서 불림하여 사용하는 부품
	SM15C	S15C	1,100~900	880~930 (공냉)	약 880 (로냉)	–	–	≥ 24 ; 불림 (≥ 235)	≥ 38 ; 불림 (≥ 373)	≥ 30 ; 불림	–	–	109~149 ; 불림	
	SM20C	S20C	1,100~900	870~920 (공냉)	약 860 (로냉)	–	–	≥ 25 ; 불림 (≥ 245)	≥ 41 ; 불림 (≥ 402)	≥ 28 ; 불림	–	–	116~174 ; 불림	
	SM25C	S25C	1,100~900	860~910 (공냉)	약 850 (로냉)	–	–	≥ 27 ; 불림 (≥ 265)	≥ 45 ; 불림 (≥ 441)	≥ 27 ; 불림	–	–	123~183 ; 불림	
	SM30C	S30C	1,100~850	850~900 (공냉)	약 840 (로냉)	850~900 (수냉)	550~650 (급냉)	≥ 34 ; QT (≥ 333)	≥ 55 ; QT (≥ 539)	≥ 23 ; QT	≥ 57 ; QT	≥ 11 ; QT (≥ 108)	152~212	스프라인샤프트, 소형 기어 등의 고주파 담금질 부품. 전동기축, 차축 등으로서 불림하고 또 일부 고주파 담금질 등으로 사용하는 부품
	SM35C	S35C	1,100~850	840~890 (공냉)	약 830 (로냉)	840~890 (수냉)	550~650 (급냉)	≥ 40 ; QT (≥ 392)	≥ 58 ; QT (≥ 569)	≥ 22 ; QT	≥ 55 ; QT	≥ 10 ; QT (≥ 98.1)	167~235	
	SM38C	S38C	1,100~850	830~880 (공냉)	약 820 (로냉)	830~880 (수냉)	550~650 (급냉)	≥ 45 ; QT (≥ 441)	≥ 62 ; QT (≥ 608)	≥ 20 ; QT	≥ 50 ; QT	≥ 9 ; QT (≥ 88)	179~255	
	SM40C	S40C	1,100~850	830~880 (공냉)	약 820 (로냉)	830~880 (수냉)	550~650 (급냉)	≥ 45 ; QT (≥ 441)	≥ 62 ; QT (≥ 608)	≥ 20 ; QT	≥ 50 ; QT	≥ 9 ; QT (≥ 88)	179~255	
	SM43C	S43C	1,100~850	820~870 (공냉)	약 810 (로냉)	820~870 (수냉)	550~650 (급냉)	≥ 50 ; QT (≥ 490)	≥ 70 ; QT (≥ 686)	≥ 17 ; QT	≥ 45 ; QT	≥ 8 ; QT (≥ 78)	201~269	일반 작은 부품으로서 완전히 담금질을 하는 부품, 크랭크축, 리어액슬샤프트 등 완전 담금질하는 부품
	SM45C	S45C	1,100~850	820~870 (공냉)	약 810 (로냉)	820~870 (수냉)	550~650 (급냉)	≥ 50 ; QT (≥ 490)	≥ 70 ; QT (≥ 686)	≥ 17 ; QT	≥ 45 ; QT	≥ 8 ; QT (≥ 78)	201~269	
	SM48C	S48C	1,050~850	810~860 (공냉)	약 800 (로냉)	810~860 (수냉)	550~650 (급냉)	≥ 55 ; QT (≥ 539)	≥ 75 ; QT (≥ 735)	≥ 15 ; QT	≥ 40 ; QT	≥ 7 ; QT (≥ 69)	212~277	
	SM50C	S50C	1,050~850	810~860 (공냉)	약 800 (로냉)	810~860 (수냉)	550~650 (급냉)	≥ 55 ; QT (≥ 539)	≥ 75 ; QT (≥ 735)	≥ 15 ; QT	≥ 40 ; QT	≥ 7 ; QT (≥ 69)	212~277	

※ 단, 상기 항목은 참고치로만 활용 가능함.

17. Special Steel 특수강

4) Heat Treatment & Mechanical Properties 열처리 및 기계적 성질

강종 Steel Group	KS 기호 (괄호안: 구기호)	JIS 기호	단조 (℃)	열처리(℃)				기계적 성질						용도
				N	A	Q	T	항복점 kgf/mm² (N/mm²)	인장강도 kgf/mm² (N/mm²)	연신율 (%)	감면율 (%)	샤르피 충격치 kgfm/cm² (J/cm²)	브리넬 경도 (HB)	
탄소강 Carbon Steel	SM53C	S53C	1,050~850	800~850 (공냉)	약 790 (로냉)	800~850 (수냉)	550~650 (급냉)	≥ 60 ; QT (≥ 588)	≥ 80 ; QT (≥ 785)	≥ 14 ; QT	≥ 35 ; QT	≥ 6 ; QT (≥ 59)	229~285	Connecting Rod, Pin, Gear 등 완전 담금질하여 고강도 요구부품, 트럭 차축 등 질량 효과가 큰 완전 담금질 부품
	SM55C	S55C	1,050~850	800~850 (공냉)	약 790 (로냉)	800~850 (수냉)	550~650 (급냉)	≥ 60 ; QT (≥ 588)	≥ 80 ; QT (≥ 785)	≥ 14 ; QT	≥ 35 ; QT	≥ 6 ; QT (≥ 59)	229~285	
	SM58C	S58C	1,050~850	800~850 (공냉)	약 790 (로냉)	800~850 (수냉)	550~650 (급냉)	≥ 60 ; QT (≥ 588)	≥ 80 ; QT (≥ 785)	≥ 14 ; QT	≥ 35 ; QT	≥ 6 ; QT (≥ 59)	229~285	
기계구조용 Mn강 (SMn XXX)	SMn420	SMN420	1,100~900	870~930	850~900	1차 850~900 2차 780~830 (유냉)	150~200 (공냉)	-	≥ 70 (≥ 686)	≥ 14	≥ 30	≥ 5 (≥ 49)	201~311	표면 경화용
	SMn433	SMN433	1,100~850	870~930	840~900	830~880 (수냉)	550~650 (급냉)	≥ 55 (≥ 539)	≥ 70 (≥ 686)	≥ 20	≥ 55	≥ 10 (≥ 98.1)	201~277	
	SMn438	SMN438	1,100~850	870~930	840~900	830~880 (유냉)	550~650 (급냉)	≥ 60 (≥ 588)	≥ 75 (≥ 736)	≥ 18	≥ 50	≥ 8 (≥ 78)	212~285	
	SMn443	SMN443	1,100~850	870~930	840~900	830~880 (유냉)	550~650 (급냉)	≥ 65 (≥ 637)	≥ 80 (≥ 785)	≥ 17 ; QT	≥ 45	≥ 8 (≥ 78)	299~302	
기계구조용 Mn-Cr강 (SMnC XXX)	SMnC420	SMN420	1,100~900	870~930	850~900	1차 850~900 2차 780~830 (유냉)	150~200 (공냉)	-	≥ 85 (≥ 834)	≥ 13	≥ 30	≥ 5 (≥ 49)	235~321	표면 경화용
	SMnC433	SMN433	1,100~850	870~930	840~900	830~880 (수냉)	550~650 (급냉)	≥ 80 (≥ 785)	≥ 95 (≥ 932)	≥ 13	≥ 40	≥ 5 (≥ 49)	269~321	
Cr강 (SCr XXX)	SCr415	SCR415	1,100~900	850~900 (공냉)	약 850 (로냉)	1차 850~900 2차 800~850 (유냉)	150~200 (공냉)	-	≥ 80 (≥ 785)	≥ 15	≥ 40	≥ 6 (≥ 59)	217~302	표면 경화용 캠축, 핀
	SCr420	SCR420	1,100~900	850~900 (공냉)	약 850 (로냉)	1차 850~900 2차 800~850 (유냉)	150~200 (공냉)	-	≥ 85 (≥ 834)	≥ 14	≥ 35	≥ 5 (≥ 49)	235~321	표준형 크롬도금 표면 경화강 치차류 스프라인축
	SCr430	SCR430	1,100~850	880	약 830 (로냉)	830~880 (유냉)	520~620 (급냉)	≥ 65 (≥ 637)	≥ 80 (≥ 785)	≥ 18	≥ 55	≥ 9 (≥ 88)	229~293	볼트, 너트
	SCr435	SCR435	1,100~850	850~900 (공냉)	약 830 (로냉)	830~880 (유냉)	520~620 (급냉)	≥ 75 (≥ 836)	≥ 90 (≥ 883)	≥ 15	≥ 50	≥ 7 (≥ 69)	255~321	Arm류, 고주파 담금질 부품
	SCr440	SCR440	1,100~850	880	약 830 (로냉)	830~880 (유냉)	520~620 (급냉)	≥ 80 (≥ 785)	≥ 95 (≥ 932)	≥ 13	≥ 45	≥ 6 (≥ 59)	269~331	강력볼트, Arm축류
	SCr445	SCR445	1,100~850	880	약 830 (로냉)	830~880 (유냉)	520~620 (급냉)	≥ 85 (≥ 834)	≥ 100 (≥ 980.7)	≥ 12	≥ 40	≥ 5 (≥ 49)	285~352	축류, Key, 너클, 핀

※ 단, 상기 항목은 참고치로만 활용 가능함.

17. Special Steel 특수강

4) Heat Treatment & Mechanical Properties 열처리 및 기계적 성질

강종 Steel Group	KS 기호 (괄호안: 구기호)	JIS 기호	단조 (℃)	열처리(℃)				기계적 성질						용도
				N	A	Q	T	항복점 kgf/mm² (N/mm²)	인장강도 kgf/mm² (N/mm²)	연신율 (%)	감면율 (%)	샤르피 충격치 kgfm/cm² (J/cm²)	브리넬 경도 (HB)	
Cr-Mo강 (SCM XXX)	SCM415	SCM415	1,100~900	850~900 (공냉)	약 850 (로냉)	1차 850~900 2차 800~850 (유냉)	150~200 (공냉)	-	≥ 85 (≥ 834)	≥ 16	≥ 40	≥ 7 (≥ 69)	235~321	표면 경화용 일반용, 기어, 핀, 축류
	SCM418	SCM418	1,100~900	850~900 (공냉)	약 850 (로냉)	1차 850~900 2차 800~850 (유냉)	150~200 (공냉)	-	≥ 90 (≥ 883)	≥ 15	≥ 40	≥ 7 (≥ 69)	278~331	표면 경화용 일반용, 기어, 축류
	SCM420	SCM420	1,100~900	850~900 (공냉)	약 850 (로냉)	1차 850~900 2차 800~850 (유냉)	150~200 (공냉)	-	≥ 95 (≥ 932)	≥ 14	≥ 40	≥ 6 (≥ 59)	262~352	
	SCM421	SCM421	1,100~900	850~900 (공냉)	약 850 (로냉)	1차 850~900 2차 800~850 (유냉)	150~200 (공냉)	-	≥ 100 (≥ 980.7)	≥ 14	≥ 35	≥ 6 (≥ 59)	285~375	기어, 축류, 체인, 핀 강도를 중시하는 부품
	SCM430	SCM430	1,100~900	830~880 (공냉)	약 830 (로냉)	830~880 (유냉)	530~630 (급냉)	≥ 70 (≥ 686)	≥ 85 (≥ 834)	≥ 18	≥ 55	≥ 11 (≥ 108)	241~302	작은 축류, 고주파 담금질 부품
	SCM432	SCM432	1,050~850	830~880 (공냉)	약 830 (로냉)	830~880 (유냉)	530~630 (급냉)	≥ 75 (≥ 736)	≥ 90 (≥ 883)	≥ 16	≥ 50	≥ 9 (≥ 88)	255~321	볼트, 프로펠러, 축류
	SCM435	SCM435	1,050~850	830~880 (공냉)	약 830 (로냉)	830~880 (유냉)	530~630 (급냉)	≥ 80 (≥ 785)	≥ 95 (≥ 932)	≥ 15	≥ 50	≥ 8 (≥ 78)	269~331	일반용, 축류, Arm류 기어, 볼트, 냉간단조품
	SCM440	SCM440	1,050~850	830~880 (공냉)	약 830 (로냉)	830~880 (유냉)	530~630 (급냉)	≥ 85 (≥ 834)	≥ 100 (≥ 980.7)	≥ 12	≥ 45	≥ 6 (≥ 59)	285~352	크랭크축, 너클, 암
	SCM445	SCM445	1,050~850	830~880 (공냉)	약 850 (로냉)	830~880 (유냉)	530~630 (급냉)	≥ 90 (≥ 883)	≥ 105 (≥ 1,030)	≥ 12	≥ 40	≥ 4 (≥ 39)	302~363	대형 강력 축류
	SCM822	SCM822	1,100~900	850~900 (공냉)	약 850 (로냉)	1차 850~900 2차 800~850 (유냉)	150~200 (공냉)	-	≥ 105 (≥ 1,030)	≥ 12	≥ 30	≥ 6 (≥ 59)	302~415	표면 경화용 피니언, 기어
Ni-Cr강 (SNC XXX)	SNC236	SNC236	1,050~850	820~880 (공냉)	약 820 (로냉)	820~880 (유냉)	550~650 (급냉)	≥ 60 (≥ 588)	≥ 75 (≥ 736)	≥ 22	≥ 50	≥ 12 (≥ 118)	217~277	샤프트, 볼트
	SNC415	SNC415	1,100~900	820~900 (공냉)	약 850 (로냉)	1차 850~900 2차 740~790 (유냉)	150~200 (공냉)	-	≥ 80 (≥ 785)	≥ 17	≥ 45	≥ 9 (≥ 88)	235~341	표면 경화용 피스톤 핀
	SNC631	SNC631	1,050~850	820~880 (공냉)	약 820 (로냉)	820~880 (유냉)	550~650 (급냉)	≥ 70 (≥ 686)	≥ 85 (≥ 834)	≥ 18	≥ 50	≥ 12 (≥ 118)	248~302	크랭크샤프트, 기어

※ 단, 상기 항목은 참고치로만 활용 가능함.

