

1.4003 / 3CR12® FACT SHEET



What is 3CR12® / 1.4003

3CR12® / 1.4003 is a weldable ferritic utility stainless steel. It provides the benefits of traditional stainless steel, such as strength, corrosion and abrasion resistance, durability and low maintenance. It also provides additional benefits such as good weldability and formability, making it capable of fabrication by conventional techniques.

TECHNICAL SPECIFICATIONS

Structure and Properties

TO BSEN10088-2 (at ambient) transverse		Typical
Tensile Strength (N/mm ²)	450 - 650	522
0.2% Yield Strength (N/mm ²)	320min ≤ 6mm	376
	280min > 6mm	361
Elongation (%)	20min ≤ 6mm	23
	18min > 6mm	26
Hardness (BHN)*	220max ≤ 12mm	165
	250max > 12mm	
Charpy Impact (J) (to prEN10028-7)	50min ≥ 15mm	100
	35min < 15mm	85

*(not to BSEN10088-2)

Chemical Composition % To BSEN10088-2

Carbon	0.03 max
Silicon	1.00 max
Manganese	1.50 max
Phosphorus	0.040 max
Sulphur	0.020 max
Chromium	10.50 - 12.50
Nickel	0.30 - 1.00
Nitrogen	0.03 max

Does it have a cost benefit?

Because 3CR12® / 1.4003 does not depend upon expensive alloying elements like Nickel and Molybdenum, it has a consistently low cost advantage compared to other corrosion resisting materials.

It also offers the benefit of reduced costs through eliminating protective treatments and corrosion allowances. In-service 3CR12® / 1.4003 goes on to generate savings in maintenance, improved productivity and longer service life. It is proven to offer lower life cycle costs than traditional materials where corrosion or abrasion affect service conditions.

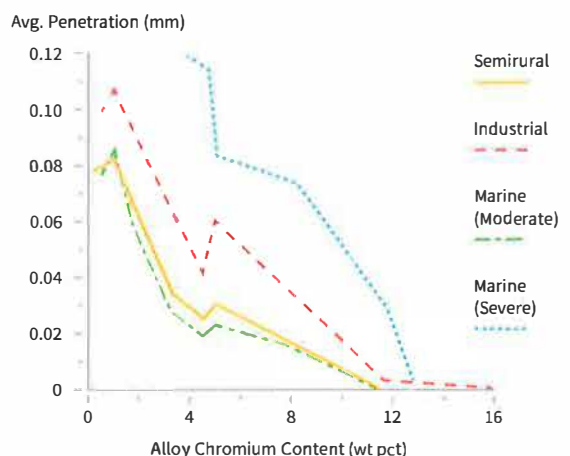
Does it meet recognised specifications?

3CR12® conforms to the European grade for the stainless steel type 1.4003, included in specification EN 10088, which covers stainless steel flat and long products. It is also included in the specification EN 10028-7 for stainless steels suitable for pressure purposes, which includes minimum specified impact values. Additionally 3CR12® / 1.4003 is certified to ASTM A240 UNS S41003.

Corrosion Resistance

As a general guide 3CR12® / 1.4003 has 250 times the corrosion resistance of unpainted mild steel. In atmospheric corrosion testing, 3CR12® / 1.4003 has a given corrosion rate of 0.001 - 0.002mm/year (0.0004" - 0.00008"/year) in a marine environment.

The effect of chromium content upon reducing corrosion in different environments



Corrosion / Abrasion

The cycle of abrasive removal of metal surface following surface corrosion, will rapidly erode carbon steels, even where costly coatings are applied.

In wet or damp conditions where abrasion occurs 3CR12® / 1.4003 has demonstrated excellent performance by resisting corrosion attack and maintaining better flow and slideability characteristics compared to non or low alloyed steels, including abrasion resistant grades.

Weldability

3CR12® / 1.4003 is designed to have good weldability. Its fine grained microstructure is determined by micro-alloy element control which prevents grain growth in the heat affected zone (HAZ) and allows high integrity welds in section thicknesses up to 30mm. The following weld processes have been successfully used on 3CR12®: SMAW, GTAW, FCAW, PAW, laser resistance, spot and seam.

Strength and Stiffness

3CR12® / 1.4003 offers higher strength and equal structural stiffness than mild steels such as BSEN10025 S275 (Min. Yield 275N/mm²) or BSEN10025 S355 (Min. Yield 355N/mm²). It behaves much like an austenitic steel, in that it is a gradual yielding steel and does not show a definite yield point. In square or rectangular sections, commonly used in vehicle frames 3CR12® ensures that the structure will deform in a controlled manner and absorb sufficient impact energy to preserve interior survival space.

Coating and Painting

Where paint is applied 3CR12® / 1.4003 has exceptional under paint corrosion resistance, and will continue to resist corrosion even where the paint coat has been damaged.

3CR12® / 1.4003 is designed to provide excellent abrasion resistance, therefore coatings or paint systems are not necessary for anti-abrasive purposes. Under normal corrosive conditions 3CR12® / 1.4003 will discolour, without affecting its performance. For aesthetic reasons painting may be the solution. Normal preparation is necessary, such as ensuring a clean, grease and contamination free surface etc. A primer coat is recommended for cold rolled material due to its smoother surface, but hot rolled, annealed and pickled steel may be suitably painted in a single coat.

Product Range

Material is available in hot and cold rolled sheet and plate in a range of widths and thicknesses. A choice of surface finish is also available. Welded tube can be supplied in a wide range of sizes and thicknesses.

In House Cut To Length Line

In 2012 Offshore Stainless installed a purpose-built cut to length line capable of processing coils into specific lengths, to provide our customers with bespoke sized sheets to best suit their production and processing equipment. It has since processed over 80,000 tons of 4003 / 3CR12® material in a variety of widths and the thicknesses ranging from 1.00mm to 6.00mm. Offshore Stainless have always held an extensive stock of sheet sizes, which is now enhanced by the largest stock of 3CR12® / 4003 coil in Europe. Offshore Stainless can offer very short lead times on the specific lengths you require from standard widths at highly competitive rates. Please enquire.



AVAILABLE PRODUCTS

Thickness of sheet (mm)	1.00	1.20	1.50	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	15.00	20.00	25.00	30.00
2000mm x 1000mm	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2500mm x 1250mm	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3000mm x 1500mm	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6000mm x 1500mm	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



Largest European Independent Stockist of Stainless Steel Ferritic Grade 1.4003 in Sheet, Plate, Strip, Square & Rectangular Box Section

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