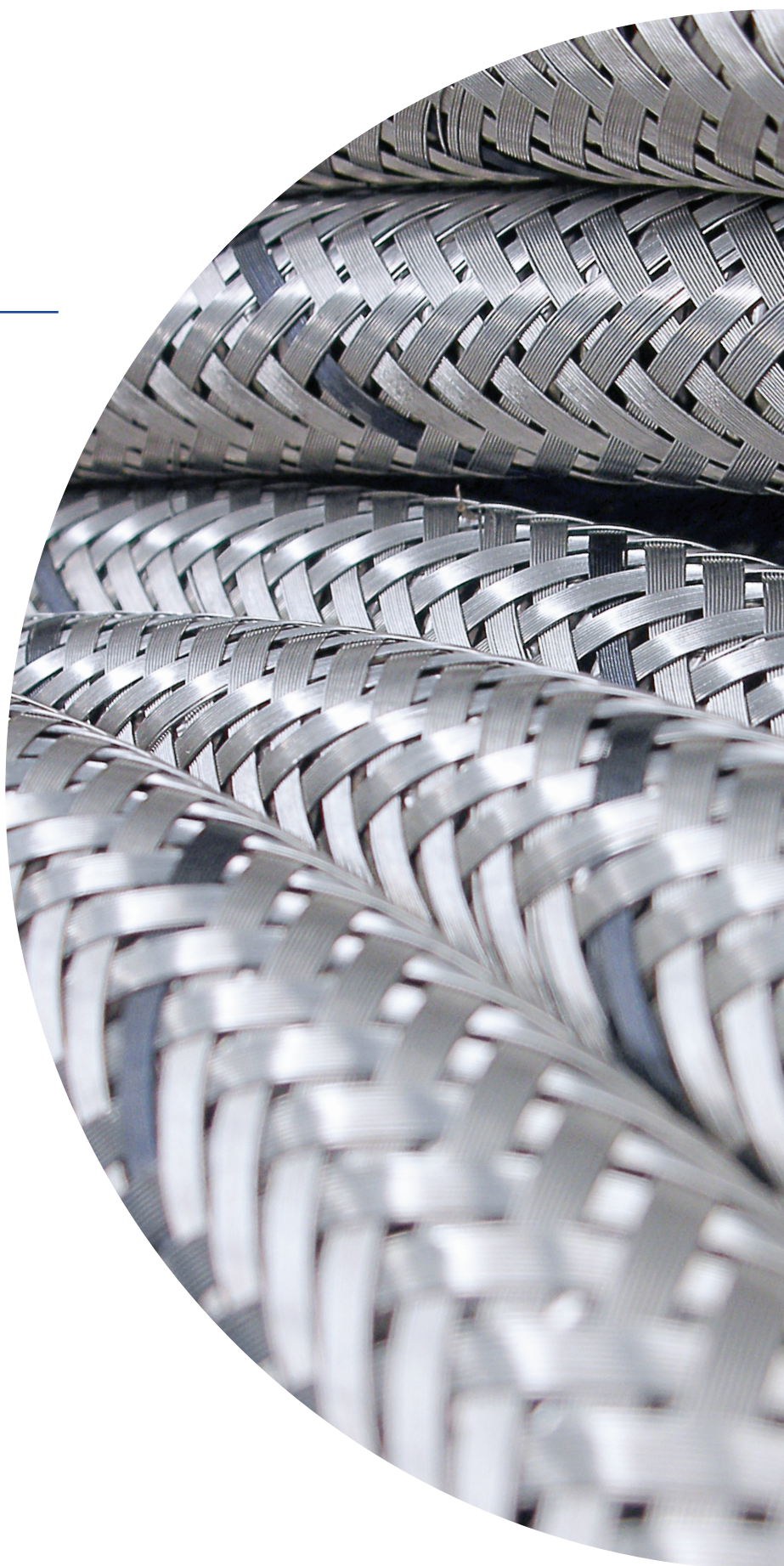
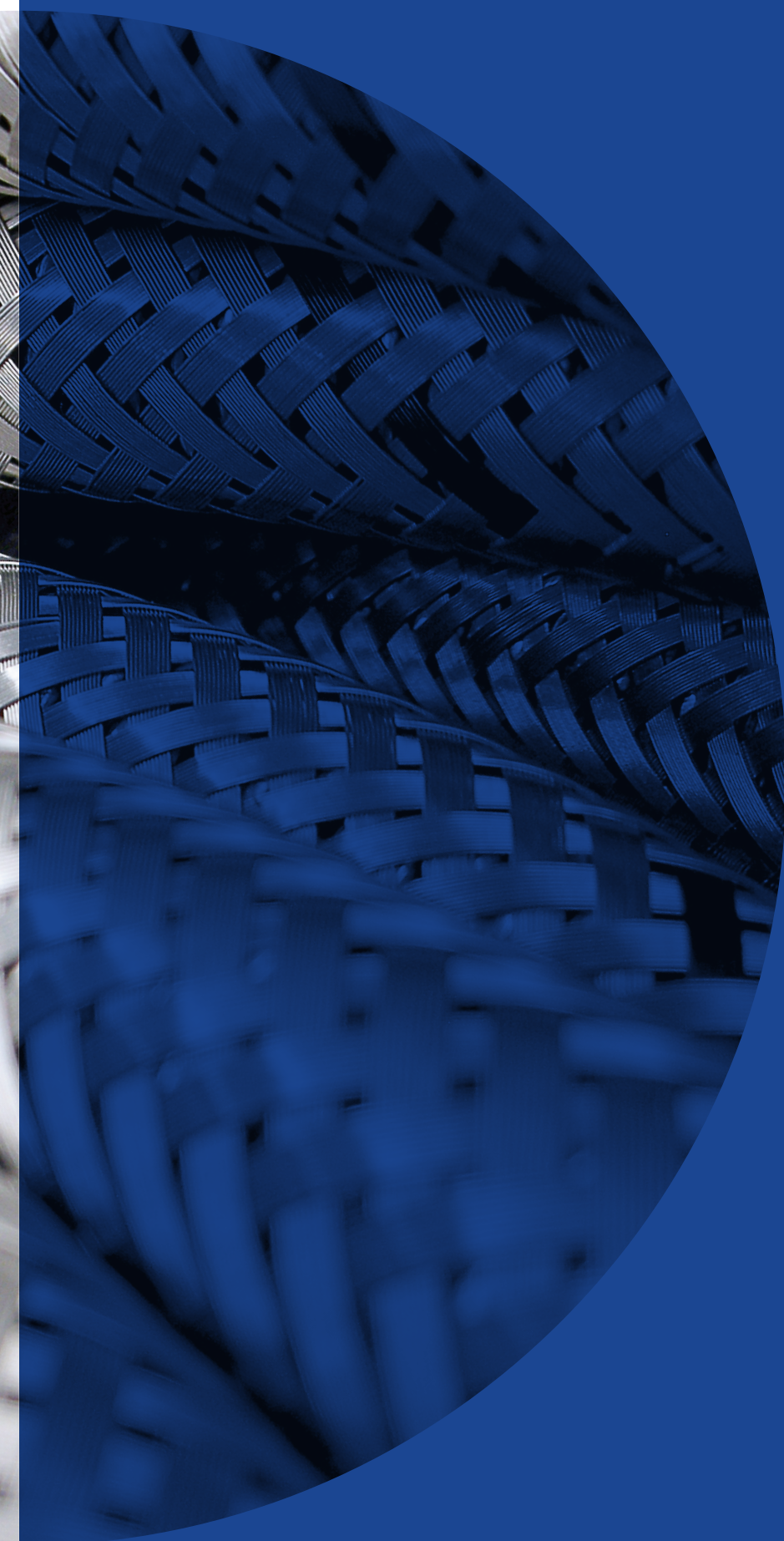