17. Special Steel 특수강

4) Heat Treatment & Mechanical Properties 열처리 및 기계적 성질

강종 Steel Group	KS 기호 (괄호안: 구기호)	JIS 기호	단조 (℃)	열처리(℃)				기계적 성질						용도
				N	A	Q	T	항복점 kgf/mm² (N/mm²)	인장강도 kgf/mm² (N/mm²)	연신율 (%)	감면율 (%)	샤르피 충격치 kgfm/cm² (J/cm²)	브리넬 경도 (HB)	
Ni-Cr강 (SNC XXX)	SNC815	SNC815	1,100~900	830~880 (공냉)	약 830 (로냉)	1차 830~880 2차 750~800 (유냉)	150~200 (공냉)	-	≥ 100 (≥ 980.7)	≥ 12	≥ 45	≥ 8 (≥ 78)	285~388	표면 경화용 질량효과가 큰 샤프트
	SNC836	SNC836	1,050~850	820~880 (공냉)	약 820 (로냉)	820~880 (유냉)	550~650 (급냉)	≥ 80 (≥ 785)	≥ 95 (≥ 932)	≥ 15	≥ 50	≥ 8 (≥ 78)	269~321	샤프트류, 기어
Ni-Cr-Mo강 (SNCM XXX)	SNCM220 (SNCM21)	SNCM220	1,100~850	850~900 (공냉)	약 850 (로냉)	1차 850~900 2차 800~850 (유냉)	150~200 (공냉)	-	≥ 85 (≥ 834)	≥ 17	≥ 40	≥ 6 (≥ 59)	248~341	표면 경화 침탄강, 치차, 축류
	SNCM240 (SNCM6)	SNCM240	1,050~850	820~870 (공냉)	약 820 (로냉)	820~870 (유냉)	580~680 (공냉)	≥ 80 (≥ 785)	≥ 90 (≥ 883)	≥ 17	≥ 50	≥ 7 (≥ 69)	255~311	축류
	SNCM415 (SNCM22)	SNCM415	1,100~850	850~900 (공냉)	약 850 (로냉)	1차 850~900 2차 780~830 (유냉)	150~200 (공냉)	-	≥ 90 (≥ 883)	≥ 16	≥ 45	≥ 7 (≥ 69)	255~341	표면 경화용 치차, 축류
	SNCM420 (SNCM213)	SNCM420	1,100~850	850~900 (공냉)	약 850 (로냉)	1차 850~900 2차 770~820 (유냉)	150~200 (공냉)	-	≥ 100 (≥ 980.7)	≥ 15	≥ 40	≥ 7 (≥ 69)	293~375	표면 경화용 롤러, 베어링 대형치차축류
	SNCM431 (SNCM1)	SNCM431	1,050~850	820~870 (공냉)	약 820 (로냉)	820~870 (유냉)	570~670 (공냉)	≥ 70 (≥ 686)	≥ 85 (≥ 834)	≥ 20	≥ 55	≥ 10 (≥ 98.1)	248~302	크랭크샤프트, 터빈
	SNCM439 (SNCM8)	SNCM439	1,050~850	820~870 (공냉)	약 820 (로냉)	820~870 (유냉)	580~680 (공냉)	≥ 90 (≥ 883)	≥ 100 (≥ 980.7)	≥ 16	≥ 45	≥ 7 (≥ 69)	293~352	치차류
	SNCM447 (SNCM9)	SNCM447	1,050~850	820~870 (공냉)	약 820 (로냉)	820~870 (유냉)	580~680 (공냉)	≥ 95 (≥ 932)	≥ 105 (≥ 1,030)	≥ 14	≥ 40	≥ 6 (≥ 59)	302~363	치차류
	SNCM616 (SNCM26)	SNCM616	1,100~850	850~900 (공냉)	약 670 (로냉)	1차 850~900 2차 770~830 (유냉)	100~200 (공냉)	-	≥ 120 (≥ 1,177)	≥ 14	≥ 40	≥ 8 (≥ 78)	341~415	표면 경화용 침탄 없는 초강인강으로도 유효
	SNCM625 (SNCM2	SNCM625	1,050~850	820~870 (공냉)	약 670 (로냉)	820~870 (유냉)	570~670 (공냉)	≥ 85 (≥ 834)	≥ 95 (≥ 932)	≥ 18	≥ 50	≥ 8 (≥ 78)	269~321	크랭크축, 치차, 축류
	SNCM630 (SNCM5)	SNCM630	1,050~850	850~900 (공냉)	약 670 (로냉)	850~950 (유냉)	550~650 (공냉)	≥ 90 (≥ 882)	≥ 110 (≥ 1,079)	≥ 15	≥ 45	≥ 8 (≥ 78)	302~352	가장 담금질성이 큰 강종, 대형치차축류
	SNCM815 (SNCM25)	SNCM815	1,100~850	830~900 (공냉)	약 650 (로냉)	1차 830~880 2차 750~800 (유냉)	150~200 (공냉)	-	≥ 110 (≥ 1,079)	≥ 12	≥ 40	≥ 7 (≥ 69)	311~375	표면 경화용 가장 강인한 표면 경화강

※ 단, 상기 항목은 참고치로만 활용 가능함.

17. Special Steel 특수강

5) Dimensional Tolerance 치수 허용차

KS D 3501 치수단위(Unit) : mm

구분 Classification		허용차 Tolerance	비고 Remarks 편경차 Diametrical Variation
직경 Diameter	Under 16	±0.4	Not more than 70% of total tolerance range of diameter
	16 to 28, excl.	±0.5	
	28 & over	±1.5%	

Note: The following standards are also applicable JIS G 3192, ASTM A6/6M, DIN 1013

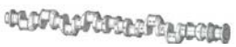
18. Forging 단조

1) Production Range 제조 범위

Description	Materials
Shipbuilding	Carbon Steel Low Alloy Steel
Mold & Tool Steel	Carbon Tool Steel High Alloy Steel
Forged Roll	High Carbon Steel High Alloy Steel
Machinery	Carbon Steel Alloy Steel

Description	Size & Weight
Max.	Length : 15m Diameter : Ø4,000 Weight : 52Ton

2) Shipbuilding 조선용 단조품

Description			Approval Organization	ETC
Crank Shaft (2-Stroke)		Crank Throw	MAN D&T WIN-GD Class Rule	· All Type of Engine
		Main Journal	Class Rule	
		Shaft Flange	Class Rule	
		Thrust Cam	Class Rule	
Crank Shaft (4-Stroke)	 Crankshaft		HHI MAN D&T	· All Type of Himsen Engine · L23/30, L27/38, L28/32 L32/40
Engine Parts		Piston Rod	MAN D&T Class Rule	· All Type of Engine
		Connecting Rod	Class Rule	
		Cylinder Cover	MAN D&T Class Rule	
		Piston Crown	MAN D&T Class Rule	
		Crosshead Pin	Class Rule	
Stern Parts		Shaft	Class Rule	· Carbon Steel : Max. 90Ton · Alloy Stee : Max. 80Ton

18. Forging 단조

3) Mold & Tool Steel 금형/공구강

○ Plastic Forming 플라스틱 성형용

Description	Materials
General Products	HS-PB, HS-PA, HS-PP
High Polishability	HS-PPH, HS-PPM, HS-PS, HS-PU


○ Hot Forging Die 열간 단조용

Description	Materials
General Products	STD61(HS-HF), SKT4
High Polishability	HS-HF(E)


○ Press 프레스 가공용

Description	Materials
Cold	STD11(HS-CF), HS-CF(E)
Hot	STD61(HS-HF), HS-DC, HS-HS


○ Die Casting 다이캐스팅

Description	Materials
General Products	STD61(HS-HF)
High Performance	HS-DC, HS-DC(E)


*회색 : 개발중
(E) : ESR

○ Mold Steel Rectangular Bar 금형강 단조 각재

Available Discussion Required 단위 : mm

	500<W ≤600	600<W ≤700	700<W ≤800	800<W ≤900	900<W ≤1000	1000<W ≤1100	1100<W ≤1200	1200<W ≤1300	1300<W ≤1400
200<T≤300									
300<T≤400									
400<T≤500									
500<T≤600									
600<T≤700									
700<T≤800									
800<T≤900									
900<T≤1000									
1000<T≤1100									

* ~ 900T : Length 2,000~4,000mm, 900T ~ : Length 2,000~3,500mm
* The Other Sizes Not Mentioned Here Is Needed to Discuss

○ Tool Steel Rectangular Bar 공구강 단조 각재

Available Discussion Required 단위 : mm

	200<W ≤250	250<W ≤300	300<W ≤350	350<W ≤400	400<W ≤450	450<W ≤500	500<W ≤600	600<W ≤700	700<W ≤800	800<W ≤900	900<W ≤1000
150<T≤200											
200<T≤250											
250<T≤300											
300<T≤350											
350<T≤400											
400<T≤450											
450<T≤500											
500<T≤550											
550<T≤600											

* Length : 2,000~4,000mm, 500T ~ : Length : ~ 3,500mm
* Round Size : Φ200 ~ Φ600
* The Other Sizes Not Mentioned Here Is Needed to Discuss

18. Forging 단조

4) Forged Rolls 단조롤

○ Plastic Forming 플라스틱 성형용

구분	강종	제품중량(TON)	경도(HS)
형강압연	1.5%C	3~35	40~45
	1.8%C	3~35	50~55
	2.1%C	3~35	60~65
냉연	3%Cr	3~35	70~75
	4%Cr	3~35	80~85
	5%Cr	3~35	90~95

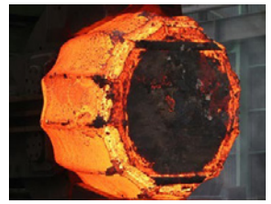
5) Forged Round Bars 라운드바

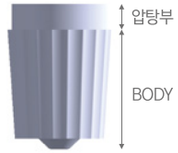
○ Available Size & Weight 공급 사양

Size			
	직경 Dia.	Φ 180 ~ Φ1,000	Forging Ratio : min 4S
	길이 Length	1,000 ~ 15,000mm	
	중량 Weight	0.5 ~ 70ton	

※ 기타 형상이나 사양은 당사 설비사양 범위 내에서 별도 협의 가능

6) Ingot 단강

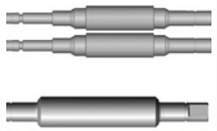
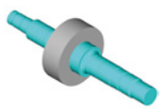
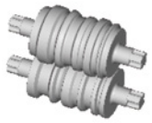




Weight Range	Ingot Weight	Body	Hot-Top	Ratio
6.9~9.4Ton	9.44Ton	7.88Ton	1.56Ton	16.5%
11.0~13.6Ton	13.56Ton	11.32Ton	2.24Ton	16.5%
14.6~17.2Ton	17.16Ton	14.33Ton	2.83Ton	16.5%
17.9~22.7Ton	22.69Ton	18.95Ton	3.74Ton	16.5%
23.6~30.6Ton	30.56Ton	25.52Ton	5.04Ton	16.5%
32.0~40.5Ton	40.52Ton	33.88Ton	6.69Ton	16.5%
41.5~48.5Ton	48.51Ton	40.51Ton	8.00Ton	16.5%
50.8~62.1Ton	62.05Ton	51.81Ton	10.24Ton	16.5%
64.1~75.0Ton	75.00Ton	61.50Ton	13.50Ton	18.0%
80.0~95.0Ton	95.00Ton	76.00Ton	19.00Ton	20.0%

19. Roll 롤

1) Production Range 생산 가능 범위

Item		Centrifugal Casting Roll (Vertical & Horizontal)		Static Casting Roll
Typical Shape			 ※ Sleeve Type	
Product		(~ 5M) Plate, Hot Strip Mill	Section Mill	Bar, Sections, etc.
Materials		· Indefinite Chilled Cast Iron · Ultra Wear Resistant Indefinite Chilled Cast Iron · High Chromium Steel · High Chromium Iron · High Speed Steel · Semi-High Speed Steel	· High Alloy Cast Steel · Graphitic Cast Steel	· Low Carbon Cast Steel · High Alloy Cast Steel · Graphitic Cast Steel · Ductile Cast Iron
Size ※ (Max. / mm)	Body Diameter	1,400	1,400	1,500
	Body Length	5,500	As Required	5,000
	Total Length	11,000	As Required	11,000
Weight (Max. kg)		70,000	20,000	70,000

※ 사전 협의 필요 ; Prior Discussion is Necessary

2) Chemical Compositions (wt%) 화학성분

Materials	Symbol	C	Si	Mn	Ni	Cr	Mo
Low Carbon Cast Steel	SP	0.30 / 1.00	0.30 / 1.00	0.60 / 1.10	RES.	0.80 / 1.20	0.20 / 0.50
	SQ	0.40 / 1.00	0.30 / 1.00	0.60 / 1.10	0.70 / 1.30	0.80 / 1.20	0.20 / 0.50
High Alloy Cast Steel (Adamite)	AG	1.50 / 2.50	1.00 / 2.00	0.50 / 1.50	1.00 / 2.50	0.50 / 1.50	0.50 / 2.00
	AS	1.50 / 2.50	0.50 / 1.50	0.50 / 1.50	1.00 / 2.00	1.00 / 2.50	0.40 / 1.00
	AP	1.10 / 2.40	0.30 / 1.00	0.60 / 1.20	RES.	0.80 / 1.20	0.20 / 0.50
	AQ	1.10 / 2.40	0.30 / 1.00	0.60 / 1.20	0.80 / 1.70	0.80 / 1.20	0.20 / 0.50
	GS	1.20 / 2.20	0.80 / 1.70	0.50 / 1.20	0.50 / 1.80	0.50 / 1.50	0.20 / 0.50
High Chromium Steel	HSVN	1.00 / 2.40	0.50 / 1.50	0.70 / 1.30	Max. 1.00	10.00 / 14.00	2.00 / 5.00
High Chromium Iron	HCV	2.00 / 3.20	0.50 / 1.50	0.70 / 1.30	Max. 2.00	14.00 / 20.00	1.00 / 4.00
	HCMV (Skin Pass)	2.00 / 3.20	0.50 / 1.50	0.70 / 1.30	Max. 2.00	14.00 / 20.00	1.00 / 4.00
High Speed Steel	TVN	0.60 / 3.00	V + Ti + Nb = Max. 15.00			4.00 / 8.00	2.50 / 6.00
Indefinite Chilled Cast Iron	ISH	2.90 / 3.40	0.70 / 1.00	0.40 / 1.10	4.00 / 5.30	1.30 / 2.00	0.10 / 0.60
Ultra Wear Resistant Indefinite Chilled Cast Iron	UWIC	2.90 / 3.40	1.00 / 2.00	0.40 / 1.10	4.00 / 5.30	Mo+Cr+V+Ti+Nb=Max. 5.00	
Ductile Cast Iron	DA	3.00 / 3.50	1.60 / 2.30	0.30 / 1.20	2.00 / 3.00	Max. 0.30	0.30 / 1.00
	DD, DE DF, DG	3.00 / 3.50	1.50 / 2.20	0.30 / 1.20	1.20 / 3.80	0.20 / 1.00	0.30 / 1.00
	DDH, DEH DFH, DGH	3.00 / 3.50	1.50 / 2.20	0.30 / 1.20	1.20 / 3.80	0.20 / 1.00	0.30 / 1.00
	*SHD	3.00 / 3.50	1.50 / 2.20	0.30 / 1.20	1.20 / 3.80	0.20 / 1.00	0.30 / 1.00

*SHD: Specially Heat treated high strength Ductile cast iron
※ 사전 협의 필요 ; Prior Discussion is Necessary

19. Roll 롤

3) Mechanical Properties 기계적 특성

Materials	Symbol	Tensile Strength (kgf/mm²)	Bending Strength (kgf/mm²)	Elongation (%)	Impact Value (kgm/cm²)	Compressive Strength (kgf/mm²)	Symbol
Low Carbon Cast Steel	SP	70 / 95	140 / 190	2.00 / 10.00	2.00 / 5.00	–	SP
	SQ	70 / 100	140 / 190	1.00 / 7.00	1.00 / 4.00	–	SQ
High Carbon Cast Steel (Adamite)	AG	50 / 70	70 / 120	0.10 / 1.00	0.10 / 1.00	–	AG
	AS	50 / 70	70 / 120	0.10 / 1.00	0.10 / 1.00	–	AS
	AP	40 / 65	60 / 160	0.10 / 3.00	0.10 / 1.50	–	AP
	AQ	40 / 65	60 / 180	0.10 / 2.00	1.10 / 1.50	–	AQ
	GS	50 / 75	100 / 160	0.30 / 1.50	0.30 / 1.50	–	GS
High Chromium Steel	HSVN	75 / 90	100 / 120	0.10 / 2.00	0.10 / 2.00	260 / 320	HSVN
High Chromium Iron	HCV	65 / 80	80 / 110	0.10 / 1.00	0.10 / 1.00	200 / 280	HCV
	HCMV (Skin Pass)	60 / 75	80 / 110	0.10 / 1.00	0.10 / 1.00	200 / 280	HCMV (Skin Pass)
High Speed Steel	TVN	70 / 90	100 / 130	0.10 / 2.00	0.10 / 2.00	300 / 320	TVN
Indefinite Chilled Cast Iron	ISH	35 / 55	60 / 80	0.10 / 1.00	0.10 / 1.00	230 / 250	ISH
Ultra Wear Resistant Indefinite Chilled Cast Iron	UWIC	35 / 55	60 / 80	0.10 / 1.00	0.10 / 1.00	230 / 250	UWIC
Ductile Cast Iron	DA	60 / 80	80 / 140	0.50 / 1.00	0.10 / 0.60	–	DA
	DD, DE DF, DG	40 / 55	60 / 80	0.10 / 1.00	0.10 / 0.30	–	DD, DE DF, DG
	DDH, DEH DFH, DGH	40 / 55	60 / 80	0.10 / 1.00	0.10 / 0.30	–	DDH, DEH DFH, DGH
	SHD	70 / 90	90 / 160	0.50 / 2.00	0.10 / 0.50	–	SHD

※ 사전 협의 필요 : Prior Discussion is Necessary

19. Roll 롤

4) Application 적용

Unit : Shore Hardness 경도 (Hs)

Product	Type of Stand		Type of Roll	Low Cabon Cast Steel	High Alloy Cast steel (Adamite)		
				SP SQ	AS AG	AP AQ	GAD GS
Slabs	2 Hi		–	35/45	–	–	35/45
Blooms	2 Hi		–	35/45	–	–	40/50
Plate 후판	4 Hi		Roughing Work Roll	–	–	–	–
			Finishing Work Roll	–	–	–	–
Plate (5M) 광폭후판	4 Hi		Roughing Work Roll	–	–	–	–
			Finishing Work Roll	–	–	–	–
Hot Strip Mill 열연	Continuous		Scale Breakers	–	–	40/50	40/50
			Roughing Work Roll	–	–	45/55	–
			Front Stands Finishing Work Roll	–	–	–	–
			Rear Stands Finishing Work Roll	–	–	–	–
			Edger	–	–	45/55	–
	Reversing	2 Hi	Roughing	–	–	45/55	–
		4 Hi	Roughing	–	–	–	–
Skin Pass & Temper	2 Hi, 4 Hi		Work Roll	–	–	–	–
	4 Hi		Back-Up Roll	–	–	–	–

