



**SLOVENSKI STANDARD**  
**SIST ENV 10220:1997**

**01-december-1997**

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**Nevarjene in varjene jeklene cevi - Mere in mase na enoto dolžine**

Seamless and welded steel tubes - Dimensions and masses per unit length

Nahtlose und geschweißte Stahlrohre - Maße und längenbezogene Masse

Tubes lisses en acier, soudés et sans soudure - Tableaux généraux des dimensions et des masses linéiques

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**Ta slovenski standard je istoveten z: ENV 10220:1993**

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**ICS:**

23.040.10      Železne in jeklene cevi      Iron and steel pipes

**SIST ENV 10220:1997**

**en**

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EUROPEAN PRESTANDARD

ENV 10220

PRÉNORME EUROPÉENNE

EUROPÄISCHE VORNORM

November 1993

UDC 669.14-462.3:621.643.2-034.14:621.774.21

Descriptors: Piping, steel tubes, welded tubes, seamless tubes, smooth tubes, dimensions, linear density, tables (data)

English version

## Seamless and welded steel tubes - Dimensions and masses per unit length

Tubes lisses en acier, soudés et sans soudure - Nahtlose und geschweißte Stahlrohre - Maße und  
 - Tableaux généraux des dimensions et des masses linéiques - Längenbezogene Masse

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This European Prestandard (ENV) was approved by CEN on 1993-11-05 as a prospective standard for provisional application. The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into an European Standard (EN).

CEN members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

### CEN

European Committee for Standardization  
 Comité Européen de Normalisation  
 Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

## Foreword

The European Committee for Iron and Steel Standardization (ECISS) placed the order to the Technical Committee ECISS/TC 29 "Steel tubes and fittings for steel tubes" to elaborate an European dimensional standard defining dimensions and masses of steel tubes on the basis of ISO 4200: 1991. The work on the corresponding standard EN 10 220 is coordinated by ECISS/TC 29/SC 8 "Steel tubes; dimensions and tolerances" the secretariat of which is held by Normenausschuß Eisen und Stahl (FES) in DIN.

ECISS/TC 29/SC 8 regarded it as necessary in developing EN 10 220 to

- adhere to the principle on which ISO 4200 was based; i. e. to take into account present practice even if this is not quite in line with a pure metric dimensional series.
- preserve the essential details agreed in ISO for tube dimensions because of the international trade in steel tubes and tube products.

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Table 2 and table 3 of ISO 4200 were therefore adopted unchanged into this document as tables 1 and 3.

The committee noted however various possibilities for amendment of ISO 4200 as outlined below.

In order to allow for discussion of these proposals in ISO/TC 5/SC 1, and considering that EN 10 220 should not be published until decisions have been taken on these proposals in ISO TC 5/SC 1, ECISS/TC 29/SC 8 prefers to publish this document for the time being as European Prestandard (ENV).

In preparing the European Prestandard the following amendments were considered necessary:

- a) The scope of ISO 4200 was considered to be insufficiently clear particularly with reference to the terms "tubes for general purposes" "precision tubes" and "particular use and application", and has therefore been revised.
- b) Table 1 and the relevant clause 3 were deleted for the following reason:

The indications given in clause 3 for the use of the dimensions covered by groups A to G were not regarded as generally appli-



able. It should be left to the committees for the various fields of application and to the competent subcommittees for steel tubes to specify a reasonable selection of pipes from general dimensional tables.

- c) In order to indicate the manufacturing range for seamless tubes an additional table was added (as table 2) with the note that the dimensions specified there are not usually stock dimensions and that fittings and accessories may be not available for them.

The following propositions were identified for discussion in ISO/TC 5/SC 1 for later implementation in EN 10 220.

- d) In the scope the most important aims of the standard should be made more clear:

- to rationalize manufacturing and stockholding of tubes;
- to provide tubes for piping systems fitted to the dimensions of accessories;
- to indicate the range of producible dimensions.

- e) Further in the scope or at another appropriate place it should be indicated that the competent Subcommittees for steel tubes and the application committees should select from the preferred dimensions a restricted number for their purposes.

- f) In view of the aims mentioned under d) and e) it is intended to review the need for those dimensions marked in annex 1 (table A.1) and to reduce the series 2 and 3 to one series.

- g) All wall thicknesses should be reviewed. Especially the wall thickness of 5,4 mm seems not to be necessary. The same seems to apply for the wall thickness of 65 mm after having implemented the new table 2.

