HBIS SERBIA

PRODUCT CATALOGUE

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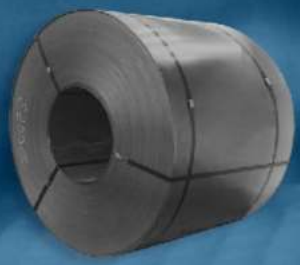
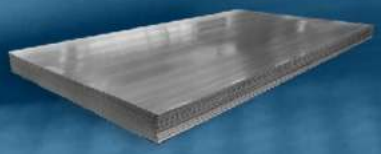
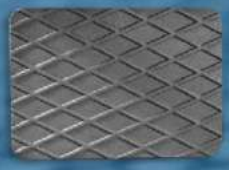
PRODUCTS

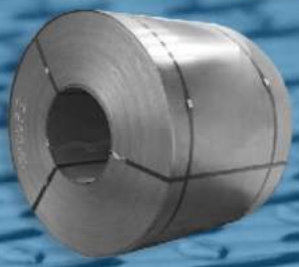
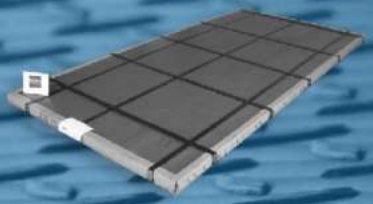
HOT ROLLED PRODUCTS

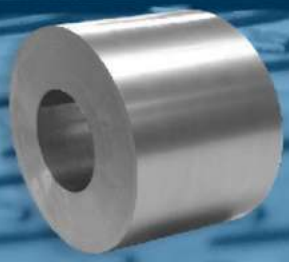
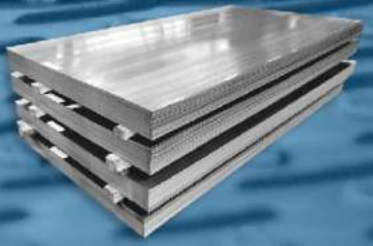
HOT ROLLED CHEQUERED PRODUCTS



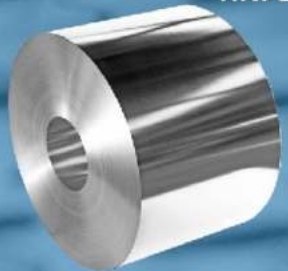

HOT ROLLED PICKLED PRODUCTS

COLD ROLLED PRODUCTS

TINPLATE PRODUCTS




HBIS SERBIA

HBIS GROUP SERBIA

HBIS GROUP Serbia Iron & Steel d.o.o. Beograd (herein-after HBIS Serbia) is a company founded in 2016. as part of international HBIS GROUP Corporation.

HBIS Serbia consists of:
· Factory in Smederevo for the production of cold and hot rolled flat steel products,
· Factory in Sabac for the production of tin plate,
· Factory in Kucevo for the production of lime stone.

The company's projected production capacity is 2.2 million tons of finished products per year and employs over 5.000 workers.

HBIS Serbia produces the following flat rolled steel products in coils and sheets:
· Hot-rolled products,
· Hot-rolled chequered products,
· Hot rolled pickled products,
· Cold rolled products,
· Tinplate products.

HBIS Serbia has implemented a quality management system which is applied, maintained and constantly improved.
The company has numerous certificates such as :
· ISO 9001
· ISO 14001
· ISO 45001
· HACCP
· ISO/IEC 17025
· ISO 22000
· CE sign per standard EN10025-2
· AD 2000-Merkblatt W0 and PED 97/23/EC
· Lloyd's Register
· DNV-GL

HBIS Serbia issues inspection certificates 3.1. for its products according to EN 10204:2004. This implies that the validation of inspection results is run in internal certified laboratory, independent of manufacturing department and that the presented inspection results comply with the order requirements. Inspection certificate 2.2: Products have been delivered in accordance with the requirements of the contract on the basis of the results of "non-specific tests". Inspection certificate 3.2: A document prepared by an authorized inspector of the representative of an indipendent certification company appointed according to the official rules and confirming that the products delivered comply with the requirements of the contract and containing the test results (refer to steel for shipbuilding).

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HOT ROLLED PRODUCTS

HBIS SERBIA

HOT ROLLED AND PICKLED PRODUCTS

HBIS Serbia produces hot rolled strips on semi-continuous six-stand rolling mill. On this line, hot rolled strip can be produced in the range from 720mm to 2050mm of width and from 1.5mm to 15mm of thickness. At the end of the production line hot rolled strips are wounded up into coils of inner diameter 740mm and maximum outside diameter 2000mm. The Hot rolling line can produce smooth strips with mill surface and patterned strips (pattern type: diamond or tear).

Hot rolled coil can be additionally processed on:
- Pickling line
- Cross-cutting line for hot rolled coils, cut in sheets and packed in bundles
- Longitudinal cutting line for hot rolled coils cut in slit strip

Based on the range of production possibilities, hot rolled products can be ordered according to following parameters:

Delivery:
- Hot rolled coil
- Hot rolled sheets
- Hot rolled slit coils

Surface type:
- Mill surface (surface with no rolled-in and loosely adhered ferro - oxide powder typical for rolling on higher temperatures)
- Pickled surface (surface from which no rolled-in and loosely adhered ferro-oxide are removed by pickling in hydrochloric acid)
- Patterned surface (regular embossed pattern surface diamond or tear shaped)

Edge condition:
- Mill edge
- Cut (trim) edge

Pickled surface oiling:
- Unoiled surface
- Oiled surface

Coil inner diameter:
- 750 mm (+/- 30 mm)
- 610 mm (+/- 30 mm)

Production of hot rolled product with specific delivery form, surface type, edge condition, oiling of pickled surface and inner diameter is being agreed during the ordering. Furthermore, requests related to quality and dimension assortment, measures and shapes with tolerance, quality certificates, end use, packing type, general delivery terms and other requests are also considered during the ordering.

PICKLED PRODUCTS

According to the range of production possibilities pickled products can be delivered as:

- Pickled coils
- Pickled sheets
- Pickled slit coils

Measures and shape with tolerances

Hot rolled products are delivered with measures and shape prescribed by the following European Standards: EN 10051/2010 - standard for hot rolled coils and sheets with the mill or pickled surface. *Values in EN 10051/2010 are not applicable to uncropped ends of the coil of hot rolled coils ("Head" and "tail"). Maximum length (in meters) for mentioned coil ends can be up to 90/nominal thickness (mm), but will not exceed 20 meters in total.* DIN 59220/1983 - standard for hot rolled coils and sheets with patterned surface (excluding critical dimensions).

Note: flatness of patterned products is guaranteed according to EN 10051/2010.

The delivery of hot rolled products with a tighter thickness tolerance is also possible according to the table:

Nominal thickness (mm)	Tolerances for nominal width (mm)			
	≤ 1200	> 1200 ≤ 1500	> 1500 ≤ 1800	> 1800
≤ 2.00	± 0,15	± 0,15	± 0,17	
> 2.00 ≤ 2.50	± 0,14	± 0,15	± 0,15	± 0,17
> 2.50 ≤ 3.00	± 0,15	± 0,15	± 0,16	± 0,17
> 3.00 ≤ 4.00	± 0,15	± 0,16	± 0,17	± 0,18
> 4.00 ≤ 5.00	± 0,16	± 0,17	± 0,19	± 0,19
> 5.00 ≤ 6.00	± 0,17	± 0,19	± 0,19	± 0,21
> 6.00 ≤ 8.00	± 0,19	± 0,20	± 0,21	± 0,23
> 8.00 ≤ 10.0	± 0,21	± 0,22	± 0,23	± 0,27
> 10.0 ≤ 12.5	± 0,23	± 0,24	± 0,25	± 0,29
> 12.5 ≤ 15.0	± 0,25	± 0,25	± 0,27	± 0,30

Delivery of hot rolled products according to ASTM standard is possible for measures and shapes like: ASTM A568M-15, ASTM A635M-14. The delivery possibility of hot rolled products according to other global standards for measures and shape is being evaluated during the ordering.
For certain assortment and critical dimensions, the flatness guarantee possibility is being evaluated during the ordering.

Types of steel products

HBIS Serbia possesses latest equipment and technology with the controlled rolling regime that provides product quality compatible with the requirements of recognized global standards. Properties guaranteed for specific purposes are primarily determined by the qualitative assortment of hot rolled products that are including following steel types:

- **Commercial steels**
- **Structural steels**
- **Low-carbon steels for cold forming or for further cold rolling**
- **Steels for shipbuilding**
- **Steels for boilers and high pressure vessels**
- **Micro-alloyed, thermo-mechanically rolled, high yield strenght steels for cold forming**
- **Line-pipes steels according to API 5L standards**

Each of the listed steel types has specific common delivery types as well as specific dimensional assortment.

HOT ROLLED COILS

The production possibility of specific dimension for hot rolled coils with mill or pickled surface in range of possible dimensions is defined in tables given in the chapter “Dimensional possibilities of production”. If otherwise not indicated in the table, maximum unit specific weight of coil is 18kg/mm. The grades are grouped according to regulated standard requirement for Re. Thus, general division implies that the group “S235” comprises of steels with the standardized Re 235 MPa or less, group “S275” with the standardized minimum Re 275MPa and group “S355” with the standardized minimum Re 355MPa. This catalog shows which table of “Dimensional possibilities of production” is being used for each steel type. The tables are for overview. All requests for hot rolled coils production related to specific dimension and weight are evaluated during the ordering. Steel quality, dimension and weight requirements outside the range of tables can also be taken into consideration.