※ 사전 협의 필요 ; Prior Discussion is Necessary

High Chromium		High Speed Steel	Indefinite Chilled Cast Iron	Ultra Wear Resistant Indefinite Chilled Cast Iron	Ductile		
HSVN	HCV HCMV	TVN	ISH	UWIC	DA	SHD	DD, DE DF, DG
–	–	–	–	–	–	40/55	–
–	–	–	–	–	–	40/55	–
70/80	–	–	65/80	70/80	–	–	–
–	70/80	–	65/80	75/85	–	–	–
–	–	–	70/80	70/80	–	–	–
–	–	–	70/80	75/85	–	–	–
–	–	–	–	–	–	–	–
70/80	–	75/85	–	–	–	–	–
	70/80	75/85	–	–	–	–	–
–	–	75/85	75/85	75/85	–	–	–
–	–	75/85	–	–	–	–	50/60
70/80	–	70/80	–	–	–	–	–
70/80	–	75/85	–	–	–	–	–
–	85/95	–	–	–	–	–	–
–	–	–	70/85	–	–	–	–

19. Roll 롤

4) Application 적용

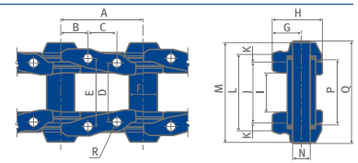
Unit : Shore Hardness 경도 (Hs)

Product	Type of Stand	Type of Roll	Low Cabon Cast Steel	High Alloy Cast steel (Adamite)			High Chromium		High Speed Steel	Indefinite Chilled Cast Iron	Ultra Wear Resistant Indefinite Chilled Cast Iron	Ductile		
			SP SQ	AS AG	AP AQ	GAD GS	HSVN	HCV HCMV	TVN	ISH	UWIC	DA	SHD	DD, DE DF, DG
Billets / Bar 평철	2Hi Continuous	Roughing	35/45	–	40/50	40/50	–	–	–	–	–	45/55	45/55	–
		Intermediate	–	–	–	–	–	–	–	–	–	–	–	50/70
		Finishing	–	–	–	–	–	–	75/85	75/85	–	–	–	65/75
Beams	Universal	Horizontal Roughing	–	50/75	–	–	–	–	–	–	–	–	–	–
		Horizontal Finishing	–	50/75	–	–	–	–	–	–	–	–	–	–
		Horizontal Edger	–	–	50/60	–	–	–	–	–	–	–	–	50/60
		Vertical	–	50/75	–	–	–	–	70/80	–	–	–	–	50/65
Heavy Sections 대형강	2 and 3 Hi (Tandem)	Roughing	35/45	–	45/55	–	–	–	–	–	–	–	45/55	–
		Intermediate	–	–	45/55	45/55	–	–	–	–	–	–	50/60	50/60
		Finishing	–	–	50/60	45/60	–	–	–	–	–	–	–	55/65
Medium Sections 중형강	2 and 3 Hi (Tandem)	Roughing	–	–	35/45	45/55	–	–	–	–	–	–	45/55	–
		Intermediate	–	–	45/55	45/55	–	–	–	–	–	–	50/60	50/60
		Finishing	–	–	45/55	45/60	–	–	–	–	–	–	–	55/65
Light Section 소형강	2 and 3 Hi	Roughing	–	–	45/55	45/55	–	–	–	–	–	45/55	50/55	50/55
		Intermediate	–	–	–	–	–	–	–	–	–	–	55/65	55/65
		Finishing	–	–	–	–	–	–	–	–	–	–	–	60/70
Rod 선재	2 and 3 Hi	Roughing	–	–	45/55	–	–	–	–	–	–	45/55	50/60	50/60
		Intermediate	–	–	–	–	–	–	–	–	–	–	55/65	55/65
		Finishing	–	–	–	–	–	–	75/85	70/80	75/85	–	–	60/70

※ 사전 협의 필요 ; Prior Discussion is Necessary

20. Heavy Machinery 중기

1) Track Link Assembly 링크조립품

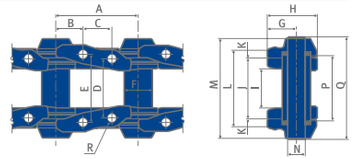


치수단위(Unit) : mm

홀간 거리 Pitch (A)	제품명 Model Name	표준단면치수 Dimensions												제품명 Model Name
		B	C	D	E	F(Ø)	G	H	I	K	L	M	N(Ø)	Q	R(Ø)	
90.0	KU90B	Welding Type	Welding Type	Welding Type	Welding Type	22.2	23.0	46.0	27.0	0.5	59.0	74.0	14.2	77.0	-	KU90B
101.6	KU102A	Welding Type	Welding Type	Welding Type	Welding Type	32.2	30.0	60.0	32.0	0.9	73.8	87.8	19.2	92.5	-	KU102A
135.0	KU135B	42.4	43.4	72.0	99.0	39.0	36.0	70.0	48.0	0.4	102.0	134.4	22.3	140.0	13.2	KU135B
	KU135C	40.0	46.0	80.0	104.0	35.0	36.0	67.0	53.6	1.0	104.0	136.0	22.3	140.0	13.5	KU135C
	KU135E	42.4	43.4	65.0	92.0	39.0	36.0	70.0	40.0	0.9	95.0	127.4	23.0	133.0	12.3	KU135E
	KU135F	41.0	46.0	64.0	94.0	35.1	35.5	65.0	40.0	0.6	85.0	120.2	22.1	123.0	13.5	KU135F
	KU135G	42.4	43.4	72.0	99.0	39.0	36.0	70.0	48.0	0.4	90.0	134.4	22.3	140.0	13.2	KU135G
	KU135H	42.4	43.4	72.0	99.0	41.2	45.2	82.0	44.3	0.8	-	137.9	24.0	143.0	12.3	KU135H
140.0	KU140A	44.0	52.0	86.0	86.0	37.0	38.0	70.0	57.8	0.6	109.9	133.0	25.2	137.0	12.3	KU140A
154.0	KU154B	44.0	57.0	73.0	89.0	41.3	40.5	74.0	45.0	1.2	101.1	125.0	24.1	131.0	14.2	KU154B
	KU154E	48.0	55.0	90.0	90.0	46.15	42.0	80.0	62.0	0.8	106.0	150.6	30.25	157.0	14.3	KU154E
160.0	KU160A	52.0	56.0	99.0	99.0	45.3	46.0	83.0	66.0	1.0	130.5	152.0	30.0	157.0	14.8	KU160A
171.45	KU171A	55.2	60.3	108.0	108.0	53.8	53.5	94.5	72.2	1.2	135.2	178.6	36.6	183.0	16.2	KU171A
	KU171B	56.4	58.7	125.4	144.5	54.0	58.8	101.6	90.5	0.6	168.0	203.3	36.7	206.4	16.1	KU171B
	KU171H	55.6	60.3	107.9	107.9	50.4	49.5	89.0	72.9	1.0	135.6	168.9	33.5	175.0	16.2	KU171H
	KU171J	53.7	60.3	108.0	108.0	53.5	53.5	94.5	71.2	1.2	137.2	178.6	36.6	186.0	16.3	KU171J
	KU171K	55.2	60.3	108.0	108.0	53.8	55.0	96.0	72.2	1.2	125.5	178.6	33.4	183.0	16.2	KU171K
	KU171L	55.57	60.32	108.0	108.0	53.8	53.0	96.0	74.6	1.1	125.5	178.6	33.4	184.0	16.2	KU171L
	KU171M	55.6	60.3	107.9	107.9	50.6	50.0	90.0	72.9	0.6	137.5	171.9	34.1	178.0	16.3	KU171M
	KU171N	55.6	60.3	107.9	107.9	50.7	49.5	89.0	72.9	1.0	139.2	168.9	33.6	175.0	16.2	KU171N
175.0	KU175E	54.0	57.0	86.4	102.4	46.0	47.0	86.0	52.4	1.2	117.8	162.0	30.0	173.0	16.3	KU175E
	KU175F	54.0	57.0	86.4	102.4	50.2	49.0	90.0	52.4	1.2	117.5	162.0	32.0	173.0	16.3	KU175F
175.41	KU175A	57.3	58.7	125.4	144.5	58.8	60.2	103.2	82.0	0.6	165.3	209.2	36.6	212.0	18.1	KU175A
190.0	KU190B	58.0	62.0	124.4	160.4	59.0	58.0	105.0	82.8	1.2	170.4	205.2	38.0	213.2	20.3	KU190B
	KU190C	58.0	69.0	119.6	155.6	58.7	60.0	106.0	82.6	1.5	167.7	201.6	36.6	207.0	20.8	KU190C
	KU190E	58.0	62.0	124.4	160.4	59.0	58.0	105.0	83.0	1.4	141.0	215.8	38.0	220.0	20.45	KU190E
	KU190L	58.0	62.0	124.4	160.4	59.0	57.0	104.0	82.8	0.6	163.6	207.0	38.0	212.0	20.2	KU190L
	KU190M	58.0	62.0	124.4	160.4	59.0	58.0	105.0	82.8	1.2	170.4	205.2	38.0	212.0	20.5	KU190M
	KU190N	58.0	62.0	124.4	160.4	59.0	58.0	105.0	84.8	1.2	169.8	207.0	38.0	212.0	20.2	KU190N
	KU190R	58.0	62.0	119.6	155.6	59.0	60.0	110.0	82.5	1.5	166.7	201.5	38.0	207.0	20.8	KU190R
	KU190S	58.0	62.0	124.4	160.4	59.0	57.0	104.0	82.8	0.6	163.6	207.0	38.0	212.0	20.8	KU190S
	KU190U	58.0	62.0	124.4	160.4	59.0	58.0	105.0	84.0	1.4	139.5	211.79	38.0	216.0	20.2	KU190U
202.8	KU203D	62.0	72.0	129.0	179.0	64.0	64.0	115.0	92.0	1.5	185.3	226.0	42.0	230.0	21.0	KU203D
203.2	KU203A	58.0	72.2	138.4	178.4	66.7	64.0	116.4	100.8	0.8	189.0	237.4	44.5	245.0	20.2	KU203A
	KU203C	58.0	72.2	138.4	178.4	66.7	64.0	116.4	100.8	0.8	193.8	237.4	44.5	245.0	20.2	KU203C
	KU203G	58.0	72.2	138.4	178.4	66.9	64.0	116.0	102.0	1.4	191.5	230.8	44.7	242.0	20.2	KU203G
	KU203H	58.0	72.2	138.4	178.4	66.9	64.0	116.0	101.0	1.4	194.2	235.6	44.6	244.0	20.2	KU203H
215.9	KU216B	64.3	76.2	146.0	184.0	71.0	70.0	129.0	108.5	1.5	201.1	245.1	47.0	252.0	22.3	KU216B
	KU216D	69.0	76.0	140.0	190.0	67.9	68.4	124.0	100.7	1.5	200.8	241.7	46.0	246.5	23.0	KU216D

20. Heavy Machinery 중기

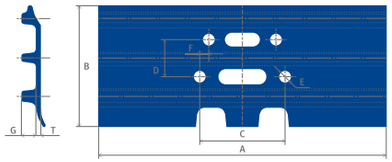
1) Track Link Assembly 링크조립품



치수단위(Unit) : mm

홀간 거리 Pitch (A)	제품명 Model Name	표준단면치수 Dimensions											제품명 Model Name
		B	C	D	E	F(Ø)	G	H	I	K	L	M	N(Ø)	Q	R(Ø)	
216.0	KU216E	63.0	76.2	140.4	178.4	66.5	64.0	116.0	102.0	1.4	191.6	233.6	44.6	242.0	22.3	KU216E
	KU216M	63.0	76.2	140.4	178.4	66.9	64.0	116.0	102.0	1.4	191.6	233.6	44.7	242.0	22.3	KU216M
	KU216N	64.3	76.2	146.0	184.0	71.4	70.0	129.0	103.1	1.2	203.2	246.3	47.0	252.0	24.3	KU216N
	KU216P	63.0	76.2	140.4	178.4	66.5	64.0	116.0	102.0	1.4	191.6	233.6	44.6	242.0	22.3	KU216P
	KU216Q	63.0	76.2	140.4	178.4	66.5	64.0	120.0	102.0	1.4	191.6	233.6	44.6	242.0	22.3	KU216Q
	KU216R	64.3	76.2	146.1	184.2	73.4	70.0	129.0	102.4	1.5	205.7	250.6	48.1	257.0	24.3	KU216R
	KU216S	64.3	76.2	146.1	184.2	71.0	70.0	125.0	105.1	1.5	204.2	245.9	46.4	253.0	22.9	KU216S
	KU216T	66.4	76.0	140.0	190.0	48.2	70.0	129.0	102.35	1.5	178.0	250.55	48.2	256.0	24.3	KU216T
228.6	KU228B	71.4	76.2	149.2	200.0	73.3	70.0	129.0	104.0	1.5	213.5	257.0	48.8	264.0	24.3	KU228B
	KU228C	71.4	76.2	144.0	184.0	71.0	70.0	129.0	106.0	1.4	202.2	248.2	47.0	252.0	24.3	KU228C
	KU228D	71.4	76.2	144.0	184.0	71.0	70.0	129.0	106.0	1.4	202.2	243.2	47.0	252.0	24.3	KU228D
260.35	KU260A	88.0	76.2	184.2	235.0	85.0	79.0	152.0	133.4	1.5	266.2	311.4	57.2	319.0	27.3	KU260A
	KU260B	88.0	76.2	184.2	235.0	85.0	86.0	159.0	133.4	1.5	266.2	311.4	57.2	319.0	30.3	KU260B

2) Track Shoe 트랙슈 (Triple Grouser)

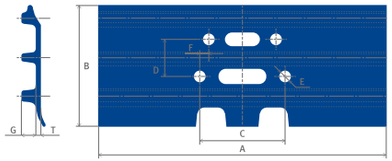


치수단위(Unit) : mm

두께 Thickness	폭 Width (A)	품목코드 Description Code	표준단면치수 Dimensions			표준단면치수 Dimensions		적용 링크 피치 Applied Link Pitch	단면적 Section Area (mm²)	품목코드 Description Code
			B	C	D	F	G			
6.0	350~500	13TA060	154.0	92.0	43.4	13.5	14.0	135.0	1,378.1	13TA060
			154.0	99.0	43.4	13.5	14.0	135.0	1,378.1	
	450~600	15TA060	165.0	89.0	57.0	8.0	20.0	154.0	1,792.9	15TA060
			165.0	90.0	55.0	0.0	20.0	154.0	1,792.9	
8.0	450~600	15TA080	165.0	89.0	57.0	8.0	20.0	154.0	2,121.4	15TA080
			165.0	90.0	55.0	0.0	20.0	154.0	2,121.4	
	500~900	17TA080	198.9	102.4	57.0	8.0	25.0	171.45	2,903.4	17TA080
	500~600	17TB080	190.0	107.9	60.3	0.0	20.0	171.45	2,353.8	17TB080

20. Heavy Machinery 중기

2) Track Shoe 트랙슈 (Triple Grouser)

