

## Heavy Steel Tube For Mechanical Services Applications



**EN10255/10217-2 Hot Finished Tube**  
Commonly referred to as 'Part 2'

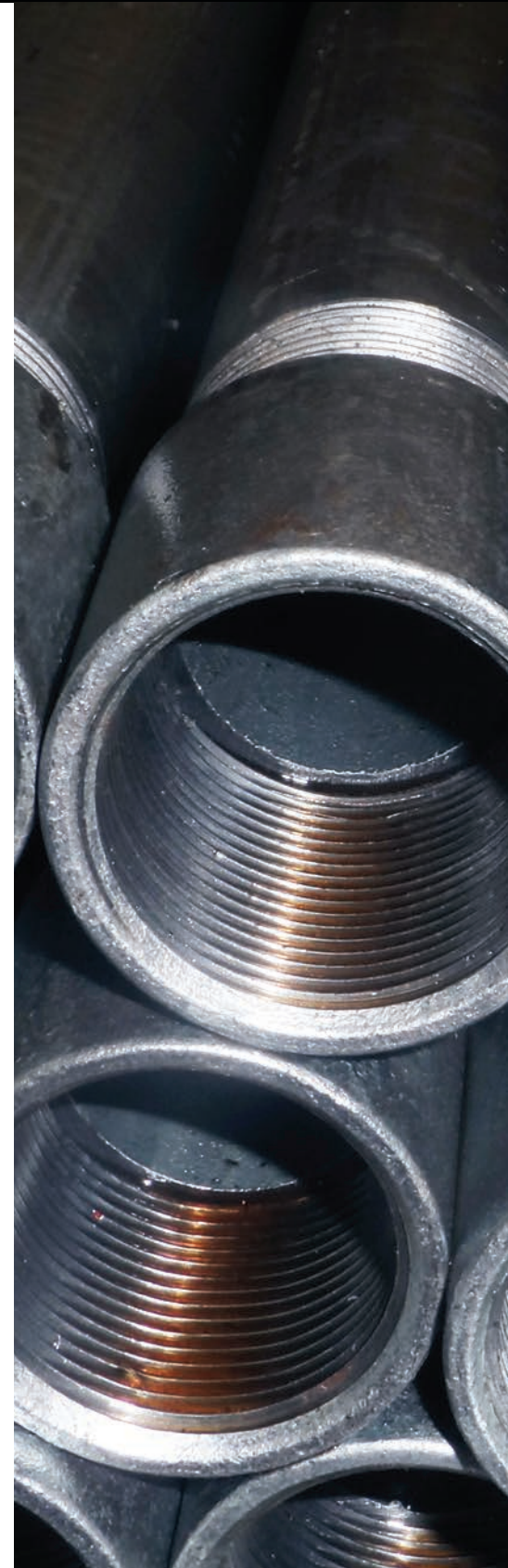
**Keeping the art of distribution simple**

Shawston are the only UK distributor exclusively stocking hot finished EN10255/10217-2 P235GH heavy weight steel tube.

During late 2017, Shawston received its final shipment of hot finished 'part 2' steel tube and today, stocks are extensive and all of our customers receive 'part 2' steel tube when they ask for or describe 'heavy weight' on a purchase order.

## Why have Shawston done this? Why does this matter?

- In recent times there have been several instances of EN10255/10217-1 cold formed 'part 1' steel tube being delivered to site where the application demanded higher certified pressures at varying temperatures. Cold formed 'part 1' steel tube is not pressure certified at varying temperatures. Some contractors have had to rip out cold formed tube and replace it with hot finished 'part 2'.
- Shawston realised that most Steel Tube Distributors including the larger UK stockists are dual stocking cold formed and hot finished steel tube. Sometimes kept in the same bays, it's impossible to visually separate the two different tube types.
- Shawston have witnessed various distributors deliver steel tube that matches the contractors purchase order description, which in the main is a traditional description dating back many years in the trade, but if the match is just to supply heavy tube, the contractor may well receive cold formed 'part 1'. When in fact, the pressure and temperature demanded hot finished 'part 2'.
- There has been a lot of confusion so Shawston decided to change. To now GUARANTEE contractors that all heavy weight tube supplied by Shawston is backed by test certification and is the correct specification for the project. Shawston will therefore only supply hot finished PG235GH 'part 2' red heavy weight steel tube up to 150mm NB.



