

DIN EN 10357

General

DIN EN 10357 was developed for seam welded tubes made of stainless steel for pipe systems in the food, pharmaceutical and chemical industries.

DIN EN 10357 (2021) replaces EN 10357 (2014). Major technical changes compared to the previous edition are as follows:

- Series B dropped, dimensions changed in series C
- Surface finish and roughness and symbols changed.

EN 10357 replaced DIN 11850 at the beginning of 2014.

With regard to EN 10357 the following normative references must be provided: DIN EN 2768, DIN 11851, DIN EN 10374, DIN11853-1 to -3, DIN 11864-1 to -3, DIN 32676, DIN EN 10088-1, DIN EN 10088-2, DIN EN 10204, DIN EN ISO 1127, DIN EN 10217-7

The standard materials 1.4301, 1.4307, 1.4404, 1.4432 and 1.4435 are listed as types of steel.

Material 1.4404 has replaced titanium-stabilized material 1.4571, which is no longer provided for in DIN EN 10357. The end user is responsible for selecting the correct material. In particular for drinking water, for applications in the food and milk processing industry there are strict regulations which may differ from country to country.

Pipe connections

- Pipe fitting according to DIN 11851 [for rolling in and butt welding](#)
- Threaded pipe unions acc. to DIN 11864-1 and DIN 11853-1 [for butt welding](#)
- Flange connections acc. to DIN 11864-2 and DIN 11853-2 [for butt welding](#)
- Clamp connection acc. to DIN 11864-3 and DIN 11853-3 [for butt welding](#)
- Clamp connections according to DIN 32676 [for butt welding](#)
- Joints according to ISO 2037 [for butt welding](#)
- Joints according to BS 4825 [for butt welding](#)

Typical ordering data acc. to DIN EN 10357

- technical terms and conditions of delivery acc. to DIN EN 10217-7 E.g.: CL1 BC bright annealed W2Rb or matt pickled W2Ab and annealed (according to DIN EN 10217-7)
- Outside pipe diameter and wall thickness E.g.: 41 x 1.5
- Manufacture lengths E.g.: approx. 6000 mm ± 100 mm
- Material E.g.: 1.4404
- Certificates E.g.: 3.1
- Test class acc. to DIN EN 10217-7 E.g.: TC1 or TC2

The pipes are marked at least at one end of the supplied pipe.

Surface properties

Product class	Symbol	Inner surface	Outer surface	Heat treatment
CL1 (0.8/1.6 µm)	CL1 CC	pickled W2b and passivated Ra < 0.8µm Welded seam area Ra < 1.6 µm	pickled W2b and passivated	not heat-treated
	CL1 CD	pickled W2b and passivated Ra < 0.8µm Welded seam area Ra < 1.6 µm	ground Ra < 1.0 µm	not heat-treated
	CL1 BC	annealed and pickled, or bright annealed, W2Ab or W2Rb Ra < 0.8µm Welded seam area Ra < 1.6 µm	annealed and pickled, or bright annealed, W2Ab or W2Rb	heat treated
	CL1 BD	annealed and pickled, or bright annealed, W2Ab or W2Rb Ra < 0.8µm Welded seam area Ra < 1.6 µm	ground Ra < 1.0 µm	heat treated
CL2 (0.8/0.8 µm)	CL2 CC	pickled W2b and passivated Ra < 0.8µm Welded seam area Ra < 0.8 µm	pickled W2b and passivated	not heat-treated
	CL2 CD	pickled W2b and passivated Ra < 0.8µm Welded seam area Ra < 0.8 µm	ground Ra < 1.0 µm	not heat-treated
	CL2 BC	annealed and pickled, or bright annealed, W2Ab or W2Rb Ra < 0.8µm Welded seam area Ra < 0.8 µm	annealed and pickled, or bright annealed, W2Ab or W2Rb	heat treated
	CL2 BD	annealed and pickled, or bright annealed, W2Ab or W2Rb Ra < 0.8µm Welded seam area Ra < 0.8 µm	ground Ra < 1.0 µm	heat treated

A distinction is made between the surface quality on the inner surface and the outer surface. It is essentially evaluated acc. to DIN EN 10217-7.

