

Seamless circular steel tubes for general and mechanical engineering purposes

Material Data Sheet

Steel designation:

Name

Material No.

E355

1.0580

Scope

This data sheet applies for seamless circular steel tubes for general and mechanical engineering purposes of non-alloy quality steel.

Application

This steel is standard for application in mechanical engineering and for general technical purposes.

Chemical composition (Heat analysis in %)

Product form	C	Si	Mn	P	S
R	≤ 0,22	≤ 0,55	≤ 1,60	≤ 0,030	≤ 0,035

R = round tube

Mechanical properties at room temperature

Product form	Delivery condition ¹⁾	Minimum tensile properties					
		Yield strength R _{eff} N/mm ² for nominal thickness in mm		Tensile strength R _m N/mm ² for nominal thickness in mm		Elongation A in % for nominal thickness in mm	
R	+ AR or +N	≤ 16	355	≤ 16	490	l ²⁾	t ³⁾
		> 16 ≤ 40	345	> 16 ≤ 40			
		> 40 ≤ 65	335	> 40 ≤ 65			
		> 65 ≤ 80	315	> 65 ≤ 100	470		
		> 80 ≤ 100	295				

¹⁾ If not agreed otherwise in the order, the delivery condition is at the manufacturers discretion.

²⁾ l = longitudinal

³⁾ t = transverse

Reference data for some physical properties

Density at 20 °C Kg/dm ³	Modulus of elasticity kN/mm ² at				Thermal conductivity at 20 °C W/m K	spec. thermal capacity at 20 °C J/kg K	spec. electrical resistivity at 20 °C Ω mm ² /m
	20 °C	100 °C	200 °C	300 °C			
7,85	210	205	197	190	54	461	0,15

Linear coefficient 10⁻⁶ K⁻¹ of thermal expansion between 20 °C and

100 °C	200 °C	300 °C
11,1	12,1	12,9

Hot forming / Heat treatment (for guidance only)

Hot Forming		Heat Treatment		
Temperature °C	Cooling Type	Normalizing ¹⁾	Stress relieving anneal ²⁾	Cooling Type
700 - 750	Air	850 - 950 °C	580 - 630 °C	Air

¹⁾ Normalizing: Holding time 1 minute per mm plate thickness, minimum 30 minutes

²⁾ Stress relieving anneal: Holding time 1-2 minutes per mm plate thickness, minimum 30 minutes

Processing / Welding

Standard welding processes for these steel grades are:

- TIG– welding
- MAG– welding massive wire
- MAG– welding cored wire
- Arc welding (E)
- Submerged arc welding (SAW)

For these steel grades as filler metal the following electrodes and welding wires are recommended:

Process	Filler metal
TIG	Union I 52
MAG solid wire	Union K 52 Union K56
MAG cored wire	Union MV 70 Union BA 70 (Union RV 71)
Arc welding (E)	Phoenix 120K Phoenix Special D
SAW	Wire
	Powder
	Union S 2 (Union S 2)
	UV 400 (UV 306)

These steels can be welded within all thickness ranges according to the afore mentioned welding processes considering the general rules of technology by hand and automatically welding.

The mentioned filler metals apply for highest demands. The details in brackets are for lower demands.

Burning, preheating, welding and stress relieving annealing should occur under consideration of Stahl-Eisen-Material bulletin 088.

Specifications and standards concerning stress relieving anneal have to be observed.

Remark

The material is magnetizable.

Editor

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References

DIN EN 10297-1:2003-06 Beuth Verlag GmbH, Postfach, D-10772 Berlin
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Böhler Schweißtechnik Deutschland GmbH, Hamm

Important Hint

Information given in this data sheet about property or applicability of materials respective products are no assurance of characteristics but serve for description.

Information, with which we like to advise you, relate to the experience of the producers and our own.

Warranty for the results of the treatment and application of the products cannot be granted.

