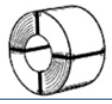
HOT ROLLED PICKLED PRODUCTS

OUR CONTINUOUS PICKLING LINE WORKS ON HYDROCHLORIC ACID. STRIPS ARE MADE ENDLESS BY USING LASER WELDING MACHINE AND THEN THEY GO THROUGH A STRETCH-DESCALING EQUIPMENT

LIBERTY

MAIN PARAMETERS

	COIL	SLIT COIL	SHEET	
				
Thickness; h (mm)	1.2 – 6.0	1.2 – 4.0	1.2 – 2.5	2.51 – 6.0
Width; b (mm)	780* – 1540**	min. 30 mm	555* – 1540**	780* – 1540**
Length; l (mm)			500 – 3200	1600 – 4000

* only with trimmed edge
** with mill edge

COIL WEIGHTS AND DIMENSIONS

Width; b (mm)	800 – 860	861 – 950	951 – 1050	1051 – 1150	1151 – 1250	1251 – 1350	1351 – 1450	1451 – 1540
Coil weight (t)	10 – 12	11 – 13.5	12.5 – 15	13.5 – 16.5	14.5 – 18	16 – 19.5	17.5 – 21	18.5 – 22

Coil outside diameter: 1100-1900 mm
Coil inside diameter: 610 ± 20 mm (below 4.0 mm thickness in case of re-coiling, 508 ± 20 mm)

The weight of the slit coil can be set depending on the width, thickness, diameters, required weight specification and the weight of the "mother coil".

SHEET DIMENSIONS

Commercial sheet dimensions

WIDTH; b (mm)	LENGTH; l (mm)		
	2000	2500	3000
1000	h = 1.5; 2.0; 2.5; 3.0; 4.0; 5.0; 6.0 mm	—	—
1250	—	h = 2.0; 2.5; 3.0; 4.0; 5.0; 6.0 mm	—
1500	—	—	h = 2.5; 3.0; 4.0; 5.0; 6.0 mm

PRODUCT GROUPS

The latest issued standards are applied for our products. Mechanical properties and chemical compositions of sheets, indicated in the tables are valid taking into consideration the additional requirements of the standards indicated.

DEFINITION OF STRENGTH CATEGORIES

According to EN 10051

Category 'A'	with minimum yield strength Re ≤ 300 MPa
Category 'B'	with minimum yield strength 300 MPa < Re ≤ 360 MPa
Category 'C'	with minimum yield strength 360 MPa < Re ≤ 420 MPa
Category 'D'	with minimum yield strength 420 MPa < Re ≤ 900 MPa

HOT ROLLED PICKLED PRODUCTS

The manufacturer uses the company steel standard DASZ 03 instead of EN 10051:

Category I. Steel grades characterised with maximum yield strength, used for cold rolling,
Category II. Steel grades with yield strength 185 MPa ≤ Re < 235 MPa,
Category III. Steel grades with yield strength 235 MPa ≤ Re < 260 MPa,
Category II. Steel grades with yield strength 260 MPa ≤ Re < 340 MPa,
Category V. Steel grades with yield strength 340 MPa ≤ Re < 420 MPa,
Category VI. Steel grades with yield strength 420 MPa ≤ Re < 460 MPa.
Category VII. Steel grades with yield strength 460 MPa ≤ Re < 500 MPa.

DASZ 06 standard includes the producible dimension ranges as well as dimensional tolerances by strength categories. These dimensional and geometrical tolerances are either the same as or stricter than that specified by EN 10051 standard. In case of standards with the same number, but from different years the specifications of the standard included in the delivery contract are normative.

HOT ROLLED PICKLED MILD STEELS

Steels for enamelling

Typical applications: boilers, ovens, gas convector and other household appliances.

STRENGTH CATEGORY	DASZ 206
I.	FE P13-B

Steels for cold forming

Typical applications: bending, cold forming, deep drawing, depending on the steel grade these steels are applicable for parts made by small, medium and large scale deep drawing, such as compressors.