Pressure calculation for pipe acc. to DIN EN 10357

Pipe	max. p at 20°C	max. p at 150°C
[mm]	[bar]	[bar]
Series A		
13 x 1.5	332	250
19 x 1.5	219	165
23 x 1.5	179	135
29 x 1.5	140	105
35 x 1.5	115	87
41 x 1.5	98	74
53 x 1.5	75	56
70 x 2.0	76	57
85 x 2.0	62	47
104 x 2.0	50	38
129 x 2.0	41	31
154 x 2.0	34	26
204 x 2.0	26	19
254 x 2.0	20	15
Series C		
12.7 x 1.65	378	285
19.05 x 1.65	241	182
25.4 x 1.65	177	134
38.1 x 1.65	116	87
50.8 x 1.65	86	65
63.5 x 1.65	68	52
76.2 x 1.65	57	43
101.6 x 2.11	55	41
152.4 x 2.77	48	36
Series D		
25 x 1.2	129	98
32.0 x 1.2	100	75
38.0 x 1.2	84	63
51.0 x 1.2	62	47
63.5 x 1.6	67	50
76.1 x 1.6	55	42
101.6 x 2.0	52	39

The permissible operating pressures have been calculated for longitudinally welded pipes ($v=1$) with the calculation value for material number 1.4307 acc. to DIN EN 10217-7:2015-01, table 6 and 8 - in solution-annealed condition, taking into consideration utilization of the permissible calculation voltage of 100 % in the welded seam.

Tube acc. to DIN EN 10357

Tube acc.DIN EN10357 Quality CL1 CC (Mill Finish)

		1.4301(304L)	1.4404(316L)			
Inch	Dimensions	Article no.	Article no.			Weight [kg/m]
3/4"	19 x 1.5	45047	55047			0.64
1"	25.4 x 1.5	45049	55049			0.88
1 1/2"	38.1 x 1.5	45051	55051			1.37
2"	50.8 x 1.5	45052	55052			1.85
2 1/2"	63.5 x 1.5	45054	55054			2.32
3"	76.1 x 1.5	45055	55055			2.8
4"	101.6 x 1.5	45057	55057			3.75
4"	101.6 x 2	45058	55058			4.98

- unannealed (not heat treated)
- Pickled O/D
- Inside Ra:0.8/1.6µm

Tube acc.DIN EN10357 Quality CL1 CD (polished O/D)

		1.4301(304L)	1.4404(316L)			
Inch	Dimensions	Article no.	Article no.			Weight [kg/m]
3/4"	19.05 x 1.5	45059	55059			0.64
1"	25.4 x 1.5	45061	55061			0.88
1 1/2"	38.1 x 1.5	45063	55063			1.37
2"	50.8 x 1.5	45064	55064			1.85
2 1/2"	63.5 x 1.5	45066	55066			2.32
3"	76.1 x 1.5	45067	55067			2.8
4"	101.6 x 1.5	45069	55069			3.75
4"	101.6 x 2.0	45070	55070			4.98

- unannealed (not heat treated)
- Outside polish Ra1.0µm
- Inside Ra:0.8/1.6µm

Tube acc.DIN EN10357 Quality CL1 BC (Mill Finish)

		1.4301(304L)	1.4404(316L)			
Inch	Dimensions	Article no.	Article no.			Weight [kg/m]
1"	25.4 x 1.6	45074	55074			0.95
1 1/2"	38.1 x 1.6	45076	55076			1.46
2"	50.8 x 1.6	45077	55077			1.97
2 1/2"	63.5 x 1.6	45079	55079			2.48
3"	76.1 x 1.6	45080	55080			2.98
4"	101.6 x 2.0	45082	55082			4.98

- conforms to ASTM A270 Fully Annealed (heat treated)
- Pickled or bright annealed
- Inside Ra:0.8/1.6µm (pickled or bright annealed)

Tube acc.DIN EN10357 Quality CL1 BD (polished O/D)

		1.4301(304L)	1.4404(316L)			
Inch	Dimensions	Article no.	Article no.			Weight [kg/m]
1/2"	12.7 x 1.6	n/a	55084	offer acc.ASME BPE		0.44
3/4"	19.05 x 1.6	n/a	55085	offer acc.ASME BPE		0.7
1"	25.4 x 1.6	45087	55087			0.95
1 1/2"	38.1 x 1.6	45089	55089			1.46
2"	50.8 x 1.6	45090	55090			1.97
2 1/2"	63.5 x 1.6	45092	55092			2.48
3"	76.1 x 1.6	45093	55093			2.98
4"	101.6 x 2.0	45095	55095			4.98