- h) Outside diameter 762 mm should be inserted in series 1. Outside diameters greater than 1 554 mm which are not being delivered from stocks should only quote the diameter and a range of thickness.

- i) A detailed proposal for the amendment of table 3 is to be expected after discussions in ECISS/TC 29/SC 11/WG 3 (Tubes for mechanical and general engineering purposes - Precision tubes). Probably this will cover the proposal to extend the range of diameters up to about 400 mm.

- j) The conversion factors to be used for calculation of masses per unit length for high-alloy steel tubes should be taken from ISO 683-13:1986 with the note given there to table 8.

This European Prestandard was adopted and following countries are bound to announce the existence of this European Prestandard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

## 1 Scope

This European Prestandard gives tables of preferred dimensions in millimetres and masses per unit length in kilogrammes per metre of plain end seamless and welded steel tubes. It covers two groups of tubes:

- group 1: tubes for general purposes (e. g. pressure, structural and mechanical application; see tables 1 and 2)
- group 2: tubes for special requirements regarding tolerances and surface finish, called "precision tubes" in the following (see table 3)

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Relevant subcommittees of ECISS and relevant Technical Committees of CEN should select these dimensions for their tubes.

The outside diameters are classified into three series for group 1 and two series for group 2 reflecting the availability of other components of a pipe line (see clause 2). This classification of outside diameters into different series and of preferred wall thicknesses indicates the range of manufactured steel tube available today.

The masses given in the Prestandard are calculated from the nominal diameter and thickness. To calculate the masses per unit length of tubes with different dimensions from those given in the tables, the formula in clause 3 should be used.

It should be noted that it may not be possible in all cases to supply series 2 and 3 tube sizes for which the values are given in the tables.

## 2 Classification of outside diameters

The tubes in accordance with this European Prestandard are classified in three series which may be defined in the following way:

- series 1: tubes for which all the accessories needed for the construction of piping systems are standardized
- series 2: tubes for which not all accessories are standardized
- series 3: tubes for special applications for which very few standardized accessories exist. Some of these diameters may be withdrawn in due course.

## 3 Method of calculating masses per unit length

The values of the masses per unit length have been calculated to at least five significant figures, precisely as specified in the formula given below, and have then been rounded to three significant figures for values of less than 100 and to the nearest whole number for larger values.

$$M = (D - T) \cdot T \cdot 0,0246615^{1)} \text{ kg/m}$$

where

M is the mass per unit length in kg/m,  
D is the specified outside diameter in mm and  
T is the specified thickness in mm.

The calculated values may also be applied to tubes with different density values, but have then to be multiplied by a factor of

- 1,015 for austenitic stainless steel
- 0,985 for ferritic and martensitic stainless steel.

Note: These factors may possibly be changed using the coefficients recommended by ISO/TC 17 in ISO 683-13, table 8.

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<sup>1)</sup> This factor is based on a density of 7,85 kg/dm<sup>3</sup>

## 4 Dimensions and masses per unit length

### 4.1 Group 1

Table 1 gives dimensions and the values of the masses per unit length for tubes for general purposes and for use as components in piping systems. Table 2 offers additional values for seamless tubes with higher thickness.

For tubes intended to be used as components in piping systems, it is recommended that only those dimensions in table 1 in series 1 outside diameters should be applied.

### 4.2 Group 2

Table 3 gives the dimensions and values of the masses per unit length for precision steel tubes.

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Table 1: Tubes for general purposes; dimensions and masses per unit length, group 1

