

				CSN 41 1320
UNM		STEEL 11 320		
				JK 125 121
				125 131
				125 191
STEEL 11 320				
Steel group as per CSN 42 0074	For medium or deep drawing, for mass or volume forming( container forming) with guaranteed weldability for enamelling with ceramic and organic enamel after metal working.			
Chemical composition % (Analysis of heat lot or melt)	C	P	S	
	max. 0.11	max. 0.045	max. 0.045	
Allowed tolerance on chemical composition in finished product 1) %	+ 0.02	+ 0.009	+ 0.009	
Output class as per CSN 42 0030	001			
Colour coding as per CSN 42 0010	Light Brown - green			
Type of Steel as per method of manufacture	• Open hearth or Oxy converter Oxygen tandem process Uncleaned or semi cleaned			
Products	Wires			
Available form	Hot rolled			
Surface	Scaly			
Dimension Standard	CSN 42 5410			
Technical supply conditions	CSN 42 0175			
Material designation and condition	11 320.0			
1 MPa= 1 N/mm2				Contd.
Supersedes CSN 41 1320 of 13.12.1967	Effective date 1.7.1978			



Condition	Non heat treated
Thickness mm	up to 25
Max. Tensile stress strength $\sigma_{Pt}$ MPa	410
Min. elongation 65 % longitudinal	30
Angle of bend $\alpha$   $\alpha$ and mandrel dia.   'D' for testing	180°
brittleness as   D per CSN 42 0401	0
Weldability as per CSN 05 1310	Guaranteed



Products	Thin sheets									
Available form	Hot rolled									
Surface as per dimension standard	.2 pickled, dull .3 pickled, polished									
Dimension Standards	CSN 42 5302 CSN 42 5304									
Technical supply conditions	ON 42 0126 CSN 42 0128									
Material designation	11 320.30					11 320.31				
Condition	Annealed soft									
Degree of pre rolling	further no pre roll					lightly pre rolled				
Thickness mm	0.70 to 2.90									
Max. yield strength σ Kt 2) MPa	260					290				
Ultimate tensile strength σ Pt MPa	270 to 370									
Min. elongation cross. 5 10 %	30					28				
Minimum cupping with Ericson test as per CSN 42 0406	for degree of pre roll 0	t	0.55	0.60	0.70	0.80	0.90	1.00	1.30	
		h	8.60	0.80	9.20	9.60	9.90	10.2	10.8	
		t	1.50	1.80	2.00	-	-	-	-	
		h	11.2	11.7	12.0	-	-	-	-	
t= thick-ness mm	for degree of pre roll	t	0.55	0.60	0.70	0.80	0.90	1.00	1.30	
h= cup depth mm		h	8.20	8.50	9.00	9.40	9.70	10.0	10.7	
	1	t	1.50	1.80	2.00	-	-	-	-	
		h	11.1	11.6	11.8	-	-	-	-	
Double bend test	On the external surface of the bend shall not have meatallic tear or fissures; roughening or coarsening of surface is permitted									
Weldability as per CSN 05 1310	Guaranteed 3)									



Products	Longitudinally welded smooth tubes				
Available form	Cold Rolled				
Surface as per dimension standard	.0 Scaly .1 dull .2 oxidised with out flaky scales .3 bright				
Dimension Standards	CSN 42 5723				
Technical supply conditions	CSN 42 0152				
Material designation and condition	11 320.0		11 320.1		
Condition	Non heat treated		normalised and annealed		
External diameter mm	14 to 152				
Min. yield strength $\sigma_{Kt}$ MPa	200		180		
Minimum tensile strength $\sigma_{Pt}$ MPa	300		280		
Min. ductility $\delta_{10}$ longitudinal %	10		22		
Distance h between platens during flattening test as per CSN 42 0413 D = Ext. diameter mm t = wall thickness mm	-		$h = \frac{1.09 D \cdot t}{0.09 D + t}$		
Minimum expansion during flare or flanging test as per CSN 42 0412 for cone angle $\beta = 45^\circ$ d = int. dia. D D = ext. dia. % D1= ext. dia. after flaring	d	>=	0.9	0.8	0.7
	D				
	D1-D.100%		10	12	14
Note : all dimensions in mm.					
Weldability as per CSN 05 1310	good 4)		guaranteed		