- conforms to ASTM A270 Fully Annealed (heat treated)
- Pickled or bright annealed
- Inside Ra:0.8/1.6µm (pickled or bright annealed)

Pipe acc. to DIN EN 10357

- unannealed
- pickled
- inside Ra: 0.8/1.6 µm

Pipe acc. to DIN EN 10357 series A – quality CL1 CC

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN DIN	Dimensions	Article no.	Article no.			Weight [kg/m]
15	19 x 1.5	222 029	222 034			0.658
20	23 x 1.5	222 066	222 071			0.808
25	29 x 1.5	222 109	222 114			1.033
32	35 x 1.5	222 154	222 159			1.258
40	41 x 1.5	222 190	222 195			1.484
50	53 x 1.5	222 237	222 242			1.934
65	70 x 2	222 265	222 270			3.405
80	85 x 2	222 282	222 287			4.157
100	104 x 2	222 299	222 304			5.108
125	129 x 2	222 316	222 321			6.360
150	154 x 2	222 327	222 332			7.612
200	204 x 2	801 794	801 793			10.116

- unannealed
- pickled
- inside Ra: 0.8/1.6 µm
- ground on the outside Ra: 1.0 µm

Pipe acc. to DIN EN 10357 series A - quality CL1 CD

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN DIN	Dimensions	Article no.	Article no.			Weight [kg/m]
15	19 x 1.5	222 031	222 036			0.658
20	23 x 1.5	222 068	222 073			0.808
25	29 x 1.5	222 111	222 116			1.033
32	35 x 1.5	222 156	222 161			1.258
40	41 x 1.5	222 192	222 197			1.484
50	53 x 1.5	222 239	222 244			1.934
65	70 x 2	222 267	222 272			3.405
80	85 x 2	222 284	222 289			4.157
100	104 x 2	222 301	222 306			5.108
125	129 x 2	222 318	222 323			6.360
150	154 x 2	222 329	222 334			7.612
200	204 x 2	801 796	801 819			10.116

- annealed
- pickled or bright annealed
- inside Ra: 0.8/1.6 µm

Pipe acc. to DIN EN 10357 series A - quality CL1 BC

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN DIN	Dimensions	Article no.	Article no.			Weight [kg/m]
15	19 x 1.5	222 030	222 035			0.658
20	23 x 1.5	222 067	222 072			0.808
25	29 x 1.5	222 110	222 115			1.033
32	35 x 1.5	222 155	222 160			1.258
40	41 x 1.5	222 191	222 196			1.484
50	53 x 1.5	222 238	222 243			1.934
65	70 x 2	222 266	222 271			3.405
80	85 x 2	222 283	222 288			4.157
100	104 x 2	222 300	222 305			5.108
125	129 x 2	222 317	222 322			6.360

- annealed
- pickled or bright annealed
- inside Ra: 0.8/1.6 µm
- ground on the outside Ra: 1.0 µm

Pipe acc. to DIN EN 10357 series A – quality CL1 BD

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN DIN	Dimensions	Article no.	Article no.			Weight [kg/m]
15	19 x 1.5	222 032	222 037			0.658
20	23 x 1.5	222 069	222 074			0.808
25	29 x 1.5	222 112	222 118			1.033
32	35 x 1.5	222 157	222 162			1.258
40	41 x 1.5	222 193	222 198			1.484
50	53 x 1.5	222 240	222 245			1.934
65	70 x 2	222 268	222 273			3.405
80	85 x 2	222 285	222 290			4.157
100	104 x 2	222 302	222 307			5.108
125	129 x 2	222 319	222 324			6.360

Pipe acc. to DIN EN 10357

Pipe acc. to DIN EN 10357 series A – quality CL2 BC

1.4404 (316L) TC2						
DN DIN	Dimensions	Article no.				Weight [kg/m]
15	19 x 1.5	221 035				0.658
20	23 x 1.5	221 072				0.808
25	29 x 1.5	221 115				1.033
32	35 x 1.5	221 160				1.258
40	41 x 1.5	221 196				1.484
50	53 x 1.5	221 243				1.934
65	70 x 2.0	221 271				3.405
80	85 x 2.0	221 288				4.157
100	104 x 2.0	221 305				5.108
125	129 x 2.0	221 322				6.360