Outside diameter mm	Thickness <sup>1)</sup> , mm										Masses per unit length, kg/m																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	0.5	0.6	0.8	1	1.2	1.4	1.6	1.8	2	2.3	2.6	2.9	3.2	3.6	4	4.5	5	5.4	5.6	6	6.3	7.1	8	8.6	10	11	12.5	14.2	16	17.5	20	22.2	25	28	30	37	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400	405	410	415	420	425	430	435	440	445	450	455	460	465	470	475	480	485	490	495	500	505	510	515	520	525	530	535	540	545	550	555	560	565	570	575	580	585	590	595	600	605	610	615	620	625	630	635	640	645	650	655	660	665	670	675	680	685	690	695	700	705	710	715	720	725	730	735	740	745	750	755	760	765	770	775	780	785	790	795	800	805	810	815	820	825	830	835	840	845	850	855	860	865	870	875	880	885	890	895	900	905	910	915	920	925	930	935	940	945	950	955	960	965	970	975	980	985	990	995	1000	1005	1010	1015	1020	1025	1030	1035	1040	1045	1050	1055	1060	1065	1070	1075	1080	1085	1090	1095	1100	1105	1110	1115	1120	1125	1130	1135	1140	1145	1150	1155	1160	1165	1170	1175	1180	1185	1190	1195	1200	1205	1210	1215	1220	1225	1230	1235	1240	1245	1250	1255	1260	1265	1270	1275	1280	1285	1290	1295	1300	1305	1310	1315	1320	1325	1330	1335	1340	1345	1350	1355	1360	1365	1370	1375	1380	1385	1390	1395	1400	1405	1410	1415	1420	1425	1430	1435	1440	1445	1450	1455	1460	1465	1470	1475	1480	1485	1490	1495	1500	1505	1510	1515	1520	1525	1530	1535	1540	1545	1550	1555	1560	1565	1570	1575	1580	1585	1590	1595	1600	1605	1610	1615	1620	1625	1630	1635	1640	1645	1650	1655	1660	1665	1670	1675	1680	1685	1690	1695	1700	1705	1710	1715	1720	1725	1730	1735	1740	1745	1750	1755	1760	1765	1770	1775	1780	1785	1790	1795	1800	1805	1810	1815	1820	1825	1830	1835	1840	1845	1850	1855	1860	1865	1870	1875	1880	1885	1890	1895	1900	1905	1910	1915	1920	1925	1930	1935	1940	1945	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070	2075	2080	2085	2090	2095	2100	2105	2110	2115	2120	2125	2130	2135	2140	2145	2150	2155	2160	2165	2170	2175	2180	2185	2190	2195	2200	2205	2210	2215	2220	2225	2230	2235	2240	2245	2250	2255	2260	2265	2270	2275	2280	2285	2290	2295	2300	2305	2310	2315	2320	2325	2330	2335	2340	2345	2350	2355	2360	2365	2370	2375	2380	2385	2390	2395	2400	2405	2410	2415	2420	2425	2430	2435	2440	2445	2450	2455	2460	2465	2470	2475	2480	2485	2490	2495	2500	2505	2510	2515	2520	2525	2530	2535	2540	2545	2550	2555	2560	2565	2570	2575	2580	2585	2590	2595	2600	2605	2610	2615	2620	2625	2630	2635	2640	2645	2650	2655	2660	2665	2670	2675	2680	2685	2690	2695	2700	2705	2710	2715	2720	2725	2730	2735	2740	2745	2750	2755	2760	2765	2770	2775	2780	2785	2790	2795	2800	2805	2810	2815	2820	2825	2830	2835	2840	2845	2850	2855	2860	2865	2870	2875	2880	2885	2890	2895	2900	2905	2910	2915	2920	2925	2930	2935	2940	2945	2950	2955	2960	2965	2970	2975	2980	2985	2990	2995	3000	3005	3010	3015	3020	3025	3030	3035	3040	3045	3050	3055	3060	3065	3070	3075	3080	3085	3090	3095	3100	3105	3110	3115	3120	3125	3130	3135	3140	3145	3150	3155	3160	3165	3170	3175	3180	3185	3190	3195	3200	3205	3210	3215	3220	3225	3230	3235	3240	3245	3250	3255	3260	3265	3270	3275	3280	3285	3290	3295	3300	3305	3310	3315	3320	3325	3330	3335	3340	3345	3350	3355	3360	3365	3370	3375	3380	3385	3390	3395	3400	3405	3410	3415	3420	3425	3430	3435	3440	3445	3450	3455	3460	3465	3470	3475	3480	3485	