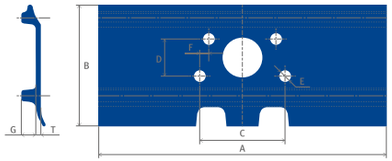


치수단위(Unit) : mm

두께 Thickness	폭 Width (A)	품목코드 Description Code	표준단면치수 Dimensions			표준단면치수 Dimensions		적용 링크 피치 Applied Link Pitch	단면적 Section Area (mm²)	품목코드 Description Code
			B	C	D	F	G			
8.5	500~700	19TB085	219.0	155.57	69.0	18.0	26.0	190.0	3,299.2	19TB085
			219.0	160.4	62.0	18.0	26.0	190.0	3,299.2	
	400~500	16TA085	185.0	99.0	56.0	0.0	22.0	160.0	2,687.6	16TA085
9.0	500~900	17TA090	198.9	108.0	60.3	0.0	25.0	171.45	3,094.2	17TA090
			198.9	125.41	58.7	9.6	25.0	171.45	3,094.2	
9.5	500~700	17TC095	190.0	102.4	57.0	8.0	20.0	175.0	2,676.8	17TC095
			190.0	108.0	60.3	0.0	20.0	171.45	2,676.8	
10.0	400~900	19TA100	217.5	160.4	62.0	18.0	26.0	190.0	3,679.7	19TA100
	500~900	19TB100	219.0	155.57	69.0	18.0	26.0	190.0	3,626.3	19TB100
			219.0	160.4	62.0	18.0	26.0	190.0	3,626.3	
10.5	500~600	17TA105	198.9	108.0	60.3	0.0	25.0	171.45	3,377.8	17TA105
			198.9	125.41	58.7	9.55	25.0	171.45	3,377.8	
11.0	500~950	20TA110	232.5	178.4	72.2	20.0	26.0	203.2	4,290.7	20TA110
	600~900	20TB110	232.5	178.4	72.2	20.0	31.0	203.2	4,699.0	20TB110
	600~900		247.0	178.4	76.2	19.0	36.0	216.0	5,133.7	
		21TB110	247.0	184.2	76.2	19.0	36.0	216.0	5,133.7	21TB110
	600~850	21TC110	250.0	178.4	76.2	19.0	30.0	216.0	4,542.8	21TC110
			250.0	190.0	76.0	19.0	30.0	216.0	4,542.8	
	600~850	21TC115	250.0	178.4	76.2	19.0	30.0	215.9	4,704.6	21TC115
12.5	500~900	19TA125	217.5	160.4	62.0	18.0	26.0	190.0	4,219.7	19TA125
13.0	600~900	21TA130	247.0	178.4	76.2	19.0	36.0	215.9	5,627.7	21TA130
			247.0	184.0	76.2	19.0	36.0	215.9	5,627.7	
16.0	600~900	21TD160	247.0	178.4	76.2	19.0	36.0	228.6	6,148.5	21TD160
			247.0	184.0	76.2	19.0	36.0	228.6	6,148.5	
			247.0	190.0	76.0	25.4	36.0	228.6	6,148.5	
			247.0	200.0	76.2	25.4	36.0	228.6	6,148.5	
18.0	600~900	21TD180	247.0	184.0	76.2	19.0	36.0	216.0	6,642.5	21TD180

20. Heavy Machinery 중기

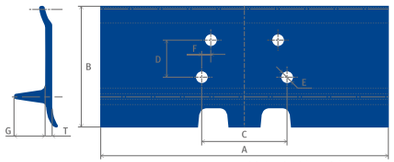
3) Track Shoe 트랙슈 (Double Grouser)



치수단위(Unit) : mm

두께 Thickness	폭 Width (A)	품목코드 Description Code	표준단면치수 Dimensions			표준단면치수 Dimensions		적용 링크 피치 Applied Link Pitch	단면적 Section Area (mm²)	품목코드 Description Code
			B	C	D	F	G			
5.5	230~250	09TA055	109.0	-	-	-	16.5	90.0	851.3	09TA055
6.0	250~300	10TA060	109.0	-	-	-	16.5	102.0	1,105.5	10TA060
13.0	600~900	P190DG	217.0	160.4	62.0	18.0	35.0	190.0	4,205.5	P190DG
15.0	600~900	P216DG	250.0	184.0	76.2	19.0	49.5	216.0	6,238.4	P216DG
			250.0	178.4	76.2	19.0	49.5	216.0	6,238.4	
17.0	600~900	P216DG-17t	250.0	184.0	76.2	19.0	49.5	216.0	6,738.4	P216DG-17t
18.5	650~900	P260DG-18.5t	302.0	235.0	76.2	25.4	50.0	260.4	8,583.0	P260DG-18.5t
21.0	650~900	P260DG	302.0	234.95	76.2	25.4	50.0	260.35	9,335.0	P260DG

4) Track Shoe 트랙슈 (Single Grouser)



치수단위(Unit) : mm

두께 Thickness	폭 Width (A)	품목코드 Description Code	표준단면치수 Dimensions			표준단면치수 Dimensions		적용 링크 피치 Applied Link Pitch	단면적 Section Area (mm²)	품목코드 Description Code
			B	C	D	F	G			
13.5	600~960	19SG135	222.0	155.6	69.0	18.0	57.5	190.0	3,866.9	19SG135
			222.0	160.4	62.0	18.0	57.5	190.0	3,866.9	
16.7	600~900	21SG167	247.7	184.2	76.2	19.1	71.4	216.0	6,106.2	21SG167

5) Chemical Composition (Ladle Analysis) 강재 성분표

명칭 Designation	종류의 기호 Symbol	화학성분 Chemical Composition (%)				
		C	Si	Mn	P. Max.	S. Max.
중기용 For Heavy Construction Equipment	S43BC	0.43~0.48	0.15~0.35	0.67~0.90	0.030	0.015
	15B23M	0.21~0.25	0.15~0.30	1.00~1.10	0.030	0.015
	15B37M	0.32~0.36	0.15~0.30	1.00~1.40	0.030	0.025
	10B35M	0.32~0.36	0.15~0.30	1.00~1.30	0.030	0.025
	30MNB4	0.32~0.36	0.15~0.30	1.20~1.50	0.030	0.025
	SCR440B	0.39~0.43	0.15~0.30	0.67~0.85	0.030	0.025

Quality Certification 품질인증 현황

Certificate Product of KS KS 표시 허가품목

KS 기호	허가번호 Certi. No.	허가일자 Approval Date	등급 및 품명 Grade & Name of Product	비고 Remarks
KS D 3504	43 871 95-06-001	1964. 12. 18 1973. 12. 24 1995. 08. 16	Steel Bar for Concrete Reinforcement 철근콘크리트용 봉강 Deformed Bar: SD300, SD400, SD500, SD400W, SD500W, SD600, SD700*, SD400S*, SD500S*, SD600S*	Incheon 인천공장 Pohang 포항공장 Dangjin 당진제철소
KS D 3503	42 1459 05-0388	1964. 12. 08 1977. 05.16 2005. 08. 17	Rolled Steel for General Structure 일반구조용 압연강재 Equal Angle & Unequal Angle: SS275, SS315, SS410 등변 ㄱ형강, 부등변 ㄱ형강 Inverted Angle: SS235, SS275 부등변 부등후 ㄱ형강 Channels, I-Beams: SS275 ㄷ형강, I형강 H-Beams: SS275, SS315, SS410 H형강 Steel Strip: (구)SS400 / (신)SS275 강대 Steel Plate: (구)SS400, SS490, SS540 / (신)SS275, SS315, SS410 강판	Incheon 인천공장 Pohang 포항공장 Dangjin 당진제철소
KS E 4002	2451	1981. 09. 16	I Section Steel for Mine Support: Type 1:100, Type 1:130 광산지보용 I형강: 1종:100, 1종: 130	Incheon 인천공장
KS D 3515	5321 10987 06-0372	1987. 06. 11 1994. 05. 11 2006. 09. 27	Rolled Steel for Welded Structure 용접구조용 압연강재 H-Beams, Channel, Equal Angle: SM275A, SM275B, SM355A, SM355B H형강, ㄷ형강, 등변 ㄱ형강 : SM420B Steel Strip: (구)SM400B, SM490A, SM490B, SM490YB, SM520B, SM520C / (신)SM275B, SM275C, SM355A, SM355B, SM420B, SM420C 강대 Steel Plate: (구)SM400A, SM400B, SM400C, SM490A, SM490B, SM490C, SM490YA, SM490YB, SM520B, SM520C, SM570 / (신)SM275A, SM275B, SM275C, SM355A, SM355B, SM355C, SM420B, SM420C, SM460B 강판	Incheon 인천공장 Pohang 포항공장 Dangjin 당진제철소
KS D 3698	7920	1999. 07. 22	Cold Rolled Stainless Steel Sheet & Coil: STS 304, 304L, 316, 316L, 430, 430L, 436L 냉간 압연 스테인리스 강판 및 강대	Incheon 인천공장
KS D 3868	10-0605	2010. 10. 27	Rolled Steel for Bridge Structure 교량구조용압연강재 Steel Plate: (구)HSB500, HSB500L, HSB500W, HSB600 / (신)HSB380, HSB380L, HSB380W, HSB460 강판	Dangjin 당진제철소
KS D 3866	09-0237 09-0330	2010. 03. 10 2009. 08. 26	Hot Rolled Steel Sections for Building Structure 건축구조용 열간압연 형강	Incheon 인천공장 Pohang 포항공장

KS 기호	허가번호 Certi. No.	허가일자 Approval Date	등급 및 품명 Grade & Name of Product	비고 Remarks
KS F 4604	05-0420 3318	2005. 09. 14 1983. 12. 17	Hot Rolled Steel Sheet Pile: SY300, SY400 열간압연 강널말뚝	Incheon 인천공장 Pohang 포항공장
KS R 9106	97-09-067	1997. 12. 18	Rail 보통 레일	Pohang 포항공장
KS R 9110	10-0106	2010. 02. 24	Head Hardened Rail 열처리 레일	Pohang 포항공장
KS F 4603	00-1257	2000. 03. 23	Steel H Pile H형강 말뚝	Incheon 인천공장
KS D 3501	05-0387	2005. 08. 17	Hot Rolled Mild Steel Sheet, Coil: SPHC 열간 압연 연강판 및 강대	Dangjin 당진제철소
KS D 3555	05-0389	2005. 08. 17	Hot Rolled Carbon Steel Strip for Pipe & Tube: HRS1, HRS2 강관용 열간 압연 탄소강대	Dangjin 당진제철소
KS D 5994	13-5215	2013. 10. 16	High performance Rolled Steel for Building structure: (구)HSA800 / (신)HSA650 건축구조용 고성능 압연강재	Dangjin 당진제철소
KS D 3512	07-0409 13-5149 99-0535	2007. 10. 31 2013. 08. 21 1999. 04. 03	Cold-reduced carbon steel sheets and strip : SPCC, SPCD, SPCE 냉간 압연 강판 및 강대	Dangjin #1 & #2 CR 당진제철소 1 & 2 냉연 Suncheon 순천공장
KS D 3506	07-0408 13-5148 99-0536	2007. 10. 31 2013. 08. 21 1999. 04. 03	Hot-dip zinc-coated steel sheets and coils : #1CR : (구)SGCC, SGCD1, SGCD2, SGCD3, SGC340, SGC400, SGC440, SGC570, SGHC, SGH400,SGH440,SGH490 / (신)SGCC, SGCD1, SGCD2, SGCD3, SGC245Y, SGC295Y, SGC335Y, SGC560Y, SGHC, SGH295Y, SGH355Y, SGH365Y #2CR : (구)SGCC, SGCD1, SGCD2, SGCD3, SGC340, SGC400, SGC440, SGC490 / (신) SGCC, SGCD1, SGCD2, SGCD3, SGC245Y, SGC295Y, SGC335Y, SGC365Y Suncheon : SGCD1, SGCD2, SGCD3, SGCC, SGC340, SGC400 용융 아연 도금 강판 및 강대	Dangjin #1 CR 당진제철소 1냉연 Dangjin #2 CR 당진제철소 2냉연 Suncheon 순천공장
KS D 3528	99-0537	1999. 04. 03	Electrolytic zinc-coated steel sheet and strip : SECC, SECD, SECE, EB, E8, E16, E24, E32, E40 전기 아연 도금 강판 및 강대	Suncheon 순천공장
KS D 3520	99-0584	1999. 04. 03	Prepainted hot-dip zinc-coated steel sheet and strip : 1, 2류 도장 용융 아연 도금 강판 및 강대	Suncheon 순천공장
KS D 3752	16-0265	2016. 03. 30	Carbon steels for machine structural use : SM20C, SM45C, 원형강 기계 구조용 탄소 강재	Dangjin 당진제철소
KS D 3867	16-0266	2016. 03. 30	Low-alloyed steels for machine structural use : SCM415, SCM420, SCM440, 원형강 기계구조용 합금강 강재	Dangjin 당진제철소

* 당진제철소는 SD700, SD400S, SD500S, SD600S 인증에서 제외

Quality Certification 품질인증 현황

ISO Certification ISO 인증

구분 Section	허가번호 Certi. No.	허가일자 Approval Date
품질경영시스템 Quality Management System ISO 9001:2015 KS Q ISO 9001:2015	QMS-1261 (KSA) FM548055 (BSI)	2017. 11. 08 (최초인증 1994. 04. 29) 2017. 11. 06 (최초인증 2009. 03. 11)
품질경영시스템 Quality Management System ISO 9001:2008 KS Q ISO 9001:2009	SEO 1955816/C (LRQA)	2015. 10. 20 (최초인증 2005. 11. 02)
품질경영시스템 Quality Management System ISO 9001:2008 KS Q ISO 9001:2009	SEO 1955816/B (LRQA)	2015. 10. 20 (최초인증1999. 02. 12)
환경경영시스템 Environmental Management System ISO 14001:2004 KS I ISO 14001:2009	EMS-0163 (KSA) EMS548050 (BSI)	2014. 11. 20 (최초인증 2003. 10. 29) 2014. 10. 28 (최초인증 2009. 03. 11)

품명 Product	비고 Remarks	구분 Section
형강 Steel Shape 철근 Steel Bar 열연강판, 강대 Hot Rolled Plate & Coil 스테인리스 Stainless Steel Plate & Coil 원형강 Round Bar 레일 및 경레일 Rail & Light Rail 빌렛, 부룸, 빔블랑크 Steel Billets, Blooms & Beam-Blanks 선철 Pig Iron 단강/단조 Production of Ingot and Forging Products for Ships and Industrial Machinery 주조롤 Cast Rolls 중기 및 기계 Heavy Machinery & Machinery 슬라브 SLAB	Incheon 인천공장 Pohang 포항공장 Dangjin 당진제철소 Suncheon Forging Factory 순천단조공장	품질경영시스템 Quality Management System ISO 9001:2008 KS Q ISO 9001:2009
냉간압연 강판 및 강대 Cold-rolled steel sheet and coil 용융 아연 도금 강판 및 강대 Hot-dip zinc-coated steel sheet and coil 산세 도유 강판 및 강대 Pickled and oiled steel sheet and coil 용융 아연 합금 도금 강판 및 강대 Hot-dip zinc alloy-coated steel sheet and coil	Dangjin CR 당진제철소 냉연사업부	품질경영시스템 Quality Management System ISO 9001:2008 KS Q ISO 9001:2009
냉간압연 강판 및 강대 Cold-rolled steel sheet and coil 용융 아연 도금 강판 및 강대 Hot-dip galvanized steel sheet and coil 전기 아연 도금 강판 및 강대 Electrolytic galvanized steel sheet and coil 산세 도유 강판 및 강대 Pickled and oiled steel sheet and coil 전기 아연 니켈 도금 강판 및 강대 Electrolytic zinc-nickel coated steel sheet and coil	Suncheon 순천공장	품질경영시스템 Quality Management System ISO 9001:2008 KS Q ISO 9001:2009
형강 Steel Shape 철근 Steel Bar 열연강판, 강대 Hot Rolled Plate & Coil 스테인리스 Stainless Steel Plate & Coil 원형강 Round Bar 레일 및 경레일 Rail & Light rail 빌렛, 부룸, 빔블랑크 Steel Billets, Blooms & Beam-Blanks 선철 Pig Iron 단강/단조 Production of Ingot and Forging Products for Ships and Industrial Machinery 주조롤 Cast Roll 중기 및 기계 Heavy Machinery & Machinery	Incheon 인천공장 Pohang 포항공장 Dangjin 당진제철소 Suncheon Forging Factory 순천단조공장	환경경영시스템 Environmental Management System ISO 14001:2004 KS I ISO 14001:2009