STRENGTH CATEGORY	EN 10111
I.	DD11 DD12 DD13 DD14

HOT ROLLED PICKLED NON-ALLOY STRUCTURAL STEELS

Typical applications: construction, production of welded structures, pressed parts, bent sections and tubes.

STRENGTH CATEGORY	EN 10025-2	DIN 17100
III.	S235JR +N S235J0 +N S235J2 +N	
IV.	S275JR +N S275J0 +N S275J2 +N	
V.	S355JR +N S355J0 +N S355J2 +N	
VI.		St 50-2

EN 10025-2 Standard: The products are delivered in normalizing rolled condition (+N). If cold forming (cold bending, edge bending, roller-type forming) is required when ordering, the steel grade specification has to be completed with the letter C (e.g. S355J2C +N).

HOT ROLLED PICKLED PRODUCTS

STEELS RESISTANT TO ATMOSPHERIC CORROSION

Typical applications: support and cover elements of outdoor surfaces exposed to weather conditions and production of containers suitable for sea transport.

Steels resistant to atmospheric corrosion can be used profitably as structural steels, because there is no need for additional surface protection. The continuous brown surface layer that develops in one year slows down further corrosion of the steel. The qualities produced according to DASZ 210 standard are phosphor alloyed and atmospheric corrosion resistant steel grades that have been developed based on quality CORTEN A.

STRENGTH CATEGORY	EN 10025-5	DASZ 210
III.	S235J0W +N S235J2W +N	—
V.	—	D-COR-TEN 410

STEELS FOR MANUFACTURING BOILERS AND PRESSURE VESSELS

Typical applications: pressure vessels, gas bottles, boilers and containers.

The characteristics of these steel types are excellent formability, weldability and low content of impurities.

STRENGTH CATEGORY	EN 10028-2	EN 10028-3	EN 10207	EN 10120
III.	P235GH +N	—	—	—
	—	—	—	P245NB
	—	—	P235S	—
IV.	P265GH +N	—	—	—
	—	—	—	P265NB
	—	—	P265S	—
	—	P275N	—	—
	—	P275NH	—	—
	—	P275NL1	—	—
	—		P275SL	—
	P295GH +N	—	—	—
	—	—	—	P310NB
V.	P355GH +N	—	—	—
	—	P355N	—	—
	—	P355NH	—	—
	—	P355NL1	—	—
	—		—	P355NB

Symbols:

GH, H	for high temperature service, with hot yield point test
L	for low temperature service
B	base material of gas bottles
P	base material of pressure vessels and boiler plates
S	cold toughness, applicable also at low temperature
SL	cold toughness, with specification of impact test value at -50°C
N	produced by normalizing rolling

HOT ROLLED PICKLED PRODUCTS

FINE-GRAINED STEELS

Typical applications: welded structures, bridges, floodgates, containers and water tanks exposed to high load at low ambient temperature.

Hot rolled steels with high strength, with extremely good weldability and formability properties. Specifically developed combination of high strength properties and good formability.

Fine-grained steels produced by normalizing rolling

STRENGTH CATEGORY	EN 10025-3	EN 10149-3	SEW 092
IV.	S275N, NL	S260NC	QStE 260 N
	—	S315NC	—
V.	S355N, NL	S355NC	QStE 340 N
	—	—	QStE 380 N
VI.	S420N, NL	S420NC	QStE 420 N

Symbols according to EN 10025-3 standard:
N by normalizing rolling, impact test at -20°C
NL by normalizing rolling, impact test at -50°C

Fine-grained steels produced by thermomechanical rolling

STRENGTH CATEGORY	EN 10149-2	SEW 092
IV.	S315MC	—
V.	S355MC	QStE 340 TM
	—	QStE 380 TM
VI.	S420MC	QStE 420 TM
VII.	S460MC	—

Symbols according to EN 10149-2 standard:
M by thermomechanical rolling
C suitable for cold flanging

ELECTROTECHNICAL STEELS

Typical applications: electric industrial applications, production of isotropic, cold rolled products with non-grain-oriented structure.