COMMERCIAL STEELS

Structural steels are delivered in grades produced according to quality standards given in the comparative table:

Grade	Quality standard
A 283 C	ASTM A 283 / 2000
SAE 1006	ASTM A 568 / 03
SAE 1008	ASTM A 568 M - 03
SAE 1009	ASTM A 635 / 03
SAE 1010	ASTM A 568 M - 03
SAE 1010	ASTM A 635 / 03
SC Type B	ASTM A 1011 M - 14
SC Type B	ASTM A 1018 M - 15
CS Type B - 1006	ASTM A 1011 M - 14
CS Type B - 1008	ASTM A 1011 M - 14

STRUCTURAL STEELS

Structural steels are delivered in grades produced according to quality standards given in the comparative table:

Quality Standard	EN 10025-2/2004	EN 10025/90+A1/93	DIN 17100/1980	ASTM	JIS G 3132/87
Grade		S185			
	S235JR	S235JR S235JRG2	RSt 37-2	SS GRADE 230 ASTM A 1011M-14 SS GRADE 250 TYPE 1 ASTM A1018M-15 SS GRADE 250 TYPE 2 ASTM A1011M-14 & ASTM A1018M-15	SPHT1 SPHT2
	S235JO	S235JO			
	S235J2	S235J2G3	St 37-3		
	S275JR	S275JR	St 44-2		
	S275JO	S275JO			
	S275J2	S275J2G3	St 44-3		
	S355JR	S355JR		HSLAS Grade 340 Class 1 HSLAS Grade 380 Class 1 ASTM A1011-14 & ASTM A1018M-15	
	S355JO	S355JO			
	S355J2	S355J2G3 S355J2G4 S355K2G3	St 52-3		

If normalized steel is required in the order, that request should be emphasized due to evaluating the possibilities of production and any additional testing. The similarity of grades given in the comparative table is conditional. Always use original standards for accurate comparison.

Chemical composition of the ladle analysis for the grades according to EN10025-2/2004

Grade	C max	Si max*	Mn max	P max	S max	N max**	Cu min	CEV max
S235JR	0,17		1,40	0,035	0,035	0,012	0,55	0,35
S235J0	0,17		1,40	0,030	0,030	0,012	0,55	0,35
S235J2	0,17		1,40	0,025	0,025		0,55	0,35
S275JR	0,21		1,50	0,035	0,035	0,012	0,55	0,40
S275J0	0,18		1,50	0,030	0,030	0,012	0,55	0,40
S275J2	0,18		1,50	0,025	0,025		0,55	0,40
S355JR	0,24	0,55	1,60	0,035	0,035	0,012	0,55	0,45
S355J0	0,20	0,55	1,60	0,030	0,030	0,012	0,55	0,45
S355J2	0,20	0,55	1,60	0,025	0,025		0,55	0,45

* The content of Si depends on suitability for hot-dip zinc-coating (see table below).
** Al-killed steels have minimum 0.02% Al

Steel classes with regard to the suitability for hot-dip zinc-coating based on the ladle analysis:

Classes	Elements % by mass		
	Si	Si + 2.5P	P
Class 1	≤ 0.030	≤ 0.090	
Class 2[a]	≤ 0.35		
Class 3	$0.14 \leq Si \leq 0.25$		≤ 0.035

[a] Class 2 is applicable only to special zinc alloys.

Mechanical properties for grades according to EN10025-2/2004

	Re_H min*	Rm*		Amin*					Kv2 min**	
Grade		h < 3	h ≥ 3	1 < h ≤ 1.5	1.5 < h ≤ 2	2 < h ≤ 2.5	2.5 < h < 3	3 < h ≤ 40	J	t °C
S185	185	310 - 540	290 - 510	9	10	11	12	16		
S235JR	235	360 - 510	360 - 510	16	17	18	19	24	27	20
S235J0	235	360 - 510	360 - 510	16	17	18	19	24	27	0
S235J2	235	360 - 510	360 - 510	16	17	18	19	24	27	-20
S275JR	275	430 - 580	410 - 560	14	15	16	17	21	27	20
S275J0	275	430 - 580	410 - 560	14	15	16	17	21	27	0
S275J2	275	430 - 580	410 - 560	14	15	16	17	21	27	-20
S355JR	355	510 - 680	470 - 630	13	14	15	16	20	27	20
S355J0	355	510 - 680	470 - 630	13	14	15	16	20	27	0
S355J2	355	510 - 680	470 - 630	13	14	15	16	20	27	-20

h nominal thickness (mm)

* Tension properties are tested in transversal test pieces

** The impact properties are tested in rolling direction test pieces.The impact properties of JR grades are verified only when specified at the time of the ordering.

Delivery condition of hot rolled coils can be +AR, +N or +M.

For products with delivery condition in normalized or normal-rolling state (+N), mechanical properties will be in accordance with the values shown in the table. Values will be shown in the inspection certificate.

Dimensional possibilities of structural steel production

Structural steels are delivered as hot rolled coils with mill or pickled surface in a dimension range given in the tables below. For the grades marked as S185 or S235 use the table of “S235” group, for the grades marked as S275 use the table of “S275” group, and the grades marked as S355 use the tables of “S355” group. The tables are for overview. All requests for hot rolled coils production related to specific dimension and weight are evaluated during the ordering.

LOW-CARBON STEELS FOR COLD FORMING AND FURTHER COLD ROLLING

Low-carbon steels for cold forming and further cold rolling are delivered in the grades produced by quality standards given in the comparative table:

Quality Standard	EN 10111	DIN 1614 T1	DIN 1614 T2	JIS G 3132/87	BS 1449/1993
Grade	DD 11	St 22	StW22	SPHT 1 SPHT 2	HR4
	DD 12	RRSt 23			
	DD 13	St 24	StW 24		

The similarity of grades given in the comparative table is conditional. Always use original standards for accurate comparison. During the ordering it should be emphasized whether end use is cold forming or further cold rolling, in order to evaluate the possibility of guarantying the end use, i.e. in order to choose the matching quality.

Chemical composition of the ladle analysis for the grades according to EN10111/2008

Grade	C max	Mn max	P max	S max
DD11	0.12	0.60	0.045	0.045
DD12	0.10	0.45	0.035	0.035
DD13	0.08	0.40	0.030	0.030

Mechanical properties for grades according to EN10111/2008

Grade	R_{eL} $1,50 \leq h < 2.00$	R_{eL} $2.00 \leq h \leq 11.00$	Rm max	A min $1,5 \leq h < 2.0$	A min $2,0 \leq h < 3.0$	A min $3.0 \leq h \leq 11.0$
DD11	170-360	170-340	440	23	24	28
DD12	170-340	170-320	420	25	26	30
DD13	170-330	170-310	400	28	29	33

h - nominal thickness (mm)
The tensile properties are tested in transversal test pieces

Dimensional possibilities of low-carbon steels production for cold forming further cold rolling

Low-carbon steels for cold forming or further cold rolling are delivered as hot rolled coils with mill or pickled surface in the dimension range given in the table marked as “S235”. The tables are for overview. All requests for hot rolled coils production related to specific dimension and weight are evaluated during the ordering.

STEELS FOR SHIPBUILDING

Steels for shipbuilding are delivered in the grades produced by standards given in the comparative table:

Grade	Quality standard	H min	H max
A	Lloyd's Register / 2018	3,000	15,000
DH 32	Lloyd's Register / 2018	8,000	12,000
DH 36	Lloyd's Register / 2018	8,000	12,000
VL A	DNV.GL/2019	3,000	15,000

The similarity of grades given in the comparative table is conditional. Always use original standards for accurate comparison.

Chemical composition of the ladle analysis for grades according to Lloyd's Register/2018 and DNV.GL/2019

Chemical composition	Lloyd's Register / 2018			DNV.GL/2019
	Grade			
	A	DH 32	DH 36	VL A
C min	0,00	0,05	0,10	
C max	0,21	0,09	0,14	0,21
Mn min	0,53	0,90	0,90	0,525
Mn max		1,50	1,30	
Si min	0,00	0,00	0,00	
Si max	0,50	0,03	0,03	0,50
P max	0,0350	0,0150	0,0150	0,035
S max	0,0350	0,0100	0,0100	0,035
Al min		0,020	0,020	
Al max		0,050	0,050	
Nb min		0,020	0,020	
Nb max		0,050	0,050	
Ti min		0,000	0,000	
Ti max		0,020	0,020	
V min		0,000	0,000	
V max		0,005	0,005	
Cu min		0,000	0,000	
Cu max		0,050	0,050	0,30
Ni min		0,000	0,000	
Ni max		0,050	0,050	0,40
Cr min		0,000	0,000	
Cr max		0,050	0,050	0,20
Mo min		0,000	0,000	
Mo max		0,020	0,020	0,08
CEV max		0,360	0,0380	
Pcm max		0,180	0,0220	
(C+1/6 Mn) Max	0,40			0,40
(Nb+Ti+V) Max		0,080	0,080	

Mechanical properties for grades according to Lloyd's Register/2018 and DNV.GL/2019

Grade	R_{eH} min	R_m min	R_m max	A 5.65$\ddot{O}S_o$ min	Tensile Test Specimen	Kv_2 min	Temperature	Impact Test Specimen	Kv_2 Mandatory	Bending	Bending Test Specimen	Delivery Conditions
A	235	400	520	22	Transversal	27	20	Longitudinal	NO	27		AR|N NR|TM
DH 32	315	440	590	22	Transversal	31	-20	Longitudinal	YES	+	Transversal	TM
DH 36	355	490	620	21	Transversal	34	-20	Longitudinal	YES	+	Transversal	TM
VL A	235	400	520	22								

Dimensional possibilities of steels for shipbuilding production

Steels for shipbuilding are delivered as hot rolled coils with mill surface in the dimension range given in the diagram of “S275” and “S355” group. The diagrams are for overview. All requests for hot rolled coils production related to specific dimension and weight are evaluated during the ordering.

