

**TECHNICAL DATA SHEET**
**Hot-Finished Carbon Steel Tube**

21.02.2025

**Descriptions of Product**

BS EN 10255 &amp; 10217 Part 2 Dual Certified

**Descriptions of standards**

BS EN 10255:2004: Non-alloy steel tubes suitable for welding and threading.

BS EN 10217:2019: Welded steel tubes for pressure purposes-Technical delivery conditions

Part 2: Electric welded non-alloy and alloy steel tubes with specified elevated temperature properties.

**Application**

In installation for the transportation/distribution/ storage of gas/fuel intended for the supply of building heating/cooling systems from the external storage reservoir or the last pressure reduction unit of the boiler/ heater /cooler system(s) of the building(s).

**Chemical and Mechanical Properties**
**Table 1: Chemical Compositions (%) max.**

Standard	Steel	C	Si	Mn	P	S	Cu	Mo	Cr	Ni	Nb	Ti	V	Al min	Cr+Cu+Mo+Ni
EN10217-2	P235GH	0,16	0,35	1,20	0,025	0,020	0,30	0,08	0,30	0,30	0,01	0,03	0,02	0,02	0,70
EN10255	S235GT	0,20	****	1,40	0,035	0,030	****	****	****	****	****	****	****	****	****

**Table 2: Mechanical Properties**

Standard	Yield (Mpa) min.	Tensile (Mpa) min- max.	Elongation (min) (%) l t	Impact Energy		
				0°	-10°	0°
EN10217-2	235	360 - 500	25	23	40	28
EN10255	235	320 - 520	20	****	****	****

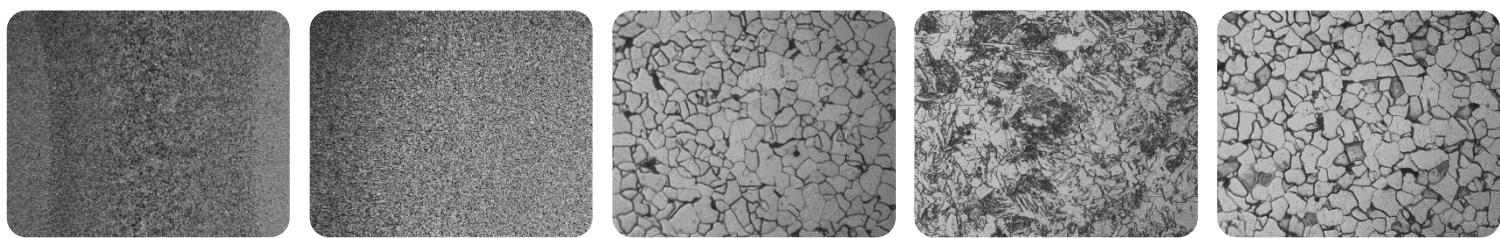
l: Longitudinal, t: transverse.

**Manufacturing**
**Table 3: Manufacturing Route**

Tube Production Process	Starting Material	Forming Operation	Delivery Condition	Acc.to EN 10217	
Electric Welded HFW	Hot Rolled Strip Normalized Rolled Strip	High Frequency Welding (HFW)	Tube full body normalized Tube weld seam normalized	Part 2	TC1

**Dimensions Tolerances**
**Applied Tests**

Outside Diameter	: ± 1 %	Cast Chemical Analysis	: One per cast	Leak-tightness test	: Each tube
Wall Thickness	: T≤ 5mm ±10% - 5 < T ≤ 10mm ±8%	Tensile Test	: One per cast	Dimensional inspection	: Each tube
Length	: by agreement	Impact Test	: One per cast	Visual examination	: Each tube
		Metallographical Inspection	: One per cast	NDT of the weld	: Each tube

**Metallurgical Properties**

 After Welding (Before Normalising)  
Weld Zone Heat Affected Zone (HAZ) Macro-structure

After Normalising Macro-structure

Pipe Body Micro-structure

After Welding Weld Zone Micro-structure (martensitic structure HAZ)

After Normalising Weld Zone Micro-structure

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**Compliance to regulations**
**Table 4: Dual Certified welded carbon steel pipes for building services products**

Standard	BS EN 10255 / 10217-2:2019 GH Part 2 - TC 1	BS EN 10255 / 10217-2:2019 GH Part 2 - TC 1
<b>Technical Delivery Condition</b>	Weld Seam Normalized	Full Body Normalized
<b>Grade</b>	S235GT-P235GH	S235GT-P235GH
<b>Temp Classification</b>	High Temp (HT)	High Temp (HT)
<b>PED Compliance</b>	YES	YES
<b>CPR CE Compliance</b>	YES – System 3&4	YES – System 3&4

**Recommended Design Temperature & Pressure**

We are able to make the following recommendations with regards to temperature and consequently pressure durability.