# Inox Hoses

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## Balinox

*Balinox is the corrugated stainless steel hose range by Balflex®. Balinox stainless steel hoses are produced to Balflex® specifications and to ISO 10380 type 2 standards. It covers a wide variety of low to very high-pressure applications, in different grades of stainless steel, with different construction methods of the inner tube and of the reinforcement braid.*

*Stainless steel hoses facilitate relative movement of the parts to be connected, adapt to thermal expansion, resist to high pressure and offer good corrosion resistance to a wide range of fluids.*

*Balflex® optimized the production of these hoses in order to assure the highest performance and the most extensive range of applications. The Balinox range of stainless steel hoses offer a very wide variety of materials and construction solutions in order to suit the particular problems to be addressed.*

### The Balinox range of metal hoses in this catalogue includes:

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- × **Balinox 10.5211.** - Wide pitch annular corrugated stainless steel AISI 321 hose with one braid AISI 304
- × **Balinox 10.5161.** - Wide pitch annular corrugated stainless steel AISI 316L hose with one braid AISI 304
- × **Balinox 10.5104.** - Wide pitch annular corrugated stainless steel AISI 304 hose with one braid AISI 304

### General Guidelines

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Normally, the following aspects should be considered when choosing a stainless steel hose:

- × the chemical reactivity of the product to be conveyed by the hose;
- × the temperature of the product to be conveyed;
- × the pressure of the product to be conveyed;
- × the kind of flow of the product to be conveyed (pulsation or high velocity);
- × the geometry of the parts to be connected and the degree of movement required, the bend radius and unsupported lengths;
- × the environmental conditions.



## 1. Suitability of corrugated metal hose assemblies

Corrugated metal hose assemblies are basically suitable for the transport of critical fluids under pressure and temperature. The required flexibility of the corrugated hose generally results in a wall thickness considerably smaller than that of all other parts of the system in which they are installed. Therefore, increasing the wall thickness of the hose to prevent damages caused by corrosion is not reasonable and it becomes essential to select a suitable material for the flexible element which is sufficiently resistant against all corrosive media that may occur during the entire lifetime. In many cases, the hose has to be manufactured out of a material with even higher corrosion resistance than those of the system parts it is connected to.

In addition, possible corrosive environmental effects must be considered. The material selection must take into account all possible kinds of corrosion, especially pitting corrosion, intergranular corrosion, crevice corrosion and stress corrosion cracking (SCC).

## 2. Selection of a suitable material

The material for the corrugated hose is to be selected according the specific aggressiveness of the operating fluid or of the surrounding atmosphere.

Recommendations for the selection of materials are given under [www.euroqualiflex.com](http://www.euroqualiflex.com).

## 3. Prevention of corrosive effects during operation of the plant

Any uncertainties concerning the exact composition of the working fluid, differing operating states, and other peripheral service conditions may additionally increase the danger of corrosion and have to be taken into account.

## 4. Responsibility of the hose manufacture

The responsibility of the hose manufacturer covers the functional design of the hose assembly according to the given information, as pressures, temperatures, movements, kind of application and additional loadings, and also the material concerning its formability and weldability.

In addition, BALFLEX techn staff contribute their wide scope of experience when assisting the user in selecting a suitable material for the special application. But, with regard to the influences of the actual operating situation given (see point 3) only the user can take full responsibility for the selected material. The advice of the hose manufacturer can only be given without obligation, i.e. without any liability for the material to be properly selected.

## Selection of the hose

### Chemical reactivity

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**Balinox** Stainless Steel hose is supplied in the following grades:

- × **AISI 321**
- × **AISI 316**

The different grades have different chemical resistance to the fluids or gases to be conveyed. **AISI 321** grade suits most applications; **AISI 316** is used for more demanding applications. The Chemical Resistance Chart shows the suitability of the two grades in terms of corrosion resistance to the most common products to be conveyed.

The corrosion resistance of the end fittings should also be considered at this point. **AISI 321** can be used with stainless steel, carbon steel and copper based alloys fittings, which offer a wide variety of corrosion and mechanical resistance. Carbon steel fittings should not be welded on **AISI 316** hose; normally **AISI 316** applications require also stainless steel fittings.

### Pulsating and high velocity flows

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Pulsating flows, such as exhaust of alternating machines or discharge controlled by fast operating valves, can force the assembly into vibration, which causes premature failure of the assembly. High velocity flows (5 m/s for liquids, 10 m/s for saturated vapor and 50 m/s for gases) can also force the corrugations into vibration.

Vibrations can be avoided through the use of an adequate interlocked flexible internal liner, that smoothes the flow. Double-walled inner tube also reduces vibration hazard.