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ISO Certification ISO 인증

구분 Section	허가번호 Certi. No.	허가일자 Approval Date
안전보건경영시스템 Health & Safety Management System OHSAS 18001:2007 K-OHSMS 18001:2007	HSS-0020 (KSA) OHS 548051 (BSI)	2017. 11. 08 (최초인증 2005. 12. 21) 2017. 11. 06 (최초인증 2009. 03. 11)
안전보건경영시스템 Safety & Health Management System KOSHA 18001	EMS-0163(KSA) OHS 548051(BSI) 제681호 제837호 제106호	2017. 11. 08 2017. 11. 06 2016. 11. 01 2014. 06. 22 (최초인증 2011. 06. 27) 2011. 01. 27
품질경영시스템 Quality Management System ISO/TS 16949:2009	IATF No.0112984 TSS-0105 (KSA)	2013. 11. 16 (최초인증 2007. 12. 20)
품질경영시스템 Quality Management System ISO/TS 16949:2009	SEO 2981055/A (LRQA)	2015. 10. 20 (최초인증 2005. 11. 02)
품질경영시스템 Quality Management System ISO/TS 16949:2009	SEO 0955816/B (LRQA)	2015. 10. 20 (최초인증 2003. 11. 10)

품명 Product	비고 Remarks	구분 Section
형강 Steel Shape 철근 Steel Bar 열연강판, 강대 Hot Rolled Plate & Coil 스테인리스 Stainless Steel Plate & Coil 원형강 Round Bar 레일 및 경레일 rail & Light rail 빌렛, 부룸, 빔블랑크 Steel Billets, Blooms & Beam-Blanks 선철 Pig Iron 단강/단조 Production of Ingot and Forging Products for Ships and Industrial Machinery 주조롤 Cast Roll 중기 및 기계 Heavy Machinery & Machinery	Incheon 인천공장 Pohang 포항공장 Dangjin 당진제철소 Suncheon Forging Factory 순천단조공장	안전보건경영시스템 Health & Safety Management System OHSAS 18001:2007 K-OHSMS 18001:2007
K-OHSMS 18001:2007/OHSAS 18001:2007 OHSAS 18001:2007 KOSHA 18001 KOSHA 18001 KOSHA 18001	Incheon 인천공장 Pohang 포항공장 Dangjin 당진제철소	안전보건경영시스템 Safety & Health Management System KOSHA 18001
강재, 강판 및 강대의 제조 Manufacture of Steel Products, Plate Sheet and Strip Coil	Dangjin 당진제철소	품질경영시스템 Quality Management System ISO/TS 16949:2009
냉간압연 강판 및 강대 Cold-rolled steel sheet and coil 용융 아연 도금 강판 및 강대 Hot-dip zinc-coated steel sheet and coil 산세 도유 강판 및 강대 Pickled and oiled steel sheet and coil 용융 아연 합금 도금 강판 및 강대 Hot-dip zinc alloy-coated steel sheet and coil	Dangjin CR 당진제철소 냉연사업부	품질경영시스템 Quality Management System ISO/TS 16949:2009
냉간압연 강판 및 강대 Cold-rolled steel sheet and coil 용융 아연 도금 강판 및 강대 Hot-dip galvanized steel sheet and coil 전기 아연 도금 강판 및 강대 Electrolytic galvanized steel sheet and coil 산세 도유 강판 및 강대 Pickled and oiled steel sheet and coil 전기 아연 니켈 도금 강판 및 강대 Electrolytic zinc-nickel coated steel sheet and coil	Suncheon 순천공장	품질경영시스템 Quality Management System ISO/TS 16949:2009

Quality Certification 품질인증 현황

Certificate Product of JIS JIS 표시 허가품목

구분 Section	허가번호 Certi. No.	허가일자 Approval Date	품명 Product	비고 Remarks	구분 Section
JIS G 3112	KSKR07022(KSA) KR8746(日경제산업성) KSKR07033 KR8749 KSKR07018	2011. 01. 06 (최초인증 1987. 08. 07) 2014. 02. 13 (최초인증 2008. 02. 13) 1987. 12. 03 2013. 12. 12 (최초인증 2007. 12. 12)	Steel Bar for Concrete Reinforcement 철근콘크리트용 봉강 Plain Bar : SR235, SR295 원형철근 Deformed Bar : SD295A, SD295B, SD345, SD390, SD490 이형철근	Pohang 포항공장 Dangjin 당진제철소	JIS G 3112
JIS G 3101	KSKR07020(KSA) KR8745(日경제산업성) KSKR07031 KR8969 KSKR07006	2016. 12. 26 (최초인증 2007. 12. 26) 2014.02.13 (최초인증 2008. 02. 13) 1989. 06. 13 2013. 05. 30 (최초인증 2007. 05. 30)	Rolled Steel for General Structure : Shape, Hot Rolled Steel 일반구조용 압연강재 : 형강, 열연강판, 열연강대	Incheon 인천공장 Pohang 포항공장 Dangjin 당진제철소	JIS G 3101
JIS G 3106	KSKR07021(KSA) KR8745(日경제산업성) KSKR07032 KSKR07017	2016. 12. 26 (최초인증 1987. 08. 07) 2014. 02. 13 (최초인증 2008. 02. 13) 2013. 12. 12 (최초인증 2007. 12. 12)	Rolled Steel for Welded Structure : Shape, Hot Rolled Steel 용접구조용 압연강재 : 형강, 열연강판, 열연강대	Incheon 인천공장 Pohang 포항공장 Dangjin 당진제철소	JIS G 3106
JIS A 5528	KSKR08041(KSA) KR8977(日경제산업성) KSKR08042 KR9995	2017. 08. 04 (최초인증 1989. 10. 23) 2014. 07. 16 (최초인증 2008. 07. 16) 1999. 06. 02	Hot Rolled Steel Sheet Pile 열간압연. 강널말뚝	Incheon 인천공장 Pohang 포항공장	JIS A 5528
JIS A 5523	KSKR10008 KSKR10001	2016. 06. 17 2013. 04. 22 (최초인증 2010. 04. 22)	Weldable Hot Rolled Steel Sheet Pile 용접용 열간압연. 강널말뚝	Incheon 인천공장 Pohang 포항공장	JIS A 5523
JIS G 4051	KSKR07034 KSKR12019	2014. 02. 13 (최초인증 2008. 02. 13) 2015. 07. 30 (최초인증 2012. 08. 02)	Carbon Steel for Machine Structural Use 원형강(기계구조용 탄소강) 열간압연 강판 및 강대	Pohang 포항공장 Dangjin 당진제철소	JIS G 4051
JIS G 3136	KSKR07023 KSKR11009 KSKR11023	2016. 12. 26 2014. 06. 30 (최초인증 2011. 06. 30) 2014. 10. 27 (최초인증 2011. 10. 27)	Rolled Steel for Building Structure 건축구조용 압연강재	Incheon 인천공장 Pohang 포항공장 Dangjin 당진제철소	JIS G 3136
JIS G 3131	KSKR07007	2013. 05. 30 (최초인증 2007. 05. 30)	Hot Rolled Mild Steel Plate, Sheet & Strip : Hot Rolled Steel 열간압연연강판 및 강대:열연강판, 열연강대	Dangjin 당진제철소	JIS G 3131

Quality Certification 품질인증 현황

Certificate Product of JIS JIS 표시 허가품목

구분 Section	허가번호 Certi. No.	허가일자 Approval Date	품명 Product	비고 Remarks	구분 Section
JIS G 3114	KSKR10027	2014. 01. 06 (최초인증 2011. 01. 06)	Hot Rolled atmospheric corrosion resisting Steel for welded structure 용접구조용 내후성 열간압연강재	Dangjin 당진제철소	JIS G 3114
JIS G 3113	KSKR12017	2015. 07. 30 (최초인증 2012. 08. 02)	Hot Rolled Steel Plate, Sheet and Strip for Automobile Structural Uses 자동차 구조용 열간압연 강판 및 강대 SAPH310, SAPH370, SAPH400, SAPH440	Dangjin 당진제철소	JIS G 3113
JIS G 3132	KSKR12018	2015. 07. 30 (최초인증 2012. 08. 02)	Hot Rolled Carbon Steel Strip for Pipes and Tubes 강관용 열간압연 탄소강 강대	Dangjin 당진제철소	JIS G 3132
JIS G 3302	KSKR07013 KSKR13015 KSKR08104	2013. 11. 28 (최초인증 2007. 11. 28) 2013. 12. 05 2014. 04. 10 (최초인증 2008. 10. 01)	Hot-dip zinc-coated steel sheet and strip 용융 아연 도금 강판 및 강대	Dangjin #1 CR 당진제철소 1냉연 Dangjin #2 CR 당진제철소 1냉연 Suncheon 순천공장	JIS G 3302
JIS G 3141	KSKR07012 KSKR13014 KSKR08103	2013. 11. 28 (최초인증 2007. 11. 28) 2013. 12. 05 2014. 04. 10 (최초인증 2008. 10. 01)	Cold-reduced carbon steel sheet and strip 냉간 압연 강판 및 강대	Dangjin #1 CR 당진제철소 1냉연 Dangjin #2 CR 당진제철소 1냉연 Suncheon 순천공장	JIS G 3141
JIS G 3312	KSKR08105	2014. 04. 10 (최초인증 2008. 10. 01)	Prepainted hot-dip zinc-coated steel sheet and strip 도장 용융 아연 도금 강판 및 강대	Suncheon 순천공장	JIS G 3312
JIS G 3313	KSKR11001	2014. 04. 10 (최초인증 2012. 02. 29)	Electrolytic zinc-coated steel sheet and strip 전기 아연 도금 강판 및 강대	Suncheon 순천공장	JIS G 3313
JIS G 4305	KSKR09009	2017. 08. 04	Cold Rolled Stainless Steel Plate, Sheet & Strip 냉간 압연 스테인리스 강판 및 강대	Incheon 인천공장	JIS G 4305
JIS E 1101	KSKR10038	2014. 03. 30 (최초인증 2011. 03. 30)	Flat Bottom Railway Rails and Special Rails for Switches and Crossings of Non-Treated Steel 보통 레일 및 분기기류용 특수 레일	Pohang 포항공장	JIS E 1101
JIS E 1120	KSKR10039	2014. 03. 30 (최초인증 2011. 03. 30)	Head Hardened Rails 열처리 레일	Pohang 포항공장	JIS E 1120
JIS G 4052	KSKR14020	2014. 11. 14	Structural Steel with Hardenability (H-Beam) 소입성을 보증한 구조용강 강재(H강) Chrome Steel, Chrome-Molybdan Steel 크롬강, 크롬몰리브덴강	Pohang 포항공장	JIS G 4052
JIS G 4053	KSKR14015	2014. 11. 06	Alloy Steel for Machine Structural Use 기계구조용 합금강 강재 Hot Rolled Steel Bar and Wire Rod 열간압연봉강 및 선재	Pohang 포항공장	JIS G 4053

Quality Certification 품질인증 현황

The Others 기타 인증

구분 Section	허가번호 Certi. No.	허가일자 Approval Date
유럽연합(EU) CPR (CE-Mark)	0035-CPR-060001 0035-CPR-060001-2	2018. 01. 29 (최초인증 2006. 01. 19) 2014. 02. 07 (최초인증 2011. 03. 09)
유럽연합(EU) CPR (CE-Mark)	0038/CPD/MUM/0710056/1	2007. 07. 19
유럽연합(EU) U-Sign	696 06587-01	2009. 01. 20
유럽연합(EU) PED	01 202ROK/Q 02 0014	2017. 09. 29
유럽연합(EU) PED	0038/PED/MUM/1210002/1	2012. 01. 19
홍콩정부승인 Hong Kong Government	(74) in BD GR/I-80/44	2011. 11. 23
KEPIC (원자력분야)	DN-594 DN-217 DN-675	2019. 03. 19 2012. 06. 30(최초인증 2003. 06. 30) 2016. 05. 03
철도용품 품질인증	KRC-12호	2013. 11. 19
유자격공급자	201400269	2012. 06. 30
	0038/CPD/MUM/0710056/1	2012. 06. 30
	926/021091	2014. 09. 03
SIRIM (MALAYSIA)	PH040401	2018. 08. 28
	PH040402	2018. 07. 04
SIRIM (MALAYSIA)	PC000738	2013. 08. 23
	PC000711	2013. 08. 02
SIRIM (MALAYSIA)	PC000865 PC000866 PC000867 PC000900 PC000901 PC000902 PC001112 PC001608 PC001786	2013. 11. 15 2013. 11. 15 2013. 11. 15 2013. 11. 29 2013. 11. 29 2013. 11. 29 2014. 04. 04 2015. 03. 04 2015. 06. 17

품명 Product	인증기관 Accredited Unit	비고 Remarks	구분 Section
Hot Rolled Products of Structural Steels for metal structures or in composite metal and concrete structures	TÜV Rheinland	Incheon 인천공장 Pohang 포항공장	유럽연합(EU) CPR (CE-Mark)
Hot Rolled Plate & Coil 열연강판 및 코일	Lloyd's Register Verification	Dangjin 당진제철소	유럽연합(EU) CPR (CE-Mark)
Hot Rolled Steel Sheet Pile	TÜV Rheinland	Pohang 포항공장	유럽연합(EU) U-Sign
Stainless Steel 스테인리스	TÜV Rheinland	Incheon 인천공장	유럽연합(EU) PED
Hot Rolled Plate 열연강판	Lloyd's Register Verification	Dangjin 당진제철소	유럽연합(EU) PED
Steel Shape (H-Beam) 305X305X223kg, 180kg EN10025-2:2004 S450J0+AR	Buildings Department	Incheon 인천공장	홍콩정부승인 Hong Kong Government
Manufacturer and supplier of steel board and reinforcing steel 재료업체로서 판재 및 철근의 제조 및 공급	Korea Electric Association 대한전기협회	Incheon 인천공장 Pohang 포항공장 Dangjin 당진제철소	KEPIC (원자력분야)
Rail (60Kg K Ordinary Rail, 60kg UIC Rail) 레일 (60Kg K 보통 레일, 60kg UIC 레일)	Korean Railroad Corporation 한국철도공사	Pohang 포항공장	철도용품 품질인증
C205B, Reinforcing Steel Bar, #11, #14 and #18 Bar sizes	Korea Hydro & Nuclear Power 한국수력원자력(주)	Pohang 포항공장	유자격공급자
C205A, Reinforcing Steel Bar, Up to #10 Bar sizes	Korea Hydro & Nuclear Power 한국수력원자력(주)	Pohang 포항공장	
C205C, Reinforcing Steel Bar, KS Bars	Korea Hydro & Nuclear Power 한국수력원자력(주)	Pohang 포항공장	
Hot Rolled Products of Non Alloy Structural Steel	SIRIM QAS	Incheon 인천공장	SIRIM (MALAYSIA)
Hot Rolled Steel Sections for General Structure	SIRIM QAS	Incheon 인천공장	
Hot Rolled Stell Sheet Pile	SIRIM QAS	Pohang 포항공장	SIRIM (MALAYSIA)
Hot Rolled Sections of Non-alloy Structual Steel	SIRIM QAS	Pohang 포항공장	
Hot Rolled Steel Strip and Plates Strip: SPHC, SPHT1, SPHT2, SAE1006, SAE1008, SAE1012, SAE1016, S235JR, S275JR, S355JR, S355J0, SG255, SG295 Plate : S275JR, S275J0, S275J2, S355JR, S355J0, S355J2, S355K2, S355N, S355NL, S355M, S355ML, API-2H50, API 2W-50, API 2W-60	SIRIM QAS	Dangjin 당진제철소	SIRIM (MALAYSIA)

Quality Certification 품질인증 현황

The Others 기타 인증

구분 Section	허가번호 Certi. No.	허가일자 Approval Date
BC 1 (싱가포르)	0035-CPR-060001 0035-CPR-060001-2	 2012. 03. 26
BC 1 (싱가포르)	MUM/BC1/0710056/2	2009. 08. 03
SNI (인도네시아)	07-0601-2006 07-3567-2006 07-2053-2006	2009. 06. 02 2014. 01. 17 2014. 08. 21
BIS IS 2062 (인도)	CM/L - 4050439	2017. 05. 01
BIS IS 2062 (인도)	CM/L - 4036748	2013. 06. 10
BIS IS 2041 (인도)	CM/L - 4055449	2014. 11. 12
BIS IS 10748 (인도)	CM/L-4100010143	2016. 02. 29
BIS 1079 (인도)	CM/L-4100014656	2016. 06. 03
BIS 11513 (인도)	CM/L-4100014555	2016. 06. 03
BIS 513 (인도)	CM/L-4100014252	2016. 05. 31
BIS 513 (인도)	CM/L-4100014353	2016. 05. 25