STEEL FOR PRESSURE PURPOSES

Steels for pressure purposes are delivered in the grades produced by standards given in the comparative table.

	Quality standard	Grade
Steels for pressure purposes	EN 10028 - 2/2017	P265GH
		P295GH*

* Production possibility is evaluated during the ordering.

Chemical composition of the ladle analysis for grades according to EN 10028-2/2017

Grade	*C min*	*C max*	*Si max*	*Mn min*	*Mn max*	*P max*	*S max*	*Al min*	*N max*	*Cu max*	*Cr max*	*Mo max*	*Ni max*	*Nb max*	*Ti max*	*V max*
P265GH		0.2	0.4	0.8*	1.4	0.025	0.010	0.020	0.012	0.3	0.3	0.08	0.3	0.03	0.03	0.02
P295GH	0.08	0.2	0.4	0.8**	1.5	0.025	0.010	0.020	0.012	0.3	0.3	0.08	0.3	0.02	0.03	0.02

* for the thickness less than 6mm Mn min 0.6% ** for the thickness less than 6mm Mn min 0.7%

Mechanical properties for grades according to EN 10028-2/2017

Grade	R_{eH} min	R_m min	R_m max	A 5.65$\sqrt{So}$ min	Rp 0.2 min at 300ºC	KV_2 min*	TºC
P265GH	265	410	530	22	173	27	-20
P295GH	295	460	580	21	192	27	-20

For grades according to EN 10028-2/2017, an inspection certificate AD 2000-Merkblatt W0 is obligatory. HBIS Serbia has next certificates for these materials: Pressure equipment according to AD 2000-merkblatt W0 and material manufacturer according to pressure equipment directive2014/68/EU annex I, section 4.3.

STEEL FOR WELDED GAS CYLINDERS

Steels for welded gas cylinders are delivered in the grades produced by standards given in the comparative table:

	Quality Standard	Grade
Steel for welded gas cylinders	EN 10120/2008	P265NB
		P310NB

* Production possibility is evaluated during the ordering.

Chemical composition of the ladle analysis for grades according to EN 10120/2008

Grade	C max	Si max	Mn max	P max	S max	Al min	N max	NB max	Ti max
P265NB	0.19	0.25	0.4	0.025	0.015	0.020	0.009	0.050	0.030
P310NB	0.20	0.50	0.7	0.025	0.015	0.020	0.009	0.050	0.030

Mechanical properties for grades according to EN 10120/2008

Grade	R_{eH} min	R_m min	R_m max	A min $h < 3.0$	A min $3.0 \leq h < 5.0$
P265NB	265	410	500	24	32
P310NB	310	460	550	21	28

h - nominal thickness (mm).

Mechanical properties of steel are in accordance with the standards and are the subject of agreement during the ordering.

Dimensional possibilities of steels for pressure purposes and welded gas cylinders

Steels for pressure purposes and welded gas cylinders are delivered as hot rolled coils with mill or pickled surface in the dimension range given in the tables of “S235”, “S275” or “S355” groups. The diagrams are for overview. All requests for hot rolled coils production related to specific dimension and weight are evaluated during the ordering.

MICRO-ALLOYED, THERMOMECHANICALLY ROLLED, HIGH YIELD STRENGTH STEELS FOR COLD FORMING

Micro-alloyed, thermo-mechanically rolled, high yield strength steels for cold forming are delivered in the grades produced by quality standards given in the comparative table. The similarity of grades given in the comparative table is conditional. Always use original standards for accurate comparison.

Quality standard	EN 10149-2/2013	SEW 092
Grade	S315MC	
		QStE 340 TM
	S355MC	
		QStE 380 TM
	S420MC	QStE 420 TM
	S460MC	QStE 460 TM

Chemical composition of the ladle analysis for the grades according to EN 10149-2/2013

Grade	C max	Mn max	Si	P max	S max	Al min	Nb max	V max	Ti max	(Si+2.5P)max	(Nb+Ti+V)max
S315MC	0,12	1,30	0,35	0,0250	0,0200	0,015	0,090	0,200	0,150	0,09	0,22
S355MC	0,12	1,50	0,35	0,0250	0,0200	0,015	0,090	0,200	0,150	0,09	0,22
S420MC	0,12	1,60	0,35	0,0250	0,0150	0,015	0,090	0,200	0,150	0,09	0,22
S460MC	0,12	1,60	0,35	0,0250	0,0150	0,015	0,090	0,200	0,150	0,09	0,22

* Content of Si is contracted during ordering. Content of Si in steel produced in HBIS Serbia =Max.0.03%. If it is agreed during ordering, Si content shell be max. 0,010%.

Mechanical properties for grades according to EN 10149-2/2013

Grade	R_{eH} min	R_m	A_{80} min t < 3.0 mm	$A_{5.65\sqrt{So}}$ min t ≥ 3.0 mm
S315MC	315	390-510	20	24
S355MC	355	430-550	19	23
S420MC	420	480-620	16	19
S460MC	460	520-670	14	17

t - nominal thickness (mm)

If agreed at the time of the order, impact energy shall be verified for products with nominal thickness ≥6.00 mm. In this case, minimum guaranted absorbed energy shall be 40J at -20 oC.

Dimensional possibilities of micro-alloyed, thermo - mechanically rolled, high yield strength steels for cold forming

Micro-alloyed, thermo - mechanically rolled, high yield strength steels for cold forming are delivered as hot rolled coils with mill or pickled surface in the dimension range given in the table of "S355 (micro-alloyed)" group. The tables are for overview. All requests for hot rolled coils production related to specific dimension and weight are evaluated during the ordering.

STEELS FOR LINE-PIPES ACCORDING TO API 5L STANDARDS

Dimensional possibilities of pipe steel production according to API 5L standards

Table: Steel group of grades:

Grade	Steel group
B	Structural steel class S275
X42	Microalloyed
X52	Microalloyed
X60	Microalloyed
X65	Microalloyed
X70	Microalloyed

Steels for pipes according to API standards are delivered in coils with mill surface in the dimension range given in the tables of "S355 (micro-alloyed)" group. The tables are for overview. All requests for hot rolled coils production related to specific dimension and weight are evaluated during the ordering.

Steels for line-pipes according to API 5L standards are delivered in two basic levels of standard technical requirements. They are expressed as two product specification levels (PSL 1 i and PSL 2). The line-pipe steel production possibility is evaluated during the ordering due to specific requirements.
Level PSL 1 provides a standard level of quality for line-pipes.
Level PSL 2 has additional mandatory requirements for chemical composition, notch toughness and strength properties. Chemical composition for PSL 1 and PSL 2 needs to be as in tables below, respectively.
Level PSL 2 contains a single mark which identifies delivery state.
HBIS Serbia produces Grade **B** as normalized rolled steel (delivery condition **N**), and X42 to X70 as thermo-mechanical rolled streels (delivery condition **M**).

Chemical composition for PSL 1 pipes:

Grade	C max [b]	Si max	Mn max	P max	S max	Nb max	V max	Ti max	Other
B PSL1	0.26	-	1.2	0.03	0.03	c,d	c,d	d	
X42 PSL1	0.26	-	1.3	0.03	0.03	d	d	d	
X52 PSL1	0.26	-	1.4	0.03	0.03	d	d	d	
X60 PSL1	0.26 [e]	-	1.40 [e]	0.03	0.03	f	f	f	
X70 PSL1	0.26 [e]	-	1.65 [e]	0.03	0.03	f	f	f	

b For each reduction of 0,01% below the specified maximum concentration for carbon, an increase of 0,05% above the specified maximum concentration for Mn is premissible, up to a maximum of 1,65% for grades ≥ B, but ≤ X52;up to a maximum of 1,75% for grades > X52 but < X70; and up to a maximum of 2,00% for grade X70.

c Unless otherwise agreed, Nb +V ≤ 0.06 %

d Nb + V + Ti ≤ 0.15%

e Unless otherwise agreed.

f Unless otherwise agreed, Nb + V + Ti ≤ 0.15%

Chemical composition for PSL 2 pipes:

