

Product Technical Submission: Install® Plus 235

BS EN10255/10217-2 Grade S/P 235 GT/GH Hot-finished Carbon Steel Tube.

Install® Plus 235 hot-finished, multi-certified tube has been specifically developed to satisfy a wide range of building, mechanical and industrial services pipework applications.

Hot-finished for uniform stress-free and consistent mechanical properties, improved service life and enhanced ductility compared to comparable commodity cold-formed alternatives.



1. Tata Steel

- Our **Install® Plus 235** hot-finished tube is made at our manufacturing site in Corby, Northamptonshire, UK using steel strip, also made by Tata Steel in Port Talbot, South Wales, UK.
- As we manufacture both the steel and the tube, we can ensure full product traceability as well as control and consistency of steel and product properties and characteristics.
- Our multi-certified tubes are hot finished to deliver a rationalised and simplified approach to satisfy the widest range of pipework applications.

2. Hot-finished for proven benefits

- Tube produced by Tata Steel is High Frequency Welded (HFW), resulting in a tube with consistent properties and enhanced ductility.
- Our **Install® Plus 235** tubes are also hot-finished, so do not contain a Heat Affected Zone (HAZ), a highly stressed area of weakness adjacent to the weld line.
- They can therefore be more readily manipulated without the risk of failure, have improved weldability and pressure integrity and deliver improved performance and service life compared with cold-formed alternatives.

3. Multi-certified - making life easier

- By manufacturing and testing to the highest quality standards, we are able to provide a tube that covers the widest range of application and end-user requirements.
- Not only does **Install® Plus 235** meet the key BS EN10255 standard requirements (and that of the new draft prEN10255), it also covers those of BS EN10217-2 Grade P235GH.
- This ensures a product that can be CE marked under the Construction Products Directive (now updated as the Construction Products Regulations) and that is also harmonised with the Pressure Equipment Directive (PED).
- Specifying a BS EN10217-2 (Part 2) tube grade is the only way to technically ensure that a hot-finished GH (Get Hot) product is supplied, one that also includes validation for elevated temperature use.

4. Servicing a wider range of applications

- Install® Plus 235** has been specifically developed for use in a wide range of building and industrial services applications (please refer to our full technical literature for examples of typical applications).

5. Product statements – Install® Plus 235

- Is the perfect replacement for the old, and now withdrawn, BS1387, that is still frequently specified.
- Uses a new stronger and more robust 235MPa steel in place of the 195MPa grade in the withdrawn BS1387 and in previous versions of EN10255.
- Is available in sizes 15nb (1/2") to 150nb (6") in both MEDIUM and HEAVY weight.
- Is fully hot-finished for improved manipulation, installation, performance and service life benefits.
- Is multi-certified to satisfy a wider range of applications, including seamless substitution.
- Has a design temperature of: -20 to 300°C.
- Is available with: Plain, Screwed and Socketed, or Grooved end finishes.
- Can be supplied with: Red Painted (external), or Galvanised (internal and external) coatings. Self-coloured may be available upon request.

6. Product technical data

Size range

Thread size	Specified Outside Diameter			Thickness (mm)									
	R (inch)	OD (mm)	NB	2.00	2.30	2.60	2.90	3.20	3.60	4.00	4.50	5.00	5.40
½	21.3	15				Medium		Heavy					
¾	26.9	20				Medium		Heavy					
1	33.7	25						Medium		Heavy			
1 ¼	42.4	32						Medium		Heavy			
1 ½	48.3	40						Medium		Heavy			
2	60.3	50							Medium		Heavy		
2 ½	76.1	65							Medium		Heavy		
3	88.9	80								Medium		Heavy	
4	114.3	100									Medium		Heavy
5	139.7	125										Medium	Heavy
6	165.1	150										Medium	Heavy

Mechanical properties

Steel Name	C max	Mn max	P max	S max	Upper Yield Strength ReH min (MPa)	Tensile Strength Rm (MPa)	Elongation A min %
S235GT/P235GH	0.16	1.2	0.025	0.020	235	360 to 500	27