Products	Longitudinally welded smooth tubes					
Available form	Cold Rolled					
Surface as per dimension standard	.3 ext. & int. bright		.0 Scaly .2 ext. & int. oxidised without flaky scales			
Dimension Standards	CSN 42 6713 , CSN 42 6714					
Technical supply conditions	CSN 42 0142					
Material designation and condition	11 320.0		11 320.1			
Condition	Non heat treated		normalised and annealed			
External diameter mm	5 to 100					
Min. yield strength σ Kt MPa	-		180			
Minimum tensile strength σ Pt MPa	min.390		270 to 370			
Min. ductility ε 10 longitudinal %	5		25			
Distance h between platens during flattening test as per CSN 42 0413 D = Ext. diameter mm t = wall thickness mm	$h = \frac{1.09 D \cdot t}{0.09 D + t}$					
Minimum expansion during flare or flanging test as per CSN 42 0412 for cone angle β = 45° d = int. dia. D = ext. dia. D1= ext. dia. after flaring	d --- ≥ D	-	0.9	0.8	0.7	0.6
	D1-D.100% ----		10	12	14	16
Note : all dimensions in mm						
Weldability as per CSN 05 1310	good 4)		guaranteed			

Products	Longitudinally welded precisely chamfered smooth tubes from bright annealed bands or strips			
Available form	Cold Rolled			
Surface as per dimension standard	.1 dull to metallic dull bright .3 internally and externally bright			
Dimension Standards	CSN 42 6713			
Technical supply conditions	CSN 42 0142			
Material designation and condition	11 320.0			
Condition	Non heat treated			
External diameter mm	8 to 70			
Min. yield strength σ Kt MPa	240			
Minimum tensile strength σ <sub>Pt</sub> MPa	310			
Min. elongation ductility δ 10 longitudinal %	12			
Distance h between platens during flattening test as per CSN 42 0413 D = Ext. diameter mm t = wall thickness mm	$h = \frac{1.09 D \cdot t}{0.09 D + t}$			
Minimum expansion during flare or flanging test as per CSN 42 0412 for cone angle β = 45° d = int. dia. D = ext. dia. D1 = ext. dia. after flaring	d --- ≥ D	0.9	0.8	0.7
D1 - D. 100% D = int. dia. D = ext. dia. D1 = ext. dia. after flaring	D D D	10	12	14
Notes: all dimensions in mm				

contd.



Angle of bend $\alpha$	$\alpha$	
& radius of bend		90°
'R' for bend test		
per CSN 42 0414	R	3D
D= ext.diameter		
Weldability		
as per CSN 05 1310		guaranteed 4)



Products	Bands and Strips or Sheets and flats		
Available form	Cold rolled		
Surface as per CSN 42 0107	.0 dark or black .1 bright		
Dimension Standard	CSN 42 5350		
Technical Supply Regulations	CSN 42 0107		
Material designation and condition	11 320.20		
Condition	Recrystallised and annealed		
Degree of pre roll	No further pre roll		
Thickness mm	upto 4.00		
Ultimate tensile strength $\sigma_{Pt}$ MPa	270 to 370		
elongation Min. ductility longitudinal $\sigma$ 10 %	32		
Angle of bend $\alpha$   $\alpha$ and mandrel dia.	180o		
'D' for testing   brittleness as   D	0		
per CSN 42 0401   longitudinal for   thickness from 3mm 5)			
Min. internal   radius of bend   r & angle $\alpha$   $\alpha$	180o		
with cold ---   forming   long.	0		
t=thickness   r   mm   cross	0	1	0.25t

contd.





