TATA STEEL

TATA

INSTALL+™ Dual Certified Tube (BS EN 10255 & 10217-1)

Pressure Ratings

This data sheet provides guidance on the maximum operating pressures recommended for INSTALL+™ (dual certified to BS EN 10255[1] & 10217-1[2]) tube with various jointing techniques.

System design

A systems pressure rating will vary as a function of tube size, wall thickness, employed jointing system, whether jointing products or compounds are applied, the installation technique used, local service and support conditions, and maintenance practices etc.

Accordingly, it is not practical to lay down precise limits for working and operating pressures, so the information provided here is for guidance only, as some values may be conservative or dependant on jointing product, compounds or systems used.

Higher-pressure ratings may be demonstrated via a pressure test, or calculation if applicable. All piping systems should be designed in accordance with appropriate established standards or design codes.

Screwed and socketed joints

The standard joint specified in BS EN 10255[1] is the taper threaded tube and parallel threaded socket (taper/parallel) 'Screwed and Socketed' (S&S) joint. We **only supply** this type of joint on our INSTALL+™ products. Taper/taper joints can also be used and may provide slightly higher pressures ratings, please refer to the relevant manufacturers product data.

We **strongly recommend** that all threaded joints be made up using suitable thread compounds appropriate for the application concerned.

There are a huge variety of such products on the market, ranging from tapes and strings to various thread applied liquids or compounds, some of which are hardening and some not.

As the performance of the joint depends on the particular compound and installation technique employed, it is not possible to lay down precise limits for the pressure ratings of S&S joints, considering every possible option. Therefore the values in Table 1A should be considered as being provided for **information only.**

These values have been verified by laboratory tests carried out on Tata Steel Tubes products, and may be conservative for some jointing products.

Please refer to the appropriate thread compound pressure and product data for confirmation on suitability and operational performance. Validation via safe and controlled pressure testing is also advised.

Table 1: Suggested maximum operating pressures (bar)

Tube size			**(A) Suggested maximum operating pressure (bar) for screwed and socketed joints** Correctly made-up using suitable and appropriate jointing compounds						**(B) Suggested maximum operating pressure (bar) for tube, or full penetration butt-welded joints** Butt-welded joints prepared in accordance with current best practice (based on P235 TRI mechanical properties)							
			Water -7 to 60°C		**Compressed Air**		**Steam to 260°C max**		**-7 to 60°C**		**100°C max**		**175°C max**		**260°C max**	
OD	Nominal Bore NB		Tube Weight (M = Medium, H = Heavy)						Tube Weight (M = Medium, H = Heavy)							
mm	**mm**	**inch**	**M**	**H**	**M**	**H**	**M**	**H**	**M**	**H**	**M**	**H**	**M**	**H**	**M**	**H**
21.3	15	½	80	100	70	90	10	12	233	270	190	234	161	198	139	171
26.9	20	¾	75	90	65	80	10	12	186	215	152	187	128	158	111	136
33.7	25	1	70	85	60	75	10	12	172	215	149	186	126	157	109	136
42.4	32	1 ¼	55	70	50	65	9	10	137	171	119	148	100	126	87	108
48.3	40	1 ½	45	60	40	55	9	10	120	150	104	130	88	110	76	95
60.3	50	2	40	55	35	50	7	9	109	136	94	118	80	100	69	86
76.1	65	2 ½	35	45	30	40	7	9	86	108	75	93	63	79	55	68
88.9	80	3	30	40	25	35	7	9	82	103	71	89	60	75	52	65
114.3	100	4	25	35	20	30	5.5	7	72	86	62	75	53	63	46	55
139.7	125	5	*25**	*30**	*20**	*25**	*5.5**	*7**	65	70	57	61	48	52	41	45
165.1	150	6	*20**	*25**	*15**	*20**	*4**	*5.5**	55	60	48	52	40	44	35	38

*Guidance only, we do not supply 5" and 6" screwed and socketed products

Welded joints

Table 1B also shows the suggested maximum operating pressure (bar) that can be used for tubes employing circumferential full penetration welded joints, operating at temperatures between -7 and +260°c. These values have been determined in accordance with design guidelines set out in EN 13480-3[3], for straight pipe under normal operating conditions.

Alternative jointing

INSTALL+™ tube is also suitable for use with **welded flanged joints, steel welding fittings, malleable iron fittings, compression fittings and grooved couplings.** INSTALL+™ tube is now available from Tata Steel with pre-grooved ends. The suggested maximum operating pressures shown in Table 1B can be applied to the tube, but a systems pressure rating may vary as a result of the joint, fitting or applied compounds used. This may restrict or lower either the operating pressure and/or operational temperature. For actual system ratings, contact the appropriate fitting or coupling manufacturer or supplier for confirmation of their recommended operational values.

Natural Gas Services

IMPORTANT: INSTALL+™ medium and heavy duty tube is suitable for ambient temperature gas applications. However, due to regulatory requirements, restrictions to allowable gas pressure(s) may apply. For certain pressures and applications alternative Tata Steel Tube products may be required. Please consult our **Gas Applications Data Sheet** for full details.

Screwed and socketed lightweight tube

Special care must be taken when threading and using lightweight tube, as the thinner walls may result in a shorter overall thread length, plus a greater proportion of incomplete or 'black' threads. In general, the useful thread length (the length of complete plus incomplete thread) in lightweight tube is only 80% of that for a medium or heavy weight tube. This may have a significant impact on pressure performance.

Tata Steel therefore **recommends** that threaded lightweight tubes only be used in very low-pressure applications, and **never** for the conveyance of gas, air or steam. We also **strongly recommend** that lightweight tubes are not used in fire sprinkler, or safety critical applications.

Additional notes

It is the responsibility of the end user to ensure that:

- All exposed steel in tubes and fittings is protected during installation to prevent subsequent corrosion
- The tube and its jointing technique are suitable for the intended application
- All standards and engineering Documents referenced are correctly applied
- They are operating fully in accordance with all relevant statutory and legislative requirements
- Limitations on working pressures may exist as a result of National or local regulatory requirements or codes of practice
- Where such regulations may apply, please consult with the relevant certification bodies for confirmation of actual requirements
- All due consideration of any additional allowances or factors be taken into consideration
- For screwed and socketed application involving exposed pipework in sizes above 50nb, the use of taper/taper joints is recommended
- Galvanised tubes should not be used in hot water applications > 60 degrees C due to polarity reversal, which may result in rapid corrosion

References

[1] BS EN 10255: 2004-A1: 2007 Non-alloy steel tubes suitable for welding and threading.
[2] BS EN 10217-1: 2002-A1: 2006 Welded steel tubes for pressure purposes.
[3] BS EN 13480-3: 2002-A4: 2010 Metallic industrial piping.
[4] BS EN 10208-1:2009 Steel pipes for pipelines for combustible fluids

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