품명 Product	인증기관 Accredited Unit	비고 Remarks	구분 Section
Hot Rolled H Beams, Angle and Channels of Structural Steel Hot Rolled Beams of Structural Steel	TÜV Rheinland	Incheon 인천공장 Pohang 포항공장	BC 1 (싱가포르)
Hot Rolled Plate & Coil 열연강판 및 코일	Lloyd's Register Verification	Dangjin 당진제철소	BC 1 (싱가포르)
Hot Rolled Steel Sheets, Plates and Coils 열연 강판 Cold Rolled Steel Sheet and Coil 냉연 강판 Zinc coated Steel Sheet and Coil 아연도금 강판	BSI(BALAI RISET DAN STANDARDISASI INDUSTRI) PUSTAN BSI(BALAI RISET DAN STANDARDISASI INDUSTRI) SURABAYA	Dangjin 당진제철소 Dangjin #1CR 당진제철소 1냉연 Suncheon 순천공장	SNI (인도네시아)
Hot Rolled, Medium and High Tensile Structural Steel	Bureau of Indian Standards	Incheon 인천공장	BIS IS 2062 (인도)
Hot Rolled Medium and High Tensile Structural Steel	Bureau of Indian Standards	Dangjin 당진제철소	BIS (인도)
Steel Plates for Pressure Vessels used at Moderate and low temperature	Bureau of Indian Standards	Dangjin 당진제철소	BIS IS 2041 (인도)
Hot Rolled Steel Strips for Welded Tubes and Pipes	Bureau of Indian Standards	Dangjin 당진제철소	BIS IS 10748 (인도)
Hot Rolled Carbon Steel Sheets and Strips	Bureau of Indian Standards	Dangjin 당진제철소	BIS 1079 (인도)
Hot-rolled carbon steel strip for cold rolling purpose	Bureau of Indian Standards	Dangjin 당진제철소	BIS 11513 (인도)
Cold Reduced Low Carbon Steel Sheet and Strip	Bureau of Indian Standards	Dangjin 당진제철소	BIS 513 (인도)
Cold Reduced Low Carbon Steel Sheet and Strip	Bureau of Indian Standards	Suncheon 순천공장	BIS 513 (인도)

Quality Certification 품질인증 현황

The Others 기타 인증

구분 Section	허가번호 Certi. No.	허가일자 Approval Date
AD 2000 W0 (독일)	50238/1	2014. 08. 28
UK CARERS (영국)	70704	2007. 07. 31
국제공인시험기관인정 KOLAS	KT505	2018. 01. 17
국제공인시험기관인정 KOLAS	KT508	2011. 12. 05
국제공인시험기관인정 KOLAS	No.483 No.533	2011. 06. 29 2012. 11. 06
국제공인교정기관인정 KOLAS	KC09-233호	2009. 06. 18
국제공인교정기관인정 KOLAS	KI127	2017. 01. 04
주물용 선철	2016-0040호	2016. 03. 17
UL (미국)	20160701-HM61349	2016. 07. 01
ACRS (호주)	161103	2016. 11. 30

품명 Product	인증기관 Accredited Unit	비고 Remarks	구분 Section
Manufacture of hot rolled steel plate	Lloyd's Register Quality Assurance GmbH	Dangjin 당진제철소	AD 2000 W0 (독일)
Reingorcing Bar 철근	UKAS	Pohang 포항공장	UK CARERS (영국)
KS Q ISO/IEC 17025:2006 역학시험 Mechanical Test 화학시험 Chemical Test	한국인정기구 Korea Laboratory Accreditation Scheme	Incheon 인천공장	국제공인시험기관인정 KOLAS
KS Q ISO/IEC 17025:2006 역학시험 Mechanical Test 화학시험 Chemical Test	한국인정기구 Korea Laboratory Accreditation Scheme	Pohang 포항공장	국제공인시험기관인정 KOLAS
KS Q ISO/IEC 17025:2006 역학시험 Mechanical Test 화학시험 Chemical Test	한국인정기구 Korea Laboratory Accreditation Scheme	Dangjin 당진제철소	국제공인시험기관인정 KOLAS
KS Q ISO/IEC 17025:2006 선형치수/형상/기타관련량/질량/압력/ 직류/인피던스/교류 및 교류전력/ 기타 직류 및 저주파 측정/온도	한국인정기구 Korea Laboratory Accreditation Scheme	Dangjin 당진제철소	국제공인교정기관인정 KOLAS
KS Q ISO/IEC 17020:2014 금속재료검사 (형강,레일,특수강,철근)	한국인정기구 Korea Laboratory Accreditation Scheme	Pohang 포항공장	국제공인교정기관인정 KOLAS
Foundry Pig Iron 주물용 선철 (F계열, D계열)	한국주물공업협동조합 Korea Foundry Cooperative Association	Dangjin 당진제철소	주물용 선철
COMPONENT – COATINGS, METALLIC Zinc-Coatings, G90-U Zinc-Coatings, G60-U	Underwriters Laboratory	Dangjin 당진제철소	UL (미국)
Structural steel hot-rolled plates and slabs to AS/NZS 3678	Australasian Certification Authority for Reinforcing and Structural Steels Ltd	Dangjin 당진제철소	ACRS (호주)

Quality Certification 품질인증 현황

Certified Product of Register Shipping (Steel Shapes)
선급협회 제조승인 품목(형강)

구분 Section	공장 Site	허가번호 Certi. No.	허가일자 Approval Date	등급 Grade	품명 Product	구분 Section
한국 선급협회 (KR)	Incheon	INC00396-SP001	2017. 04. 25	A, B, AH32, AH36	Rolled Steel Section for Hull Structure	한국 선급협회 (KR)
		INC00396-QA001	2018. 04. 26 (Annual Audit)	-	Approval Certificate for Quality Assurance System	
	Pohang	POH00337-SP002	2013. 08. 08 (최초인증 1997. 04. 10)	A, AH32, AH36, DH32, DH36, FH32, FH36	Rolled Steel Sections for Hull Structure	
				RL33, RL37	Rolled Steel Sections for Low Temperature Service	
		POH00337-SP003	2012. 11. 16 (최초인증 1988. 09. 16)	RSBC70	Grade 3 Chain Bar	
		POH00337-QA001	2014. 02. 11 (최초인증 2010. 12. 15)	-	Approval Certificate for Quality Assurance System	
영국 선급협회 (LR)	Incheon	MD00/0754/0007/1	2017. 02. 28	A, B, AH27S, AH32, AH36	Steelmaking, Semi-Finished Products, Sections	영국 선급협회 (LR)
	Pohang	MD00/0819/0014/1	2013. 07. 04	Sections : A, B, D, E, AH27S, AH32, AH36, DH32, DH36, AH40, DH27S, DH40, EH27S, EH32, EH36, EH40, FH27S, FH32, FH36, FH40, LTAH27S, LTAH32, LTDH27S, LTDH32, LTEH27S, LTEH32, LTFH27S, LTFH32, LTFH36, LTFH40 Bars : R3S, R4, U3, R3, U2	Steelmaking, Semi-Finished Products, Sections and Bars	
		MD00/3084/0006/1	2013. 07. 04	Sections : A, B, D, AH27S, AH32, AH36	Steelmaking and Sections	
노르웨이 선급협회 (DNV)	Pohang	AMM-7054	2014. 11. 11	Sections: NV- A, E, A32, A36, D32, D36, F40, NV4-4, NV2-4L, NV4-4L Round Bars: NV-K2, K3, R3, R3S, R4	Approval of Manufacturer Certificate : Sections and Round Bars	노르웨이 선급협회 (DNV)
		R-3369	2012. 12. 31	-	DET NORSKE VERITAS Manufacturing Survey Arrangement	
노르웨이-독일 선급협회 (DNV-GL)	Incheon	AMMM00001EM	2017. 06. 08	DNV : NV A, NV B, NV A32, NV A36, NV D36+TM GL : GL-A, GL-B, GL-A32, GL-A36 DNV-GL : VL A, VL B, VL A32, VL A36, VL D36	Steelmaking and Rolled Steel Products	노르웨이-독일 선급협회 (DNV-GL)
미국 선급협회 (ABS)	Incheon	ML3-11 156172 a	2012. 06. 25	A, B	Hull Structural Steel Shape	미국 선급협회 (ABS)
		ML3-11 250258	2012. 06. 25	AH32, AH36	Higher Strength Hull Structural Steel Section	
		ML3-11 156172 c	2012. 06. 25	A, AH32, AH36	플랫바(Flat Bar)	
	Pohang	155204 e	2006. 04. 19	AH32, AH360	Section : Angle	
		155204 d	2006. 04. 19	E	Sections	
		539617	2010. 01. 29	AH32, AH36	Steel Sections(Inverted Angle)	
		506268	2009. 10. 13	A, AH32, AH36, DH32, DH36	Sections : H-Beam (No. 1)	
				RQ3, RQ3S, RQ4 (No. 1)	Bars : Rolled Steel Round Bar	
		285891	2007. 11. 20	A, AH32, AH36	Sections : Angle (No. 2)	
				FH40	Sections(Angle)	

Quality Certification 품질인증 현황

Certified Product of Register Shipping (Steel Shapes)
선급협회 제조승인 품목(형강)

구분 Section	공장 Site	허가번호 Certi. No.	허가일자 Approval Date
독일 선급협회 (GL)	Pohang	WZ 653 HH 10	2014. 05. 21
		WZ 1385 HH5	2014. 12. 29
일본 선급협회 (NK)	Incheon	TA13986E	2018.07.01
	Pohang	TA14398E	2014. 04. 23
프랑스 선급협회 (BV)	Incheon	SMS.W. II ./1175/F.0	2017. 10. 27
		08450/D0 BV	2015. 04. 01
		08449/D0 BV	2015. 04. 01
	Pohang	10279/D0 BV	2014. 12. 01
		10280/D0 BV	2014. 12. 01
		07924/D0 BN	2013. 10. 24
러시아선급협회 (RS)	Pohang	7.1.4.1	2012. 06. 20
이태리 선급협회 (RINA)	Pohang	11/PU/01/1370	2012. 01. 05
		FAB248014PU	2015. 01. 29

등급 Grade	품명 Product	구분 Section
GL-A, B, D, E, A32, A36, A40, D32, D36, D40, E32, E36, E40, F32, F36, F40, S235J0, S235J2, S235JR, S275J0, S275J2, S275JR, S355J0, S355J2, S275M, S275ML, S355M, S355ML	Normal and Higher Strength Hull Structural Steels	독일 선급협회 (GL)
K1, K2, K3	Unalloyed Steels for Welded Structures Anchor Chain Cables and Accessories	
GL-A, A32, A36	Unequal angles and inverted angles made of normal and higher strength hull structural steels	
KA, KB, KA32, KA36	형강 (Steel Shapes)	일본 선급협회 (NK)
KA, KA32, KA36	플랫바 (Flat Bar)	
KA, KE, KA32, KD32, KA36, KD36, KF32, KF36, KF40	Rolled Steels for Hull	
KSBC50, KSBC70	Round Bars for Chains	
KL33, KL37	Rolled Steels for Low Temperature Service	
A, B, AH32, AH36, DH36, S355J0+M	- Cast Steel Ordinary Anchors and High Holding Power Anchor - Steel Casting in Carbon and Carbon-Manganese Steel and Low Alloy Steel - Ingot for Forging in Carbon and Carbon-Manganese Steel and Low Alloy Steel - Hot Rolled Section	프랑스 선급협회 (BV)
A, B	Flat Bar and Section	
AH32, AH36, DH36, S355J0+M	Flat Bar and Section	
A, B, D, E,	Normal Strength Hull Steel Rolled Products	
AH32, AH36, DH32, DH36, EH36, FH36, FH40	Higher Strength Hull Steel Rolled Products	
Q2a, Q3a	Round Bars for Ship Anshor Chain Cable	
PC-A, E, AH32, AH36, DH32, DH36, EH32, EH36	Rolled sections of hull structural steel of normal and higher strength	러시아선급협회 (RS)
-	STATEMENT	이태리 선급협회 (RINA)
A, AH32, AH36, DH32, DH36	Normal strength and higher strength hull steel sections	

Quality Certification 품질인증 현황

Certified Product of Register Shipping (Low Temperature Steel Plate)
선급협회 제조승인 품목(Low Temperature Steel Plate)

구분 Section	허가일자 Approval Date	등급 Grade	두께 Thickness
한국 선급협회 (KR)	2012. 03. 23	RL235A, RL235B RL325A, RL325B RL360	40
영국 선급협회 (LR)	2012. 07. 09	LTDH27S, LTDH32, LTDH36 LTFH27S, LTFH32, LTFH36	40
노르웨이-독일 선급협회 (DNVGL)	2012. 04. 16	2-3, 2-4, 2-4L 4-3, 4-4, 4-4L EN 10028-5 P355/ML1/ML2	40
미국 선급협회 (ABS)	2012. 05. 11	V-O55, V-O60, VH32-O50, VH32-O60, VH-O55, VH-O60	40
일본 선급협회 (NK)	2012. 05. 11	KL33 KL37	40
프랑스 선급협회 (BV)	2012. 06. 05	410LE/410LF 460LE/460LF/460LFM32	40
이태리 선급협회 (RINA)	2012. 05. 03	410LE/410LF 460LE/460LF	40

Certified Product of Register Shipping (HR PLATE, PLATE)
선급협회 제조승인 품목(HR PLATE, PLATE)

구분 Section	HR PLATE		PLATE	
	허가일자	등급	허가일자	등급
한국 선급협회 (KR)	2008. 03. 14 (A,B열연) 2011. 06. 15 (C열연)	A, B, AH32, AH36	2010. 10. 25	A, B, D, E, AH32/36/40, DH32/36/40, EH32/36/40, FH32/36/40, AH47-H, DH47-H, EH47-H-BCA, AH36/40,DH36/40,EH36/40-BCA AH43/47/51, DH43/47/51, EH43/47/51, FH43/47/51
영국 선급협회 (LR)	2008. 11. 24 (A,B열연) 2012. 01. 27 (C열연)	A, B, AH32, AH36	2010. 11. 17	A, B, D, E, AH32/36/40, DH32/36/40, EH32/36/40, FH32/36/40, EH47, AH46/50, DH46/50, EH46/50, FH43/46/50
노르웨이-독일 선급협회 (DNVGL)	2008. 02. 05 (A,B열연) 2011. 06. 20 (C열연)	A, B A32, A36	2010. 11. 13	A, B, D, E, A32/36/40, D32/36/40, E32/36/40, F32/36/40, D47, E47, A,D,E36/40 BCACOD A420/460/500, D420/460/500, E420/460/500, F420/460/500
미국 선급협회 (ABS)	2008. 03. 11 (A,B열연) 2011. 07. 21 (C열연)	A, B, AH32, AH36	2010. 12. 16	A, B, D, E, AH32/36/40, DH32/36/40, EH32/36/40, FH32/36/40, AH40/47BCA, DH40/47BCA, EH40/47BCA AQ43/47/51, DQ43/47/51, EQ43/47/51
일본 선급협회 (NK)	2008. 01. 18 (A,B열연) 2011. 06. 20 (C열연)	KA, KB, KA32, KA36	2010. 11. 08	KA, KB, KD, KE, KA32/36/40, KD32/36/40, KE32/36/40, KF32/36/40 KE47, KA420/500, KD420/500, KE420/500, KF420/500
프랑스 선급협회 (BV)	2008. 09. 30 (A,B열연) 2011. 07. 28 (C열연)	A, B, AH32, AH36	2010. 11. 19	A, B, D, E, AH32/36/40, DH32/36/40, EH32/36/40, FH32/36/40, EH40CAS, EH47CAS, A420/460/500, D420/460/500, E420/460/500, F420/460/500
이태리 선급협회 (RINA)	2008. 04. 17 (A,B열연) 2011. 07. 18 (C열연)	A, B, AH32, AH36	2010. 12. 07	A, B, D, E, AH32/36/40, DH32/36/40, EH32/36/40, FH32/36/40, AH47, DH47, EH47, A420/460/500, D420/460/500, E420/460/500, F420/460/500
중국 선급협회 (CCS)	2011. 06. 20 (C열연)	A, B A32, A36	2010. 11. 10	A, B, D, E, A32/36, DH32/36/40, EH32/36/40, FH32/36/40, AH36/40/47-CA, DH36/40/47- CA, EH36/40/47-CA, A420/460/500, D420/460/500, E420/460/500, F420/460/500
러시아 선급협회 (RS)	2011. 05. 16 (C열연)	A, B, AH32, AH36	2010. 10. 26	A, B, D, E, AH32/36, DH32/36/40, EH32/36/40, FH32/36/40 AH47, DH47, EH47, A420/460/500, D420/460/500, E420/460/500, F420/460/500

