

## Install® Plus: Pressure ratings

A premium pipework solution for a wide range of pressure applications

This document provides guidance on the maximum operating pressures recommended for the robust and reliable Install® Plus multi-certified, hot-finished tube with various jointing techniques.

### System design

All piping systems should be designed in accordance with appropriate established standards or design codes.

The pressure rating of any pipework system will vary as a function of tube size, wall thickness, employed jointing system and whether jointing products or compounds are applied.

The installation technique used, local service and support conditions, operating

temperatures and maintenance practices etc may also influence the operating pressure.

### Pressure data

As it is not practical to lay down precise limits for working and operating pressures, the data provided in Table 1 is for guidance only.

Some values may be conservative or dependant on the jointing product, compounds or fittings used, which may in turn determine the actual operating pressure for the system.

### Screwed and socketed joints

Install® Plus is supplied with a taper threaded tube and parallel threaded socket, referred to as a taper/parallel Screwed and Socketed' (S&S) joint. This is the standard joint option specified in EN10255, and is the only type of S&S joint that we supply.

Taper/taper joints may also be used with Install® Plus and may provide slightly higher pressure ratings. Please refer to the relevant fittings data for guidance.

Table 1

Tube size			(A) Suggested maximum design pressure (bar) for screwed and socketed joints Correctly made-up using suitable and appropriate jointing compounds						(B) Suggested maximum design pressure (bar) for tube or full penetration butt-welded joints Butt-welded joints prepared in accordance with current best practice (based on S235GT/P235GH mechanical properties)							
			Water -20 to 60°C		Compressed Air		Steam to 300°C max		-20 to 60°C		100°C max		150°C max		300°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	182	225	128	158
26.9	20	¾	75	90	65	80	10	12	186	215	152	187	146	179	103	126
33.7	25	1	70	85	60	75	10	12	172	215	149	186	143	179	101	126
42.4	32	1¼	55	70	50	65	9	10	137	171	119	148	114	143	80	100
48.3	40	1½	45	60	40	55	9	10	120	150	104	130	100	125	71	88
60.3	50	2	40	55	35	50	7	9	109	136	94	118	91	113	64	80
76.1	65	2½	35	45	30	40	7	9	86	108	75	93	72	90	51	63
88.9	80	3	30	40	25	35	7	9	82	103	71	89	68	85	48	60
114.3	100	4	25	35	20	30	5.5	7	72	86	62	75	60	72	42	51
139.7	125	5	25*	30*	20*	25*	5.5*	7*	65	70	57	61	54	59	38	41
165.1	150	6	20*	25*	15*	20*	4*	5.5*	55	60	48	52	46	50	32	35

For larger Install® Plus XL EN10255 sizes, please refer to our Inline™ product literature for full details.  
\*Guidance only, we do not supply 5" and 6" screwed and socketed products.

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

#### Suggested design pressures

The values for S&S joints in Table 1(A) have been verified by laboratory tests carried out on Tata Steel products, and cannot be applied to tubes not produced by Tata Steel.

If higher pressures are required, alternative jointing methods or products may be required.

Please refer to the relevant pressure and product data from the appropriate manufacturer for confirmation on suitability and operational performance of such products.

#### Pressure tests

A safe and controlled system pressure test is recommended to confirm the suitability of any pipework installation.

#### Welded joints

Table 1(B) shows the suggested maximum design pressure (bar) for tubes employing circumferential full penetration butt welded joints, operating at temperatures between -20 and +300°C.

These values have been determined in accordance with design guidelines set out in EN13480-3, for straight pipe under normal operating conditions.

Please contact one of our Customer Technical Services (CTS) experts if you require product information outside the temperature range stated.

#### Alternative jointing

Install® Plus tube is also suitable for use with:

- Welded, flared or flanged joints
- Steel welding fittings
- Malleable iron fittings
- Compression fittings
- Mega press fittings
- Grooved couplings

Install® Plus tube is now available with grooved ends, to save you fabrication time during installations.

The suggested maximum design pressures shown in Table 1(B) can be applied to the grooved tube, but the pressure rating of the pipework will depend on the actual pipe coupling design, or commercial fitting used.

This may restrict or lower either the design pressure and / or operational temperature range.

For actual system ratings, contact the appropriate coupling or fitting manufacturer or supplier for confirmation of their recommended operational values.

#### Natural gas services

Important note: Install® Plus medium and heavy weight tube is suitable for ambient temperature low pressure gas applications within buildings.

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 refer to the Tata Steel gas applications technical data sheet for full details.

#### S&S 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 note

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

- All exposed steel in tubes and fittings are protected when installed 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.
- Systems are designed and installed fully in accordance with all relevant statutory and legislative requirements.
- Limitations on working pressures that may exist as a result of National or local regulatory requirements or codes of practice are taken into consideration.
- Where such regulations apply, that consultation with the relevant certification bodies for confirmation of actual requirements has taken place.
- Any additional allowances or factors have been taken into consideration
- Screwed and socketed tube is not used for gas applications involving exposed pipework in sizes above 50nb.
- Galvanised tubes are not to be used in hot water applications > 60°C due to polarity reversal, which may result in rapid corrosion.

#### Technical support

Our Customer Technical Services (CTS) experts are on hand to answer any product enquiries.

Please contact us via the Tubes technical helpline: +44 (0) 1536 404561.

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