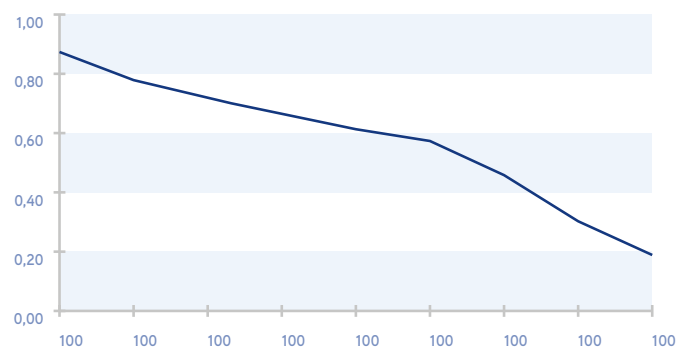
### Temperature

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The different grades allow different maximum working temperatures. The maximum working temperature is of 800°C (1472°F) for the **AISI 321** and **AISI 316** grades, and of 450°C for the **AISI 304** grade. Brass fittings and galvanizing allow a maximum working temperature of 220°C (428°F).

High working temperatures and alternation of high and low temperatures accelerate corrosion and imply a decrease in life expectancy of the hose. Chart 1 recommends a de-rating factor for pressure rating and bend radius as a function of working temperature. Please consult for more information.

**Chart 1: Temperature de-rating factor for working pressure:**



**NOTE:** Enter the working temperature in °C (°F) in the horizontal axis and read the de-rating factor on the vertical axis. Apply this factor to the maximum working pressure of the hose rated for ambient temperature to obtain the actual working pressure at the project temperature. Likewise apply the inverse coefficient to the minimum bend radius.

### Pressure

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The construction type of the hose influences mainly its mechanical resistance and flexibility. The corrugated inner tube allows for flexibility and tightness. The external braid or braids allow for increased pressure resistance. **Balinox®** hoses are supplied standard with none, one or two braids of **AISI 304**. Other braids or external sleeves may be supplied and fit into the assemblies. Double-walled hoses allow higher working pressures while maintaining high flexibility.



## Installation geometry

The construction type of the hose influences mainly its mechanical resistance and flexibility. Balinox® Stainless Steel hose is supplied in the following construction variations:

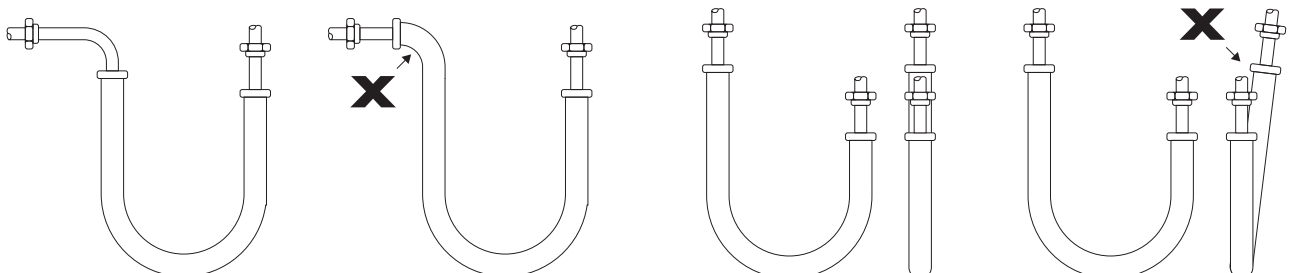
- × annular or helical corrugated
- × narrow or wide pitch
- × single or double walled
- × unbraided or braided
- × unlined or lined

The flexibility of the hose is limited. The minimum bend radius of the hose is a very important parameter for hose selection. Installation should always take into consideration the need to respect the minimum bend radius of the hose. The static minimum bend radius is the minimum bend radius that can be achieved once, at installation, for connection of static parts. The dynamic minimum bend radius is the minimum flexure radius that shall be considered for a constant motion.

The determination of the length of the hose should allow for thermal expansion and for the minimum bend radius necessary for the motion and offset of the assembly. Flexing must be always limited to one plane.

The catalogue pages list the minimum bend radius of the standard **Balinox®** hoses. For other construction variations please consult. Table 2 gives equations for calculation of hose lengths for different common situations.

Care should be given to fluid and hose weight on unsupported lengths of hose and its effect on bending the hose beyond the minimum bend radius. Hose support should be used in order to restrain the hose at the inferior horizontal axis level.



## Environmental conditions

Abrasion can damage the external braid and thus reduce sharply the pressure resistance of the hose. External abrasion, mechanical shock or external exposure to extreme temperatures and aggressive media should be considered when choosing external braid, sleeves or other protection elements. A larger diameter metal or rubber hose may be fit on the outside, as well as insulating braided sleeves.

## Assembly, Installation and Servicing

All hoses should be handled and installed without twisting or torsion (see examples below). The twisting of the hose causes shear stress and significantly reduces service life. To avoid the possibility of applying torsion when tightening fittings, free swiveling connections should be used at both ends.

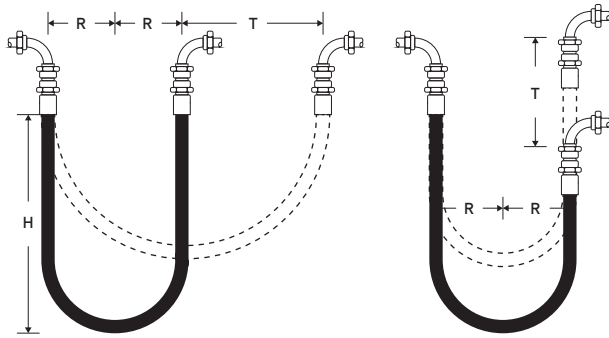
Braid damage significantly reduces pressure resistance. Visual inspection of the outer braid should be made. Braids that show wire cuts should be proportionally pressure underrated.

Stainless steel hoses should be hydrostatically tested before installation at 150% of working pressure for 1 minute.

Some applications require special cleaning procedures like degreasing, washing and drying. Care should be taken to use non-aggressive solvents. The same applies when servicing the equipment to which the hose were assembled.