Quality Certification 품질인증 현황

Certificated Product of Register Shipping (SLAB)
선급협회 제조승인 품목(슬라브)

구분 Section	250mm		300mm	
	허가일자	등급	허가일자	등급
한국 선급협회 (KR)	2010. 10. 25	RL235A, RL235B RL325A, RL325B, RL360	2011. 09. 20	A, B, D, E, AH32/36/40, DH32/36/40, EH32/36/40, FH32/36/40, AH47-H, DH47-H, EH47-H-BCA, AH36/40,DH36/40,EH36/40-BCA AH43/47/51, DH43/47/51, EH43/47/51, FH43/47/51
영국 선급협회 (LR)	2010. 11. 17	LTDH27S, LTDH32, LTDH36 LTFH27S, LTFH32, LTFH36	2012. 01. 27	A, B, D, E, AH32/36/40, DH32/36/40, EH32/36/40, FH32/36/40, EH47, AH46/50, DH46/50, EH46/50, FH43/46/50
노르웨이-독일 선급협회 (DNVGL)	2010. 11. 13	2-3, 2-4, 2-4L 4-3, 4-4, 4-4L	2011. 09. 09	A, B, D, E, A32/36/40, D32/36/40, E32/36/40, F32/36/40, D47, E47, A,D,E36/40 BCACOD A420/460/500, D420/460/500, E420/460/500, F420/460/500
미국 선급협회 (ABS)	2010. 12. 16	V-O55, V-O60, VH32-O55, VH32-O60 VH-O55, VH-O60	2011. 10. 20	A, B, D, E, AH32/36/40, DH32/36/40, EH32/36/40, FH32/36/40, AH40/47BCA, DH40/47BCA, EH40/47BCA AQ43/47/51, DQ43/47/51, EQ43/47/51
일본 선급협회 (NK)	2010. 11. 08	KL33 KL37	2011. 09. 20	KA, KB, KD, KE, KA32/36/40, KD32/36/40, KE32/36/40, KF32/36/40 KE47, KA420/500, KD420/500, KE420/500, KF420/500

Certificated Product of Register Shipping (SLAB)
선급협회 제조승인 품목(슬라브)

구분 Section	250mm		300mm	
	허가일자	등급	허가일자	등급
프랑스 선급협회 (BV)	2010. 11. 19	410LE/410LF 460LE/460LF/460LFM32	2011. 10. 26	A, B, D, E, AH32/36/40, DH32/36/40, EH32/36/40, FH32/36/40, EH40CAS, EH47CAS, A420/460/500, D420/460/500, E420/460/500, F420/460/500
이태리 선급협회 (RINA)	2010. 12. 07	410LE/410LF 460LE/460LF	2011. 09. 26	A, B, D, E, AH32/36/40, DH32/36/40, EH32/36/40, FH32/36/40, AH47, DH47, EH47, A420/460/500, D420/460/500, E420/460/500, F420/460/500
중국 선급협회 (CCS)	2010. 11. 10	-	2012. 01. 02	A, B, D, E, A32/36, DH32/36/40, EH32/36/40, FH32/36/40, AH36/40/47-CA, DH36/40/47- CA, EH36/40/47-CA, A420/460/500, D420/460/500, E420/460/500, F420/460/500
러시아 선급협회 (RS)	2010. 10. 26	-	2011. 09. 21	A, B, D, E, AH32/36, DH32/36/40, EH32/36/40, FH32/36/40 AH47, DH47, EH47, A420/460/500, D420/460/500, E420/460/500, F420/460/500

Conversion Table 도량형 환산표

Linear Measure 길이

	Millimeter (mm)	Centimeter (cm)	Meter (m)	Inch (in)	Foot (ft)	Yard (yd)	Mile (mi)
Millimeter (mm)	1	0.1	0.001	0.03937	0.0032808	0.0010936	$0.0_{(6)}6214$
Centimeter (cm)	10	1	0.01	0.3937	0.032808	0.010936	$0.0_{(5)}6214$
Meter (m)	1,000	10	1	39.37	3.28083	1.0936	$0.0_{(3)}6214$
Inch (in)	25.40	2.540	0.0254	1	0.0833	0.02778	$0.0_{(4)}1578$
Foot (ft)	304.8	30.48	0.3048	12	1	0.333	$0.0_{(3)}1894$
Yard (yd)	914.4	91.44	0.9144	36	3	1	$0.0_{(3)}5682$
Mile (mi)	1,609,347.0	160,934.70	1,609.35	63,360	5,280	1,760	1

Cube Measure 부피

	Cubic Centimeter (cm^3)	Cubic Meter (m^3)	Cubic Inch (in^3)	Cubic Foot (ft^3)	Cubic Yard (yd^3)
Cubic Centimeter (cm^3)	1	0.0(5)1	0.06102	$0.0_{(4)}3531$	$0.0_{(5)}1308$
Cubic Meter (m^3)	1,000,000	1	61,023	35.31	1.308
Cubic Inch (in^3)	16.39	$0.0_{(4)}1639$	1	$0.0_{(3)}5787$	$0.0_{(4)}2143$
Cubic Foot (ft^3)	28,317	0.028317	1,728	1	0.03704
Cubic Yard (yd^3)	764,500	0.7645	46,660	27	1

Note: The small subnumeral following a zero indicates that the zero is to be repeated that number of times.
thus $0.0_{(3)}4=0.0004$

Square Measure 면적

	Square Millimeter (mm^2)	Square Centimeter (cm^2)	Square Meter (m^2)	Square Inch (in^2)	Square Foot (ft^2)	Square Yard (yd^2)
Square Millimeter (mm^2)	1	0.01	0.0(5)1	0.00155	$0.0_{(4)}10764$	$0.0_{(5)}119599$
Square Centimeter (cm^2)	100	1	0.0001	0.154999	0.0010764	$0.0_{(3)}119599$
Square Meter (m^2)	1,000,000	10,000	1	1,549.99	10.7639	1.19599
Square Inch (in^2)	654.2	6.452	$0.0_{(3)}6452$	1	0.006944	$0.0_{(3)}7616$
Square Foot (ft^2)	92,900	929	0.0929	144	1	0.11111
Square Yard (yd^2)	836,100	8,361	0.8361	1,296	9	1

Weight 중량

	Kilogram (kg)	Ounce (oz)	Pound (lb)	Net Ton (2,000lbs) (nt)	Gross Ton (2,240 lbs) (gt)	Metric Ton (1,000kg) (t)
Kilogram (kg)	1	35.274	2.20462	0.001102	$0.0_{(3)}9842$	0.001
Ounce (oz)	0.02835	1	0.0625	$0.0_{(4)}3125$	$0.0_{(4)}279$	$0.0_{(4)}2835$
Pound (lb)	0.45359	16	1	0.0005	$0.0_{(3)}4464$	$0.0_{(3)}4536$
Net Ton (nt)	907.187	32,000	2,000	1	0.89286	0.90719
Gross Ton (gt)	1,106.05	35,840	2,240	1.12	1	1.01605
Metric Ton (t)	1,000	35,274	2,204.62	1.10231	0.98421	1

Conversion Table 도량형 환산표

Weight per Linear Unit 중량

	Gram per Centimeter (g/cm)	Kilogram per Meter (kg/m)	Pound per Inch (lb/in)	Pound per Foot (lb/ft)	Pound per Yard (lb/yb)
Gram per Centimeter (g/cm)	1	0.1	0.50560	0.06720	0.20159
Kilogram per Meter (kg/m)	10	1	0.05600	0.67197	2.0159
Pound per Inch (lb/in)	178.5	17.8579	1	12	36
Pound per Foot (lb/ft)	148.816	1.48816	0.08333	1	3
Pound per Yard (lb/yb)	4.96054	0.49605	0.02778	0.3333	1

Weight per Unit Volume 단위체적당 중량

	Kilogram per Cubic Centimeter (kg/cm³)	Kilogram per Cubic Meter (kg/m³)	Metric Ton per Cubic Meter (t/m³)
Kilogram per Cubic Centimeter (kg/cm³)	1	1,000,000	1,000
Kilogram per Cubic Meter (kg/m³)	0.000001	1	0.001
Metric Ton per Cubic Meter (t/m³)	0.001	1,000	1
Pound per Cubic Inch (lb/in³)	0.02768	27,680.4	27.6804
Pound per Cubic Foot (lb/ft³)	0.000016	16.0196	0.01602

Weight per Unit Area 단위면적당 중량

	Kilogram per Square Centimeter (kg/cm²)	Kilogram per Square Meter (kg/m²)	Metric Tonper Square Meter (t/m²)
Kilogram per Square Centimeter (kg/cm²)	1	10,000	10
Kilogram per Square Meter (kg/m²)	0.0001	1	0.001
Metric Tonper Square Meter (t/m²)	0.01	1,000	1
Pound per Square Inch (lb/in²)	0.0703067	703.06686	0.7031
Pound per Square Foot (lb/ft²)	0.0004882	4.8824087	0.004882

Energy 에너지

	B.T.U	Calories	Ft-lb	kg-m	Hp-hr	Kw-hr	Joules
B.T.U (mean)	1	0.252	778	107.563	0.0(3)2939	0.0(3)2931	1,054.80
Calories (mean)	3.968	1	3,091.36	426.84	0.001559	0.001163	4.185
Ft-lb	0.001285	0.0(3)3239	1	0.1383	0.0(6)505	0.0(6)3767	1.355
Ft-ton	2.571	0.6478	2,000	276.511	0.00101	0.0(3)7535	2,712.59
kg-m	0.009297	0.002343	7.23301	1	0.053653	0.0(5)2725	9.806
Hp-hr	2,544.99	641.327	1,980.000	273.747	1	0.746	2,685,600
Kw-hr	3,411.57	859.702	2,654.200	366.959	1.34041	1	3,600,000
Joules (absolute)	0.0(3)9477	0.0(3)2389	0.73735	0.101937	0.0(6)3725	0.0(6)2778	1
Lb C	14.544	3.665	11,315.000	1,564.396	5.714	4.263	153,470,000
Lb H_2O	970.4	244.537	745.971	104.379	0.38127	0.284424	1,023.966

Note: The small subnumeral following a zero indicates that the zero is to be repeated that number of times.
thus $0.0_{(3)}4=0.0004$

Conversion Table 도량형 환산표

Pressure 압력

	Bar	Long ton per Sq. Foot (long ton w/ft²)	Barometric Pressure (atm)	Mercury Column in Meter (m Hg)	Mercury Column in inch (in Hg)	Water Column in Meter (m H_2O)	Water Column in Foot (ft H_2O)	
Bar	1	0.93239	0.98692	0.75006	29.53	10.197	33.456	Bar
Long ton per Sq. Foot (long ton w/ft²)	1.0725	1	1.0585	0.80445	31.671	10.937	35.881	Long ton per Sq. Foot (long ton w/ft²)
Barometric Pressure (atm)	1.0133	0.94074	1	0.76	29.921	10.333	33.9	Barometric Pressure (atm)
Mercury Column in Meter (m Hg)	1.3332	1.2431	1.3158	1	39.37	13.595	44.605	Mercury Column in Meter (m Hg)
Mercury Column in inch (in Hg)	0.03386	0.031574	0.033421	0.0254	1	0.34533	1.133	Mercury Column in inch (in Hg)
Water Column in Meter (m H_2O)	0.098064	0.091436	0.096781	0.073554	2.8958	1	3.2808	Water Column in Meter (m H_2O)
Water Column in Foot (ft H_2O)	0.02987	0.02787	0.029499	0.022419	0.088265	0.3048	1	Water Column in Foot (ft H_2O)

Conversion Table 도량형 환산표

Equivalent Degrees, Centigrade and Fahrenheit 등가온도, 섭씨온도와 화씨온도

C	F	C	F	C	F	C	F
−129	−200	−17.8	0	−8.33	17	1.11	34
−101	−150	−17.2	1	−7.78	18	1.67	35
−73.3	−100	−16.7	2	−7.22	19	2.22	36
−67.8	−90	−16.1	3	−6.67	20	2.78	37
−62.2	−80	−15.6	4	−6.11	21	3.33	38
−56.7	−70	−15.0	5	−5.56	22	3.39	39
−51.2	−60	−14.4	6	−5.00	23	4.44	40
−45.6	−50	−13.9	7	−4.44	24	5.00	41
−40.0	−40	−13.3	8	−3.89	25	5.56	42
−34.5	−30	−12.8	9	−3.83	26	6.11	43
−28.9	−20	−12.2	10	−2.78	27	6.67	44
−26.1	−15	−11.7	11	−2.22	28	7.22	45
−23.4	−10	−11.1	12	−1.67	29	7.78	46
−20.6	−5	−10.6	13	−1.11	30	8.33	47
		−10.0	14	−0.56	31	8.89	48
		−9.44	15	0	32	9.44	49
		−8.39	16	0.56	33	10.0	50

Note : 변환공식 Conversion formula : F=1.8C+32

C	F	C	F	C	F	C	F
10.6	51	20.0	68	29.4	85	43	110
11.1	52	20.6	69	30.0	86	49	120
11.7	53	21.1	70	30.6	87	54	130
12.2	54	21.7	71	31.1	88	60	140
12.8	55	22.2	72	31.7	89	66	150
13.3	56	22.8	73	32.2	90	71	160
13.9	57	23.3	74	32.8	91	77	170
14.4	58	23.9	75	33.3	92	82	180
15.0	59	24.4	76	33.9	93	88	190
15.6	60	25.0	77	34.4	94	93	200
16.1	61	25.6	78	35.0	95	99	210
16.7	62	26.1	79	35.6	96	100	212
17.2	63	26.7	80	36.1	97		
17.8	64	27.2	81	36.7	98		
18.3	65	27.8	82	37.2	99		
18.9	66	28.3	83	37.8	100		
19.4	67	28.9	84	38	101		

Caution 주의사항

형강 및 철근

| 사용 시 주의사항 |

- 설계도에 의거한 강재의 종류를 사용하시기 바랍니다. 설계도에 맞지 않는 제품 사용 시 구조물 안전에 문제가 발생합니다.
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- 철근은 한국공업규격(KS)에 정해진 방법대로 굽힘가공 작업을 하십시오. 무리하게 작업하거나 저온에서 굽힘가공 시 철근이 부러질 수 있으며, 그로 인해 다칠 수 있습니다.

| 취급 시 주의사항 |

- 제품 취급 시 안전 장구를 착용하십시오. 충격 및 베임 등 인체에 상해를 입을 수 있습니다.
- 제품 운송 시 제품을 움직이지 않게 결박하고 운송법규를 준수하십시오. 제품 낙하로 인하여 인적, 물적 피해가 발생할 수 있습니다.
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- 크레인 작업 시 양줄로 균형을 맞추어 작업 바랍니다. 제품을 외줄로 걸어 작업 시 균형이 맞지 않아 낙하로 인해 피해를 초래할 수 있습니다.
- 강재 취급 시 작업 전 작업조건을 확인하시기 바랍니다. 낙뢰 및 고압선 접촉에 의한 위험이 발생할 수 있습니다.
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단조/단강

| 취급 시 주의사항 |

- 각 제품별 중량에 맞는 기중기를 사용하십시오. 부적합한 장비 사용 시 낙하로 인해 안전사고가 발생할 수 있습니다.
- 각 제품별 러그(LUG)용 샤클(SHACKLE) 걸고리를 사용하십시오. 부적합한 걸고리 사용 시 이탈로 인해 안전사고가 발생할 수 있습니다.
- 안전장구를 착용하고 작업하십시오. 안전장구를 미착용하고 제품에 올라가는 경우 표면이 미끄러워 추락 등의 안전사고가 발생할 수 있습니다.
- 제품 결박 시 접촉부 보호대를 사용하시기 바랍니다. 상차 및 선적 시 결박체인이 직접 제품에 접촉되면 제품 손상 및 도색 벗겨짐이 발생될 수 있습니다.
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- 용접은 시방서에 따라 용접하십시오. 규정에 벗어난 용접작업은 제품에 손상을 초래할 수 있습니다.
- 각 제품별 중량에 적합한 차량을 선정하여 운송하십시오. 제품중량에 맞지 않는 차량으로 운송 시 낙하 및 이탈로 인적, 물적 피해가 발생할 수 있습니다.
- 제품 운송 시 제품을 움직이지 않게 결박하고 운송법규를 준수하십시오. 제품 낙하로 인하여 인적, 물적 피해가 발생할 수 있습니다.