STRENGTH CATEGORY	DASZ 215
III.	DN 1.2 Si

SPECIAL PRODUCTS

HOT ROLLED PICKLED SHEETS FOR PLASMA AND LASER CUTTING

The requirements of suitability for laser cutting are summarised in DASZ 216 standard. These products are ultra-high purity steels with low inclusion content, produced according to reduced chemical composition limit values, with reduced S-, P- and Si-contents; fine-grained, micro-alloy, with more reduced mechanical values than those specified by similar standards and low internal stress, suitable for cold flanging, as well as for plasma and laser cutting. Steel grades, specified by DASZ 216 standard or any other national or international standards, suitable for plasma and laser cutting, can be ordered.

Reduced Flatness

In case of ordering **sheets**, requirements to the allowed flatness deviation included in chapter FLATNESS depending on strength categories according to EN 10051 standard.

In case of ordering **coils** suitable for laser cutting our company guarantees the flatness tolerances indicated in chapter FLATNESS. for cut-to-length sheets only after performance of a professional levelling process on the cutting line of the customer with suitable technical conditions.

HOT ROLLED PICKLED PRODUCTS FOR GALVANIZING

Suitability for hot-dip galvanizing according to EN 10025 standard is specified in the following table.

CLASS	ELEMENTS IN MASS PERCENT		
	Si	Si + 2.5 P	P
1	Si ≤ 0.030	≤ 0.090	—
2*	Si ≤ 0.350	—	—
3	0.14 ≤ Si ≤ 0.25	—	≤ 0.035

* CLASS 2 REFERS ONLY TO SPECIAL ZINC-ALLOYS.

SURFACE

The surface of hot rolled pickled products is just as plain as it is possible to achieve by hot rolling, surface properties comply with the standard defined in the contract or other regulation.

TOLERANCES

The specified values for tolerances shall not apply to the uncropped ends of the coil for a total length "l", which is calculated using the formula:

$$l\,(m) = \frac{90}{(\text{nominal thickness (mm)}} \quad \leq 20\,(m)$$

HOT ROLLED PICKLED PRODUCTS

THICKNESS TOLERANCES

Strength category I. normal thickness tolerances

THICKNESS: h (mm)	WIDTH; b (mm)								
	b < 980	980 ≤ b ≤ 1050	1050 < b ≤ 1120	1120 < b ≤ 1200	1200 < b ≤ 1220	1220 < b ≤ 1300	1300 < b ≤ 1420	1420 < b ≤ 1500	b > 1500
1.20-1.29	–	± 0.13	–	–	–	–	–	–	–
1.30-1.49	± 0.13			–	–	–	–	–	–
1.50-1.79	± 0.13				± 0.14	–	–	–	–
1.80-2.00	± 0.13				± 0.14		–	–	–
2.01-2.19	± 0.14				± 0.16		–	–	–
2.20-2.49	± 0.14				± 0.16			–	–
2.50	± 0.14				± 0.16				± 0.17
2.51-3.00	± 0.15				± 0.17				± 0.18
3.01-4.00	± 0.17				± 0.18				± 0.20
4.01-5.00	± 0.18				± 0.20				± 0.21
5.01-6.00	± 0.20				± 0.21				± 0.22

Strength category I. minimum reduced thickness tolerances to undertake

THICKNESS: h (mm)	WIDTH; b (mm)								
	b < 980	980 ≤ b ≤ 1050	1050 < b ≤ 1120	1120 < b ≤ 1200	1200 < b ≤ 1220	1220 < b ≤ 1300	1300 < b ≤ 1420	1420 < b ≤ 1500	b > 1500
1.20-1.29	–	± 0.07	–	–	–	–	–	–	–
1.30-1.49	± 0.07			–	–	–	–	–	–
1.50-1.79	± 0.07					–	–	–	–
1.80-2.00	± 0.08						–	–	–
2.01-2.19	± 0.08						–	–	–
2.20-2.49	± 0.08							–	–
2.50	± 0.08								
2.51-3.00	± 0.08								
3.01-4.00	± 0.09								
4.01-5.00	± 0.09								
5.01-6.00	± 0.09				± 0.10				

