



YU 444
YU 445

- YU 444 (可替代316L之高耐蝕肥粒鐵鋼種)
- YU 445 (可替代304之耐蝕肥粒鐵鋼種)

YU 444 <可替代316L之高耐蝕肥粒鐵系鋼種>

YU 444 <A High Corrosion Resistant Ferritic Stainless Steel substitute for Grade 316L>

一、產品特性

- 1. 耐蝕性與316L相當。**
中鉻含鉬之肥粒鐵不銹鋼，耐蝕性與316L鋼種相當。
- 2. 兼具低熱膨脹、高熱傳導特性。**
比一般300系不銹鋼更適用於高溫/溫度變化環境。
- 3. 焊接性良好。**
添加鈮或鈦進行穩定化，可避免焊接後的晶界腐蝕。
- 4. 具成本優勢。**
因不添加鎳等貴重合金，故相較於316L具有較低成本之優勢。
- 5. 耐燃一級材料。**
通過CNS 14705-1之耐燃一級材料。
- 6. 低碳排綠色材料。**
以電爐生產，碳排放量比高爐生產的碳鋼/鋁錠為低。

二、應用

帷幕牆、熱水器儲水桶及各種水處理裝置。



Curtain walls – ESKY LAND ,Taiwan

I. Product Features

- 1. Corrosion resistance is equivalent to 316L**
The corrosion resistance of ferrite stainless steel with medium chromium contains molybdenum is equivalent to grade 316L stainless steel.
- 2. Low thermal expansion and high heat conductivity**
More capable than 300 series stainless steel in high temperature/ temperature variation environment.
- 3. Excellent weldability**
Niobium added for stabilization and preventing from intergranular corrosion after welding.
- 4. Cost advantage**
Higher Cost-competitive than 316L stainless steel for not containing precious metals, such as nickel.
- 5. Flame-resistant first-class material**
Passed CNS 14705-1 flame-resistant first-class material.
- 6. Green materials with low carbon emissions**
Produced by electric arc furnace process, so the carbon emission is lower than that of carbon steel /aluminum ingot produced by blast furnace.

II. Applications

Curtain wall, hot water storage tanks, and various types of water treatment equipment.



Hot water storage tanks

三、規範:符合 JIS SUS444及ASTM S44400之成份及機械性質要求。

III. Specifications: Conform with the JIS SUS 444 and ASTM S44400 in chemical composition and mechanical property.

1.成份 Chemical compositions

鋼種 Grade	化學成份 Chemical Composition (wt%)						
	Ni	Cr	Mo	Nb	Ti	C	N
ASTM S44400	≦ 1.00	17.50~19.50	1.75~2.50	[0.2+4(C+N)]~0.80		≦ 0.025	≦ 0.035
JIS SUS444	≦ 0.60	17.00~20.00	1.75~2.50	8(C+N)~0.80		≦ 0.025	≦ 0.025
YU 444	≦ 0.60	17.50~19.50	1.75~2.50	[0.2+4(C+N)]~0.80		≦ 0.025	≦ 0.025
ASTM 316L	10.00~14.00	16.00~18.00	2.00~2.30	-	-	≦ 0.030	≦ 0.100

2.機械性質 Mechanical properties

鋼種 Grade	降伏強度 Yield Strength (MPa)	抗拉強度 Tensile Strength (MPa)	伸長率 Elongation (%)	硬度 Hardness (HRB)
JIS SUS444	≧ 245	≧ 410	≧ 20	≦ 96
ASTM S44400	≧ 275	≧ 415	≧ 20	≦ 96
YU 444 (代表例 Typical)	357	501	32	83
316L (代表例 Typical)	307	602	55	80

四、物理性質

IV. Physical Properties

鋼種 Grade	密度 Density (g/cm ³)	熱膨脹係數 Thermal Expansion Coefficient (10 ⁻⁶ /°C)	熱導率 Heat Conductivity (W/m · °C)
		0~600°C	20°C
YU 444	7.7	11.5	26.0
316L	7.9	18.0	15.0

低熱膨脹係數於溫度變化環境下使用不易變形，高熱導率具有導熱散熱快速之優點。

Low thermal expansion coefficient can prevent deformation in an environment with temperature changes; high thermal conductivity provides better efficiency of heat conduction and dissipation.