- annealed
- pickled or bright annealed
- inside Ra: 0.8/0.8 µm

Pipe acc. to DIN EN 10357 series A - quality CL2 BD

1.4404 (316L) TC2						
DN DIN	Dimensions	Article no.				Weight [kg/m]
15	19 x 1.5	221 037				0.658
20	23 x 1.5	221 074				0.808
25	29 x 1.5	221 118				1.033
32	35 x 1.5	221 162				1.258
40	41 x 1.5	221 198				1.484
50	53 x 1.5	221 245				1.934
65	70 x 2.0	221 273				3.405
80	85 x 2.0	221 290				4.157
100	104 x 2.0	221 307				5.108
125	129 x 2.0	221 324				6.360

- annealed
- pickled or bright annealed
- inside Ra: 0.8/0.8 µm
- ground on the outside Ra: 1.0 µm

Pipe acc. to DIN EN 10357

- annealed
- pickled or bright annealed
- inside Ra: 0.8/1.6 µm
- ground on the outside on request

Pipe acc. to DIN EN 10357 series D – quality CL1 BD

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN SMS	Dimensions	Article no.	Article no.			Weight [kg/m]
25	25 x 1.2	222 476	222 478			0.715
32	32 x 1.2	222 367	222 079			0.925
38	38 x 1.2	222 566	222 899			1.106
51	51 x 1.2	222 482	222 908			1.496
63.5	63.5 x 1.6	222 280	223 017			2.480
76.1	76.1 x 1.6	45092	55092			2.985
101.6	101.6 x 2	45093	55093			4.988
4"	101.6 x 2.11	45095	55095			5.26

- unannealed
- pickled
- inside Ra: 0.8/1.6 µm

Pipe acc. to DIN EN 10357 series D – quality CL1 CC

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN SMS	Dimensions	Article no.	Article no.			Weight [kg/m]
25	25 x 1.2	222 546	222 575			0.715
32	32 x 1.2	222 544	222 585			0.925
38	38 x 1.2	222 547	222 565			1.106
51	51 x 1.2	222 548	222 564			1.496
63.5	63.5 x 1.6	222 370	222 454			2.480
76.1	76.1 x 1.6	222 372	222 466			2.985
101.6	101.6 x 2	45058	55058			4.988

- unannealed
- pickled
- inside Ra: 0.8/1.6 µm
- ground on the outside Ra: 1.0 µm

Pipe acc. to DIN EN 10357 series D – quality CL1 CD

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN SMS	Dimensions	Article no.	Article no.			Weight [kg/m]
25	25 x 1.2	222 559	222 613			0.715
32	32 x 1.2	223 544				0.925
38	38 x 1.2	222 551	222 614			1.106
51	51 x 1.2	222 560	222 615			1.496
63.5	63.5 x 1.6	222 448	222 406			2.480
76.1	76.1 x 1.6	222 460	222 407			2.985
101.6	101.6 x 2	45070	55070			4.988

- annealed
- pickled or bright annealed
- inside Ra: 0.8/1.6 µm

Pipe acc. to DIN EN 10357 series D – quality CL1 BC

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN SMS	Dimensions	Article no.	Article no.			Weight [kg/m]
25	25 x 1.2	222 362	222 593			0.715
32	32 x 1.2	222 363	222 064			0.925
38	38 x 1.2	222 561	222 594			1.106
51	51 x 1.2	222 438	222 595			1.496
63.5	63.5 x 1.6	45079	55079			2.480
76.1	76.1 x 1.6	45080	55080			2.985
101.6	101.6 x 2	45082	55082			4.988

Pipe similar to DIN EN 10357

Pipe similar to DIN EN 10357 – quality CL1 CC

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN DIN	Dimensions	Article no.	Article no.			Weight [kg/m]
15	18 x 1	222 009	222 014			0.426
20	22 x 1	222 045	222 050			0.526
25	28 x 1	222 087	222 092			0.676
32	34 x 1	222 132	222 137			0.826
40	40 x 1	222 168	222 173			0.977
50	52 x 1	222 215	222 220			1.277

