

物理特性

(a)CNS、JIS&ASTM結構用材質規範-物理性質

(a)CNS、JIS&ASTM Structural Steel Specifications-Physical Property

規格 Standard	材質代號 Steel Grade	拉力試驗 Tensile Test				拉力試驗 Tensile Test				彎曲試驗 Bending Test		^(c) 衝擊試驗 Impact Test			
		降伏強度 YS:Yield Stress(N/mm ²) Fy:Force of Yield(kgf/cm ²)				抗拉強度 TS:Tensile Stress(N/mm ²) Fu:Force of Ultimate(kgf/cm ²)	降伏比(%) Yield Ratio(%)		伸長率(%) Elongation(%)		彎曲角度 Bending Angle	彎曲半徑 Radius of Inside Diameter	試驗溫度 ℃ Test Temp.	吸收能量 J Absorption Energy	
		厚度thickness(mm)					厚度thickness(mm)		厚度thickness(mm)						
		t≥6 t<12	t≥12 t<16	t=16	t>16 t≤40		t≥6 t<12	t≥12 t<16	t≥16 t≤40	t≥6 t≤16					t>16 t≤40
型鋼結構用鋼 Specification for structural steel shapes (ASTM A992-11)	A992	YS:345~450 Fy:3520~4592				TS:≥450 Fu:≥4592	≤85		≥18 ^(d)		-	-	-	-	
橋樑結構用鋼 Specification for structural steel for Bridges (ASTM A709-11)	A709G36	YS:≥250 Fy:≥2551				TS:≥400~550 Fu:≥4082~5612	-		≥20 ^(d)		-	-	-	-	
	A709G50	YS:≥345 Fy:≥3520				TS:≥450 Fu:≥4592	-		≥18 ^(d)		-	-	-	-	
加鈮鋯高強度 低合金結構用鋼 High-strength low-alloy Columbium-Vanadium structural steel (ASTM A572-07)	A572G50	YS:≥345 Fy:≥3520				TS:≥450 Fu:≥4592	-		≥18 ^(d)		-	-	-	-	
結構用碳鋼 Carbon structural steel (ASTM A36-08)	A36	YS:≥250 Fy:≥2551				TS:400~550 Fu:4082~5612	-		≥20 ^(d)		-	-	-	-	
建築結構用鋼 Rolled steels for building structure (CNS 13812 G3262-103) (JIS G3136-2012)	SN400A	YS:≥235 Fy:≥2398				TS:400~510 Fu:4082~5204	-	-		≥17	≥21	-	-	-	-
	SN400B	YS:≥235 Fy:≥2398	YS:235~355 ^(b) Fy:2398~3622 ^(b)			TS:400~510 Fu:4082~5204		≥18	≥22						
	SN490B	YS:≥325 Fy:≥3316	YS:325~445 ^(b) Fy:3316~4541 ^(b)			TS:490~610 Fu:5000~6224		≥17	≥21						
SN400YB	YS:≥250	YS:250~355 ^(b) Fy:2551~3622 ^(b)			TS:400~510 Fu:4082~5204	≥20		≥22							
(CNS 13812 G3262-103 附錄A)	SN490YB	YS:325~445(b) Fy:3316~4541(b)				TS:490~610 Fu:5000~6224	-		≥17	≥21	-	-	0	≥27	
銲接結構用鋼 Rolled steels for welded structure (CNS 2947 G3057-103) (JIS G3106-2008)	SM400A	YS:≥245 Fy:≥2500		YS:≥235 Fy:≥2398	TS:400~510 Fu:4082~5204	-	-		≥18	≥22	-	-	-	-	
	SM400B	YS:≥245 Fy:≥2500		YS:≥235 Fy:≥2398	TS:400~510 Fu:4082~5204	-	-		≥18	≥22					
	SM490A	YS:≥325 Fy:≥3316		YS:≥315 Fy:≥3214	TS:490~610 Fu:5000~6224	-	-		≥17	≥21					
	SM490B	YS:≥325 Fy:≥3316		YS:≥315 Fy:≥3214	TS:490~610 Fu:5000~6224	-	-		≥17	≥21					
	SM490YA	YS:≥365 Fy:≥3724		YS:≥355 Fy:≥3622	TS:490~610 Fu:5000~6224	-	-		≥15	≥19					
	SM490YB	YS:≥365 Fy:≥3724		YS:≥355 Fy:≥3622	TS:490~610 Fu:5000~6224	-	-		≥15	≥19					
(CNS 2947 G3057-103 附錄C)	SM400A-A	YS:≥250 Fy:≥2551				TS:400~510 Fu:4082~5204	-	-		≥18	≥22	-	-	-	-
	SM400B-A	YS:≥250 Fy:≥2551				TS:400~510 Fu:4082~5204	-	-		≥18	≥22	-	-	0	≥27
	SM490A-A	YS:≥345 Fy:≥3520				TS:490~610 Fu:5000~6224	-	-		≥17	≥21	-	-	-	-
	SM490B-A	YS:345~450 Fy:3520~4592				TS:490~610 Fu:5000~6224	≤85		≥17	≥21	-	-	0	≥27	
一般結構用鋼 Rolled steels for general structure (CNS 2473 G3039-103) (JIS G3101-2010)	SS400	YS:≥245 Fy:≥2500		YS:≥235 Fy:≥2398	TS:400~510 Fu:4082~5204	-	-		≥17	≥21	180°	厚度1.5倍 (1.5 times of thickness)	-	-	
熱軋結構用鋼 Hot rolled products of structural steels (BS EN 10025-2:2004)	S235JR	YS:≥235 Fy:≥2398		YS:≥225 Fy:≥2296	TS:360~510 Fu:3673~5204	-	-		≥26		-	-	20	≥27	
	S235J0	YS:≥235 Fy:≥2398		YS:≥225 Fy:≥2296	TS:360~510 Fu:3673~5204	-	-		≥26		-	-	0	≥27	
	S275JR	YS:≥275 Fy:≥2806		YS:≥265 Fy:≥2704	TS:410~560 Fu:4183~5714	-	-		≥23		-	-	20	≥27	
	S275J0	YS:≥275 Fy:≥2806		YS:≥265 Fy:≥2704	TS:410~560 Fu:4183~5714	-	-		≥23		-	-	0	≥27	
	S355JR	YS:≥355 Fy:≥3622		YS:≥345 Fy:≥3520	TS:470~630 Fu:4796~6428	-	-		≥22		-	-	20	≥27	
	S355J0	YS:≥355 Fy:≥3622		YS:≥345 Fy:≥3520	TS:470~630 Fu:4796~6428	-	-		≥22		-	-	0	≥27	
	S450J0	YS:≥450 Fy:≥4592		YS:≥430 Fy:≥4388	TS:550~720 Fu:5612~7347	-	-		≥17		-	-	0	≥27	

(a)本表所列以CNS、JIS、BS EN&ASTM型鋼相關材質規範為主，成品依翼板厚度為6~40mm。

(b)腹板厚度9mm以下之H型鋼，降伏強度上限值不適用。

(c)腹板厚度9mm以下之H型鋼，降伏強度上限值不適用。降伏比上限定為0.85。

(d)1.ASTM上述伸長率之規定僅適用於試片平行部長度200mm之試片，平行部長度為50mm之試片一般實驗室較少使用，請另行查閱規範。

2.ASTM鋼料厚度低於8mm時，伸長率依ASTM A6之規定遞減。

(e)JIS衝擊試驗適用於超過12mm之鋼料，其吸收能量試驗值之平均值。