3490	3495	3500	3505	3510	3515	3520	3525	3530	3535	3540	3545	3550	3555	3560	3565	3570	3575	3580	3585	3590	3595	3600	3605	3610	3615	3620	3625	3630	3635	3640	3645	3650	3655	3660	3665	3670	3675	3680	3685	3690	3695	3700	3705	3710	3715	3720	3725	3730	3735	3740	3745	3750	3755	3760	3765	3770	3775	3780	3785	3790	3795	3800	3805	3810	3815	3820	3825	3830	3835	3840	3845	3850	3855	3860	3865	3870	3875	3880	3885	3890	3895	3900	3905	3910	3915	3920	3925	3930	3935	3940	3945	3950	3955	3960	3965	3970	3975	3980	3985	3990	3995	4000	4005	4010	4015	4020	4025	4030	4035	4040	4045	4050	4055	4060	4065	4070	4075	4080	4085	4090	4095	4100	4105	4110	4115	4120	4125	4130	4135	4140	4145	4150	4155	4160	4165	4170	4175	4180	4185	4190	4195	4200	4205	4210	4215	4220	4225	4230	4235	4240	4245	4250	4255	4260	4265	4270	4275	4280	4285	4290	4295	4300	4305	4310	4315	4320	4325	4330	4335	4340	4345	4350	4355	4360	4365	4370	4375	4380	4385	4390	4395	4400	4405	4410	4415	4420	4425	4430	4435	4440	4445	4450	4455	4460	4465	4470	4475	4480	4485	4490	4495	4500	4505	4510	4515	4520	4525	4530	4535	4540	4545	4550	4555	4560	4565	4570	4575	4580	4585	4590	4595	4600	4605	4610	4615	4620	4625	4630	4635	4640	4645	4650	4655	4660	4665	4670	4675	4680	4685	4690	4695	4700	4705	4710	4715	4720	4725	4730	4735	4740	4745	4750	4755	4760	4765	4770	4775	4780	4785	4790	4795	4800	4805	4810	4815	4820	4825	4830	4835	4840	4845	4850	4855	4860	4865	4870	4875	4880	4885	4890	4895	4900	4905	4910	4915	4920	4925	4930	4935	4940	4945	4950	4955	4960	4965	4970	4975	4980	4985	4990	4995	5000	5005	5010	5015	5020	5025	5030	5035	5040	5045	5050	5055	5060	5065	5070	5075	5080	5085	5090	5095	5100	5105	5110	5115	5120	5125	5130	5135	5140	5145	5150	5155	5160	5165	5170	5175	5180	5185	5190	5195	5200	5205	5210	5215	5220	5225	5230	5235	5240	5245	5250	5255	5260	5265	5270	5275	5280	5285	5290	5295	5300	5305	5310	5315	5320	5325	5330	5335	5340	5345	5350	5355	5360	5365	5370	5375	5380	5385	5390	5395	5400	5405	5410	5415	5420	5425	5430	5435	5440	5445	5450	5455	5460	5465	5470	5475	5480	5485	5490	5495	5500	5505	5510	5515	5520	5525	5530	5535	5540	5545	5550	5555	5560	5565	5570	5575	5580	5585	5590	5595	5600	5605	5610	5615	5620	5625	5630	5635	5640	5645	5650	5655	5660	5665	5670	5675	5680	5685	5690	5695	5700	5705	5710	5715	5720	5725	5730	5735	5740	5745	5750	5755	5760	5765	5770	5775	5780	5785	5790	5795	5800	5805	5810	5815	5820	5825	5830	5835	5840	5845	5850	5855	5860	5865	5870	5875	5880	5885	5890	5895	5900	5905	5910	5915	5920	5925	5930	5935	5940	5945	5950	5955	5960	5965	5970	5975	5980	5985	5990	5995	6000	6005	6010	6015	6020	6025	6030	6035	6040	6045	6050	6055	6060	6065	6070	6075	6080	6085	6090	6095	6100	6105	6110	6115	6120	6125	6130	6135	6140	6145	6150	6155	6160	6165	6170	6175	6180	6185	6190	6195	6200	6205	6210	6215	6220	6225	6230	6235	6240	6245	6250	6255	6260	6265	6270	6275	6280	6285	6290	6295	6300	6305	6310	6315	6320	6325	6330	6335	6340	6345	6350	6355	6360	6365	6370	6375	6380	6385	6390	6395	6400	6405	6410	6415	6420	6425	6430	6435	6440	6445	6450	6455	6460	6465	6470	6475	6480	6485	6490	6495	6500	6505	6510	6515	6520	6525	6530	6535	6540	6545	6550	6555	6560	6565	6570	6575	6580	6585	6590	6595	6600	6605	6610	6615	6620	6625	6630	6635	6640	6645	6650	6655	6660	6665	6670	6675	6680	6685	6690	6695	6700	6705	6710	6715	6720	6725	6730