Grade	C max [b]	Si max	Mn max	P max	S max	Nb max	V max	Ti max	Other	CE IIWmax [a]	P cm max [a]
BN PSL2	0.22	0.45	1.2	0.025	0.015	0.05	0.05	0.04	e,i	0.43	0.25
X42M PSL2	0.22	0.45	1.3	0.025	0.015	0.05	0.05	0.04	e,i	0.43	0.25
X52M PSL2	0.22	0.45	1.4	0.025	0.015	d	d	d	e,i	0.43	0.25
X60M PSL2	0.12 [f]	0.45 [f]	1.60 [f]	0.025	0.015	g	g	g	h,i	0.43	0.25
X70M PSL2	0.12 [f]	0.45 [f]	1.70 [f]	0.025	0.015	g	g	g	h,i	0.43	0.25

a CE_{IIW} limits are applicable if C > 0.12% i P_{cm} limits are applicable if C ≤ 0.12%

b For each reduction of 0,01% below the specified maximum concentration for carbon, an increase of 0,05% above the specified maximum concentration for Mn is premissible, up to a maximum of 1,65% for grades ≥ B, but ≤ X52; up to a maximum of 1,75% for grades > X52 but < X70; and up to a maximum of 2,00% for grade X70.

c Unless otherwise agreed, Nb +V ≤ 0.06 %

d Nb + V + Ti ≤ 0.15%

e Unless otherwise agreed, Cu ≤ 0,50%; Ni ≤ 0,30%; Cr ≤ 0,30% i Mo ≤ 0,15%

f Unless otherwise agreed.

g Unless otherwise agreed, Nb + V + Ti ≤ 0.15%

h Unless otherwise agreed, Cu ≤ 0,50%; Ni ≤ 0,50%; Cr ≤ 0,50% i Mo ≤ 0,50%

i Unless otherwise agreed, Cu ≤ 0,50%; Ni ≤ 1,00%; Cr ≤ 0,50% i Mo ≤ 0,50%

Unlles agreed otherwise, mechanical properties of hot rolled coils for pipes have to be agreed during ordering. The pipe steel production possibility is evaluated during ordering due to specific requirements.

Dimensional production possibilities

The qualities are grouped according to regulated standard request for Re. Thus, general division implies that the group “S235” comprises of steel with the standardized Re 235MPa or less, group “S275” with the standardized minimum Re 275MPa and group “S355” with the standardized minimum Re 355MPa.

The tables are for overview and all other requests on production related to quality, dimension and weight are agreed during the ordering. Steel quality, dimension and weight requirements outside the range of tables can also be taken into consideration.

The tables for dimensional possibilities have the following general notes:

	Standard production - Max coil weight 18 Kg/mm
I	Standard production - Max coil weight 10.5 Kg/mm
I - III	Standard production - Max coil weight 15.5 Kg/mm
	Non-standard production - Quality Assurance inquiry required

Additional notes typical for specific groups are below the tables.

Hot rolled coils “S235”

Thickness (mm)		Width (mm)																												
od	do	720	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050
1.50	1.74	I	I	I	I	I	I	I	I	I	I	I	I																
1.75	1.99	I-III	I-III	I-III	I-III	I-III	I-III	I-III	I-III	I-III	I-III	I-III	I-III	I-III															
2.00	2.24													I-III	I	I	I	I	I										
2.25	2.49															I-III	I	I	I										
2.50	2.99																I-III	I-III	I	I	I	I							
3.00	3.49																	I-III	I-III	I	I	I	I	I	I				
3.50	3.99																					I-III	I-III	I	I	I	I	I	I
4.00	4.49																							I-III	I-III	I	I	I	I
4.50	4.99																										I-III	I-III	I
5.00	5.49																												
5.50	5.99																												
6.00	15.00																												

Hot rolled pickled & oiled coils “S235”

Thickness (mm)	Width (mm)																	
	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
1.50 - 1.74	I	I	I	I	I	I	I	I	I	I	I	I					
1.75 - 1.99	I-III	I-III	I-III	I-III	I-III	I-III	I-III	I-III	I-III	I-III	I-III	I-III	I-III				
2.00 - 2.00													I-III	I	I	I	I
2.01 - 2.24														I	I	I	I
2.25 - 2.49															I-III	I	I
2.50 - 2.99																I-III	I-III
3.00 - 3.49																	I-III
3.50 - 3.99																	
4.00 - 4.49																	
4.50 - 5.00																	
5.01- 6.00																	

Thicknesses 5.01-6.00 x 1500 mm can be produced only in limited quantities Max. 1000 t/monthly

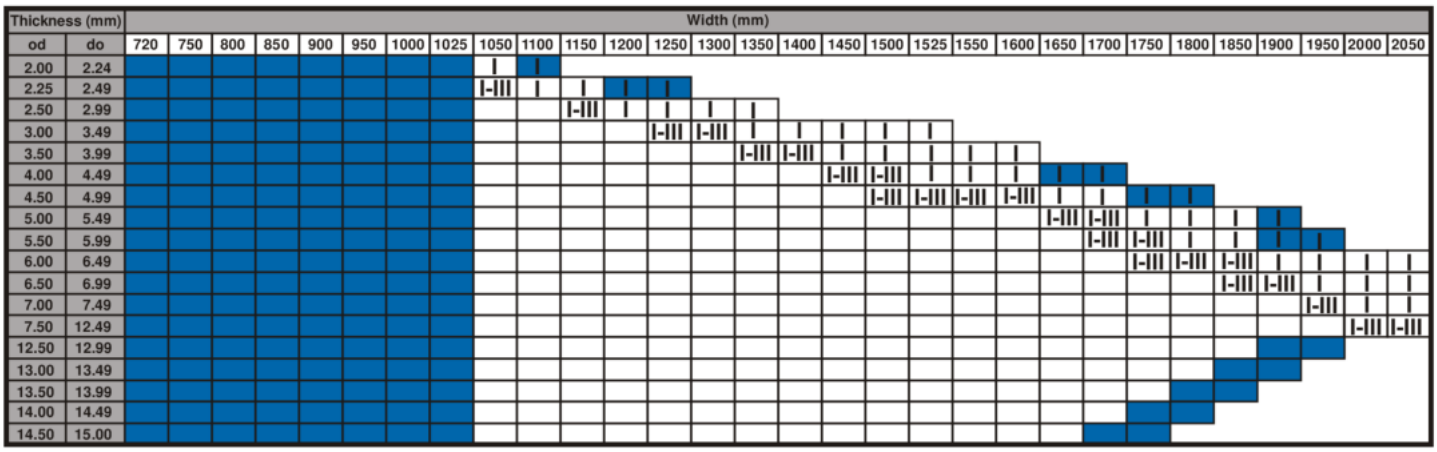
Hot rolled coils “S275”

Thickness (mm)		Width (mm)																												
od	do	720	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050
1.75	1.99	I	I	I	I	I	I	I	I	I	I	I	I																
2.00	2.24									I-III	I-III	I	I	I	I	I													
2.25	2.49												I-III	I-III	I	I	I	I	I										
2.50	2.99														I-III	I-III	I-III	I	I	I	I								
3.00	3.49																I-III	I-III	I	I	I	I	I	I					
3.50	3.99																		I-III	I-III	I	I	I	I	I	I	I		
4.00	4.49																					I-III	I-III	I	I	I	I	I	I
4.50	4.99																								I-III	I-III	I	I	I
5.00	5.49																										I-III	I-III	I
5.50	5.99																											I-III	I-III
6.00	15.00																												

Hot rolled pickled & oiled coils “S275”

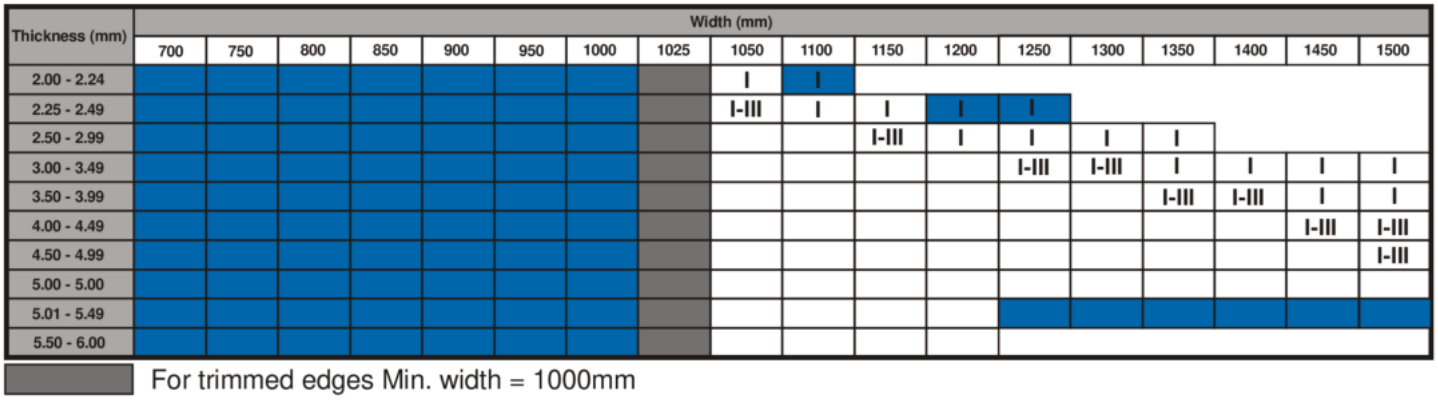
Thickness (mm)	Width (mm)																	
	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
1.75 - 1.99	I	I	I	I	I	I	I	I	I	I	I	I					
2.00 - 2.00									I-III	I-III	I	I	I	I	I		
2.01 - 2.24									I-III	I-III	I	I	I	I	I		
2.25 - 2.49												I-III	I-III	I	I	I	I
2.50 - 2.99														I-III	I-III	I-III	I
3.00 - 3.49																I-III	I-III
3.50 - 3.99																	
4.00 - 4.49																	
4.50 - 5.00																	
5.01- 6.00																	

Micro-alloyed hot rolled coils “S355”



* Production of hot rolled coil with width less than 1025 mm is not standard practice.