## Equations for calculation of hose lengths

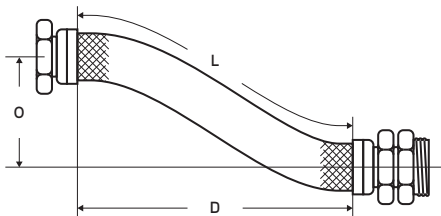
**1 Equation for calculation of hose length in an installation with a 180° loop and travel length in the same plane:**



$$L = X + \pi R + 1/2 T$$

$$H = 1/2 (L - \pi R) + R$$

**2 Equation for calculation of hose length in an off-set static installation:**



$$L = X + 2,86 R_s \arccos (1 - O / 2R_s)$$

$$D = 2,86 R_s \sin (L / 2,86 R_s)$$

**3 Equation for calculation of hose length in an off-set dynamic installation:**

$$L = X + 4,42 R \arccos (1 - O / 2R)$$

$$D = 4,42 R \sin (L / 4,42 R)$$

in which

L = Developed length of the hose

X = constant (see table 2.4) for the straight length needed at the end of the hose

R = radius of the half loop ( $\geq$  dynamic minimum bend radius)

R<sub>s</sub> = static minimum bend radius

T = travel distance of the moving end of the hose

O = Off-set of the two ends of the hose

D = Distance between hose ends

**4 Table for determination of the straight length needed at the end of the hose:**

DN	6	10	16	19	25	31	39	50
X (mm)	50	75	100	125	150	175	200	250



# Stainless Steel Chemical Resistance Chart

● Recommended

● Recommended with Restrictions

● Not Recommended

Fluids	SS GRADE	
	AISI 316L	AISI 321
Acetic acid all concentrations, 20°C	●	●
Acetic acid all concentrations, boiling	●	●
Acetic anhydride	●	●
Acetone	●	●
Acetyl chloride	●	●
Acetylene	●	●
Air	●	●
Aluminium acetate	●	●
Aluminium chloride, 10%, quiescent	●	●
Aluminium chloride, 25%, quiescent	●	●
Aluminium hydroxide	●	●
Aluminium sulfate all concentrations, 20°C	●	●
Aluminium sulfate, boiling	●	●
Ammonia, anhydrous	●	●
Ammonia, anhydrous hot gas	●	●
Ammonia, liquor	●	●
Ammonium bromide	●	●
Ammonium carbonate, 1% - 5%	●	●
Ammonium chloride, 1% - 10%	●	●
Ammonium chloride, higher concentrations	●	●
Ammonium bicarbonate, hot	●	●
Ammonium hydroxide all concentrations	●	●
Ammonium monophosphate	●	●
Ammonium nitrate, boiling	●	●
Ammonium oxalate, 5%	●	●
Ammonium perchlorate 10%, boiling	●	●
Ammonium persulfate, 5%	●	●
Ammonium phosphate, 5%	●	●
Ammonium sulfate, 1% - 5%	●	●
Ammonium sulfate, 10%	●	●
Ammonium sulfite, 20°C, boiling	●	●
Amyl acetate, amyl chloride	●	●

Fluids	SS GRADE	
	AISI 316L	AISI 321
Aniline	●	●
Argon, liquid	●	●
Barium carbonate	●	●
Barium hydroxide	●	●
Barium nitrate	●	●
Barium sulfate	●	●
Barium sulfide	●	●
Benzene, 20°C or hot	●	●
Benzoic acid	●	●
Boric acid,	●	●
Borax, 5%	●	●
Butane	●	●
Butyl acetate	●	●
Butyric acid	●	●
Calcium carbonate	●	●
Calcium chlorate	●	●
Calcium chloride	●	●
Calcium hypochlorite, 2%	●	●
Calcium hydroxide, 10% - 20%	●	●
Calcium sulfate, saturated	●	●
Carbonated water	●	●
Carbonic acid, saturated solution	●	●
Carbon dioxide	●	●
Carbon disulfide	●	●
Carbon tetrachloride	●	●
Carbon tetrachloride, commercial + 1% water	●	●
Cellulose	●	●
Chloroacetic acid	●	●
Chlorine gas	●	●
Chlorinated water, saturated	●	●
Chloroform	●	●
Chromium plating bath	●	●



Fluids	SS GRADE	
	AISI 316L	AISI 321
Chloroethane	●	●
Citric acid, still	●	●
Citric acid, boiling	●	●
Copper acetate	●	●
Copper carbonate	●	●
Copper cyanide	●	●
Copper nitrate	●	●
Copper sulfate	●	●
Creosote	●	●
Cyanogen gas	●	●
Cichloroethane	●	●
Diethyl ether	●	●
Ethylene glycol	●	●
Ethanol, 20°C and boiling	●	●
Ethyl acetate concentrated solution	●	●
Ethylene chloride	●	●
Fluorine, gas, moist	●	●
Formaldehyde, 40%	●	●
Formic acid	●	●
Furfural	●	●
Gglue solution (acid)	●	●
Glycerine	●	●
Hydrochloric acid	●	●
Hydrocyanic acid	●	●
Hydrofluoric acid	●	●
Hydrogen peroxide	●	●
Hydrogen sulfide, dry	●	●
Hydrogen sulfide, wet	●	●
Iodoform	●	●
Iron 2 chloride	●	●
Iron 3 chloride, 1%, 20°C	●	●
Iron 3 chloride, 1%, boiling	●	●
Iron 3 hydroxide	●	●
Iron 3 nitrate	●	●
Iron 2 sulfate	●	●
Kerosene	●	●

Fluids	SS GRADE	
	AISI 316L	AISI 321
Lactic acid, 1%	●	●
Lactic acid, 5% and more, 20°C	●	●
Lactic acid, 5% and more, boiling	●	●
Lead diacetate, 5%	●	●
Linseed oil	●	●
Magnesium chloride quiescent, 20°C	●	●
Magnesium chloride quiescent, hot	●	●
Magnesium sulfate	●	●
Mercury	●	●
Methane, liquid	●	●
Methanol, boiling	●	●
Naphtha	●	●
Naphthalene sulphonic acid	●	●
Nickel chloride solution	●	●
Nickel sulfate	●	●
Nitre cake	●	●
nitric acid 5%, 50%, 70%, boiling	●	●
nitric acid, 65%, 20°C	●	●
nitric acid, 65%, boiling	●	●
nitric acid, concentrated, 20°C	●	●
Nitric acid, concentrated, boiling	●	●
Nitrogen, liquid	●	●
Oil, crude	●	●
Oil, vegetable, mineral	●	●
Oleic acid	●	●
Oxalic acid, 20°C	●	●
Oxalic acid, boiling	●	●
Oxygen, liquid	●	●
Paraffin, hot	●	●
Petrol	●	●
Petroleum ether	●	●
Phenol	●	●
Phosphoric acid, 1%, 5%	●	●
Phosphoric acid, 10%, quiescent	●	●
Phosphoric acid, 80%	●	●
Potassium bromide	●	●



