

Materials Overview

Material Nr.	Temperature range	Use	Use
316 SS (Standard)	800°C 1472°F (for pressure retaining parts: 450°C 842°F)	Extraction facilities, dryers, mixing- and batching facilities, evaporators, distilleries, and other	The Cr-Ni-Mo alloyed material is very resistant against reducing organic and inorganic acids, as well as against halogen-containing media. This steel is furthermore less susceptible to selective corrosion. The titanium stabilized material exhibits slightly better heat properties with somewhat less resistance to acids.
1.4462 (st steel) Duplex	500°C 932°F	Sea water desalination plants, petro-chem industry, off-shore technology, evaporators, extraction facilities, distilleries, dryers	Good mechanical properties combined with high resistance against general corrosion, tear- and oscillation corrosion.
1.4539 (st steel)	450-800°C 842-1472°F	Flue gas sulfur elimination (scrubbers), below dew point	The material is a highly acid resistant specialty steel with particularly good resistance to sulfuric and phosphoric acid at concentrations of up to 70% and operating temperatures of up to 80°C. Furthermore this material is resistant against concentrated organic acids, even at high temperatures, as well as against salt- and soda solutions. The steel is especially insensitive to selective corrosion and tear corrosion.
2.4610 NiMo16Cr16Ti Hastelloy C4	650-1040°C 1202-1904°F	Flue gas sulfur elimination (scrubbers), chlorine gas	Excellent stability in the chemical process industry against strong oxidizing media, hot contaminated mineral acids, solvents, chlorine- and chlorine contaminated media (organic and inorganic), anhydrous bleach acid, formic acid, distilled vinegar, Essighydrid-, seawater, and The alloy exhibits great ductile strength and resistance to corrosion even in temperatures of 650 – 1040°C. Resistant to build-up of Korngrenzkariben and is therefore in most cases usable without heat treatment after welding.
1.4876 X10NiCrAlTi3320 Incoloy 800	900°C 1652°F	Hydrogen facilities	This alloy is resistant against corrosion from hydrogen and hydrogen sulfides as well as against tension corrosion.
2.4816 NiCr15Fe Inconel 600	1175°C 2147°F	air heaters	Excellent oxidation resistance up to 1175°C with superb general resistance to corrosion. Maintains high stability up to approx. 650°C. Good mechanical properties even in low temperatures. Because of its resistance to chloride-corrosion this alloy is also used in nuclear reactor components. Can be welded w/out heat treatment.
3.7035 Ti-50° B 348 Gr.2 Titan Gr.2	300°C 572°F (for pressure retaining parts: -10 - +250°C 14 - +482°F)	Sea water desalination plants, petro-chem industry, food industry, evaporators, extraction facilities, distilleries, dryers	Good mechanical properties combined with high resistance against general corrosion, tear- and oscillation corrosion. Low density and excellent to be welded.

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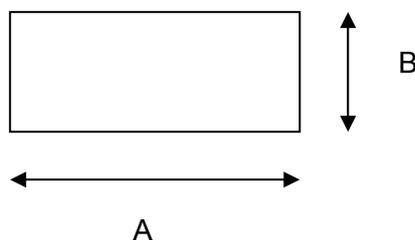
Material Nr.	Temperature range	Use	Use
2.4360 NiCu2Ofe Monel	425-550°C 797-1020°F	Extraction facilities, dryers, mixing – and batching plants, evaporators distilleries, sea water desalination plants	The Cr-Ni-Mo alloyed material is very resistant against reducing organic and inorganic acids, as well as against halogen-containing media. This steel is furthermore less susceptible to selective corrosion. The titanium stabilized material exhibits slightly better heat properties with somewhat less resistance to acids.
PVDF	-40 bis +120°C -40°F to +248°F	Chemical plants, flue gas cleaning (scrubbers), filter technology	Well suited for many aggressive acids, many solvents and cleaning agents, hot water resistant
1.5415 16 Mo 3	530°C 986°F	High pressure steam applications	
1.7335	570°C 1058°F	High pressure steam applications	
1.7380 10 CrMo 4 4	600°C 1112°F	High pressure steam applications	
1.4903 10 CrMoVNB 91	650°C 1202°F	High pressure steam applications	High pressure steam, energy and environmental technologies, chemicals/ petro-chem, oil- and gas industries, cryogenics, food and beverage industry, plastics

Technical Specifications

Sensor materials		Comercial designation	AISI	UNS
	1.4571	316Ti (standard)		S31635
	1.4462	Duplex	316 Ti	S31803
	1.4539			N08904
	2.4610	Hastelloy C4		N06455
	1.4876	Incoloy 800		N08811
	2.4816	Inconel 600		N06600
	2.4360	Monel		N04400
	PVDF			-
	1.5415	15 Mo 3		K12020
	1.7335	13 CrMo 44		K11562
	1.7380	10 CrMo 910		-
	1.4903	X 10 CrMoNVb		-
	3.7035	Titan Gr. 2	B 348 Gr.2	-

Pipe inside diameter	1 ½" – 480" (DN 20 - DN 12000)
Max. operating pressure	PN 400 / 5801 psig (depending on sensor type)
Max. operating temperature	1200°C (2192°F) (depending on sensor material)
Accuracy	± 0,3 % of full scale

- Lower permanent pressure loss (energy savings)
- Use from Re=3150
- Direct mass flow measurement (integrated temperature and flow measurement)
- Direct-mount of electr. DP transmitter
- Little danger of contamination due to large pressure sensing apertures
- ITABAR-flow-sensors with certified accuracy, tested at water calibration facility ABB Göttingen/Gerrnany. All sensor types from DN400 (16") through DN1600 64") were calibrated and tested – see test protocols.
- Material certificates available in 3.1B und 3.1A
- Flo-Tap-versions allow installation and removal under pressure (wet-tap)
- Flow measurement in rectangular or square vessels is possible



Substitute diameter

$$D_{ER} = 2 * \sqrt{\frac{A * B}{\pi}}$$

The sensor is always made for the longer side to better cover the flow profile.

- Shorter straight pipe run requirements as compared to orifice plates and nozzle.