

## DIN 1629-84 Seamless Circular Tubes Of Non Alloys Steels With Special Quality Requirements

The sub clauses marked with a single dot give specifications which are to be agreed upon at the time of ordering.

The sub clauses marked with a two dots give specifications which optional and may be agreed upon at the time of ordering.

### 1. Field of application

1.1 This standard applies to seamless circular tubes and pipes(hereinafter briefly referred to as "tubes") made of unalloyed steels as listed in table 1. These tubes are predominantly used in the construction of chemical plant, vessels, pipework and for general mechanical engineering purposes. They are designed to meet high performance requirements. Normally there are no limiting values or the maximum permissible working pressure of these tubes. The permitted working temperature shall not exceed 300°C are specified in Appendix A.)

The limits of application and other specifications given in this standard shall apply except in cases here other specifications are contained in codes of practice for specific fields of application, e.g. the Technische Regeln für Dampfkessel (TRD) (Technical rules on steam boilers) or the Technische Regeln für Druckbehälter (TRB) (Technical rules on pressure vessels), AD-Merkblätter (AD Instruction sheets).

Chemical Composition (Cast analysis) of steels for seamless circular tubes subject to special requirements

Steel Grade		Type of deoxidization (R, killed (including semi-killed)) (RR, fully killed)	Chemical Composition, % by mass				
Symbol	Material Number		C	P	S	N <sup>1)</sup>	Addition of nitrogen fixing elements (e.g. not less than 0,020% Al total)
St37.0	1.0254	R	0.17	0.040	0.040	0.009 <sup>2)</sup>	-
St44.0	1.0255	R	0.21	0.040	0.040	0.009 <sup>2)</sup>	-
St52.0 <sup>3)</sup>	1.0421	RR	0.22	0.040	0.035	-	Yes

<sup>1)</sup> A content in excess of the maximum value started is permitted if a phosphorus content less than the maximum specified by 0,005% P per 0,001% N is observed. However, the nitrogen content shall not exceed a value of 0.012% in the cast analysis and 0,014% in the product analysis.

<sup>2)</sup> The specified maximum values do not apply if the steels are supplied with the RR (instead of R) type of deoxidization.

<sup>3)</sup> The content shall not exceed 0.55% Si and 1,06% Mn in the cast analysis or 0,60% Si and 1,70% Mn in the product analysis.

Table 3. Amounts by which the chemical composition in the product analysis may deviate from the limiting values applicable to the cast analysis {see table2}

Element	Amount by which the product analysis may deviate from the limiting values applicable to the analysis % by mass
C	+0,02
P	+0,010
S	+0,010
N	+0,001 <sup>1)</sup>
<sup>1)</sup> A content in excess of the maximum value stated is permitted if a phosphorus content less than the maximum specified by 0,005% P per 0,001% N is observed. However, the nitrogen content shall not exceed a value of 0,012% in the cast analysis and 0,014% in the product analysis (this does not apply to the RR type of deoxidization).	

Table 4. Mechanical properties of tubes in the as delivered condition at room temperature.

For wall thickness exceeding 65 mm, the values shall be agreed at the time of ordering

Steel Grade		Upper Yield Stress ReH for wall thickness, in mm,			Tensile strength Rm N/mm <sup>2</sup>	Elongation (%) A5	
Symbol	Material Number	up to 16	over 16 up to 40	over 40 up to 65		Longitudinal	Transverse
St 37.0	1.0254	235	225	216	350 <sup>2)</sup> to 480	25	23
St 44.0	1.0256	275 <sup>1)</sup>	265 <sup>1)</sup>	255 <sup>1)</sup>	420 <sup>2)</sup> to 550	21	19
St 52.0	1.0421	355	345	335	500 <sup>2)</sup> to 650	21	19
<sup>1)</sup> For cold finished tube in the NBK condition (annealed above the upper transformation point under shielding gas or in a vacuum), minimum values of yield stress lower than these valued by 20N/mm <sup>2</sup> are permitted.							
<sup>2)</sup> For cold finished tubes in the NBK condition, minimum values of tensile strength lower than these values by 10N/mm <sup>2</sup> are permitted.							