Pengetahuan Bahan: Standar

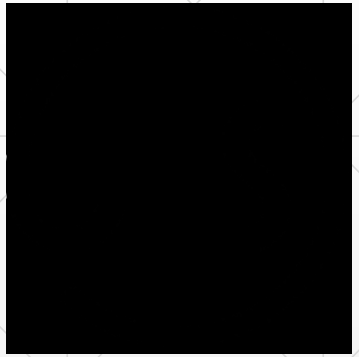
Kamis, 8 Oktober 2020

SNI

- Singkatan dari Standar Nasional Indonesia
- Adalah satu–satunya standar yang berlaku secara nasional di negara kita.
- SNI dirumuskan oleh Panitia Teknis dan ditetapkan oleh Badan Standardisasi Nasional.
- SNI juga menerbitkan standarisasi untuk baja yang menjadi acuan nasional.
- https://www.bsn.go.id/

JIS

- Singkatan dari Japan Industrial Standard
- JIS merupakan organisasi standar yang dibentuk oleh Pemerintah Jepang yang banyak bergerak di bidang perindustrian.
- Standardisasi yang disusun JIS diawasi oleh Japan Industrial Standard Comitte (JISC) dan hasilnya dipublikasikan oleh Japan Standard Asosiation (JSA).
- https://www.jisc.go.jp/



DIN

- Singkatan dari Deutsches Institut fur Normung
- Adalah organisasi standardisasi nasional Jerman.
- DIN terdaftar pada Registered German Asosiation (RGA) yang berpusat di Berlin.
- Sudah ada ribuan standar yang disusun DIN, salah satunya DIN 476.
- DIN 476 sangat dikenal dan menjadi standar pertama yang dikeluarkan DIN.
- https://www.din.de/de

AISI

- Singkatan dari American Iron and Steel Institute
- AISI adalah lembaga khusus Amerika yang membuat standar untuk komposisi baja.
- AISI juga mengatur bahwa 2 digit pertama adalah kode jenis baja (high carbon, high alloy, stainless steel, dan sebagainya), serta 2 digit terakhir menyatakan kadar karbon dalam baja tersebut.
- *https://www.steel.org/*

ASTM

- Singkatan dari American Standard Testing and Material
- Pada 1898, beberapa insinyur dan ilmuwan Amerika secara sukarela membentuk suatu komunitas untuk mengatasi persoalan material besi pada rel kereta api.
- Mereka kemudian menamai komunitas ini American Society for Testing and Material (ASTM).
- Sekarang, ASTM telah menjadi organisasi internasional yang telah menyusun lebih dari 12 ribu standar.
- Standar ASTM juga telah banyak digunakan oleh negara-negara berkembang maupun maju untuk keperluan penelitian akademis maupun industri.
- *https://www.astm.org/*

SS400 Steel
JIS G3101 General Structure Hot Rolled

- The tensile strength of the SS400 Steels is expressed in Newton per millimeters and it must be at least 400 N/mm^2 (MPa) and the maximum can be 510 N/mm^2 (MPa)
- The yield strength is minimum 205 to minimum 245 N/mm^2 (MPa) depending on the thickness

Dimensional Characteristics of SS400 Steels: The applicable thickness for this SS400 material as defined in the JIS 3101 starts from 6 mm to 120 mm.

The Chemical Composition of SS400 Steels

JIS G 3101 defines the chemical composition of SS400 steels as under:

Carbon (C) is not identified in the standard.

Manganese (Mn) is not identified in the standard.

Maximum percentage of **Phosphorous** (P) is **0.050** percent.

Maximum percentage of **Sulphur** (S) is **0.050** percent.

Remaining is iron (Fe) percentage and with few negligible impurities.

Mechanical Properties of SS400 Steels

- The tensile strength of the SS400 Steels is expressed in Newton per millimeters and it must be at least 400 N/mm2 (MPa) and the maximum can be 510 N/mm2 (MPa).
- The yield strength is minimum 205 to minimum 245 N/mm2 (MPa) depending on the thickness. The yield strength for thickness below 16 mm is minimum 245 N/mm2 (MPa) whereas for higher gauges above 100 mm is minimum 205 N/mm2 (MPa).
- The elongation property of SS400 steel varies with the ranges of thickness. The minimum percentage ranges for elongation is 17% thicknesses till 16 mm, 21% for thicknesses till 40 mm, and 23% greater than 50 mm.
- The melting point of SS400 is fourteen hundred and thirty-degree celsius
- Brinell hardness is around 160 HB

Comparative Materials

SPHC steel comparison with this grade of SS400 material will show how general structure hot rolled steel differs with commercial quality SPHC steel in chemical composition & mechanical properties.

SUS304 stainless steel is also a material used in architecture, however, it is far more corrosion resistant than SS400 material.

Equivalent Grades

- In American standards, ASTM A36 and ASTM A283 Grade D are referred to as equivalent materials.
- In European standards, EN S275 and BS 43A are referred to as equivalent materials.

Applications

Applications of this steel grade are as follows:

- Making structural tubes
- Making pipes
- Making rods
- Making various other structural sections and steel

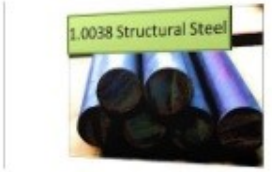
MATERIAL TRADING

PURCHASE THIS MATERIAL

Do you want to buy SS400 steel?