HOT ROLLED PICKLED PRODUCTS

Strength category II-III. normal thickness tolerances

THICKNESS: h (mm)	WIDTH; b (mm)								
	b < 980	980 ≤ b ≤ 1050	1050 < b ≤ 1120	1120 < b ≤ 1200	1200 < b ≤ 1220	1220 < b ≤ 1300	1300 < b ≤ 1420	1420 < b ≤ 1500	b > 1500
1.20-1.29	–	± 0.17	–	–	–	–	–	–	–
1.30-1.49	± 0.17			–	–	–	–	–	–
1.50-1.79	± 0.17				± 0.19	–	–	–	–
1.80-2.00	± 0.17				± 0.19		–	–	–
2.01-2.19	± 0.18				± 0.21		–	–	–
2.20-2.49	± 0.18				± 0.21			–	–
2.50	± 0.18				± 0.21				± 0.23
2.51-3.00	± 0.20				± 0.22				± 0.24
3.01-4.00	± 0.22				± 0.24				± 0.26
4.01-5.00	± 0.24				± 0.26				± 0.28
5.01-6.00	± 0.26				± 0.28				± 0.29

Strength category II-III. minimum reduced thickness tolerances to undertake

THICKNESS: h (mm)	WIDTH; b (mm)								
	b < 980	980 ≤ b ≤ 1050	1050 < b ≤ 1120	1120 < b ≤ 1200	1200 < b ≤ 1220	1220 < b ≤ 1300	1300 < b ≤ 1420	1420 < b ≤ 1500	b > 1500
1.20-1.29	–	± 0,07	–	–	–	–	–	–	–
1.30-1.49	± 0.07			–	–	–	–	–	–
1.50-1.79	± 0.07					–	–	–	–
1.80-2.00	± 0.07						–	–	–
2.01-2.19	± 0.08						–	–	–
2.20-2.49	± 0.08							–	–
2.51-3.00	± 0.08								
3.01-4.00	± 0.09								
4.01-5.00	± 0.10								
5.01-6.00	± 0.11								± 0.12

HOT ROLLED PICKLED PRODUCTS

Strength category IV. normal thickness tolerances

THICKNESS: h (mm)	WIDTH; b (mm)						
	b ≤ 1120	1120 < b ≤ 1200	1200 < b ≤ 1250	1250 < b ≤ 1300	1300 < b ≤ 1420	1420 < b ≤ 1500	b > 1500
1.50-1.69	± 0.17	–	–	–	–	–	–
1.70-1.89	± 0.17		–	–	–	–	–
1.90-1.99	± 0.17		± 0.19	–	–	–	–
2.00	± 0.17		± 0.19		–	–	–
2.01-2.39	± 0.18		± 0.21		–	–	–
2.40-2.50	± 0.18		± 0.21			–	–
2.51-2.79	± 0.20		± 0.22				± 0.23
2.80-3.00	± 0.20		± 0.22				± 0.24
3.01-4.00	± 0.22		± 0.24				± 0.26
4.01-5.00	± 0.24		± 0.26				± 0.28
5.01-6.00	± 0.26		± 0.28				± 0.29

Strength category IV. minimum reduced thickness tolerances to undertake

THICKNESS: h (mm)	WIDTH; b (mm)						
	b ≤ 1120	1120 < b ≤ 1200	1200 < b ≤ 1250	1250 < b ≤ 1300	1300 < b ≤ 1420	1420 < b ≤ 1500	b > 1500
1.50-1.69	± 0.08	–	–	–	–	–	–
1.70-1.89	± 0.08			–	–	–	–
1.90-1.99	± 0.08					–	–
2.00-2.39	± 0.09						–
2.40-2.50	± 0.09						
2.51-2.79	± 0.09						
2.80-3.00	± 0.09						
3.01-4.00	± 0.09						
4.01-5.00	± 0.10						
5.01-6.00	± 0.11		± 0.12				

Normal thickness tolerances of our products of the strength category V., VI. and VII. are specified according to DASZ 03 standard being equal to or stricter than the values specified by EN 10051 standard.

Our products of the strength category V. and above can also be ordered with reduced tolerances if agreed.