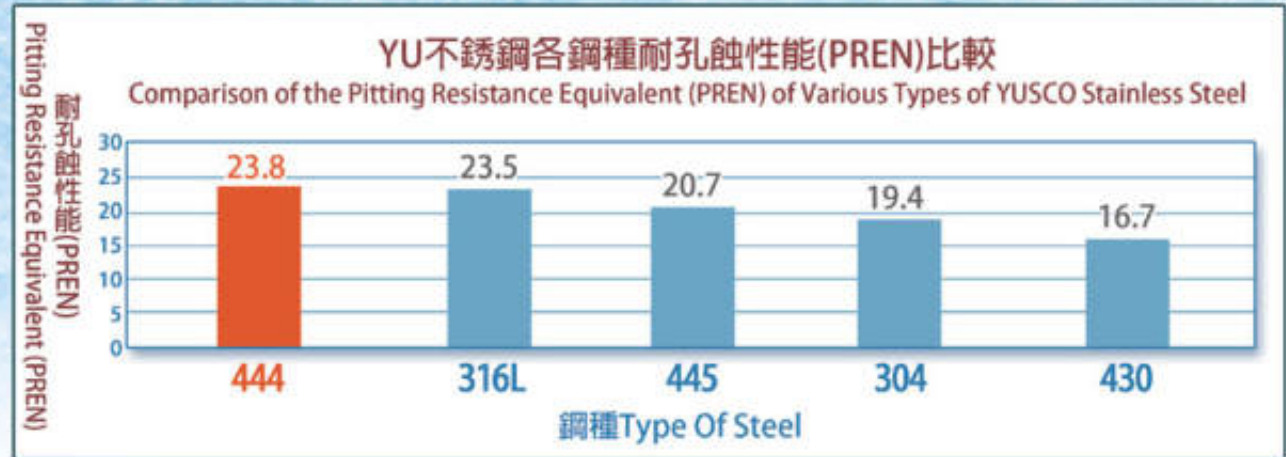
五、耐蝕性

V. Corrosion Resistance

耐孔蝕當量(Pitting Resistance Equivalent, PREN)，該計算值越高其耐孔蝕性越佳。

Pitting Resistance Equivalent (PREN); higher PREN value represents better pitting resistance.

$$\text{PREN} = \text{Cr} + 3.3\text{Mo} + 16\text{N}$$



YU 444鋼種耐孔蝕性能力與 316L鋼種相當。

The YU 444 steel's pitting resistance equivalent (PREN) is similar to the 316L steel.

循環鹽霧腐蝕試驗(Cyclic Corrosion Test, CCT)，參考ISO 9227之評價數(RN)作為耐蝕性的參考指標，RN值越高其耐腐蝕性越好。

Cyclic Corrosion Test(CCT), Refer to the evaluation number (RN) of ISO 9227 as a reference index of corrosion resistance, The higher the RN value, the better the corrosion resistance.

GRADE	444	316L	445	304L	430
672 hrs					
RN	9	7	4	3	1

YU 444鋼種耐腐蝕性能力優於YU 316L。

YU 444 steel has better corrosion resistance than YU 316L.

六、可接單尺寸及表面品級

請與燁聯業務人員接洽。

VI. Available dimensions and surface finish

Please contact the sales representative of Yieh United Steel Corp.

YU 445 <可替代304之耐蝕肥粒鐵系鋼種>

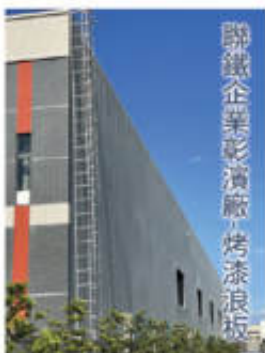
YU 445 <A Corrosion Resistant Ferritic Stainless Steel substitute for grade 304>

一、產品特性

- 1. 耐蝕性與304相當。**
具高鉻含量之肥粒鐵不銹鋼，耐蝕能力與304鋼種相當。
- 2. 兼具低熱膨脹、高熱傳導特性。**
比一般300系不銹鋼更適用於高溫/溫度變化環境。
- 3. 焊接性良好。**
添加鈮元素進行穩定化，可避免焊接後的晶界腐蝕。
- 4. 具成本優勢。**
因不添加鎳等貴重合金，故相較於304具有較低成本之優勢。
- 5. 具優良衝壓成形性。**
- 6. 耐燃一級材料。**
通過CNS 14705-1之耐燃一級材料。
- 7. 低碳排綠色材料。**
以電爐生產，碳排放量比高爐生產的碳鋼/鋁錠為低。

二、應用

1. 汽車排氣系統。
2. 太陽能支架、配電箱、建築裝飾、餐廚鍋具、家電製品等。



Painted corrugated steel sheets-building of LIEN-TEI STEEL ENTERPRISE



Solar energy stand-building of YIEH UNITED STEEL CORP.



Distribution box

I. Product Features

- 1. Corrosion resistance is equivalent to 304**
The corrosion resistance of ferrite stainless steel with high chromium is equivalent to grade 304 stainless steel.
- 2. Low thermal expansion and high thermal conductivity**
More capable than 300 series stainless steel in high temperature/ temperature variation environment.
- 3. Excellent weldability**
Niobium added for stabilization and preventing from intergranular corrosion after welding.
- 4. Cost advantage**
Higher Cost-competitive than 304 series stainless steel for not containing precious metals, such as nickel.
- 5. Excellent deep drawing formability**
- 6. Flame-resistant first-class material**
Passed CNS 14705-1 flame-resistant first-class material.
- 7. Green materials with low carbon emissions**
Produced by electric arc furnace process, so the carbon emission is lower than that of carbon steel /aluminum ingot produced by blast furnace.

II. Applications

1. Automobile exhaust pipe system.
2. Solar energy stand, distribution box, architectural decorations, kitchenware, home appliances, etc..