We can help you with buying this steel. You can send your inquiry by using our GDPR Compliant Order Inquiry Form.

materialgrades.com



1.0038 Grade – Quality Structural Steel (Non-Alloy)

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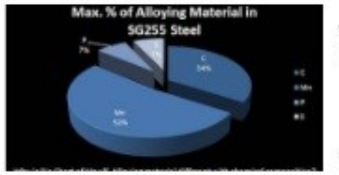
SPHC Steel - JIS G3131 Commercial Hot Rolled Steel

materialgrades.com

1.0577 Non-alloy Quality Structural Steel - EN Material

materialgrades.com



JIS G3116 Gas cylinder Hot Rolled SG255 Steel

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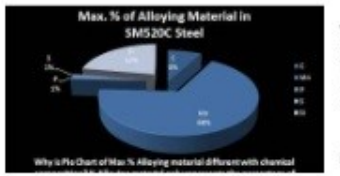
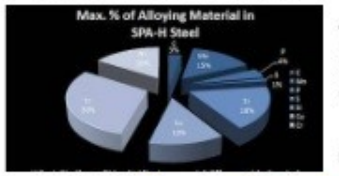
JIS G3101 General Structure Hot Rolled SS540 Steel

materialgrades.com



JIS G3101 General Structure Hot Rolled SS330 Steel

materialgrades.com



JIS G3125 Hot Rolled Superior Atmospheric Corrosion resistance…

materialgrades.com

A 1011/A 1011M-07 Commercial Hot Rolled

JIS S45C Steel, Tempered

Physical Properties

- Hardness: 201 - 269 Brinell
- Hardness: 13.8 - 27.6 Rockwell C
- Ultimate Tensile Strength:
  - 686 Mpa (metric)
  - 99600 psi (English)
- Yield Tensile Strength:
  - 490 Mpa
  - 71100 psi

JIS S45C Steel, Tempered

Categories: Metal; Ferrous Metal; Carbon Steel; AISI 1000 Series Steel; Medium Carbon Steel

Material Notes: Very common grade in Asia.

Key Words: Similar to AISI 1045 and DIN CK45.

Vendors: No vendors are listed for this material. Please click here if you are a supplier and would like information on how to add your listing to this material.

Physical Properties	Metric	English	Comments
Density	7.85 g/cc	0.284 lb/in³	AISI 1045

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	201 - 269	201 - 269	
Hardness, Rockwell C	13.8 - 27.6	13.8 - 27.6	
Tensile Strength, Ultimate	686 MPa	99600 psi	
Tensile Strength, Yield	490 MPa	71100 psi	
Elongation at Break	17 %	17 %	
Reduction of Area	45 %	45 %	
Modulus of Elasticity	205 GPa	29700 ksi	Typical steel
Poissons Ratio	0.29	0.29	Typical steel
Machinability	55 %	55 %	Based on AISI 1212 steel as 100% machinability
Shear Modulus	80.0 GPa	11600 ksi	Typical steel
Impact	8.0	8.0	kg(f)/cm²

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000162 ohm-cm @Temperature 0.000 °C	0.0000162 ohm-cm @Temperature 32.0 °F	annealed specimen

Thermal Properties	Metric	English	Comments
CTE, linear	11.5 µm/m-°C @Temperature 20.0 - 100 °C	6.39 µin/in-°F @Temperature 68.0 - 212 °F	
	13.0 µm/m-°C @Temperature 0.000 - 300 °C	7.22 µin/in-°F @Temperature 32.0 - 572 °F	
	14.0 µm/m-°C @Temperature 0.000 - 500 °C	7.78 µin/in-°F @Temperature 32.0 - 932 °F	
Specific Heat Capacity	0.486 J/g-°C @Temperature 50.0 - 100 °C	0.116 BTU/lb-°F @Temperature 122 - 212 °F	(AISI 1045) annealed
Thermal Conductivity	49.8 W/m-K	346 BTU-in/hr-ft²-°F	Typical steel

Component Elements Properties	Metric	English	Comments
Carbon, C	0.42 - 0.48 %	0.42 - 0.48 %	

Elongation at Break	17 %	17 %	
Reduction of Area	45 %	45 %	
Modulus of Elasticity	205 GPa	29700 ksi	Typical steel
Poissons Ratio	0.29	0.29	Typical steel
Machinability	55 %	55 %	Based on AISI 1212 steel as 100% machinability
Shear Modulus	80.0 GPa	11600 ksi	Typical steel
Impact	8.0	8.0	kg(f)/cm²

Electrical Properties	Metric	English	Comments
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	14.0 µm/m-°C @Temperature 0.000 - 500 °C	7.78 µin/in-°F @Temperature 32.0 - 932 °F	
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Thermal Conductivity	49.8 W/m-K	346 BTU-in/hr-ft²-°F	Typical steel

Component Elements Properties	Metric	English	Comments
Carbon, C	0.42 - 0.48 %	0.42 - 0.48 %	
Chromium, Cr	<= 0.20 %	<= 0.20 %	
Copper, Cu	<= 0.30 %	<= 0.30 %	
Iron, Fe	97.6 - 98.8 %	97.6 - 98.8 %	
Manganese, Mn	0.60 - 0.90 %	0.60 - 0.90 %	
Nickel, Ni	<= 0.20 %	<= 0.20 %	
Phosphorus, P	<= 0.030 %	<= 0.030 %	
Silicon, Si	0.15 - 0.35 %	0.15 - 0.35 %	
Sulfur, S	<= 0.035 %	<= 0.035 %	

References for this datasheet.

Users viewing this material also viewed the following:

JIS S45C Steel, Normalized
AISI 1045 Steel, cold drawn, 19-32 mm (0.75-1.25 in) round
ASTM A283 Steel, grade D
AISI E 52100 Steel (100Cr6, SUJ2, UNS G52986)
AISI 1045 Steel, cold drawn, annealed, 19-32 mm (0.75-1.25 in) round

Terima Kasih