HOT ROLLED PICKLED PRODUCTS

WIDTH TOLERANCES

WIDTH; b (mm)	WIDTH TOLERANCE (mm)		
	MILL EDGES	TRIMMED EDGES STANDARD	TRIMMED EDGES REDUCED
b ≤ 1200	-0 / + 20	-0 / + 3	-0 / + 2
1200 < b ≤ 1540	-0 / + 20	-0 / + 5	-0 / + 2

LENGTH TOLERANCES

NOMINAL THICKNESS (mm)	NOMINAL LENGTH (mm)	LENGTH TOLERANCE (mm)	
		STANDARD	REDUCED
h ≤ 2.50	< 2000	- 0 / + 6	- 0 / + 3
	≥ 2000	0.3% of the length	0.15% of the length
2.50 < h ≤ 6.00	1600 – 2499	- 0 / + 8	-
	2500 – 4000	- 0 / + 9	-

FLATNESS

Requirements to flatness if R_e ≤ 300 MPa (strength category 'A'):

THICKNESS; h (mm)	WIDTH; b (mm)	FLATNESS TOLERANCE (mm)	
		STANDARD	REDUCED
h ≤ 2.00	b ≤ 1200	18	9
	1200 < b ≤ 1500	20	10
2.00 < h ≤ 6.00	b ≤ 1200	15	8
	1200 < b ≤ 1500	18	9
	b > 1500	23	12

Dimensions or flatness tolerances different form those in the above table are subject to a separate agreement.

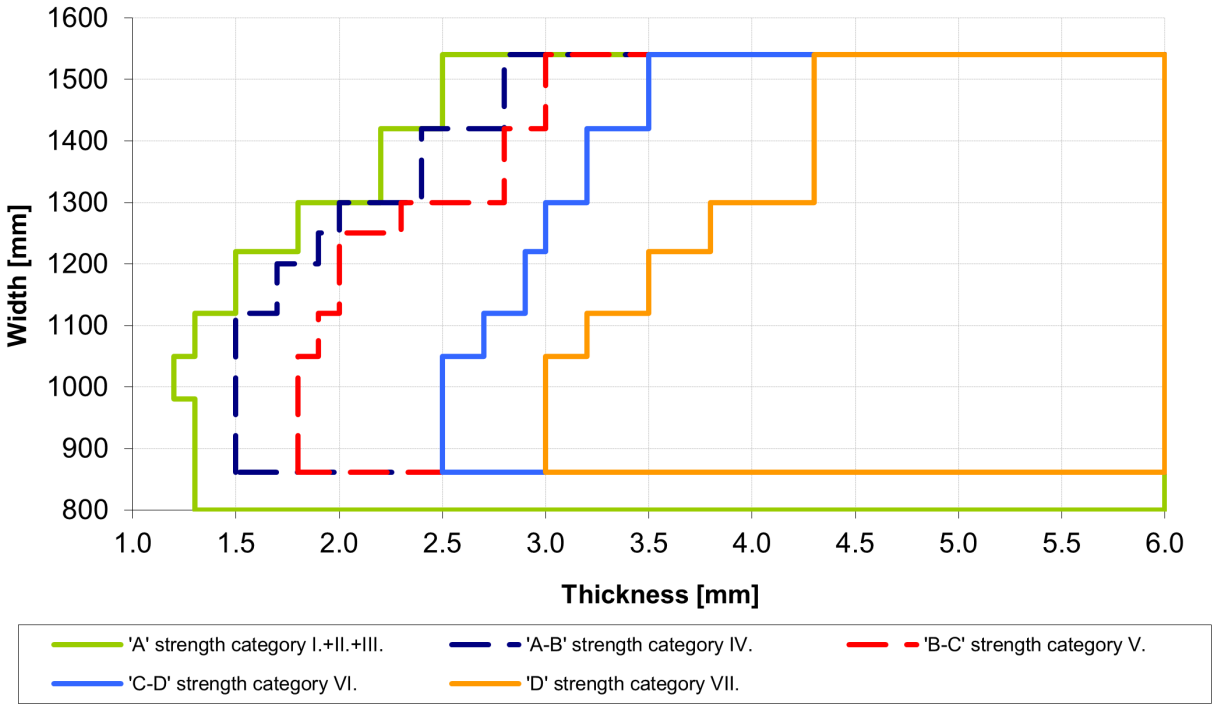
At higher temperature, in case of steels of high forming resistance, flatness tolerance is according to the following table. In case of category B and C reduced tolerances have to be agreed on at the time of ordering.