三、規範：符合 ASTM S44500及JIS SUS443J1之成份及機械性質要求。

III. Specifications: Conform with the ASTM S44500 in chemical composition and mechanical property.

1.成份 Chemical compositions

鋼種 Grade	化學成份 Chemical Composition (wt%)					
	Ni	Cr	Nb	Ti	C	N
ASTM S44500	≤0.60	19.00~21.00	10(C+N)~0.80	-	≤0.020	≤0.03
JIS SUS 443J1	≤0.60	20.00~23.00	Nb+Ti=8(C+N)~0.80		≤0.025	≤0.025
YU 445	≤0.60	20.00~21.00	10(C+N)~0.80	-	≤0.025	≤0.025
JIS SUS 304	8.00~10.50	18.00~20.00	-	-	≤0.08	-

2.機械性質 Mechanical properties

鋼種 Grade	降伏強度 Yield Strength (MPa)	抗拉強度 Tensile Strength (MPa)	伸長率 Elongation (%)	硬度 Hardness (HRB)
ASTM S44500	≥205	≥427	≥22	≤83
JIS SUS443J1	≥205	≥390	≥22	≤90
YU 445 (代表例 Typical)	340	485	32	81
304 (代表例 Typical)	297	671	54	84

四、物理性質

IV. Physical Properties

鋼種 Grade	密度 Density (g/cm ³)	熱膨脹係數 Thermal Expansion Coefficient (10 ⁻⁶ /°C)	熱導率 Heat Conductivity (W/m · °C)
		0~600°C	20°C
YU 445	7.7	11.5	25.0
304	7.9	18.0	15.0

低熱膨脹係數於溫度變化環境下使用不易變形，高熱導率具有導熱散熱快速之優點。

Low thermal expansion coefficient can prevent deformation in an environment with temperature changes; high thermal conductivity provides better efficiency of heat conduction and dissipation.

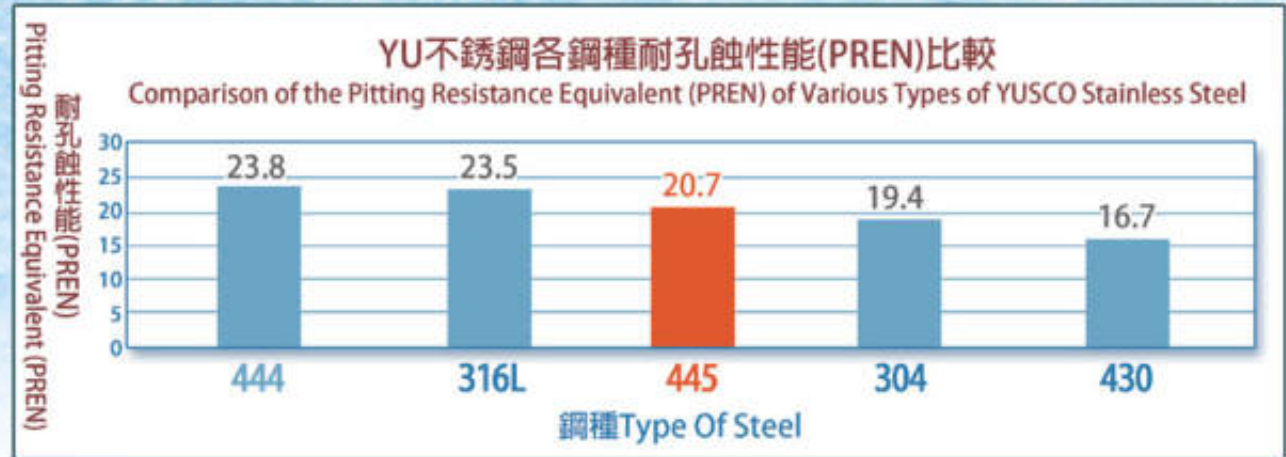
五、耐蝕性

V. Corrosion Resistance

耐孔蝕當量(Pitting Resistance Equivalent, PREN)，該計算值越高其耐孔蝕性越佳。

Pitting Resistance Equivalent (PREN); higher PREN value represents better pitting resistance.

$$PREN = Cr + 3.3Mo + 16N$$



YU 445耐孔蝕性能力優於YU 304鋼種。

YU 445 steel has better pitting resistant capability than YU 304 steel.

循環鹽霧腐蝕試驗(Cyclic Corrosion Test, CCT)，參考ISO 9227之評價數(RN)作為耐蝕性的參考指標，RN值越高其耐腐蝕性越好。

Cyclic Corrosion Test(CCT), Refer to the evaluation number (RN) of ISO 9227 as a reference index of corrosion resistance, The higher the RN value, the better the corrosion resistance.

GRADE	444	316L	445	304L	430
672 hrs					
RN	9	7	4	3	1

YU 445鋼種耐腐蝕性能力與YU 304L鋼種相當。

The corrosion resistance of YU 445 steel is equivalent to YU 304L steel.

六、可接單尺寸及表面品級

請與燁聯業務人員接洽。

VI. Available dimensions and surface finish

Please contact the sales representative of Yieh United Steel Corp.



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