

SIQUAL[™] 5663

9% NICKEL STEEL

SIQUAL 5663 is a 9 % nickel alloyed steel grade in the quenched and tempered condition intended for cryogenic and low-temperature storage tanks and pressure vessels. SIQUAL 5663 has excellent toughness and weldability, making it an ideal solution for LNG storage tanks. Martensitic microstructure, in combination with retained austenite, makes a unique contribution to cryogenic toughness, similar to stainless steels, but with much higher yield and tensile strength. SIQUAL 5663 can be supplied in accordance with EN 10028-4 as X7Ni9 (1.5663) or ASTM/ASME as A/SA 553 Type I.

STANDARDS

General technical delivery requirements according to EN 10028-4 and ASTM/ASME A/SA 553 Type I.

Standard test methods and definitions for mechanical testing according to ASTM A370.

Tensile testing at room temperature according to EN ISO 6892-1

Impact testing according to EN ISO 148-1.

Standard specification for general requirements according to ASTM/ASME A/SA 20.

Tolerances on dimensions and shape according to EN 10029 or ASTM A20.

Delivery requirements for surface condition according to EN 10163-2.

Ultrasonic testing according to EN 10160, ASTM A435, ASTM A578.

CHEMICAL COMPOSITION

SIQUAL 5663	C	Si	Mn	P	S	Ni	V	Cr+Cu+Mo
min. in %	-	0.15	0.3	-	-	8.5	-	-
max. in %	0.06	0.40	0.8	0.01	0.002	9.5	0.01	0.5

MECHANICAL PROPERTIES

Steel grade	Tensile properties*				
	Thickness [mm]	Rp _{0.2} [MPa] min.	R _m [MPa]	A _{5.65} [%]	A ₅₀ [%] min.
X7Ni9	6–30	585	680–820	18	-
X7Ni9	30.1–40	575	680–820	18	-
A/SA 553 Type I	6–40	585	690–825	-	20

* For transverse tensile test pieces.

Steel grade	Thickness [mm]	Impact toughness			
		Testing direction	Temperature [°C]	KV2 [J] min.	Lateral expansion [mm]
X7Ni9	6–40	Transverse	–196	80*	-
A/SA 553 Type I	6–40	Transverse	–196	-	0.381

* Measured on standard specimen 10 x 10 x 55 mm. The specified minimum value is the average of 3 tests. One individual value may be below the minimum average value specified, provided that it is not less than 70 % of that value. For plate thickness below 12 mm, subsize specimens shall be used. The minimum values of subsize specimens shall be reduced in direct proportion to the cross-sectional area of the test piece

DELIVERY CONDITION

- Hot-rolled quarto plates in quenched and tempered condition.

DIMENSIONS

Thickness [mm]	Width* [mm]	Length [mm]
6–7.9	max. 2000	max. 12500
8–40	max. 2500	max. 12500

*2060/2560 – if plates are ordered with untrimmed rolling edges.

SURFACE CONDITION

- Shot-blasted
- Shot-blasted and anti-corrosion painted*

* Maximum width of the anti-corrosion painted plates is 2000 mm. Thickness of the coating is 20–60 µm.

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.