Fluids	SS GRADE	
	AISI 316L	AISI 321
Potassium carbonate	●	●
Potassium chlorate	●	●
Potassium chloride	●	●
Potassium chromium sulfate, 5%	●	●
Potassium cyanide	●	●
Potassium bichromate	●	●
Potassium ferricyanide	●	●
Potassium oxalate	●	●
Potassium hydroxide, 5%, 27%	●	●
Potassium hypochlorite	●	●
Potassium nitrate	●	●
Potassium permanganate, 5%	●	●
Potassium sulfate	●	●
Potassium sulphite	●	●
Propane	●	●
Sea water	●	●
Silver bromide	●	●
Silver nitrate	●	●
Sodium acetate	●	●
Sodium carbonate, 5%, 50%	●	●
Sodium chloride, saturated, 20°C	●	●
Sodium chloride saturated, boiling	●	●
Sodium cyanide	●	●
Sodium fluoride, 5%, solution	●	●
Sodium bicarbonate	●	●
Sodium bisulfate, solution	●	●
Sodium bisulfate saturated solution	●	●
Sodium hydroxide	●	●
Sodium hypochlorite	●	●
Sodium nitrate	●	●
Sodium perchlorate, 10%	●	●
Sodium phosphate	●	●
Sodium sulfate	●	●
Sodium sulfite	●	●
Sodium thiosulphate	●	●
Sodium thiosulphite	●	●

Fluids	SS GRADE	
	AISI 316L	AISI 321
Steam	●	●
Stearic acid	●	●
Sulfur, moist	●	●
Sulfur, molten	●	●
Sulfur chloride, dry	●	●
Sulfur dioxide gas, moist	●	●
Sulfur dioxide gas, dry	●	●
Sulfuric acid, 5%, 10%	●	●
Sulfuric acid, 50%	●	●
Sulfuric acid, concentrated, 20°C	●	●
Sulfuric acid concentrated, boiling	●	●
Sulphurous acid	●	●
Tannic acid	●	●
Tartaric acid, 20°C	●	●
Tartaric acid, boiling	●	●
Tin 2 chloride saturated	●	●
Tin 4 chloride solution	●	●
Trichloroacetic acid	●	●
Trichloroethylene, dry	●	●
Trichloroethylene, moist	●	●
Vinegar	●	●
Water, potable	●	●
Yeast	●	●
Zinc chloride, 5%, still	●	●
Zinc cyanide, moist	●	●
Zinc nitrate, solution	●	●
Zinc sulfate	●	●

The following data is based on tests and believed to be reliable; however the tabulation should be used as a guide ONLY, since it does not take into consideration all variables, such as elevated temperatures, fluid contamination, concentration, etc. that may be encountered in actual use. All critical applications should be tested.






Note: All data based on 20°C/70°F unless otherwise noted.

# BALINOX 321 UNBRAIDED



ISO 10380 TYPE 2 - 10.5210.

Stainless steel annular corrugated tube AISI 321 UNBRAIDED.

#	inch				PSI		PSI			
		mm	mm	MPa		MPa		mm	mm	kg/m
10.5210.006	1/4"	6,0	9,6	<b>1,0</b>	145	<b>4,0</b>	580	25	85	0,08
10.5210.008	5/16"	8,0	12,1	<b>0,8</b>	116	<b>3,2</b>	464	32	125	0,09
10.5210.010	3/8"	10,0	14,3	<b>0,8</b>	116	<b>3,2</b>	464	38	140	0,11
10.5210.013	1/2"	12,0	16,7	<b>0,6</b>	87	<b>2,4</b>	348	45	140	0,12
10.5210.016	5/8"	16,0	21,6	<b>0,6</b>	87	<b>2,4</b>	348	58	160	0,19
10.5210.020	3/4"	20,0	26,8	<b>0,5</b>	73	<b>2,0</b>	290	70	170	0,25
10.5210.025	1"	25,0	32,2	<b>0,4</b>	58	<b>1,6</b>	232	85	190	0,35
10.5210.032	1.1/4"	32,0	41,1	<b>0,4</b>	58	<b>1,6</b>	232	105	260	0,44
10.5210.040	1.1/2"	40,0	49,5	<b>0,3</b>	44	<b>1,2</b>	174	130	300	0,68
10.5210.050	2"	50,0	60,3	<b>0,3</b>	44	<b>1,2</b>	174	160	320	0,88
10.5210.065	2.1/2"	65,0	81,0	<b>0,15</b>	22	<b>0,6</b>	87	180	410	1,07
10.5210.075	3"	80,0	95,0	<b>0,15</b>	22	<b>0,6</b>	87	200	450	1,10
10.5210.100	4"	100,0	117,0	<b>0,10</b>	15	<b>0,4</b>	58	290	560	1,40
10.5210.125	5"	125,0	150,0	<b>0,10</b>	15	<b>0,4</b>	58	325	710	2,67
10.5210.150	6"	150,0	175,0	<b>0,10</b>	15	<b>0,4</b>	58	380	815	3,22
10.5210.200	8"	200,0	225,0	<b>0,10</b>	15	<b>0,4</b>	58	500	1015	4,85
10.5210.250	10"	250,0	278,0	<b>0,05</b>	7	<b>0,2</b>	29	620	1270	7,15

**INNER TUBE:** AISI 321 annular corrugated stainless steel  
**OUTER COVER:** none

**SAFETY FACTOR:** 4:1  
**APPLICATION:** steam, chemicals, oxygen, thermofluid, naphtha, cryogening

**TEMPERATURE RANGE:** -200°C (-328°F) +600°C (+1112°F)

**COUPLINGS:** Balflex® Welding Rings serie 31



# BALINOX 321 + BRAID 304



## ISO 10380 TYPE 2 - 10.5211.

Stainless steel annular corrugated tube AISI 321 with stainless steel braid AISI 304