Tube weight

OD	Nominal bore (NB)	Outside diameter (OD)	Wall thickness (T)	Heavy weight				Medium weight			
				Weight per metre		Wall thickness (T)		Weight per metre		Wall thickness (T)	
				Plain end/ grooved tube	Screwed & socketed	mm	kg/m	mm	kg/m	mm	kg/m
21.3	15	1/2	21.8	21.0	3.2	1.44	1.45	2.6	1.21	1.22	
26.9	20	3/4	27.3	26.5	3.2	1.87	1.88	2.6	1.56	1.57	
33.7	25	1	34.2	33.3	4.0	2.93	2.95	3.2	2.41	2.43	
42.4	32	1 ¼	42.9	42.0	4.0	3.79	3.82	3.2	3.10	3.13	
48.3	40	1 ½	48.8	47.9	4.0	4.37	4.41	3.2	3.56	3.60	
60.3	50	2	60.8	59.7	4.5	6.19	6.26	3.6	5.03	5.10	
76.1	65	2 ½	76.6	75.3	4.5	7.93	8.05	3.6	6.42	6.54	
88.9	80	3	89.5	88.0	5.0	10.30	10.50	4.0	8.36	8.53	
114.3	100	4	115.0	113.1	5.4	14.50	14.80	4.5	12.20	12.50	
139.7	125	5	140.8	138.5	5.4	17.90	18.40*	5.0	16.60	17.10*	
165.1	150	6	166.5	163.9	5.4	21.30	21.90*	5.0	19.80	20.40*	

Pressure integrity

Tube size			(A) Suggested maximum design (bar) for screwed and socketed joints Correctly made-up using suitable 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
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	1 ¼	55	70	50	65	9	10	137	171	119	148	114	143	80	100
48.3	40	1 ½	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	2 ½	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.

7. Coating data – Red Paint

- **Install® Plus 235** can be supplied red painted. This coating has been specifically developed and provides significantly enhanced corrosion resistance and excellent robustness for better mechanical handling performance. It is also more environmentally friendly than our previous red paint offering.
- Tubes are shot-blasted prior to painting to provide an enhanced degree of adhesion. We have also conducted salt-spray and humidity tests to confirm corrosion resistance – REF TATA STEEL TUBES PRODUCT DATA SHEET TST73 for full details.

8. Coating data – galvanised:

- **Install® Plus 235** can also be supplied galvanised. We typically employ a hot-dipped galvanised process to BS EN ISO1461. A typical mean coating thickness for this process is >85 microns. REF TATA STEEL TUBES PRODUCT DATA SHEET TST60 for full details.

9. Fire ratings

- **Install® Plus 235** is Class A1 fire rated and is therefore classified as non-combustible in a fire and does not have to undergo additional testing to demonstrate suitability and reaction to fire. REF TATA STEEL TUBES PRODUCT DATA SHEET TST67 for full details.

10. Life expectancy and warranty

- The lifespan of any carbon steel tube is dependent on a range of factors, including the specific service conditions, a satisfactory installation practice, a proper maintenance procedure and the use of appropriate corrosion protection, inhibitors or other suitable practices.
- Properly installed and protected **Install® Plus 235** can have a service life of +25 years. Service life of +40 years may be possible with the use of protective wraps.
- Tata Steel can advise on actual life expectancy if we fully understand the application and service conditions that our product will be exposed to. REF TATA STEEL TUBES PRODUCT DATA SHEET TST60 for full details.

11. Tube mechanical suitability

- Unlike some cold-formed tubes, **Install® Plus 235** hot finished tubes are suitable for threading, grooving, bending and flaring and are fully compatible with commercially available fittings.

12. Temperature range

- **Install® Plus 235** is suitable for design temperatures from -20 to +300°C, and is supplied in accordance with BS EN10217-2, with guaranteed elevated temperature properties, in accordance with Table 5, up to and including 300°C.

13. Weight and cost saving

- Our fully traceable 235MPa grade of steel also provides the opportunity for cost and weight savings through providing enhanced pressure containment by using a stronger medium weight instead of a traditional 195MPa heavy thickness.

14. Declaration of Performance (DOP) summary


- REF TATA STEEL TUBES PRODUCT DATA DOP for full details – available from our website, or by contacting us directly.

15. Internal weldbead removed

- All **Install® Plus 235** products above 25NB are fully trimmed, providing a clear, unrestricted tube bore, and dispelling any issues due to the internal weld bead being left in place on HFW welded products.

