DIN WS 1.4003/UNS S41003

Ferritic Stainless Steel

TYPICAL AMERICAN/GERMAN DENOMINATION AISI 410S / UNS S41003

Chemical Composition

Element	C	Mn	Si	Cr	Ni	P	S	N
%	0,03	1,50	1,00	10,5 – 12,5	1,00	0,04	0,015	0,03

Values according to ASTM A240/A240M - DIN EN 10088-2 standards

General Characteristics

The stainless steel 410D (K03) is a low-carbon alloy with additions of chromium and nickel, which provides excellent resistance in corrosive and abrasive environments, a high mechanical strength and good weldability. All these qualities aligned with one of the lowest costs in the chain of special steels makes of the stainless 410D an excellent choice to replace materials used in structural applications, such as carbon, galvanized or aluminized steels. The 410D has a ferritic structure and may be folded, cut, shaped and welded by standard procedures applied to stainless steels.

The 410D (K03) can be applied in several industrial segments, especially in replacement of carbon steels, which provides an up to 50% thickness reduction. In the transport sector, 410D may be applied in wagons and body of trucks and buses. Sugarcane mills applied this steel in equipments of reception and transportation of sugarcane, diffusers, evaporators, boilers, chimneys and gas washers. Other applications include mineral processing, water treatment, distillation columns in oil industry, grain silos and industrial floors.

Delivery Conditions*

- Products:coils, sheets, blanks cold rolled and hot rolled

Thickness range (mm)	Mill edge width (mm)	Slitted edge width (mm)
1,00 to 3,09	1240, 1270	1000, 1020, 1200, 1219, 1220, 1250
3,00 to 4,84	1240, 1270	1200, 1219, 1220, 1250
4,85 to 8,00	1240, 1270, 1520	1200, 1219, 1220, 1250, 1500
9,00 to 12,70	1520	1500

* For further information please contact Aperam South America.

Mechanical Properties

In annealed condition, according to standard ASTM E-8 M: samples are perpendicular to rolling direction, specimen with Lo = 50 mm. (Typical values).

Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness HRB
340	480	30	80

Physical Properties

Density	7.7 g/cm³
Modulus of Elasticity	220 GPa
Average Coefficient of Thermal Expansion	
from 0°C to 100°C	10.4 µm/m.°C
from 0°C to 538°C	11.6 µm/m.°C
Thermal Conductivity at 100°C	30 W/m.K
Specific Heat	430 J/kg.K
Electrical Resistivity	570 nW.m
Melting Range	1480°C – 1530°C

Source: ASM Specialty Handbook – Stainless Steels

Corrosion Resistance

The metal alloys are frequently exposed to moist environments, becoming susceptible to the general corrosion. Stainless steels provide high resistance against corrosion due to the formation of a protective film (passive layer). This property is provided by the addition of at least 10.5 wt% chromium (Cr) in the alloy. The 410D (K03) has highlighted application in environments that combine abrasion and corrosion, preventing the wear that causes accelerated loss on steel thickness. The use of 410D substantially increases the equipment lifetime, which reduces costs and maintenance time.

Application examples - 410 D

Side of the sugarcane conveyor

Gas washer in 410D

The information contained in this publication has been obtained from laboratory test results and traditional and respectable bibliographic references. The behavior of stainless steel may change due to conditions of temperature, pH, contaminants, and also the conservation of tools used in welding and conformation. For these reasons, the information contained in this publication may be used only as initial reference for tests or final specification by the custumer. Aperam South America is not responsible for any loss or damage caused by inappropriate use of the information contained in this publication.

www.aperam.com

Aperam South America Av. Carandaí, 1.115 | 23º andar | 30130-915 | Belo Horizonte | MG | Brasil | Tel.: 55 (31) 3235-4200 | Fax: 55 (31) 3235-4294
Usina Praça 1º de Maio, 9 | Centro | 35180-018 | Timóteo | MG | Brasil | Tel.: 55 (31) 3849-7000 Fax: 55 (31) 3848-4699
Escritório Comercial Av. Brigadeiro Faria Lima, 1.355 | 20º andar | 01452-919 | São Paulo | SP | Brasil | Tel.: 55 (11) 3818-1700 | Fax: 55 (11) 3816-1812