

Temperature De-rating Factors

Temperature

Temperature affects the physical properties of all materials, generally the higher the temperature the weaker the material becomes. The chart below shows the temperature de-rating factors detailed within ISO 10380:2012.

Temperature De-rating Factors					
Temperature °C	SS304	SS304L	SS321	SS316	SS316L
20	1	1	1	1	1
50	0,88	0,87	0,92	0,90	0,88
100	0,73	0,72	0,83	0,78	0,74
150	0,66	0,65	0,78	0,71	0,67
200	0,60	0,59	0,74	0,66	0,62
250	0,56	0,55	0,71	0,62	0,58
300	0,52	0,51	0,67	0,58	0,54
350	0,50	0,48	0,64	0,56	0,52
400	0,48	0,46	0,62	0,53	0,50
450	0,47	0,45	0,61	0,52	0,48
500	0,46	0,44	0,60	0,51	0,47
550	0,42	0,43	0,59	0,51	0,47

The degree of strength reduction is predictable, so it is relatively straightforward to determine the combination of temperature and pressure that can be accommodated by a metallic hose.

Some metals are better than others in this respect, so in a particularly demanding application with a combination of sustained high temperature and high pressure, it is often possible to select a more exotic alloy that will meet the demands.

The table above enables easy selection of the correct derating factor for each alloy through a range of temperatures. This table is based on data from ISO 10380:2012.

Note 1: The working pressure of an assembly at elevated temperatures may be affected by fitting type, material and method of attachment.

Note 2: The derating factor to be applied to low temperatures for some of the austenitic materials listed is higher than 1.

For further information we recommend you to contact our technical sales team directly for any assistance and advice.