**Recommended maximum design pressure at elevated temperatures**

Joints	Conditions	Weight Series	Pipe Sizes mm/inch										
			21.3	26.9	33.7	42.4	48.3	60.3	76.1	88.9	114.3	139.7	165.1
			1/2	3/4	1	11/4	11/2	2	21/2	3	4	5	6
Screwed and socketed <sup>(1)</sup>	Water -20 to 100°C	Medium	80	75	70	55	45	40	35	30	25	N/A*	N/A*
		Heavy	100	90	85	70	60	55	45	40	35	N/A*	N/A*
	Compressed Air	Medium	70	65	60	50	40	35	30	25	20	N/A*	N/A*
		Heavy	90	80	75	65	55	50	40	35	30	N/A*	N/A*
	Steam to 220 °C max	Medium	20	20	20	19	19	17	17	17	15	N/A*	N/A*
		Heavy	22	22	22	21	21	19	19	19	17	N/A*	N/A*
Butt-welded <sup>(2)</sup>	-20 to 60°C	Medium	233	186	172	137	120	109	86	82	72	65	55
		Heavy	270	215	215	171	150	136	108	103	86	70	60
	100°C max	Medium	190	152	149	119	104	94	75	71	62	57	48
		Heavy	234	187	186	148	130	118	93	89	75	61	52
	150°C max	Medium	182	146	143	114	100	91	72	68	60	54	46
		Heavy	225	179	179	143	125	113	90	85	72	59	50
	300°C max	Medium	128	103	101	80	71	64	51	48	42	38	32
		Heavy	158	126	126	100	88	80	63	60	51	41	35

(1) When correctly made-up using suitable and appropriate jointing compounds

(2) Butt-welded joints prepared in accordance with current best practice (according to P235GH material mechanical properties)

(3) System design and control engineering will finally prevail.

\* Pressure data is only for guidance and it will be a function of the jointing system used. Screwed&amp;Socketed joints may be restricted for some applications so not suggested for 5 and 6".

**Handling & Storage Recommendations**

- Pipe should always be handled in a safe organized manner ensuring no damage is sustained by the pipe and all safety precautions are implemented preventing personal injury.
- The pipes will be placed only horizontally on smooth surfaces continuously, arranged in horizontal rasters on assortments and dimensions, supported over the entire length from place to place.
- Upon delivery must be check documentation matches pipe for type and quantity. It must be matches pipes identifications and MTCs (Mill Test Certificate) with each other.
- Visually check the pipe has no obvious damage sustained during transportation
- Ensure all protectors are securely in place and have no damage.
- If damage has been caused to the pipes or packages, the pipe should be clearly identified / labeled, and set aside for further examination.
- Only move the pipe when the correct threads or ends protectors have been securely installed. Ensure all relevant precautions are taken to avoid damage to either pipe body or connections. The use of incorrect protectors may damage the connections
- Do not use end capes other than with correctly fitted lift-able thread protectors installed.
- For all steel grades: stack pipe on wooden or plastic batons and avoid contact between pipe bodies/packages by aligning at least three rows of wooden spacers perpendicular to the length of the pipe between layers.
- Stack pipe so as to avoid any bending during storage. Ensure the stack is at least 30 cm above the ground to protect them from moisture.
- Ensure there are adequate ground support piers, evenly spaced to prevent pipe sag.
- Do not stack pipe higher than 10 feet / 3 meters.
- When transporting pipe by truck ensure pipe has correct protectors securely installed.
- Ensure pipe is loaded onto wooden bolsters and secured with soft straps to prevent movement in transit. Good handling and racking practices minimise repair costs and ensures pipe is in optimal condition when used.

- Implement a robust periodic inspection and maintenance schedule for all stored pipe.
- Periodically inspect 10% of the stored connections to ensure integrity. Visually verify condition of pipe bodies and traceability. Check condition and fit of protectors. Ensure there has been no water ingress to pipe ends.
- If more than 2% of the sampled connections are found to have damage, good practice is to conduct inspection on a further 10% of the stored pipe. If further damage is found within the second sample it is suggested the whole stack of pipe should be inspected.
- Do not use steel hooks or ropes.
- If using forklifts at any stage, ensure the forks are adequately padded.
- Use crow bars made of wood or other non-metallic material, rather than steel.
- Take all precautions to prevent aggressive or prolonged contact with carbon steel.
- To prevent galvanic corrosion do not mix Chrome or CRA (corrosion-resistant alloy) material with carbon steel pipe.
- The materials will be well supported circular and laterally, so that they do not overturn each other during transport.
- This materials not require special measure for storage temperature. But there must be no highly humidity and also warehouse condition shall be clean and dry. Unless necessary the storage should not make at open area. If it is mandatory, necessary precautions must be taken.
- When handling, storing and transporting pipe, care should be taken to prevent mashing, gouging or tearing damage occurring to the pipe body or connections. Standard preventative practices as outlined in the table below should be implemented.

Equipment	Recommended Materials
Drift Mandrel	Nylon / Plastic
Forklift Forks	Wood / Plastic Cover
Inspection racks	Wood / Plastic Cover
Slings	Soft / Polyester
Stanchions, stacking supports	Wood / Plastic Cover