Minimum	t	0.40	0.45	0.50	0.55	0.60	0.65	0.70	
cupping	h	8.20	8.40	8.60	8.70	8.90	9.10	9.20	
with									
Ericson	t	0.80	0.90	1.00	1.10	1.20	1.30	1.40	
test as									
per CSN	h	9.40	9.70	10.0	10.2	10.4	10.7	11.0	
42 0406									
t= thick	t	1.50	1.60	1.70	1.80	1.90	2.00	-	
ness mm									
h = cup depth mm	h	11.1	11.3	11.5	11.7	11.9	12.1	-	
Weldability									
as per CSN 05 1310									guaranteed



Products	Bands and Strips or Sheets and flats
Available form	Cold rolled
Surface as per CSN 42 0107	.1 bright .2 bright defined for metal finishing .3 higher brightness defined for metal finishing
Dimension Standard	CSN 42 5350
Technical Supply Regulations	CSN 42 0107
Material designation and condition	11 320.21
Condition	Recrystallised and annealed
Degree of pre roll	Light pre roll
Thickness mm	upto 4.00
Min. yield strength 0.2% Kt MPa	310
Ultimate tensile strength 0.2% Pt MPa	290 to 390
elongation Min. ductility longitudinal 0 10 %	28
Angle of bend $\alpha$   $\alpha$ and mandrel dia.	180°
'D' for testing	
long. brittleness	
thickness of   D	0.5t
bar mm as	
per CSN 42 0401	
Min. internal radius of bend r & angle $\alpha$   $\alpha$	180°
with cold forming   long.	0.25t
t=thickness   r	
mm   cross	0.5t

contd.



	t	0.45	0.50	0.55	0.60	0.65	0.70	0.80	
Minimum									
cupping	h	7.20	8.00	8.20	8.30	8.50	8.70	9.00	
with									
Ericson	t	0.90	1.00	1.10	1.20	1.30	1.40	1.50	
test as									
per CSN	h	9.20	9.50	9.80	10.0	10.2	10.4	10.6	
42 0406									
t = thick	t	1.60	1.70	1.80	1.90	2.00	-	-	
ness mm									
h = cup depth mm	h	10.8	11.0	11.2	11.4	11.6	-	-	
Weldability									
as per CSN 05 1310									

guaranteed 3)



Products	Thin walled profile section of equal arm and unequal arm L and sections U, Z, C	
Available form	Cold rolled	
Surface as per dimension standard	.0 dark or black .1 bright	
Dimension Standard	CSN 42 6949	CSN 42 6964
	CSN 42 6950	CSN 42 6968
	CSN 42 6963	
Technical Supply Regulations	CSN 42 0121	
Material designation and condition	11 320.20	
Condition	Non heat treated	
Thickness mm	1 to 3	
Ultimate tensile strength $\sigma_{Pt}$ MPa	310 to 440	
Min. ductility <del>elongation</del> longitudinal $\phi$ 10 %	8	
Weldability as per CSN 05 1310	good 4)	



Products	Thin walled profile section, square, rectangular closed sections L and T	
Available form	Cold formed or drawn for welded tubes	
Surface as per dimension standard	.0 dark .1 bright .2 Scaly	
Dimension Standard	CSN 42 6935 CSN 42 6936	CSN 42 6939 CSN 42 6946
Technical Supply Regulations	CSN 42 0121	
Material designation and condition	11 320.0	11.320.2
Condition	Non heat treated	recrystallised annealed
Thickness mm	1 to 3	
Ultimate tensile strength $\sigma_{Pt}$ MPa	310 to 490	310 to 390
Min. ductility elongation longitudinal $\sigma$ 10 %	6	25
Weldability as per CSN 05 1310	good 4)	guaranteed
Characteristics of steel and suitability for use	Weldable Carbon steel, has good hot or cold formability; suitable for medium or deep drawing; for surface modification or treatment by metal finishing or enamelling.	

## Notes :

- 1 Prescribed value is valid for products from ingots of weight upto 6 tons. For products from ingots of greater weight, the permitted deviations in finished products are to be agreed upon.
2. Limit yield could be about 20 Mpa higher: In such a case ratio of  $\sigma_{Kt} / \sigma_{Pt}$  for degree of preforming 0 shall be max. of 0.70 and for degree of preforming 1 a max. of 0.80.
3. For welding steel in condition and degree of preforming .21 and .31 it is necessary to consider grain coarsening in transition band or region.

contd.



4. With result of deformation during cold forming while welding can lead to grain coarsening and to twisting, as well as to changes in values of mechanical properties.
5. Bands and strips of thickness under 3 mm, and width under 200 mm is tested by double bend test.

