



# Keep Your Process Ultra Clean

## Tri-Clover® UltraPure ISO 2037

### Application

Alfa Laval Tri-Clover® UltraPure ISO 2037 tubes & fittings are the perfect choice for ultra pure processes within the demanding pharmaceutical, biotech and personal care industries.

### Standard design

UltraPure ISO 2037 tubes & fittings are manufactured to meet the ISO 2037 dimension standard for the sizes DN25 - DN100 and DIN 11850 dimension standard for the sizes DN10 - DN15.

### Materials

Product wetted steel parts are available in 1.4404 (316L) stainless steel  
Elastomers are available in EPDM, FPM and PTFE



Chemical composition in accordance with DIN EN 10088-1

Steel designation		% by mass								
Number	Name	C	Si	Mn	P	S	N	Cr	Mo	Ni
1.4404	X2CrNiMo17-12-2	≤ 0.030	≤ 1.00	≤ 2.0	≤ 0.045	≤ 0.015 <sup>(b)</sup>	≤ 0.11	16.5 to 18.5	2.00 to 2.50	10.0 to 13.0 <sup>(c)</sup>

b) For bars, rods, wire, sections, bright products and the relevant semi-finished products, a maximum content of 0,030 % S applies.

c) Where for special reasons, e. g. hot workability for the fabrication of seamless tubes where it is necessary to minimize the delta ferrite content, or with the aim of low magnetic permeability, the maximum Ni content may be increased by 1,50 % (m/m) for 1.4404.

All stainless steel parts are in accordance with DF class 1 (≤3% delta ferrite content)

All tubes are bright annealed, pickled and passivated in accordance with DIN EN 10217-7 W2Rb.

### Elastomer properties

	EPDM	FPM	PTFE
FDA (CFR 21: 177.2600)	Yes	Yes	Yes
USP Class VI certified	Yes	Yes	No
Recommended operating temperature, °C	-10°C to +140°C	-10°C to +180°C	-10°C to +220°C
<b>Resistance</b>			
Steam resistance	Yes	No	Yes
Alkali resistance	Yes	No	Yes
Resistance to fats/oils	No	Yes	Yes
Ozone resistance	Yes	Yes	Yes

## Dimensions

Dimensions and tolerances for DN25 to DN100 fittings are in accordance with ISO 2037. Dimensions and tolerances for DN10 and DN15 fittings are in accordance with dimension standard DIN 11850.

Dimension	DN10	DN15	25	38	51	63.5	76.1	101.6
Outside diameter (mm)	13.0	19.0	25.0	38.0	51.0	63.5	76.1	101.6
Inside diameter (mm)	10.0	16.0	22.6	35.6	48.6	60.3	72.9	97.6
Wall thickness (mm)	1.5	1.5	1.2	1.2	1.2	1.6	1.6	2.0

## Internal and external surface finish

Hygiene class <sup>a</sup>	Surface texture		
	Internal surface <sup>b</sup>	Seam internal	External
H4o H4 HE4o <sup>c</sup> HE4 <sup>c</sup>	Ra < 0.40 µm	Ra < 0.40 µm	Ra < 0.80 µm

a) Tubular fittings with external surface of Ra<0.80 µm are marked with an o (e.g. H4o), Machined fittings with external surface of Ra<0,80 µm are marked without an o (e.g. H4)

b) Including welded and bended area

c) Electro polished in accordance with standardized procedures involving the removal of at least 20 µm.

## Fitting pressure rating

Pressure ratings in bar	
Bends, Tees, Reducers (80/200°C)	25/15
Clamp unions (80/200°C)	25/15

## Tube pressure rating

Permissible operating pressures at room temperature 20°C

Dimension	DN10	DN15	25	38	51	63.5	76.1	101.6
Permissible operating pressures in bar for tubes								
ISO 2037			195	126	94	105	84	82
Series A/DIN	369	263						

## Other standards fulfilments

- All tubes and fittings are in accordance with the European pressure vessel directive (PED Directive 97/23/EC)
- All plastic protection end caps are in compliance to REACH (European Community Regulation on chemicals and their safe use)

## Delivery condition

To ensure easy identification and immediate use, all Tri-Clover UltraPure ISO 2037 tubes & fittings are delivered as follows:

- All tubes are delivered in lengths of 6 meters (0 to + 10 mm).
- Weld ends are delivered with straight-cut ends, free from burrs and breaks suitable for automatic welding.
- All fittings are individually marked with heat number, material, surface finish designation, and dimension.
- Internally cleaned and free from oils, grease, particulates, grinding compounds or electrolytes.
- Protected with end caps and individually dry-wrapped in plastic bags.
- Delivered with MTR (3.1) traceability certificate.

Please contact Alfa Laval for further information regarding ordering.

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**How to contact Alfa Laval**

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