Declaration of Performance (according to Regulation EU No 305/2011)	
Ref. TST-InstallPlus235	
Hot finished steel tubes Grade S195T / 1.0026 according EN 10255	
Hot finished welded steel tubes for general use in building and mechanical services applications in accordance with EC Mandate M/131 supplied with 2.2 certification to EN 10204	
Tata Steel UK Limited Tubes Europe PO Box 101, Weldon Road Corby, NN17 5UA Tel: +44 (0)1536 402121 Website : www.tatasteeleurope.com	
System of assessment and verification of constancy of performance of the product Conformity attestation: System 3 and System 4 (See CPD Annex III, 2 (ii), second possibility and third possibility)	
Notified certification body No. 0620 oversaw the initial type testing of the product by an approved laboratory and issued the ITT Report.	
Notified Body Kiwa N.V. Certificatie en Keuringen Sir Winston Churchillaan 273 Postbus 70 2280 AB RIJSWIJK The Netherlands Tel +31:70:41 44 400 Email : certif@kiwa.nl Website : www.kiwa.nl	

Essential characteristic	Performance	Harmonised technical specification	
Tolerances on dimensions and shape	In accordance with EN 10255: 2004	EN10255:	
Reaction to Fire	Euroclass A1 (steel)		
Yield strength	Nominal thickness (mm)		Values Min (MPa)
	> 5,4		195
Tensile strength	Nominal thickness (mm)		Values (MPa)
	<=5,4		min 320 max 520
Elongation (longitudinal)	Nominal thickness (mm)		Values min (%)
	<=5,4		20
Weldability	Nominal thickness (mm)		Composition (cast) max.
	<=5,4		C: 0.20 Mn: 1.40 P: 0.035 S: 0.030
Durability	Durability is dependent on the method of protection and/or the type and thickness of the coating.		

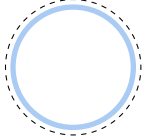
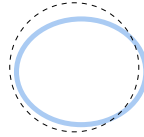
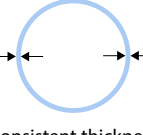
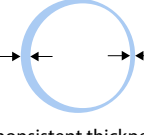
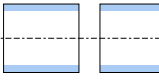
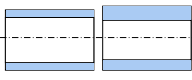
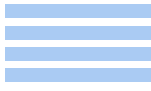
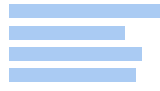
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Tata Steel Tubes Europe PO Box 101, Weldon Road Road Corby, NN17 5UA, UK 13 Ref. TST-InstallPlus235	
EN 10255: 2004 Hot finished steel tubes Grade S195T / 1.0026 according EN 10255 Hot finished steel tubes for general use in building and mechanical services applications in accordance with EC Mandate M/131 supplied with 2.2 certification to EN 10204 Information on regulated characteristics in accordance with EN10255 for: Dimensions Reaction to fire : Tensile Strength : Yield Strength : (Leak) tightness gas & liquid : Weldability : Durability : Dangerous Substances : No Performance Determined	

16. Compliance statements

- **Install® Plus 235** products are fully compliant to the Construction Products Regulations (CPR) and CE Marked to CAT3 (fuel, air, gas) and CAT4 (water). A CPR Declarations of Performance (DOP) is available (see Section 15).
- Our CAT3 approval has been third party approved (i.e. our production and QA processes have been independently audited and approved for CE marking).
- **Install® Plus 235** is also fully aligned with the Pressure Equipment Directive (PED).

17. An alternative to seamless tubes

- **Install® Plus 235** hot-finished (GH grade) has the same composition; steel grade designation and steel number as comparable hot-finished seamless products, and is therefore interchangeable
- **Install® Plus 235** is an ideal substitute for comparable hot-finished carbon steel seamless products, delivering real benefits, and providing the flexibility to service both welded and seamless market requirements.
- HFW (High Frequency Welded) tubes also have a number of technical advantages over seamless, such as improved ovality, and more consistent wall thicknesses and length control, thereby delivering improved end matching and installation benefits.

	Advantages of HFW Welded	Disadvantages of Seamless
Ovality	 Consistent roundness	 Out of roundness
Wall	 Consistent thickness	 Inonsistent thickness
End matching	 Consistent	 Inconsistent
Length tolerances	 Fixed length as standard (mm)	 Random length as standard (mm)

18. Technical support

- For any technical enquires or requests for further information, including **Install® Plus 235** technical brochures and training packages, please contact the Tubes Technical Helpline on **+44 (0) 1536 404561**

19. Additional information

- Our **Install® Plus 235** product brochure (Install Plus® 235 & Inline™ 265 Mini Guide – Ref TST186) provides confirmation of the information contained within this document.
- This can be downloaded from our website. Alternatively, please contact our technical team for a copy.



www.tatasteelconstruction/hotvscold.com

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EnglishLanguage TST-TN0060-21/08/19 V4

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