#	inch	Diagram		MPa		PSI		MIN BEND RAD		KG
		mm	mm	MPa	PSI	mm	mm	kg/m		
10.5211.006	1/4"	6,0	10,7	<b>12,0</b>	1740	<b>48,0</b>	6960	25	85	0,15
10.5211.008	5/16"	8,0	13,2	<b>10,0</b>	1450	<b>40,0</b>	5800	32	125	0,17
10.5211.010	3/8"	10,0	15,5	<b>9,0</b>	1305	<b>36,0</b>	5220	38	140	0,22
10.5211.013	1/2"	12,0	18,0	<b>8,0</b>	1160	<b>32,0</b>	4640	45	140	0,24
10.5211.016	5/8"	16,0	23,0	<b>7,0</b>	1015	<b>28,0</b>	4060	58	160	0,40
10.5211.020	3/4"	20,0	28,3	<b>6,4</b>	928	<b>25,6</b>	3712	70	170	0,50
10.5211.025	1"	25,0	33,5	<b>5,0</b>	725	<b>20,0</b>	2900	85	190	0,63
10.5211.032	1.1/4"	32,0	42,8	<b>4,0</b>	580	<b>16,0</b>	2320	105	260	0,85
10.5211.040	1.1/2"	40,0	51,2	<b>3,5</b>	508	<b>14,0</b>	2030	130	300	1,17
10.5211.050	2"	50,0	62,5	<b>3,0</b>	435	<b>12,0</b>	1740	160	320	1,61
10.5211.065	2.1/2"	65,0	83,0	<b>2,4</b>	348	<b>9,6</b>	1392	180	410	1,99
10.5211.075	3"	80,0	97,0	<b>1,8</b>	261	<b>7,2</b>	1044	200	450	2,20
10.5211.100	4"	100,0	119,0	<b>1,6</b>	232	<b>6,4</b>	928	290	560	3,00
10.5211.125	5"	125,0	152,5	<b>1,4</b>	203	<b>5,6</b>	812	325	710	4,90
10.5211.150	6"	150,0	177,5	<b>1,0</b>	145	<b>4,0</b>	580	380	815	5,71
10.5211.200	8"	200,0	228,0	<b>0,8</b>	116	<b>3,2</b>	464	500	1015	9,15
10.5211.250	10"	250,0	281,0	<b>0,8</b>	109	<b>3,0</b>	435	620	1270	13,75

**INNER TUBE:** AISI 321 annular corrugated stainless steel  
**OUTER COVER:** one stainless steel AISI 304 braid

**SAFETY FACTOR:** 4:1  
**APPLICATION:** steam, chemicals, oxygen, thermofluid, naphta, cryogening

**TEMPERATURE RANGE:** - 200°C (-328°F) +600°C (+1112°F)






**COUPLINGS:** Balflex® Welding Rings serie 31

# BALINOX 321 + DOUBLE BRAID 304



## ISO 10380 TYPE 2 - 10.5212.

Stainless steel annular corrugated tube AISI 321 with double stainless steel braid AISI 304

#	inch				PSI		PSI			
		mm	mm	MPa		MPa		mm	mm	kg/m
10.5212.006	1/4"	6,0	12,0	<b>19,2</b>	2784	<b>76,8</b>	11136	25	85	0,23
10.5212.008	5/16"	8,0	14,5	<b>16,0</b>	2320	<b>64,0</b>	9280	32	125	0,25
10.5212.010	3/8"	10,0	17,0	<b>14,4</b>	2088	<b>57,6</b>	8352	38	140	0,32
10.5212.013	1/2"	12,0	19,5	<b>12,8</b>	1856	<b>51,2</b>	7424	45	140	0,37
10.5212.016	5/8"	16,0	24,5	<b>11,2</b>	1624	<b>44,8</b>	6496	58	160	0,61
10.5212.020	3/4"	20,0	30,0	<b>10,2</b>	1479	<b>40,8</b>	5916	70	170	0,75
10.5212.025	1"	25,0	35,0	<b>8,0</b>	1160	<b>32,0</b>	4640	85	190	0,91
10.5212.032	1.1/4"	32,0	44,5	<b>6,4</b>	928	<b>25,6</b>	3712	105	260	1,30
10.5212.040	1.1/2"	40,0	53,0	<b>5,6</b>	812	<b>22,4</b>	3248	130	300	1,66
10.5212.050	2"	50,0	64,5	<b>4,8</b>	696	<b>19,2</b>	2784	160	320	2,35
10.5212.065	2.1/2"	65,0	85,5	<b>3,8</b>	557	<b>15,4</b>	2227	180	410	2,92
10.5212.075	3"	80,0	100,0	<b>2,9</b>	418	<b>11,5</b>	1670	200	450	3,30
10.5212.100	4"	100,0	121,5	<b>2,6</b>	371	<b>10,2</b>	1485	290	560	4,75
10.5212.125	5"	125,0	155,0	<b>2,2</b>	325	<b>9,0</b>	1299	325	710	7,15
10.5212.150	6"	150,0	181,0	<b>1,6</b>	232	<b>6,4</b>	928	380	815	8,20
10.5212.200	8"	200,0	213,0	<b>1,3</b>	186	<b>5,1</b>	742	500	1015	13,50
10.5212.250	10"	250,0	285,0	<b>1,2</b>	174	<b>4,8</b>	696	620	1270	20,40

**INNER TUBE:** AISI 321 annular corrugated stainless steel  
**OUTER COVER:** two stainless steel AISI 304 braids

**SAFETY FACTOR:** 4:1  
**APPLICATION:** steam, chemicals, oxygen, thermofluid, naphtha, cryogening

**TEMPERATURE RANGE:** -200°C (-328°F) +600°C (+1112°F)

**COUPLINGS:** Balflex® Welding Rings serie 31










# BALINOX 316 UNBRAIDED



ISO 10380 TYPE 2 - 10.5160.

Stainless steel annular corrugated tube AISI 316L UNBRAIDED

#	inch				PSI		PSI			
		mm	mm	MPa		MPa		mm	mm	kg/m
10.5160.006	1/4"	6,0	9,6	<b>1,0</b>	145	<b>4,0</b>	580	25	85	0,08
10.5160.008	5/16"	8,0	12,1	<b>0,8</b>	116	<b>3,2</b>	464	32	125	0,09
10.5160.010	3/8"	10,0	14,3	<b>0,8</b>	116	<b>3,2</b>	464	38	140	0,11
10.5160.013	1/2"	12,0	16,7	<b>0,6</b>	87	<b>2,4</b>	348	45	140	0,12
10.5160.016	5/8"	16,0	21,6	<b>0,6</b>	87	<b>2,4</b>	348	58	160	0,19
10.5160.020	3/4"	20,0	26,8	<b>0,5</b>	73	<b>2,0</b>	290	70	170	0,25
10.5160.025	1"	25,0	32,2	<b>0,4</b>	58	<b>1,6</b>	232	85	190	0,35
10.5160.032	1.1/4"	32,0	41,1	<b>0,4</b>	58	<b>1,6</b>	232	105	260	0,44
10.5160.040	1.1/2"	40,0	49,5	<b>0,3</b>	44	<b>1,2</b>	174	130	300	0,68
10.5160.050	2"	50,0	60,3	<b>0,3</b>	44	<b>1,2</b>	174	160	320	0,88
10.5160.065	2.1/2"	65,0	81,0	<b>0,15</b>	22	<b>0,6</b>	87	180	410	1,07
10.5160.075	3"	80,0	95,0	<b>0,15</b>	22	<b>0,6</b>	87	200	450	1,10
10.5160.100	4"	100,0	117,0	<b>0,10</b>	15	<b>0,4</b>	58	290	560	1,40
10.5160.125	5"	125,0	150,0	<b>0,10</b>	15	<b>0,4</b>	58	325	710	2,67
10.5160.150	6"	150,0	175,0	<b>0,10</b>	15	<b>0,4</b>	58	380	815	3,22
10.5160.200	8"	200,0	225,0	<b>0,10</b>	15	<b>0,4</b>	58	500	1015	4,85
10.5160.250	10"	250,0	278,0	<b>0,05</b>	7	<b>0,2</b>	29	620	1270	7,15