## What does 'part 1' and 'part 2' mean?

As ever in the trade, contractors or suppliers create easier descriptors for product. The steel tube specifications are too cumbersome to quote on all orders or during phone calls. There is one differentiating factor that separates the lower grade cold formed tube from the higher grade hot finished tube:

**LOWER GRADE, COLD FORMED** will be to EN10255/10217-1. It's the -1 at the end, trade calls it 'part 1'

**HIGHER GRADE HOT FINISHED** will be to EN10255/10217-2. It's the -2 at the end, trade calls it 'part 2'

The -2 denotes the hot finished, fully annealed manufacturing process that takes place in Shawstons partner steel mill. Ensuring the tube delivers higher temperature and pressure capabilities backed up by test certificates. As well as a whole host of other physical or chemical benefits which are listed overleaf.

## How do you know if your supplier is delivering the right tube?

## Order from Shawston and you know the specification is right.





Cold-formed tubes still have their Heat Affected Zone (HAZ), as a result of their manufacturing process. This is an area around the weld-seam that is an area of weakness as it has:

- An inconsistent microstructure
- Pockets of stress that can promote cracking
- Inconsistencies in mechanical properties and strength
- Poorer toughness than the tube body
- Increased risk of splitting
- Poorer pressure integrity
- Reduced performance against corrosion
- Poorer bending abilities

Our hot-finished tubes do not have a Heat Affected Zone (HAZ), as this is fully removed during the hot-manufacturing (normalising) process. This results in a superior product as it has:

- An ordered and consistent microstructure
- No internal stress that can promote cracking
- Consistent and reliable mechanical properties
- Improved structural integrity and ductility
- Improved and consistent toughness
- Higher pressure integrity
- Greater factor of safety
- No loss of strength during additional welding or heating
- Improved performance against corrosion
- Ability to be bent to tight radii without splitting, creasing or collapsing



## Temperature/Pressure tables for the tubes are as below produced using P235GH steel grade to EN10217-2/EN 10255H

The values are all theoretical and final end user is responsible for engineering calculations of the system where the product will be used.

**Standard:** EN 10217-2/10255H

**Material:** P235GH

### Temperature and Pressure Ratings

Temperature = -20°C to 60°C		
OD-mm	Wall-mm	P Design (Bar)
21.3	3.2	282
26.9	3.2	224
33.7	4	223
42.4	4	177
48.3	4	156
60.3	4.5	140
76.1	4.5	111
88.9	5	106
114.3	5.4	89
139.7	5.4	73
165.1	5.4	61

Temperature = 100°C		
OD-mm	Wall-mm	P Design ( Bar)
21.3	3.2	238
26.9	3.2	188
33.7	4	188
42.4	4	149
48.3	4	131
60.3	4.5	118
76.1	4.5	94
88.9	5	89
114.3	5.4	75
139.7	5.4	61
165.1	5.4	52

Temperature = 150°C		
OD-mm	Wall-mm	P Design (Bar)
21.3	3.2	217
26.9	3.2	172
33.7	4	172
42.4	4	136
48.3	4	120
60.3	4.5	108
76.1	4.5	86
88.9	5	81
114.3	5.4	68
139.7	5.4	56
165.1	5.4	47

Temperature = 300°C		
OD-mm	Wall-mm	P Design ( Bar)
21.3	3.2	138
26.9	3.2	109
33.7	4	109
42.4	4	86
48.3	4	76
60.3	4.5	68
76.1	4.5	54
88.9	5	51
114.3	5.4	43
139.7	5.4	35
165.1	5.4	30

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