- unannealed
- pickled
- inside Ra: 0.8/1.6 µm

Pipe similar to DIN EN 10357 - quality CL1 CD

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN DIN	Dimensions	Article no.	Article no.			Weight [kg/m]
15	18 x 1	222 011	222 016			0.426
20	22 x 1	222 047	222 052			0.526
25	28 x 1	222 089	222 094			0.676
32	34 x 1	222 134	222 774			0.826
40	40 x 1	222 1670	222 175			0.977
50	52 x 1	222 217	222 222			1.277

- unannealed
- pickled
- inside Ra: 0.8/1.6 µm
- ground on the outside Ra: 1.0 µm

Pipe similar to DIN EN 10357 - quality CL1 BC

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN DIN	Dimensions	Article no.	Article no.			Weight [kg/m]
15	18 x 1	222 010	222 015			0.426
20	22 x 1	222 046	222 051			0.526
25	28 x 1	222 088	222 093			0.676
32	34 x 1	222 133	222 138			0.826
40	40 x 1	222 169	222 174			0.977
50	52 x 1	222 216	222 221			1.277

- annealed
- pickled or bright annealed
- inside Ra: 0.8/1.6 µm

Pipe similar to DIN EN 10357 – quality CL1 BD

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN DIN	Dimensions	Article no.	Article no.			Weight [kg/m]
15	18 x 1	222 012	222 017			0.426
20	22 x 1	222 048	222 053			0.526
25	28 x 1	222 090	222 095			0.676
32	34 x 1	222 135	222 140			0.826
40	40 x 1	222 171	222 176			0.977
50	52 x 1	222 218	222 223			1.277

- annealed
- pickled or bright annealed
- inside Ra: 0.8/1.6 µm
- ground on the outside Ra: 1.0 µm

Pipe similar to EN 10357

- unannealed
- pickled
- inside Ra: 0.8/1.6 µm

Pipe similar to EN 10357 – quality CL1 CC

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN DIN	Dimensions	Article no.	Article no.			Weight [kg/m]
15	18 x 1.5	222 019	222 024			0.620
20	22 x 1.5	222 055	222 060			0.770
25	28 x 1.5	222 098	222 103			0.995
32	34 x 1.5	222 143	222 148			1.221
40	40 x 1.5	222 179	222 184			1.446
50	52 x 1.5	222 226	222 231			1.897

- unannealed
- pickled
- inside Ra: 0.8/1.6 µm
- ground on the outside Ra: 1.0 µm

Pipe similar to EN 10357 – quality CL1 CD

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN DIN	Dimensions	Article no.	Article no.			Weight [kg/m]
15	18 x 1.5	222 021	222 026			0.620
20	22 x 1.5	222 057	222 062			0.770
25	28 x 1.5	222 100	222 105			0.995
32	34 x 1.5	222 145	222 150			1.221
40	40 x 1.5	222 181	222 186			1.446
50	52 x 1.5	222 228	222 233			1.897

- annealed
- pickled or bright annealed
- inside Ra: 0.8/1.6 µm

Pipe similar to EN 10357 – quality CL1 BC

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN DIN	Dimensions	Article no.	Article no.			Weight [kg/m]
15	18 x 1.5	222 020	222 025			0.620
20	22 x 1.5	222 056	222 061			0.770
25	28 x 1.5	222 099	222 104			0.995
32	34 x 1.5	222 144	222 149			1.221
40	40 x 1.5	222 180	222 185			1.446
50	52 x 1.5	222 227	222 232			1.897

- annealed
- pickled or bright annealed
- inside Ra: 0.8/1.6 µm
- ground on the outside Ra: 1.0 µm

Pipe similar to EN 10357 – quality CL1 BD

		1.4307 (304L) TC1	1.4404 (316L) TC1			
DN DIN	Dimensions	Article no.	Article no.			Weight [kg/m]
15	18 x 1.5	222 023	222 027			0.620
20	22 x 1.5	222 058	222 063			0.770
25	28 x 1.5	222 101	222 106			0.995
32	34 x 1.5	222 146	222 151			1.221
40	40 x 1.5	222 182	222 187			1.446
50	52 x 1.5	222 229	222 234			1.897