**INNER TUBE:** AISI 316L annular corrugated stainless steel  
**OUTER COVER:** none

**SAFETY FACTOR:** 4:1  
**APPLICATION:** steam, chemicals, oxygen, thermofluid, naphta, cryogening

**TEMPERATURE RANGE:** -200°C (-328°F) +600°C (+1112°F)

**COUPLINGS:** Balflex® Welding Rings serie 31

# BALINOX 316 + BRAID 304



ISO 10380 TYPE 2 - 10.5161.

Stainless steel annular corrugated tube AISI 316L with stainless steel braid AISI 304

#	inch				PSI		PSI			
		mm	mm	MPa		MPa		mm	mm	kg/m
10.5161.006	1/4"	6,0	10,7	<b>12,0</b>	1740	<b>48,0</b>	6960	25	85	0,15
10.5161.008	5/16"	8,0	13,2	<b>10,0</b>	1450	<b>40,0</b>	5800	32	125	0,17
10.5161.010	3/8"	10,0	15,5	<b>9,0</b>	1305	<b>36,0</b>	5220	38	140	0,22
10.5161.013	1/2"	12,0	18,0	<b>8,0</b>	1160	<b>32,0</b>	4640	45	140	0,24
10.5161.016	5/8"	16,0	23,0	<b>7,0</b>	1015	<b>28,0</b>	4060	58	160	0,40
10.5161.020	3/4"	20,0	28,3	<b>6,4</b>	928	<b>25,6</b>	3712	70	170	0,50
10.5161.025	1"	25,0	33,5	<b>5,0</b>	725	<b>20,0</b>	2900	85	190	0,63
10.5161.032	1.1/4"	32,0	42,8	<b>4,0</b>	580	<b>16,0</b>	2320	105	260	0,85
10.5161.040	1.1/2"	40,0	51,2	<b>3,5</b>	508	<b>14,0</b>	2030	130	300	1,17
10.5161.050	2"	50,0	62,5	<b>3,0</b>	435	<b>12,0</b>	1740	160	320	1,61
10.5161.065	2.1/2"	65,0	83,0	<b>2,4</b>	348	<b>9,6</b>	1392	180	410	1,99
10.5161.075	3"	80,0	97,0	<b>1,8</b>	261	<b>7,2</b>	1044	200	450	2,20
10.5161.100	4"	100,0	119,0	<b>1,6</b>	232	<b>6,4</b>	928	290	560	3,00
10.5161.125	5"	125,0	152,5	<b>1,4</b>	203	<b>5,6</b>	812	325	710	4,90
10.5161.150	6"	150,0	177,5	<b>1,0</b>	145	<b>4,0</b>	580	380	815	5,71
10.5161.200	8"	200,0	228,0	<b>0,8</b>	116	<b>3,2</b>	464	500	1015	9,15
10.5161.250	10"	250,0	281,0	<b>0,8</b>	109	<b>3,0</b>	435	620	1270	13,75

**INNER TUBE:** AISI 316L annular corrugated stainless steel  
**OUTER COVER:** one stainless steel AISI 304 braid

**SAFETY FACTOR:** 4:1  
**APPLICATION:** steam, chemicals, oxygen, thermofluid, naphta, cryogening

**TEMPERATURE RANGE:** -200°C (-328°F) +600°C (+1112°F)

**COUPLINGS:** Balflex® Welding Rings serie 31









# BALINOX 316 + DOUBLE BRAID 304



## ISO 10380 TYPE 2 - 10.5162.

Stainless steel annular corrugated tube AISI 316L with double stainless steel braid AISI 304

#	inch										
		mm	mm	MPa	PSI	MPa	PSI	mm	mm	kg/m	
10.5162.006	1/4"	6,0	12,0	<b>19,2</b>	2784	<b>76,8</b>	11136	25	85	0,23	
10.5162.008	5/16"	8,0	14,5	<b>16,0</b>	2320	<b>64,0</b>	9280	32	125	0,25	
10.5162.010	3/8"	10,0	17,0	<b>14,4</b>	2088	<b>57,6</b>	8352	38	140	0,32	
10.5162.013	1/2"	12,0	19,5	<b>12,8</b>	1856	<b>51,2</b>	7424	45	140	0,37	
10.5162.016	5/8"	16,0	24,5	<b>11,2</b>	1624	<b>44,8</b>	6496	58	160	0,61	
10.5162.020	3/4"	20,0	30,0	<b>10,2</b>	1479	<b>40,8</b>	5916	70	170	0,75	
10.5162.025	1"	25,0	35,0	<b>8,0</b>	1160	<b>32,0</b>	4640	85	190	0,91	
10.5162.032	1.1/4	32,0	44,5	<b>6,4</b>	928	<b>25,6</b>	3712	105	260	1,30	
10.5162.040	1.1/2"	40,0	53,0	<b>5,6</b>	812	<b>22,4</b>	3248	130	300	1,66	
10.5162.050	2"	50,0	64,5	<b>4,8</b>	696	<b>19,2</b>	2784	160	320	2,35	
10.5162.065	2.1/2"	65,0	85,5	<b>3,8</b>	557	<b>15,4</b>	2227	180	410	2,92	
10.5162.075	3"	80,0	100,0	<b>2,9</b>	418	<b>11,5</b>	1670	200	450	3,30	
10.5162.100	4"	100,0	121,5	<b>2,6</b>	371	<b>10,2</b>	1485	290	560	4,75	
10.5162.125	5"	125,0	155,0	<b>2,2</b>	325	<b>9,0</b>	1299	325	710	7,15	
10.5162.150	6"	150,0	181,0	<b>1,6</b>	232	<b>6,4</b>	928	380	815	8,20	
10.5162.200	8"	200,0	213,0	<b>1,3</b>	186	<b>5,1</b>	742	500	1015	13,50	
10.5162.250	10"	250,0	285,0	<b>1,2</b>	174	<b>4,8</b>	696	620	1270	20,40	