#### SUPPLEMENT

Current International standards :

RS.975-73 Steel, thin sheet cold forged, low carbon qualitative for cold stamping, classification, grades & Tech.Requirements.

Comparison of standards recommendations RVHP RS 975-73

Steel 11320 as per CSN 41 1320 is approximate equivalent of steel 08 kp-A

Current overseas standard.  
(approximate equivalent grade steel)

08 kp as per GOST 9045 -70  
ST 22 as per DIN 1614.  
ST 12 as per DIN 1623.

Amendment or changes against previous edition :

The information on hot rolled thin sheets and preformed grade .33 and for thick sheets were discarded or removed. Values for Ericsson cupping test was modified and complemented in agreement with or in line with, associated Dimension standards. Values of mechanical properties were evaluated in SI units. Standard was totally revised.

Standards working committee :

Convener : New Iron works of Klement Gottwald, n.e, Ostrava-Kuncice.  
Department of Standards and Measures : Ing. Petr Hora.

CAUTION: Changes and Amendments, as well as news about new release of standards are to be certified by Director, Department of Standards and Measures.



## CZECHOSLOVAK NATIONAL STANDARD

Amendment b) - 12 1974
CSN 41 1320 STEEL 11 320

With effect from 1.2.1975 in CSN 41 1320 steel 11 320 of 13.12.1967.

The Expansions tests and collapse tests for precision welded tubes and for precision welded and chamfered tubes from bright annealed bands and strips on page 5 of this standard is changed with amendment as per following table.

Table values are valid for both products for normalised and annealed conditions.

Product	Precision welded tubes	Precision welded chamfered tubes from bright annealed bands or strips
Minimum expansion during flare or flanging test as per CSN 42 0412 for cone angle $\beta = 45^\circ$		
$d \geq D$	0.9	0.8
$D$	0.7	0.6
$D_1 - D.100\%$	10	12
$D$	14	16
$D$	10	12
$\%$	14	
$D_1 = \text{ext. dia. min. flare after flaring}$	Note : all dimensions in mm	
Distance h between platens during flattening test as per CSN 42 0413	$h = \frac{1.09 D \cdot t}{0.09 D + t}$	
$D = \text{Ext. diameter mm}$		
$t = \text{wall thickness mm}$		

Simultaneously the information for expansion tests on welded tubes in normalised and annealed condition as per CSN 42 0410 on the same page of the standard is discarded.

On the title page of the standard, erroneous approval date is changed to correct date as 13.12.1967.



## CZECHOSLOVAK NATIONAL STANDARD

	Amendment d) - 7/ 1965
UNM	CSN 41 1320 STEEL 11 320
	Structural steel for deep drawing

With effect from 1. August 1965 the CSN 41 1320 Steel 11 320 "Structural steel for deep drawing" of 11.10.1961 is amended with the following table.

Products	Wires
Thickness mm	up to 25
Available form	Hot rolled
Surface	Scaly
Dimension Standard	ON 42 5410
Material designation and condition	11 320.0
Condition	Non annealed
Min. yield strength 0.2 Kt or limit 0.2 0.2 kp/mm <sup>2</sup>	-
Tensile stress strength 0.2 Pt kp/mm <sup>2</sup>	max. 40
Min. elongation 55 % longitudinal	30
Angle of bend $\alpha$ ; $\alpha$ and mandrel dia.	180°
'D' for testing brittleness as D	0
Weldability as per	Guaranteed

CAUTION: Changes and Amendments, as well as news about new release of standards are to be certified by Director, Department of Standards and Measures.





## Amendment

\* 15 With effect from 1. Nov 1979 the standard CSN 41 1320 steel 11 320 of 12.10.1976 is amended as follows :

On page 3 in the product row title is changed to " Sheets "; in the row thickness the range changes to 0.70 to 3.50.

Amendment a) - 6/1979

Publishers - UNM - Praha 10 - Hostivar  
Year of publication - 1978, 12 pages, Print 10000 copies, N 16 967  
Printed by: Tisk book makers n.p. Provoz 51 Brno,  
Starobrnenska, 19/21.

