

# SIQUAL<sup>™</sup> 7380

## CHROMIUM-MOLYBDENUM ALLOY STEEL

**SIQUAL 7380** is a chromium-molybdenum alloy steel primarily intended for welded boilers and pressure vessels designed for elevated temperature service. It can be certified as steel grade 10CrMo9-10 according to EN standard and as SA 387 GR 22 CL 2 according to ASME/ASTM standard.

### STANDARDS

Steel grade 10CrMo9-10 / SA 387 GR 22 CL 2 is produced in accordance with:

- EN 10028-2: Non-alloy and alloy steels with specified elevated temperature properties
- ASME SA 387/SA 387M BPVC.II.A-2019: Pressure Vessel Plates, Alloy Steel, Chromium-Molybdenum
- ASTM A 387/A387M: 2011/2017: Standard Specification for Pressure Vessel Plates, Alloy Steel, Chromium-Molybdenum

### CHEMICAL COMPOSITION

	C	Si	Mn	P	S	Al tot.	N	Cr	Cu	Mo	Nb	Ni	Ti	V
EN 10028-2 and EN 10020	0.08	-	0.40	-	-	-	-	2	-	0.90	-	-	-	-
	0.14	0.50	0.80	0.020	0.010	0.30	0.012	2.5	0.30	1.10	0.06	0.30	0.05	0.10
ASTM A /ASME SA 387 GR 22 and (S)A 20	0.05	-	0.30	-	-	0.020	-	2	-	0.90	-	-	-	-
	0.15	0.50	0.60	0.035	0.030	-	-	2.5	0.40	1.10	0.02	0.40	-	0.03

### MECHANICAL PROPERTIES

According to EN 10028-2

Delivery condition	Tensile properties	
	Thickness [mm]	R <sub>el</sub> (R <sub>p0.2</sub> ) [MPa]
NT (normalized + tempered)	≤ 16	min. 310
	> 16.0–40	min. 300
	> 40.01–60	min. 290
NT (normalized + tempered) / QT (quenched + tempered)	> 60.01–100	min. 280

Delivery condition	Tensile properties	
	Thickness [mm]	R <sub>m</sub> [MPa]
NT (normalized + tempered) / QT (quenched + tempered)	≤ 60	480– 630
	> 60.01–100	470–620

Delivery condition	Tensile properties	
	Thickness [mm]	A <sub>5</sub> [%]
NT (normalized + tempered) / QT (quenched + tempered)	all	min. 17

Delivery condition	Impact toughness			
	Testing direction	Thickness [mm]	Temperature [°C]	KV <sub>2</sub> [J]
NT (normalized + tempered) / QT (quenched + tempered)	transverse*	≤ 60 mm	20	min. 31
		> 60 mm	20	min. 27

\*In the case of nominal thickness greater than 40 mm, the impact test piece shall be taken at quarter of the product thickness

**According to ASME SA 387 Grade 22 Class 2**

Delivery condition	Tensile properties		
	R <sub>el</sub> (R <sub>p0.2</sub> ) [MPa]	R <sub>m</sub> [MPa]	A <sub>5</sub> [%]
NT (normalized + tempered) / QT (quenched + tempered)	min. 310	515–690	min. 18

**DIMENSIONS**

Hot-rolled quarto plates	
Thickness [mm]	8–*
Width [mm]	1000–2500*
Length [mm]	Up to 12000

\*Max thickness shall be discussed at the time of inquiry.

\*Max width for primed quarto plates is 2000 mm.

**TOLERANCES ON DIMENSIONS**

- EN 10029
- ASTM A/ASME SA 20

**SURFACE CONDITION**

- EN 10163-2
- ASTM A/ASME SA 20

**DELIVERY CONDITION**

Hot-rolled quarto plates	
normalized + tempered + shot-blasted	normalized + tempered + shot-blasted + primed

**INSPECTION DOCUMENTS**

The type of document shall be agreed upon at the time of enquiry and order. A test certificate according to EN 10204/3.1 is issued mandatorily.

The information and data in this product data sheet are intended for informative purpose only and may be revised at any time without notice. Presented typical properties of the materials are described only to help readers make their own evaluations and decisions. They are not guaranteed.