Micro-alloyed hot rolled pickled & oiled coils “S355”



For trimmed edges Min. width = 1000mm

HOT ROLLED SHEETS

Hot rolled coils are cut into sheets on cross-cutting lines and packed in bundles. The production possibilities for sheets with mill or pickled surface are defined by general tables which include dimensions of sheets cut in the Hot Strip Mill cross-cutting line and Cold Rolling Mill cross-cutting line. The tables are for overview and the production possibility of hot rolled sheets packed in bundles with specific quality, dimensions and weights is agreed during the ordering and is related to dimension possibilities of hot rolled coil production. The flatness of the sheets with critical assortment dimensions is agreed during the ordering.

Hot Strip Mill cross-cutting line cuts the sheets of the following dimensions:

Surface	Dimension (mm)	
Mill	Thickness	3 - 15
	Width	800* - 2050
	Length	2000 - 12000
Pickled unoiled	Thickness	3 - 6
	Width	800** - 1500
	Length	2000 - 12000

* minimum width of micro-alloyed steel is 1025mm
** for edge trimming minimum width of micro-alloyed steel is 1000mm

Cold Rolling Mill cross-cutting lines cut the sheets in the following dimensions:

		Steel groups		
Surface		S235	S275	S355
Pickled oiled	Thickness	1.50 - 4.00 mm*	1.75 - 4.00 mm**	2.00 - 3.00 mm
	Width	700 - 1500 mm	700 - 1500 mm	1000 - 1500 mm
	Length	1 - 4m	1 - 4m	1 - 4m

* / ** non-standard production

* for sheets thickness 3.01 - 4 mm and width≥1300≤1500 mm Quality Assurance inquiry required

** for sheets thickness 3.01 - 4 mm and width≥1300≤1500 mm Quality Assurance inquiry required

HOT ROLLED SLIT COILS

Hot rolled coils are slit into strips on the longitudinal cutting lines and are delivered as single packed or as bundles. Production possibilities for slit coils with mill or pickled surface are defined by general tables which include slit strips cut on the Hot Strip Mill longitudinal cutting line or Cold Rolling Mill longitudinal cutting line. The tables are for overview and the production possibility of slit strips with a specific quality, dimensions and weights is agreed during the ordering and is related to hot rolled coils dimension production possibilities.

Hot Strip Mill longitudinal cutting line slits strips in the following dimensions:

Surface	Dimension	Steel group		
		S235	S275	S355
Mill	Thickness (mm)	1.50 - 7.00	1.80 - 4.50	2.00 - 3.00
	Width (mm)	52 - 700	52 - 700	52 - 700

Hot Strip Mill longitudinal cutting line can cut (trim) the hot rolled coils edges. Trimming possibilities of hot rolled coils with a specific quality, dimensions and weights is agreed during the ordering and is related to hot rolled coils dimension production possibilities and possibilities of Hot Strip Mill longitudinal cutting line.

Cold Rolling Mill longitudinal cutting line slits strips of the following dimensions:

Surface	Dimension	Steel group	
		S235	S275
Pickled	Thickness (mm)	1.50 - 3.8	1.75 - 3.8
	Width (mm)	200 - 700	200 - 700

DIMENSIONAL POSSIBILITIES FOR SLITTER - OUTSIDE PROCESSING

The main parameters of Slitter facility

Input	
Width (mm)	500 ÷ 1550
Thickness (mm)	Min. 1.50
Weight (t)	Max. 25
Inside diameter (mm)	508 / 610 / 760 / 850
Output	
Width (mm)	Min. 60
Number of cuts	Shown in the table below
Thickness (mm)	Min. 1.50
Max. Thickness (mm)	Shown in the table below
Weight (t)	Max. 25
Outside diameter (mm)	Max. 2000
Inside diameter (mm)	508 mm

Max number of cuts for given thickness

Thickness (mm)	Number of cuts	
	S235 (Rm ≤ 450)	S355 (Rm ≤ 630)
7.01 - 8.00	5	4
6.01 - 7.00	5	4
5.01 - 6.00	6	5
4.01 - 5.00	7	5
3.01 - 4.00	10	7
2.01 - 3.00	17	10
1.50 - 2.00	24	14

Note:
- Cutting is for oiled and unoiled hot rolled strip
- All dimensions and grades which are given trough input for slitting have to be within dimensional possibilities of HSM rolling line
- Addition for edge trimming is minimum 15mm

Thickness tolerances on width for strip slitted at Outside Processor

Tolerances on width according to thickness	
Nominal thickness (mm)	Width tolerancess (mm)
7.01 - 8.00	-0/+0,8
6.01 - 7.00	-0/+0,7
5.01 - 6.00	-0/+0,6
4.01 - 5.00	-0/+0,5
3.01 - 4.00	-0/+0,4
2.01 - 3.00	-0/+0,3
1.50 - 2.00	-0/+0,3

HOT ROLLED PATTERNED SURFACE COILS AND SHEETS

Patterned surface coils and sheets are produced in a quality S235JR and S275JR. Dimension possibilities of hot rolled coil production are given in the tables. The production possibility of hot rolled coil with specific quality, dimensions and weights is agreed during the ordering.

S235JR

Thickness (mm)		Width (mm)																	
from	to	720	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550
3.00	7.99																		
8.00	10.00																		

Pattern height 0.8 - 2.0mm
Unit specific weight of coil max. 15,5 Kg/mm.
Unit specific weight of coil over 15,5 Kg-mm acceptable for thickness 4 - 8mm and width 720 - 1250mm.

S275JR

Thickness (mm)		Width (mm)																	
from	to	720	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550
3.00	6.00																		

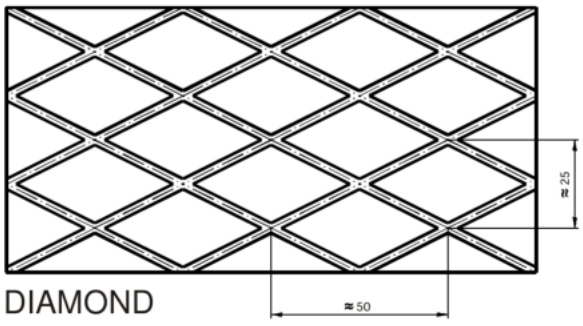
Pattern height 0.8 - 2.0mm
Unit specific weight of coil max. 15,5 Kg/mm.

Hot rolled sheets with patterned surface are produced on the Hot Strip Mill cross-cutting line in the dimension assortment given in the table. The table with dimension possibilities are given below and production possibility of hot rolled patterned sheets packed in bundles with specific quality, dimensions and weights is agreed during the ordering and is related to dimension possibilities of hot rolled coil production. The flatness of the sheets with critical assortment dimensions is agreed during the ordering.

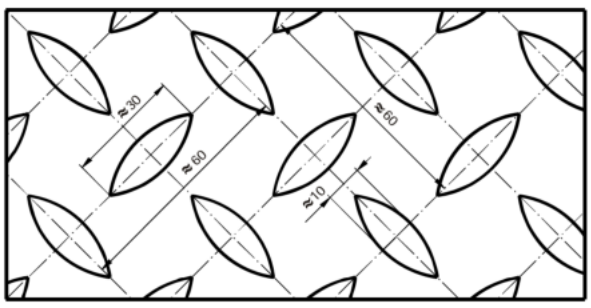
Surface	Dimension	
Patterned	Thickness	3 - 10* mm
	Width	800 - 1550 mm
	Length	2 - 12m

* maximum thickness for S275JR is 6mm.

Hot rolled patterned coils and sheets can be delivered with trimmed edge for steel grade S235JR, thickness 3 - 6 mm and width 950 -1520 mm.



DIAMOND



TEAR - DROP


COLD ROLLED
PRODUCTS
HBIS SERBIA

COLD ROLLED PRODUCTS

HBIS Serbia produces cold rolled products at a highly automated 5-stand Tandem mill, which enables cold rolling with maximum reduction of 92%, with the strip shape and profile compatible with the requirements of recognized global standards. HBIS Serbia possesses technology with the controlled cold rolling, annealing and tempering regime, compatible with the mentioned requirements. The production process of cold rolled products starts at an automated 5-stand Tandem mill where the process of cold rolling reduces pickled hot rolled band into 0.17 mm to 3.0 mm thick and 700 mm to 1500 mm wide cold rolled band.

