

# Stainless Steel

The main raw materials, Ferro-Alloys(Fe-Cr, Fe-Ni) and stainless steel Scrap are melted in the Electro Arc Furnace(EAF). The material steel is refined for the properties of steel for the application through the vacuum with gas or decarbonization, deoxidization and desulfurization.

## Types and Uses

- ♦ Austenite
- ♦ Ferrite
- ♦ Martensite
- ♦ Duplex

## ★ Austenite

### **301 : 17Cr - 7Ni / 301L : 17Cr - 7Ni - LC**

It has less contents of Cr and Ni compared to that of 304 and is possible to make it possess high strength by further cooling process. And it is mainly used for springs and the train interior and exterior panels.

### **304 : 18Cr - 8Ni**

As the kind of steel most widely used, it has the good corrosion resistance, thermal resistance and mechanical properties and is used for home appliances, construction materials and kitchenware, etc.

### **304L : 18Cr - 9Ni - LC**

Since it has a low content of carbon compared to that of 304, it has superior inter-granular corrosion resistance and is used for industrial devices, chemical equipments and LNG tanks, etc.

### **304J1 : 17Cr - 8Ni - 2Cu**

It has superior formability due to its added Cu content and is used for the materials for deep drawing, such as kitchen sinks and thermos bottles, etc.

### **316 : 18Cr - 12Ni - 2Mo**

It has superior corrosion resistance and pitting resistance due to the added Mo and increased Ni contents and the excellent hightemperature strength, so it is widely used for water pipelines, equipment for manufacturing chemicals and coastal area facilities, etc.

### **316L : 18Cr - 12Ni - 2Mo - LC**

316L has superior inter-granular corrosion resistance due to its low content of carbon compared to 316 steel and it is used under the environments that there are lots of corrosive elements, such as salinity and poisonous gas, etc.

### **316LN : 18Cr - 11Ni - 2Mo - 0.13N(Plate)**

As a kind of steel with the strength that is enhanced by adding nitrogen into 316L steel, it is used for chemical equipments and storage tanks, etc.

### **321 : 18Cr - 9Ni - 0.3Ti**

As a kind of steel with the inter-granular corrosion resistance enhanced by adding Ti into 304 steel, it is used for heat exchangers and boiler covers, etc.

### **XM15J1 : 19Cr - 13Ni - 3.5Si(Cold-rolled)**

As a kind of steel with high-temperature salinity corrosion resistance and superior oxidation resistance, it is used for the components of cars, ships, machines, heaters and incinerators, etc.

### **310S : 22Cr - 20Ni**

As a kind of steel with superior high-temperature oxidation resistance and high-temperature strength by increasing the Cr and Ni contents, it is used for applications requiring heat-resistance, such as ships, machinery and heat exchangers, etc.

### **✪ Ferrite**

#### **430 : 16Cr - 0.05C**

As a representative kind of Ferrite Stainless Steel, it has superior formability and oxidation resistance and is used for various purposes and applications, such as kitchenware, western tableware, interior and exterior materials for construction, etc.

#### **409L : 11Cr - 0.2Ti - LCN**

It has good weldability and formability due to the added Ti content and is mainly used for cars, ships, machinery, heat exchangers and heat resistant devices, etc.

#### **410L : 12Cr - LCN**

As a kind of steel with weldability, toughness of welded connections and formability enhanced by lowering C content in 410 steel and is used for container structural materials and interior or exterior materials.

#### **429EM : 14Cr - 1Si - 0.2Ti - LC**

It has superior high-temperature strength and oxidation resistance as well as formability by adding elements of Si, Ti, Mn and Cu, etc. In addition to lowering C and N contents and is used for the components of cars, ships, machines and various kinds of heatresistant devices.

#### **430J1L : 19Cr - 0.5Cu - 0.4Nb - LCN**

It has superior corrosion resistance, formability, weldability and high-temperature characteristics due to the Cu and Nb contents added into 430 steel, so it is used for washing machines, kitchen utensils, home appliances and heat-resistant devices, etc.

#### **436L : 18Cr - 1Mo - 0.3Ti - LCN**

Since Mo, Ti and Nb are added into the steel, it has superior corrosion resistance, drawability and weldability and is used for auto exhaust parts and electric home appliance.

#### **439 : 18Cr - 0.4Ti - LCN**

Due to added Ti content, it has superior corrosion resistance, workability and weldability and is widely used for auto exhaust parts and ornamental pipes.

#### **444 : 19Cr - 2Mo - 0.3Nb - LCN**

As a kind of steel added with high Cr and Mo contents, it has superior inter-granular corrosion resistance and SCC resistance and is used for tanks and hot

water heaters, etc.

#### **445NF : 21Cr - 0.3Ti - 0.4Cu - Si,Nb**

As a kind of stainless steel containing high Cr content, it has superior corrosion resistance and formability and is used for various purposes and applications, such as elevators, western tableware, construction interior and exterior materials, etc.

#### **446M : 26Cr - 2Mo - 0.3(Ti, Nb) - LCN(Cold-rolled)**

As a kind of steel containing high Cr and Mo contents, it has superior corrosion resistance and is mainly used for the construction exterior and roofing materials at coastal areas.

#### ★ **Martensite**

##### **410 : 13Cr - 0.04C**

It is a representative type of Martensite Stainless Steel. It has superior drawability and is hardened through heat treatment.

##### **410B : 12Cr - 0.4Ni**

It is possible to secure an appropriate level of quenching-hardening by adjusting the contents of Mn and Ni compared to that of 410 steel and is used for automatic motorbikes and disk breaks, etc.

##### **420N1 : 13Cr - 0.1C - 0.1N**

As a unique kind of steel with corrosion resistance and strength are improved compared to that of 420J1 and is used for western tableware (knife).

##### **420J2 : 13Cr - 0.3C**

As a kind of steel having high quench hardening compared to that of 420J1, it is used for the parts of machinery requiring abrasion resistance.

#### ★ **Duplex**

##### **329LD : 20Cr - 2.5Ni - 1.4Mo - N**

As a kind of Ni and Mo saving Duplex (Lean Duplex) steel, it has superior anti-corrosion, inter-granular corrosion resistance and is used for applications like water pipelines, sea-water and chemical equipments, etc.

##### **329J3L : 22Cr - 5Ni - 3Mo - 0.15N**

It contains voluminous elements strengthening the corrosion resistance, such as Cr, Mo and N, etc. and has superior resistance against corrosion from salinity, SCC, pitting corrosion, crevice corrosion, abrasion and erosion, etc. Thus it is mainly used for applications like desalinating, chemical and food processing equipments.