**INNER TUBE:** AISI 316L annular corrugated stainless steel  
**OUTER COVER:** two stainless steel AISI 304 braid

**SAFETY FACTOR:** 4:1  
**APPLICATION:** steam, chemicals, oxygen, thermofluid, naphta, cryogening

**TEMPERATURE RANGE:** -200°C (-328°F) +600°C (+1112°F)

**COUPLINGS:** Balflex® Welding Rings serie 31





# BRAID 304



10.5140.

Stainless steel braid AISI 304

#	inch		wire diameter mm	n° of wires	carriers	braid angle	braid coverage %	
		mm						kg/m
10.5140.006	1/4"	6,0	0,25	6	24	90	97,5	0,07
10.5140.008	5/16"	8,0	0,25	7	24	90	95,1	0,08
10.5140.010	3/8"	10,0	0,25	8	24	90	94,0	0,10
10.5140.013	1/2"	12,0	0,25	10	24	90	96,3	0,12
10.5140.016	5/8"	16,0	0,30	11	24	90	95,5	0,21
10.5140.020	3/4"	20,0	0,30	9	36	90	96,6	0,25
10.5140.025	1"	25,0	0,30	10	36	90	94,6	0,27
10.5140.032	1.1/4"	32,0	0,35	8	48	90	93,1	0,40
10.5140.040	1.1/2"	40,0	0,35	10	48	90	94,4	0,49
10.5140.050	2"	50,0	0,40	11	48	90	95,5	0,73
10.5140.065	2.1/2"	65,0	0,40	11	64	90	95,2	0,92
10.5140.075	3"	80,0	0,40	12	64	90	93,2	1,06
10.5140.100	4"	100,0	0,50	11	64	90	90,3	1,60
10.5140.125	5"	125,0	0,57	10	72	98	87,8	2,22
10.5140.150	6"	150,0	0,57	11	72	98	85	2,49
10.5140.200	8"	200,0	0,67	9	96	102	86,8	4,30
10.5140.250	10"	250,0	0,70	12	96	104	93,7	6,60

**BRAID:** 1 stainless steel wire braid

**APPLICATION:** steam, chemicals, oxygen, thermofluid, naphtha, cryogening

**TEMPERATURE RANGE:** -200°C (-328°F) +600°C (+1112°F)

**COUPLINGS:** Balflex® Welding Rings serie 31







# EXHAUST TUBE



## 10.5001.

Polygonal stripwound galvanized steel exhaust tube, interlocked, medium pitch

#	inch			thickness of strip mm	width of strip mm		
		mm	mm			mm	kg/m
10.5001.032	1.1/4"	32,0	35,0	0,30	16,0	135	0,07
10.5001.035	1.3/8"	35,0	38,0	0,30	16,0	145	0,08
10.5001.040	1.1/2"	40,0	43,5	0,30	16,0	165	0,10
10.5001.045	1.3/4"	45,0	48,0	0,30	16,0	168	0,12
10.5001.050	2"	50,0	54,5	0,30	16,0	170	0,21
10.5001.055	2.3/16"	55,0	59,5	0,30	16,0	215	0,25
10.5001.060	2.3/8"	60,0	64,5	0,30	16,0	235	0,27
10.5001.065	2.1/2"	65,0	69,5	0,30	16,0	245	0,40
10.5001.070	2.3/4"	70,0	74,5	0,30	16,0	255	0,49
10.5001.075	3"	75,0	78,5	0,30	16,0	265	0,73
10.5001.080	3.3/16"	80,0	83,5	0,30	16,0	280	0,92
10.5001.085	3.3/8"	85,0	89,5	0,30	16,0	315	1,06
10.5001.090	3.5/8"	90,0	94,5	0,30	16,0	350	1,60
10.5001.095	3.3/4"	95,0	100,0	0,40	24,0	550	2,22
10.5001.100	4"	100,0	105,0	0,40	24,0	555	2,49
10.5001.110	4.3/8"	110,0	115,0	0,40	24,0	565	4,30
10.5001.115	4.5/8"	115,0	120,0	0,40	24,0	570	6,60
10.5001.120	4.3/4"	120,0	125,0	0,40	24,0	575	2,22
10.5001.125	5"	125,0	130,0	0,40	24,0	590	2,49
10.5001.130	5.3/16"	130,0	135,0	0,40	24,0	625	4,30
10.5001.150	6"	150,0	155,0	0,40	24,0	655	6,60

**INNER TUBE:** galvanized steel medium pitch, polygonal cross-section

**APPLICATION:** steam, chemicals, oxygen, thermofluid, naphta, cryogening

**TEMPERATURE RANGE:** -50°C to +250°C



**VERSIONS:** Stainless steel on demand

## WELDING RINGS



### 31.00.S

Stainless Steel AISI 304 welding rings for single braided Stainless steel hose

#	inch			mm
		mm	mm	
31.00.06S	1/4"	11,5	14,5	20,0
31.00.08S	5/16"	14,0	17,0	20,0
31.00.10S	3/8"	16,0	19,0	20,0
31.00.13S	1/2"	18,5	21,5	20,0
31.00.16S	5/8"	23,5	26,5	20,0
31.00.20S	3/4"	28,8	31,8	25,0
31.00.25S	1"	34,5	37,5	30,0
31.00.32S	1.1/4"	43,5	46,5	30,0
31.00.40S	1.1/2"	52,0	55,0	35,0
31.00.50S	2"	63,0	66,0	35,0
31.00.65S	2.1/2"	84,0	87,0	40,0
31.00.75S	3"	97,5	100,5	50,0
31.00.100S	4"	120,0	123,0	50,0
31.00.125S	5"	154,0	157,0	50,0
31.00.150S	6"	179,0	182,0	50,0
31.00.200S	8"	229,0	232,0	50,0
31.00.250S	10"	282,0	285,0	50,0