Delivery form:

- Cold rolled coils
- Cold rolled sheets
- Cold rolled slit strip in coils
- Cold rolled non annealed coils - Full hard

Application:

- Low-carbon steel products for cold forming
- Structural steel products
- Low-carbon steel products for enameling
- Steel products for galvanizing (Full hard)
- Micro-alloyed high release limit steel for cold forming

Cold rolled coils (CRC):

- Strip thickness: 0.35 - 3.00mm
- Strip width: 700 - 1500mm

Width and thickness are interdependent

Inside diameter of coil:

- For thickness: 0.35 - 0.49 and width ≤1350mm, D=508/610mm
- For thickness: 0.50 - 3.00mm and width ≤1500mm, D=610mm D = 508 - has to be agreed
- Condition of strip edge: U i R; (U - cut before cold rolling, R - cut after cold rolling)
- Weight 5 - 20t For condition of edge R, max. weight is 15t
- Oiled: uniformly oiled surface / unoiled

Cold rolled sheet (CRSH):

- Strip thickness: 0.35 - 3.00mm
- Strip width: 700 - 1500mm

Width and thickness are interdependent

- Length of sheet: 1000 - 4000mm
- Bundle weight: 2 - 6t
- Oiled: uniformly oiled surface / unoiled

Cold rolled slit strip in coils (CRSC):

- Strip thickness: 0.35 - 3.00mm
- Strip width: 200 - 700mm

Width and thickness are interdependent

- Inside diameter of coil: D = 508/ 610/ 750mm
- A strip that is 600 - 700mm wide is produced by slitting
- Oiled: uniformly oiled surface / unoiled

Cold rolled non annealed coils (FULL HARD):

- Strip thickness: 0.35 - 3.00mm
- Strip width: 700 - 1500mm

Width and thickness are interdependent

- Inside diameter of coil: D = 420/508/750
- Weight: max. 20t, min. weight as agreed

Cold rolled strip for tin mill - black plate (BP):

Strip thickness:
- 0.17 - 0.49mm for SR material (single reduced)
- 0.14 - 0.39mm for DR material (double reduced)
- Strip width: 700 - 1050mm
- Inside diameter of coil: D = 420/508mm
- Outside diameter: max 1800mm
- Weight: max 18t, min. weight as agreed

COLD ROLLED PRODUCTS

The production process in HBIS Serbia of cold rolled products starts at an automated 5-stand Tandem mill where the process of cold rolling reduces pickled hot rolled band into 0.17 mm to 3.0 mm thick and 700 mm to 1500 mm wide cold rolled strip.The coil produced on the tandem line is non-annealed cold rolled product and as such can be delivered to the buyers as the final Full hard product.

Depending on the extent and type of processing in the Cold Mill, cold rolled products ordering can be made according to:

Delivery type:

- Cold rolled coils
- Cold rolled sheets
- Cold rolled slit strip in coils
- Cold rolled non annealed coils - Full hard

Surface quality

Standard	Quality	
	normal	Special
EN10130/2006	A	B
DIN1623T1/T2/T3/83	O3	O5
ASTM A568M-03	C2	C1

Surface finish (roughness)

Surface finish marking	Mark (EN 10130/2006)	Roughness Ra (µm)
Bright	b *	≤ 0.4
Semi bright	g	≤ 0.9
Normal (matte)	m	0.6 < Ra ≤ 1.9
Rough	r *	Ra > 1.6 µm

* Bright (b) and rough (r) surface finish is the subject of mutual agreement during the ordering.
Note: Steels for enameling are being produced only with m (matte) surface finish.

Edge condition

- mill edge
- cut (trim) edge

Inside diameter

- 508mm
- 610mm
- 750mm

Anticorosive oiling of surface

- oiled
- unoiled *

* For trimmed edges the oil amount per strip surface unit can be guaranteed:
a) =max. 1 gr/m2, or b)=0.7 - 1.2 gr/m2, or c)=1.0 - 1.8 gr/m2.

The rest of the oil amount values per strip surface unit are subject to evaluation during ordering.

Production of cold rolled product with specific delivery form, surface quality, finishing surface processing (roughness), edge condition, inside diameter and surface oiling are being agreed during the ordering. Other requests related to quality and dimension assortment, measures and shapes with tolerances, quality certificates, packing type and general delivery terms are being agreed during the ordering.

STEEL QUALITY

HBIS Serbia possesses the modern equipment and technology with the controlled cold rolling, annealing and tempering, which provides product quality compatible with the requirements of renowned global standards. Features guaranteed for specific purposes and set the qualitative assortment of cold rolled products are comprised in the following steel types:

- **Low - carbon steel products for cold forming**
- **Structural steel products**
- **Low - carbon steel products for enameling**
- **Steel for galvanizing (Full hard)**
- **Micro-alloyed high release limit steel for cold forming**

Next comparative tables show cold rolled qualities HBIS Serbia can produce. Quality similarities given in comparing tables is conditional. For further comparison of quality similarities, the use of specific quality standards is mandatory. The possibility of steel production with features prescribed by internal standards are evaluated during the ordering.

LOW - CARBON STEEL COLD ROLLED PRODUCTS

Quality Standard	EN 10130/2006	EN 10130/91+A1/98	DIN 1623 T1/1983	JIS G 3141/90	ASTM A568/2003
Grade	DC 01	DC 01	St 12	SPCC-SD	SAE 1008 ASTM A568/2003 CS Type B ASTM A1008M-15
	DC 03	DC 03	RRSt 13		
	DC 04	DC 04	St 14	SPCEN-SD	SAE 1006 ASTM A568/2003 CS Type A ASTM A1008M-15
	DC 05*				
Standard for strip dimension and shape: EN 10131/2006, DIN 1541/1975, ASTM A568M-03, ASTM A568M-15					

* Mentioned steel grade requires technical verification during ordering.

Chemical composition of the ladle analysis grades according to EN10111/2008

EN 10130/2006: Cold rolled products for cold forming				
Grade	C max	Mn max	P max	S max
DC01	0.12	0.6	0.045	0.045
DC03	0.1	0.45	0.035	0.035
DC04	0.08	0.4	0.03	0.03
DC05	0.06	0.35	0.025	0.025

Mechanical properties for grades according to EN 10130/2006

EN 10130/2006: Cold rolled products for cold forming											
Grade	Rp0.2 max h≤0.50mm	Rp0.2 max 0.50<h≤ 0.70 mm	Rp0.2 max h>0.70mm	Rm min	Rm max	A80 min h≤0.50 mm	A80 min 0.50<h≤ 0.70 mm	A80 min h>0.70 mm	r90 min 0.50≤h≤ 2.00 mm	r90 min h>2.0mm	n90 min h≥0.50 mm
DC01	320	300	280	270	410	24	26	28			
DC03	280	260	240	270	370	30	32	34	1.3	1.1	
DC04	250	230	210	270	350	34	36	38	1.6	1.4	0.18
DC05	220	200	180	270	330	36	38	40	1.9	1.7	0.2

h nominal thickness (mm)

STRUCTURAL STEEL

Quality Standard	DIN 1623 T2 / 1986	INTERNAL STANDARD
Grade		MOT 315
	St 37 - 2G	
	St 37 - 3G	MOT 355
Standard for strip dimension and shape		
EN 10131 / 2006		

Chemical composition of grade Mot 355 and MOT 315 per INTERNAL STANDARD

INTERNAL STANDARD													
Grade	C - min	C - max	Si - min	Si - max	Mn min	Mn max	P - max	S - max	Al - min	Al - max	N - max	Cu max	Si + 2,5 P - max
MOT 355	0.000	0.145	0.00	0.03	0.00	0.70	0.0250	0.0250	0.020		0.0120		0.090
MOT 315	0.06	0.12	0.00	0.03	0.35	0.60	0.0250	0.0250	0.020	0.060		0.100	

Mechanical properties for grades MOT 355 and MOT 315 per INTERNAL STANDARD

INTERNAL STANDARD						
Grade	Rp 0,2 min	Rm - min	A_{80} min	Tensile Test	Bend Test	Bend Test sample
MOT 355	215	355	24	90	+	90
MOT 315	200	315	28	90		

LOW - CARBON STEEL PRODUCTS FOR ENAMELING

Standard	EN 10209 / 1996	DIN 1623 T3 / 1987	INTERNAL STANDARD
Grade	DC01EK	EK 2	
	DC04EK		Č0148E
Standard for strip dimensions and shape			
EN 10131 / 2006 i DIN 1541 / 1975			

EN 10209 / 1996: Cold rolled low - carbon steel products for enameling									
Grade	C_{max}	Rp 0.2 max h≤0.50 mm	Rp 0.2 max 0.50<h ≤0.70 mm	Rp 0.2 max h>0.70 mm	R_m min	R_m max	A80 min h≤0.50 mm	A80 min 0.50 mm<h≤0.70	A80 min h>0.70 mm
DC01EK	0.08	310	290	270	270	390	26	28	30
DC04EK	0.08	260	240	220	270	350	32	34	36

STEEL PRODUCTS FOR GALVANIZING (FULL HARD)

Cold rolled plate can be delivered in a non-annealed form as Full hard. Full hard qualities that are being delivered are the subject of mandatory mutual agreement during the ordering and have the characteristics prescribed by internal quality standards.

