

## Seamless Steel Tubes for Pressure Purposes - Non-alloy and Alloy Steel Tubes with Specified Elevated Temperature Properties

### Standard & Material

EN 10216-2 13CrMo4-5 1.7335 (Steel Number)

It specifies the technical delivery conditions in two test categories for seamless tubes of circular cross section, with specified elevated temperature properties, made of non-alloy and alloy steel, which are used in the construction of boilers, pipelines, pressure vessels and equipment for service up to 600°C and at simultaneous high pressures, where the total stress and relevant scaling conditions can raise or lower the temperature limit.

### Chemistry Composition

C, % 0.10-0.17

Si, % 0.35 max

Mn, % 0.40-0.70

P, % 0.025 max

S, % 0.020 max

Cr, % 0.70-1.15

Mo, % 0.40-0.60



### Mechanical Properties

Tensile Strength, MPa 440-590

Yield Strength, MPa 290 min

Elongation, % 22 min

Wall Thickness: average wall thickness,  $\pm 12.5\%$  or  $\pm 0.4\text{mm}$  whichever is the greater; min wall thickness,  $+ 28\%/-0$  or  $+0.8\text{mm}/-0$  whichever is the greater; special requirements on id & wt should be agreed before contract.

Developed Length: max 30 meters each length,  $+10\text{mm}/-0\text{mm}$

Manufacture: the tubes made by cold drawn or hot rolled process.

Heat Treatment: the tubes are +NT (normalizing + tempering) heat treated over the entire length, normalizing at 900°C to 960°C, and tempering at 660°C to 730°C.

Inspection & Test: chemistry composition analysis, tension test, flattening test, flaring test, NDT, leak tightness test, surface inspection and dimension check. Option: impact test.

Further Process: U bending tubes, fin tubes, studded tubes