

# SIQUAL<sup>™</sup> 4903

## CHROMIUM-MOLYBDENUM ALLOY STEEL

**SIQUAL 4903** 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 X10CrMoVNb9-1 according to EN standard and as SA 387 GR 91 CL 2 according to ASME standard.

### STANDARDS

Steel grade X10CrMoVNb9-1 / SA 387 GR 91 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

### 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	-	0.30	-	-	-	0.03	8	-	0.85	0.06	-	-	0.18
	0.12	0.50	0.60	0.020	0.005	0.04	0.07	9.5	0.30	1.05	0.10	0.30	0.05	0.25
ASME SA 387 GR 91 and SA 20	0.08	0.20	0.30	-	-	-	0.03	8	-	0.85	0.06	-	-	0.18
	0.12	0.50	0.60	0.020	0.010	0.04	0.07	9.5	0.40	1.05	0.10	0.40	-	0.25

### MECHANICAL PROPERTIES

According to EN 10028-2

Delivery condition	Tensile properties			
	Thickness [mm]	R <sub>el</sub> (R <sub>p0.2</sub> ) [MPa]	R <sub>m</sub> [MPa]	A <sub>5</sub> [%]
NT (normalized + tempered)	≤ 60	min. 455	580–760	min. 18
	60.01–150	min. 435	550–730	

Delivery condition	Impact toughness		
	Testing direction	Temperature [°C]	KV <sub>2</sub> [J]
NT (normalized + tempered)	transverse*	-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 91 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)	min. 415	585–760	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
- ASME SA 20

## SURFACE CONDITION

- EN 10163-2
- 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.