MICROALLOYED HIGH RELEASE LIMIT STEELS FOR COLD FORMING

Quality Standard	EN 10268/2006
Grade	HC260LA*
	HC300LA*

* Non-standard grade - Quality Assurance inquiry required

Chemical composition of the ladle analysis for grades according to EN10268/2006

EN 10268/2006									
Grade	C_{max}	Si_{max}	Mn_{max}	P_{max}	S_{max}	Al_{min}	Ti_{max}	Nb_{max}	$(Nb+Ti+V+B)_{max}$
HC260LA	0.1	0.5	0.60	0.0250	0.0250	0.015	0.150	-	0.22
HC300LA	0.1	0.5	1.00	0.0250	0.0250	0.015	0.150	0.090	0.22

Mechanical properties for grades according to EN 10268/2006

EN 10268/2006							
Grade	$R_{p0.2\ min}$	$R_{p0.2\ max}$	$R_{m\ min}$	$R_{m\ max}$	A_{80} $0.50 \le h \le 0.70$mm min	A_{80} $h > 0.7$mm min	Tensile Test
HC260LA	260	330	350	430	24	26	90
HC300LA	300	380	380	480	21	23	90

Note: Steels contain one or more alloyed elements Nb, Ti and V in order to achieve tensile strength level needed.

DELIVERY TYPES, DIMENSIONS AND WEIGHTS

Cold rolled steel products are delivered in the dimensions and weights ranges given in the table below. The tables show common delivery types for this type of steel. Dimension and weight requirements outside the table range can also be taken into consideration. The possibility of specific quality dimensions and weight coil or sheet production is agreed during the ordering.

COLD ROLLED STRIP IN COILS

Cold rolled strips in coils are delivered in the dimensions and weight range given in the table below.

	Low carbon steels for cold forming		Structural steels	Low carbon steels for enameling
Thickness (mm)	0.35 - 0.49	0.50 - 3.00	0.50 - 2.50	0.50 - 2.40
Width (mm)	700 - 1350	700 - 1500	700 - 1500	700 - 1500
Weight	5 - 20t	5 - 20t	5 - 20t	5 - 20t

* Given thickness range is approximate and depends on the width. The weight depends on the dimensions and edge condition.

COLD ROLLED SHEETS

Cold rolled sheets are delivered in the dimensions and weight range given in the table below.

	Low carbon steels for cold forming		Structural steels	Low carbon steels for enameling
Thickness (mm)	0.35 - 0.49	0.50 - 3.00	0.50 - 2.50	0.50 - 2.40
Width (mm)	700 - 1350	700 - 1500	700 - 1500	700 - 1500
Length (mm)	1000 - 4000	1000 - 4000	1000 - 4000	1000 - 4000
Weight	2 - 6t	2 - 6t	2 - 6t	2 - 6t

* Given thickness range is approximate and depends on the width. The weight depends on the dimensions.

COLD ROLLED SLIT STRIP IN COILS

Cold rolled slit strip in coils is delivered in the dimensions and weight range according to the table below.

	Low carbon steels for cold forming	Structural steels	Low carbon steels for enameling
Thickness	0.35 - 3.00 mm	0.50 - 2.50 mm	0.50 - 2.40 mm
Width	200 - 700 mm	200 - 700 mm	200 - 700 mm

* Given thickness range is approximate and depends on the width. The weight is evaluated during ordering and depends on the dimensions and packing type.

COLD ROLLED NON ANNEALED STRIP IN COILS - FULL HARD

Cold rolled non annealed strips for galvanizing (Full hard) are delivered in the dimensions and weight range given in the table below. The possibility of Full hard (steel product for galvanizing) production is determined according to similar chemical composition to low-carbon and structural steel products.

	Low carbon steel		Structural steels
Thickness (mm)	0.35 - 0.49	0.50 - 3.00	0.50 - 2.50
Width (mm)	700 - 1250	700 - 1500	700 - 1500
Weight	5 - 20t	5 - 20t	5 - 20t

* Given thickness range is approximate and depends on the width. The weight depends on the dimensions.

Full hard is delivered without anticorrosive oiling and with the remains of mill oil on the surface.

TIN PLATE PRODUCTS

HBIS SERBIA

TIN PLATE

In its Tin Plates division in Sabac the HBIS Serbia produces tin plate on the ETL and TSL production lines through the processes of side trimming, tin plate plating, cutting and packing whereas such tin plate as a final product in a form of coil or sheet is than being used for further processing and final application by the end users. Tin plates produced in HBIS Serbia have various applications depending on chemical composition, mechanical properties, dimensions, tin coating and passivation. Tin plate is used in packing industry for tin can production, and its further application is found in various areas: nutrition, chemical, pharmaceutical and other industries.

TIN PLATE COIL

SINGLE REDUCED (SR)

For materials annealed under annealing bell (BA):
Thickness: 0.17 -0.49 mm
Width: 685 - 955 mm
For continuous annealed materials (CA):
Thickness: 0.17 -0.49 mm
Width: 700 -976 mm

DOUBLE REDUCED (DR)

For materials annealed under annealing bell (BA):
Thickness: 0.14 -0.26 mm
Width: 700 -950 mm
For continuous annealed materials (CA):
Thickness: 0.14 - 0.39 mm *
Width: 700- 975 mm

* Maximum thickness depends on steel quality

TIN PLATE SHEETS

SINGLE REDUCED (SR)

For materials annealed under annealing bell (BA):
Thickness: 0.17 -0.49 mm
Width: 685 - 955 mm
For continuous annealed materials (CA):
Thickness: 0.17 -0.49 mm
Width: 700 -976 mm

DOUBLE REDUCED (DR)

For materials annealed under annealing Bell (BA):
Thickness: 0.14 -0.26 mm
Width: 700 -950 mm
For continuous annealed materials (CA):
Thickness: 0.14- 0.39 mm*
Width: 700- 975 mm

- Length: 500 - 1150 mm
- Bundle weight: 0.5 - 2.0 t

* Thicknes 0.13 is produced only in TS550

HBIS Serbia Tin plates Šabac in their side trimming, tin plate plating, cutting and packing processes produces tin plate as a final product according to the EN 10202:2001 standard:

Delivery form:

- Tin plate in coils
- Tin plate in sheets

Final surface finishing (roughness):

Final surface finishing	Mark	Surface roughness - Ra (µm)
Bright	BR	≤ 0.35
Fine Stone	FS	0.25 - 0.45
Stone	ST	0.35 - 0.60

* Possibility of Bright (BR) surface production is being negotiated during ordering

Passivation:

- 311 (Cathodic Sodium Dichromate - CDC: 3,5- 9,0 mg/m2)
- 300 (Sodium Dichromate Solution: 1,0 - 3,0 mg/m2)

Oiling:

- DOS (Dioctyl Sebacate: 2 - 10 mg/m2)

Quantity of tin coating (g/m2):

Possibility of tin plate production in specific delivery form, final surface finishing (roughness), passivation and quantity of tin coating is being agreed during ordering. All other request related to quality and dimensional assortment, measures and shapes with tolerances, quality certificates, packing type and general delivery terms could be also discussed during ordering.

Quantity of tin coating (g/m2)	
Normal coating	Differential coating
E 1.0/1.0	D 1.0/1.4
E 1.4/1.4	D 1.0/2.0
E 2.0/2.0	D 1.4/2.0
E 2.8/2.8	D 1.4/2.8
E 4.0/4.0	D 2.0/2.8
E 5.0/5.0	D 2.0/5.0
E 5.6/5.6	D 2.0/5.6
	D 2.8/4.0
	D 2.8/5.0
	D 4.0/2.0
	D 5.6/2.8
	D 8.4/2.8
	D 8.4/5.6
	D11.2/2.8
	D11.2/5.6
Material with differential coating can be produced as above noted and reversed, except tin coating on under layer cannot be more than 5.6g/m2	

STEEL QUALITY

HBIS Serbia delivers tin plate according to EN10202:2001 standard. Qualities that can be produced are listed in the following table:

Tin plate products

Final reduction	SR		DR	
Annealing	CA	BA	CA	BA
Grade	TH 415	TS 245	TH 520	TS 520
	TH 435	TS 260	TH 550	TS 550
		TS 275	TH 580	
		TS 290	TH 620	

EN 10202:2001								
Steel type	C-max	Mn-min	Mn-max	S-max	P-max	Si-max	Cu-max	Ni-max
A	0.08	0.18	0.35	0.0200	0.0200	0.03	0.08	0.08
B	0.12	0.30	0.50	0.0200	0.0200	0.03	0.08	0.08
Steel type	Sn-max	As-max	Mo-max	Cr-max	N-max	Al-min	Al-max	ostali-max
A	0.02	0.02	0.02	0.08	0.0080	0.020	0.080	0.02
B	0.02	0.02	0.02	0.08	0.0080	0.020	0.080	0.02

EN 10202 / 2001										
Grade	Min Rp0.2	Max Rp0.2	Min R_m	Max R_m	Min HR30Tm for $t \leq 0.21$mm	Max HR30Tm for $t \leq 0.21$mm	Min HR30Tm for $0.21 < t \leq 0.28$mm	Max HR30Tm for $0.21 < t \leq 0.28$mm	Min HR30Tm for $t > 0.28$mm	Max HR30Tm for $t > 0.28$mm
TH 415	365	465	385	485	58	66	57	65	56	64
TH 435	385	485	410	510	61	69	61	69	60	68
TH 520	470	570	490	590						
TH 550	500	600	520	620						
TH 580	530	630	540	640						
TH 620*	570	670	575	675						
TS 245	195	295	290	390	49	57	48	56	47	55
TS 260	210	310	310	410	52	60	51	59	50	58
TS 275	225	325	325	425	54	62	53	61	52	60
TS 290	240	340	340	440	56	64	55	63	54	62
TS 520*	470	570	495	595						
TS 550	500	600	525	625						

* For TH 620 thickness between 0,291 and 0,38mm mechanical properties are not guaranteed according to standard, but according to: Rp0,2=550-650 MPa and Rm=555-655MPa.