Steel Shapes & Deformed Bar

| Suggested Use |

- Follow all directions that are specified Problems may occur if products are not used according to their intended specifications.
- Work according to standard specifications. Careless and improper usage may cause cracking and damage.
- Hyundai Steel's sheet Pile Interlock is made up of different sizes and shapes. Other brands should not be used as a replacement as they differ. Please contact us immediately if you are considering using another manufacturer's Interlock steel board pile.
- Steel reinforcing Bar should follow KS guidelines when being shaped. Be careful of the potential hazards that can be caused by excessive operations or shaping.

| Instructions on Handling |

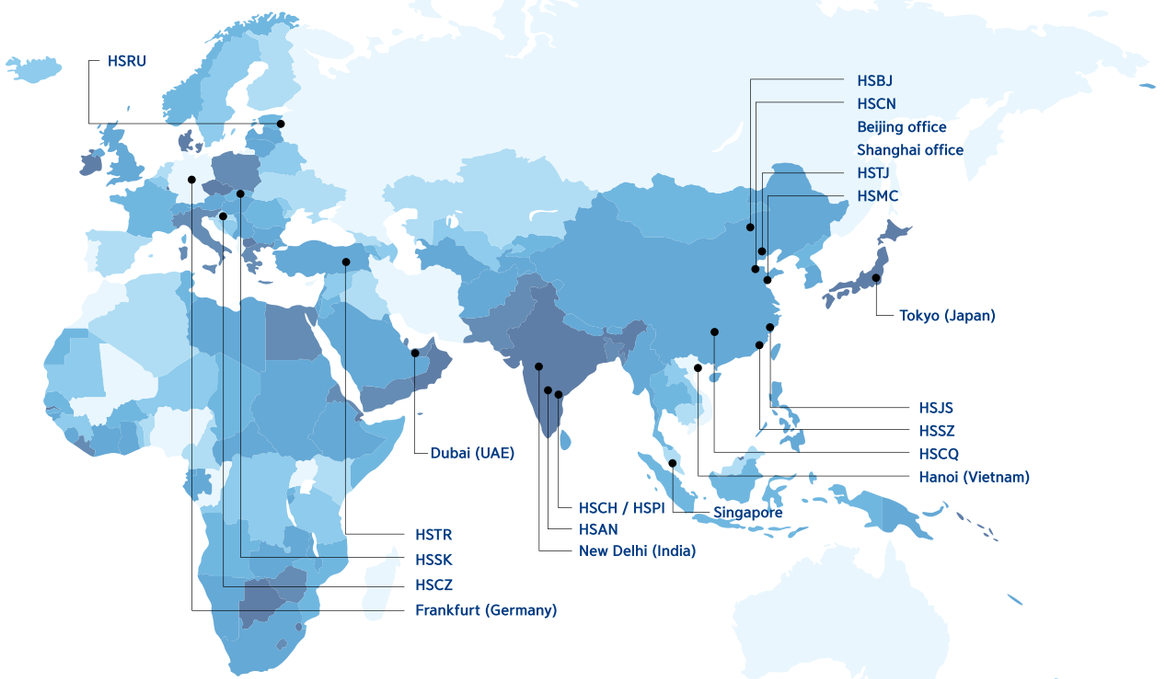
- Be sure to wear safety gear when handling products. Beware of being shocked or cut.
- Bind products tightly during transportation and be sure to follow traffic laws and regulations. I njury or loss can occur from falling products.
- Ensure that support is used when piling up products. Injuries may result from jamming your hands or feet in the products.
- Use designated equipment when loading and unloading products. Using improper equipment can cause unexpected accidents.
- Do not lift products that are on the binding line without using a lever or a wire. Dropping of products that are on the untied binding line may result in casualties.
- When performing crane work, make sure to on both ends. Using a single rope to balance can cause severe damage as products may drop.
- Check all work conditions before handling any steel products. Be careful of hazards caused by lightning or high voltage shock.
- When transporting steal products, ensure that more than two people are on the job If one person is on the job, steel products may sway and lose their balance causing injuries.

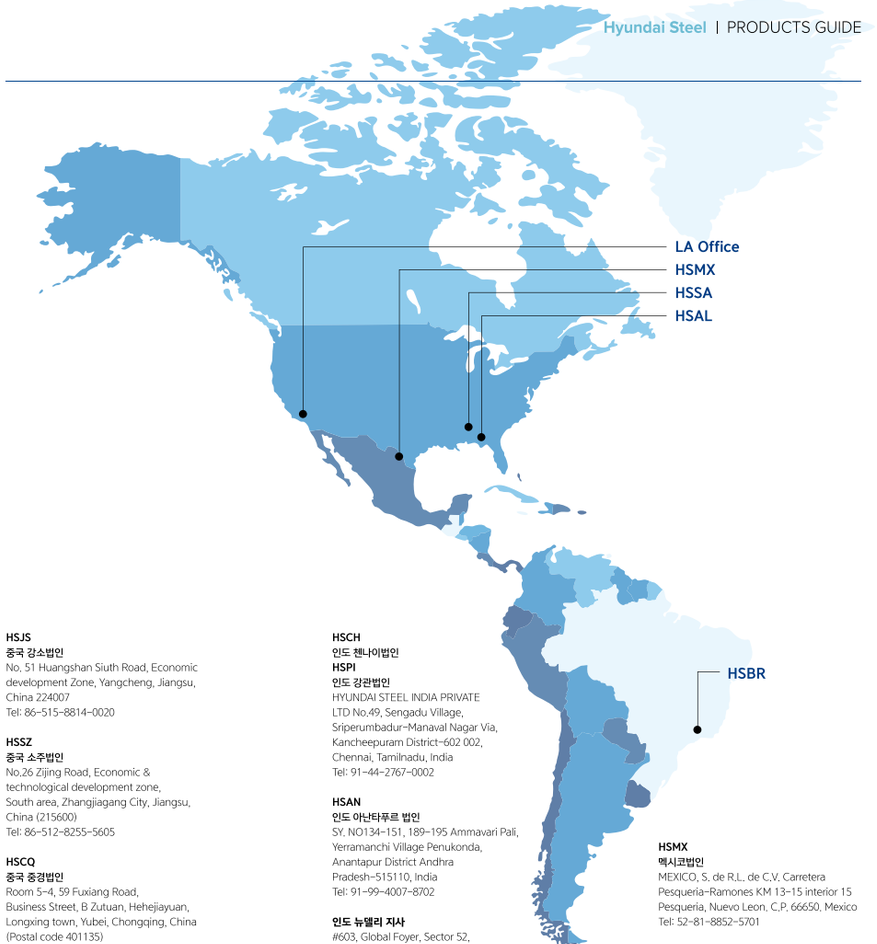
Forging / Ingot

| Instructions on Handling |

- Use the correct crane for each product as all have different weights. Using improper equipment can cause unexpected accidents.
- Use Lug and Shackle for each product. Using improper shackles may cause unexpected accidents.
- Use safety equipment during all operations. Use safety equipment during Ingot operations as unexpected accidents may occur including falling due to slippage.
- Using proper safety equipment when binding the products together. When loading and unloading products, be careful of the binding chain coming into contact with the product as this may cause damage and paint to peel off.
- Check to make sure that products are piled safely. When piling or transporting products using a crane, be careful as injuries may result from the jamming of body parts.
- Welding work should be done according to all standard specifications. Not following regulations may cause problems such as the damaging or cracking of products.
- Select the correct vehicle according to the weight of the products when transporting goods. Not using the correct vehicle when transporting goods may cause product damage or human injuries and fatalities.
- Bind products tightly during transportation and be sure to follow traffic laws and regulations. Injury or loss can occur from falling products.

Global Network 글로벌 네트워크





국내 DOMESTIC NETWORK

본사 HEAD QUARTERS
서울특별시 서초구 헌릉로 12
12 Hunneung-no, Seocho-gu, Seoul, Korea
Tel : +82-2-3464-6114 / Fax : +82-2-3464-6100

인천공장 INCHEON WORKS
인천광역시 동구 중봉대로 63
63 Jungbongdae-ro Dong-gu, Incheon Metropolitan City, Korea
Tel : +82-32-760-2114 / Fax : +82-32-763-5046

포항공장 POHANG WORKS
경상북도 포항시 남구 동해안로 6363
6363 Donghaean-ro, Nam-gu, Pohang City, Gyeonsangbuk-do, Korea
Tel : +82-54-271-1114 / Fax : +82-54-271-1241

당진제철소 DANGJIN STEEL MILL
충청남도 당진시 송악읍 북부산업로 1480
1480 Bukbusaneopno, Songak-eup, Dangjin City, Chungcheongnam-do, Korea
Tel : +82-41-680-0114 / Fax : +82-41-680-1199

순천공장 SUNCHEON WORKS
전라남도 순천시 해룡면 인덕로 300
300 Indeok-no, Haeryong-myeon, Suncheon City, Jeollanam-do, Korea
Tel : +82-61-720-4114 / Fax : +82-61-723-5256

울산공장 ULSAN WORKS
울산광역시 북구 염포로 706
706 Yeompo-ro, Buk-gu, Ulsan, Korea
Tel : +82-52-280-0114 / Fax : +82-52-287-8916

예산공장 YESAN WORKS
충청남도 예산군 삽교읍 산단1길 131
131, Sandan 1-gil, Sapgyo-eup, Yesan-gun, Chungcheongnam-do, Korea
Tel : +82-41-330-4500 / Fax : +82-41-330-4515

서울영업소 SEOUL SALES OFFICE
서울특별시 서초구 마방로 60 동원에프앤비빌딩
60 Mabang-ro Socho-gu, Seoul, Korea
Tel : +82-2-2092-8169 / Fax : +82-2-2092-8588, 8589

부산영업소 BUSAN SALES OFFICE
부산광역시 동구 중앙대로 331 메리츠 타워 21층
21th Floor, Meritz Tower, 331, Jungang-daero, Dong-gu, Busan, Korea
Tel : +82-51-901-0606 / Fax : +82-51-901-0600

울산영업소 ULSAN SALES OFFICE
울산광역시 북구 염포로 706 신관 3층
3th Floor, New Building, 706, Yeompo-ro, Buk-gu, Ulsan, Korea
Tel : +82-52-280-0371 / Fax : +82-52-280-0379

대구영업소 DAEGU SALES OFFICE
대구광역시 수성구 달구벌대로 2330 교보생명 2층
2th Floor, Kyobo Life Insurance, 2330, Dalgubeol-daero, Suseong-gu, Daegu, Korea
Tel: +82-53-745-1871 / Fax: +82-53-745-1875

광주영업소 GWANGJU SALES OFFICE
광주광역시 서구 대남대로 465 상공회의소 501호
Room 501, 5th Floor, Chamber of Commerce and Industry, 465, Daenam-daero, Seo-gu, Gwangju, Korea
Tel: +82-62-351-8040~7 / Fax: +82-62-351-8644

서울 IT 사무소 SEOUL IT OFFICE
서울특별시 서초구 매헌로16 하이브랜드 19층
19th Floor, Hibrand ,16, Maeheon-ro, Seocho-gu, Seoul, Korea
Tel: +82-2-2155-4229 / Fax: +82-2-2155-4209

해외 OVERSEAS NETWORK

ASIA

HSCN
현대제철 차이나
17th, TEDA MSD-G2 Bldg, No.57, Second Avenue TEDA(Tianjin Economic-Technological Development Area), Tianjin, China(300457)
Tel: 86-186-2279-7847

중국 북경 지사
Room 401, Hyundai Motors Tower, No.38 Xiaoyun Road, Chaoyang District, Beijing, China (100027)
Tel: 86-21-6083-0792

중국 상하이 사무소
Room No. 2108, No.1699, Gubei Road, Minhang District, Shanghai, China
Tel:86-10-8453-9229

HSBJ
중국 북경법인
HYUNDAI STEEL Beijing Process Co., Ltd
NO.63 Shuanghe Street, Shunyi District, Beijing, China(101-300)
Tel: 86-10-8940-1525

HSTJ
중국 천진법인
Tianjin Economic-Technological Development Area TEDA Industrial Park, No.65 Bibo East Street Hangu District, Tianjin, 300480 P.R of China
Tel: 86-136-5216-8331

HSJS
중국 강소법인
No. 51 Huangshan Siuth Road, Economic development Zone, Yangcheng, Jiangsu, China 224007
Tel: 86-515-8814-0020

HSSZ
중국 소주법인
No.26 Zijing Road, Economic & technological development zone, South area, Zhangjiagang City, Jiangsu, China (215600)
Tel: 86-512-8255-5605

HSCQ
중국 중경법인
Room 5-4, 59 Fuxiang Road, Business Street, B Zutuan, Hehejiayuan, Longxing town, Yubei, Chongqing, China (Postal code 401135)

HSMC
중국 중기법인
QINGDAO HYUNDAI MACHINERY CO.,LTD
North of NO.8 Rd. East of zhuzhou Rd. Jiaozhouwan Industry Park Qingdao.
Tel: 86-532-8727-3793
FAX: 86-532-8727-3816

일본 동경 지사
Shiroyama Trust Tower 18F, 4-3-1 Toranomon, Minato-ku, Tokyo, 105-6018, Japan
Tel: 81-3-6402-3263
Fax: 81-3-6402-3265

싱가포르 지사
152 Beach Road, #11-02 Gateway East
Singapore 189721
Tel: 65-6341-5080

베트남 하노이 지사
#1020, Pacific Place Building, 83B Ly Thuong Kiet, Hanoi, Vietnam
Tel: 84-4-946 1006
Fax: 84-4-946-1025

UAE 두바이 지사
#2204, JAFZA VIEW 18, Jebel Ali Free Zone, P.O.BOX 263190, Dubai, U.A.E
Tel: 971-4-886-5968
Fax: 971-4-886-5967

HSCH
인도 첸나이법인
HSPI
인도 강관법인
HYUNDAI STEEL INDIA PRIVATE LTD No.49, Sengadu Village, Sriperumbadur-Manaval Nagar Via, Kancheepuram District-602 002, Chennai, Tamilnadu, India
Tel: 91-44-2767-0002

HSAN
인도 아난타푸르 법인
SY. NO134-151, 189-195 Ammavari Pali, Yerramanchi Village Penukonda, Anantapur District Andhra Pradesh-515110, India
Tel: 91-99-4007-8702

인도 뉴델리 지사
#603, Global Foyer, Sector 52, Gurugram, India
Tel: 91-11-4611-5231

AMERICA

HSAL
미국 앨라배마법인
HYUNDAI STEEL AMERICA, INC.
200 Team Member Lane, Greenville, AL, 36037
Tel: 1-334-382-4311

HSSA
현대제철 아메리카
HYUNDAI STEEL Company 16200 Park Row Suite 270, Houston, TX 77084
Tel: 1-281-578-5325 (Office)
Mobile: 1-832-317-9779

LA 지사
10550 Talbert Ave, Fountain valley, CA 92708, USA
Tel: 1-714-594-1699

HSBR
브라질법인
HYUNDAI STEEL INDUSTRY & TRADE
BRAZIL LLC Avenida hyundai, 1505 Agua Santa, Piracicaba Sao Paulo, Brazil
Tel: 55-19-3430-5803

HSMX
멕시코법인
MEXICO, S. de R.L. de C.V. Carretera Pesqueria-Ramones KM 13+15 interior 15 Pesqueria, Nuevo Leon. C.P. 66650. Mexico
Tel: 52-81-8852-5701

EUROPE

HSCZ
체코법인
HYUNDAI STEEL Czech s.r.o Hyundai 333/5, 739 51 Nosovice, Czech Republic
Tel: 420-558-419-303

HSSK
슬로바키아법인
Mobis ulica 417/1A, 013 02 Gbel'any, Slovakia
Tel: 421-41-515-7700

HSRU
러시아법인
HYUNDAI STEEL RUS LLC., 20, Liter "p", Levashovskoe highway, Sestroretsk, Saint-Peterburg, 197701
Tel: 7-812-418-0902

HSTR
터키법인
Ataturk Mah. Kocaeli Asim Kibar OSB 4.Cad. No : 2, Alikahya / Izmit / Kocaeli / Turkey
Tel: 90-262-310-20-16

독일 프랑크푸르트 지사
Kaiserleipromenade 5, 63067 Offenbach, Germany
Tel: 49-69-271472-781
Fax: 49-69-271472-798

hyundai-steel.com

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