

CromElso™ 5 Chromium-Molybdenum Steel

Special alloy (5Cr0.5Mo) steel for high temperature service in sulfur rich media

CromElso™ 5 is Industeel's 5%Cr-0.5%Mo pressure vessel steel grade primarily intended for welded pipe and pressure vessel fabrication for the oil refining industry.

It is intended to be used for environments where the presence of sulfur compounds is expected as long as no free hydrogen or H₂S is present, in the temperature range up to 500°C (932°F).

CromElso™ 5 is available in plate form for thicknesses from 5 to 138 mm.

Properties

Standards

CromElso™ 5 is compliant with:

- ASTM/ASME A/SA-387 gr5 cl.2 (UNS S50200)
- ASTM/ASME A/SA-387 gr5 cl.1 (UNS S50200)
- EN 10028-2 X12CrMo5 (1.7362)

*For other standard compliancy, please consult.
Multiple certifications are possible on request.*

Tensile properties

Guaranteed transverse tensile properties at room temperature. (Measured on every plates):

Standard	Plate thickness (mm)	Yield Strength (MPa)	Ultimate Tensile Strength (MPa)	Minimum Elongation (%)
EN 10028-2 X12CrMo5	≤ 60	≥ 320	510-690	20
	60-150	≥ 300	480-660	
A/SA-387 gr5 cl.1		≥ 205	415-585	18
A /SA-387 gr5 cl.2		≥ 310	515-690	

Chemical composition

Ladle analysis – Expressed in weight percent (wt%) as per above standards

C	S	P	Si	Mn	Cr	Mo	Ni	N	Al
0.10	≤ 0.003	≤ 0.020	0.30	0.30	5.0	0.5	≤ 0.3	≤ 0.02	0.045

The above chemistry is suitable for welded steam piping and can be adjusted according to intended use and product size.

CVN Impact Properties

The impact properties of **CromElso™ 5** depend upon the temperature and time of heat treatment (tempering and PWHT) as well as the plate thickness. For typical heat treatment conditions, the following impact properties of **CromElso™ 5** can be guaranteed :

Standard	Impact Energy (min) at Test Temperature		
	-20°C	0°C	+20°C
EN 10028-2 X12CrMo5	27	34	40

Welding

Consumables used for the welding of **CromElso™ 5** shall comply with the following standards.

	SMAW	GMAW	FCAW	SAW (Wire + Flux)
AWS	SFA5.5 EB 8018 B2 H4 R	SFA 5.28 ER 80S-B6	SFA 5.29 E 80T5-B6M-H4	SFA5.23 F7P0-EB6-B6
EN	EN 3590-A ECrMo5 B 4 2 H5	EN ISO 21952-A G CrMo5 Si	EN ISO 17643-A T CrMo5 B M21 3 H5	EN ISO 24596-B S 49 2 FB SU 5CM + EN ISO 14174 S A FB 1 65 DC H5

Please contact your favorite filler materials supplier for corresponding references.

Delivery conditions

Plates

CromElso™ 5 can be produced in thicknesses from 5 mm and up to ~138 mm (3/16" up to 5.5").
Maximum plate weight: 20 tons per unit for continuous casting route and up to 80+ tons for ingot route.

Prefabrication

By special agreement, prefabricated pieces can be delivered according to drawings. The following operations can be performed: beveling, bending, rolling of shell to radius, cutting to shape, fabrication of stiffeners and annular plates, pre-welding. *(Non exhaustive list, please consult)*

XCarb®

On request, **CromElso™ 5** plates can be delivered with **XCarb®** certificate that guarantees steels with a low carbon footprint, made through the electric arc furnace using recycled scrap and renewable electricity. Product carbon footprint is third-party verified.

Applications

Hydrocarbon sources get more and more enriched with sulfur compounds as sour crudes tend to be more exploited than was the case in the past. In refinery environments, recommendations for material selection like API RP 571 are available.

CromElso™ 5 is resistant to sulfur attack and may for example be used in Crude Distillation or Vacuum Distillation units. It is generally applicable in a temperature range of 270-500°C and with a fluid not containing more than 1wt% sulfur as long as no free hydrogen or H₂S is present.

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Technical data and information are to the best of our knowledge at the time of editing. However, they may be subject to some slight variations due to our ongoing research programme on steels. Therefore, we suggest that information be verified at time of enquiry or order. Furthermore, in service, real conditions are specific for each application. The data presented here are only for the purpose of description, and considered as guarantees when written formal approval has been delivered by our company. Further information may be obtained from the address opposite.