* For TS 520 standard EN10202:2001 does not prescribe values of mechanical properties. Given values are internally prescribed.

DELIVERY TYPES, DIMENSIONS AND WEIGHTS

Tin plates are delivered in dimension and weight ranges given in the following tables. The tables show usual delivery forms for this type of steel. Requests for dimensions and weights that are outside the dimensions given in the tables, can also be negotiated. Possibility of coil or sheet production in specific quality, dimensions and weight could be agreed during ordering.

Tin plate in coil:

Final redukction	Annealing	Thickness (mm)	Width (mm)
SR*	BA	0.17-0.49	685-955
	CA	0.17-0.49	700-976
DR*	BA	0.140-0.26	700-950
	CA*	0.140-0.39	700-975

Coil ID (inner diameter): 420mm (+10/-15mm) Coil OD (outside diameter): max. 1675mm Weight:4 - 18t

DR-CA	
Grade	Thickness (mm)
TH 520	0.14-0.39
TH 550	0.14-0.29
TH 580	0.14-0.29
TH 620	0.15-0.38

DR*CA*
Maximum/minimum thickness depends on steel quality as given in the table.

Tin plate in sheet:

Final reduction	Annealing	Thickness (mm)	Width (mm)	Length (mm)
SR*	BA	0.17- 0.49	685-955	500-1150
	CA	0.17-0.49	700-976	
DR*	BA	0.13*-0.26	700-950	
	CA*	0.14-0.39	700-975	

Bundle weight: 0.5-2.0t SR* (single reduced) - single reduced tin plate DR* (double reduced) - double reduced tin plate BA - annealing under annealing bell CA - continuous annealing

* Thickness 0.13 mm is produced only in grade TS550.

DR*CA* Maximum / minimum thickness depends on steel quality as given in the table for tin plate in coil.

HBIS Serbia - Tinplate Šabac also offers next products:

- HBL lacquered tinplate
- HBP printed tinplate

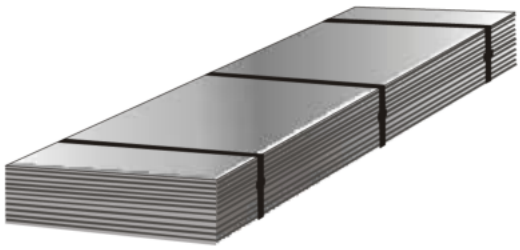
PACKAGING

HBIS SERBIA

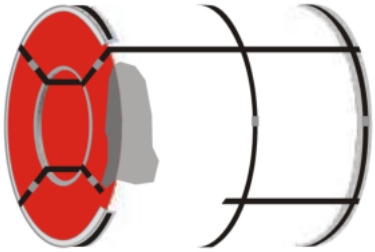
PACKAGING AND TRANSPORT

Packaging of finished products is done according to the internal packaging standard.Packages are divided into four basic types: basic minimum (packed with or without paper), improved minimum (packed with or without paper, protected edge, firmly bound), reinforced and special.

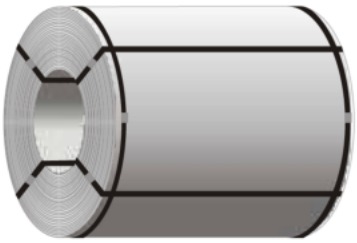
Below are the images of typical packages for each type of product. For other packages please contact Sales department.



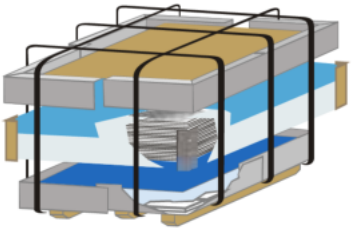
HOT ROLLED SHEETS
Packaging P224



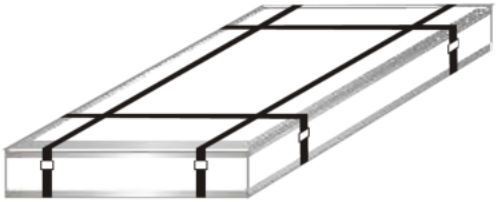
COLD ROLLED COILS
Packaging P343



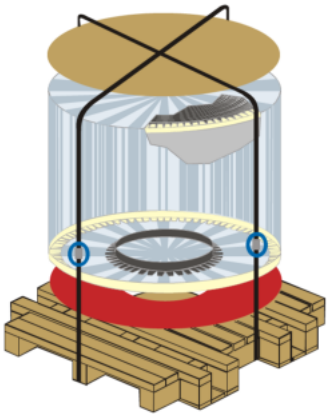
HOT ROLLED COILS
Packaging P108



TIN PLATE IN SHEETS
Packaging T



OLD ROLLED SHEETS
Packaging P229



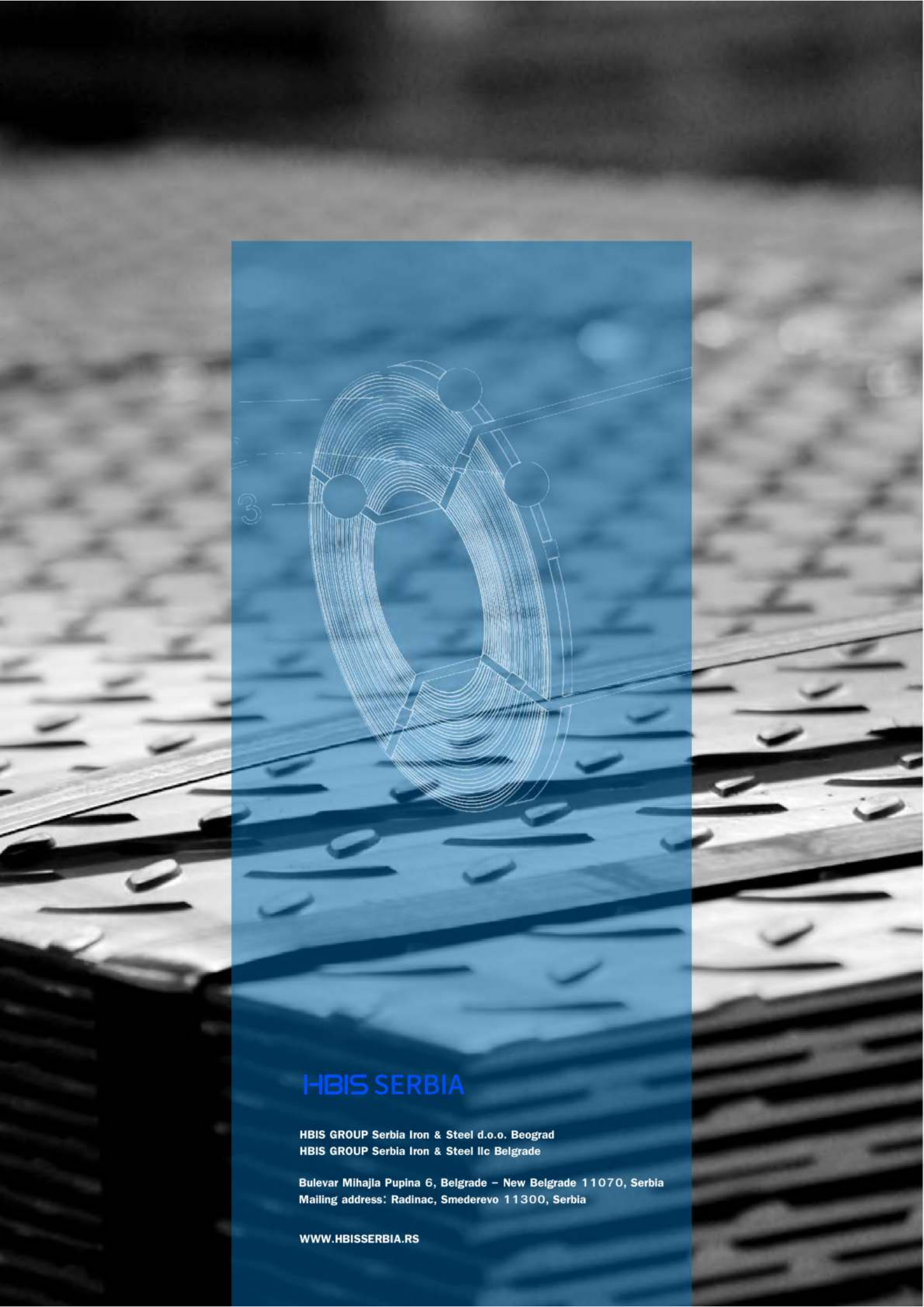
TIN PLATE IN COILS
Packaging U

CUSTOMER REQUESTS

In order to clearly understand your requirements, they need to include the following elements:

- type of product,
- quality,
- quality standard ,
- dimensions,
- standard for dimensions,
- special features, if any,
- the end use of the product,
- unit weight of the product,
- quantity,
- lottery obligation (lot size),
- deadline and dynamics of delivery,
- edge state,
- quality and type of surface for HV products,
- type of packaging and binding,
- the way of marking,
- Requirements of laws and regulations that are applicable to the product, and other special requirements, if any, and which are not listed above.

Valid product catalogue and contacts are available
on our web site www.hbisserbia.rs



HBIS SERBIA

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