

**DIN 2394-81 WELDED AND SIZED PRECISION STEEL TUBES**

1. Field of application

This Standard applies to welded and sized precision steel tubes; and, in compliance with ISO/DIS 3306, those tube dimensions have been selected from the range of manufacture dimensions which are mainly used as design elements

If tubes with the tolerances and in accordance with the technical conditions of delivery of this Standard are to be used as pipelines, the dimensions of DIN 2458 may, if necessary, be used. These tubes must be ordered according to quality grade C.

Grade	Mfg. Process	Chemical composition (%)									
		C	Si	Mn	P	S	Ni	Cr	Mo	Others	
St28	W	0.13Max	-	-	0.050Max	0.050Max	-	-	-	-	①
USt28											②
RSt28											③
St34.2	W	0.15Max	-	-	0.050Max	0.050Max	-	-	-	-	①
US34.2											②
RSt34.2											③
St3.2	W	0.17Max	-	-	0.050Max	0.050Max	-	-	-	-	①
US37.2											②
RSt37.2											③
St44.2	W	0.21Max	-	-	0.050Max	0.050Max	-	-	-	-	①
											②
											③
St52.3	W	0.25Max	0.55Max	1.60Max	0.040Max	0.040Max	-	-	-	-	①
											②
											③

①Welded and Sized ②Annealed ③Normalized

Grade	Material number	Tensile Test MPa or N/mm <sup>2</sup>		Remarks (Similar to JIS)
		Min Yield point	Tensile Strength	
St28	-	-	305Min	(STKM11) (STAM290G)
US28	1.0357	-	265Min	
RSt28	1.0326	180	275-385	
St34-2	-	-	335Min	-
US34-2	1.0028	-	305Min	
RSt34-2	1.0034	205	315-410	
St37-2	1.0037	-	390Min	(STKM12)
US37-2	1.0036	-	315Min	
RSt37-2	1.0038	205	340-470	
St44-2	1.0044	-	440Min	(STKM13) (STAM390G)
		-	390Min	
		255	410-540	
St52-3	1.0570	-	540Min	(STKM19)
		-	490Min	
		350	490-630	

## 2. Other relevant standards

DIN 2394 Part 2 Seamless precision steel tubes; technical conditions of delivery

## 3. Dimensions, designation

The tubes are generally ordered in terms of outside diameter and wall thickness. Should the inside diameter be more important, then the tubes may also be ordered in terms of inside diameter and wall thickness or also in terms of outside and inside diameter. These tubes must be ordered according to quality grade C.

If the permissible deviations in diameter are to be one way only, this must be stated on ordering; in this case the total range of  $\pm$  tolerance is the permissible one-way deviation, e.g. instead of (55  $\pm$  0.30) mm either

$$(55 \begin{smallmatrix} +0.5 \\ 0 \end{smallmatrix}) \text{ mm or } (55 \begin{smallmatrix} 0 \\ -0.5 \end{smallmatrix}) \text{ mm.}$$

The permissible deviations in diameter given in the table of dimensions apply to the welded and sized condition on delivery (BKM). In the case of annealed (GBK) and normalized (NBK) tubes, the tolerances on diameter are greater because of distortion during annealing, the permissible values being as follows:

outside diameter	$\geq \frac{1}{20}$	the values quoted in the table of dimensions
less than	$\frac{1}{20}$ to $\frac{1}{40}$	1.5 times the values quoted in the table of dimensions
less than	$\frac{1}{40}$	twice the values given in the table of dimensions

The permissible deviations in diameter include ovality.

The dimensional deviations specified for the wall thicknesses do not apply in the region of the weld.

For intermediate dimensions, which can be supplied by agreement, the deviations on the next larger nominal dimension apply.

Designation of a welded precision steel tube made of RSt 37-2, in the BKM condition on delivery, of outside diameter  $da = 40$  mm and wall thickness  $s = 1.5$  mm:

Tube DIN 2394 - RSt 37-2 BKM 40 x 1.5

Technical conditions of delivery

Technical conditions of delivery according to DIN 2394 Part 2.

Wall thickness $s$	Nominal dimension	0.7	1	1.2	1.5	1.8	2	2.2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	
	Permissible deviation	$\pm 10\%$ the nominal dimension 1) The deviation of centers (eccentricity) is included in the permissible wall thickness deviation.																	
Outside diameter $da$																			
Nominal dimension	Permissible deviation	Mass per meter length in kg																	



120																			
133	±1.0																		
159	±1.2																		
						S/D = 1/40 ↑						S/D = 1/20 ↑							
<p>1) For outside diameter nominal dimension 4 mm, permissible deviation from nominal dimension s of the wall thickness ± 20%</p> <p>For outside diameter, nominal dimension 6 and 8 mm, permissible deviation from nominal dimension s of the wall thickness: ± 15%</p>																			