At higher temperature in case of steels of high forming resistance, flatness requirement are 300 MPa < R_e ≤ 900 MPa (in strength category B, C and D):

THICKNESS; h (mm)	WIDTH; b (mm)	FLATNESS DEVIATION, IF CATEGORY* (mm/m)		
		B	C	D
h ≤ 6.00	b ≤ 1200	18	23	**
	1200 < b ≤ 1500	23	30	**
	1500 < b	28	38	**

* Classification of strength category A, B, C and D according to the EN 10051 standard.
** As agreed

DIMENSIONS



STRENGTH CATEGORY I. + II. + III.			
THICKNESS; h (mm)		WIDTH; b (mm)	
Min.	Max.	Min.	Max.
1.20	1.29	980	1050
1.30	1.49	800	1120
1.50	1.79	800	1220
1.80	2.19	800	1300
2.20	2.49	800	1420
2.50	6.00	800	1540

STRENGTH CATEGORY IV.			
THICKNESS; h (mm)		WIDTH; b (mm)	
Min.	Max.	Min.	Max.
1.50	1.69	861	1120
1.70	1.89	861	1200
1.90	1.99	861	1250
2.00	2.39	861	1300
2.40	2.79	861	1420
2.80	6.00	861	1540

STRENGTH CATEGORY V.			
THICKNESS; h (mm)		WIDTH; b (mm)	
Min.	Max.	Min.	Max.
1.80	1.89	861	1050
1.90	1.99	861	1120
2.00	2.29	861	1250
2.30	2.79	861	1300
2.80	2.99	861	1420
3.00	6.00	861	1540

STRENGTH CATEGORY VI.			
THICKNESS; h (mm)		WIDTH; b (mm)	
Min.	Max.	Min.	Max.
2.50	2.69	861	1050
2.70	2.89	861	1120
2.90	2.99	861	1220
3.00	3.19	861	1300
3.20	3.49	861	1420
3.50	6.00	861	1540

STRENGTH CATEGORY VII.			
THICKNESS; h (mm)		WIDTH; b (mm)	
Min.	Max.	Min.	Max.
3.00	3.19	861	1050
3.20	3.49	861	1120
3.50	3.79	861	1220
3.80	4.29	861	1300
4.30	6.00	861	1540

CORROSION PROTECTION

Temporary corrosion protection is made by oiling, the degree shall be specified with the following

TYPE OF OILING	DEGREE OF OILING BY SIDES (g/m²)
slight	0.8 – 1.2
medium	1.3 – 2.0
heavy	2.1 – 2.5
individual	0.8 – 2.5

The production mill suggests a quantity of 1.7 g/m² or more.

In case of appropriate packaging and storing, as well as under perfect transport and storing conditions the oiled product will be protected from corrosion for at least 3 month from the date of Notice of Readiness.

We do not take any responsibility for corrosion if the product is unoiled or the degree of oiling is less than 1.0 g/m²!

PACKAGING

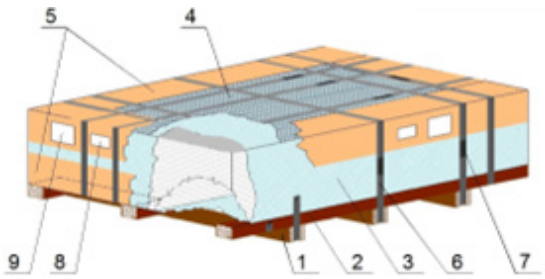
Product is identified by CODE 39 bar code labels.

Our products are packaged in environmentally friendly packaging that involves foiled paper and paper edge protector. The following illustrations provide information about the most common packaging types of our key products.

PACKAGING OF SHEETS (DASZ 35)

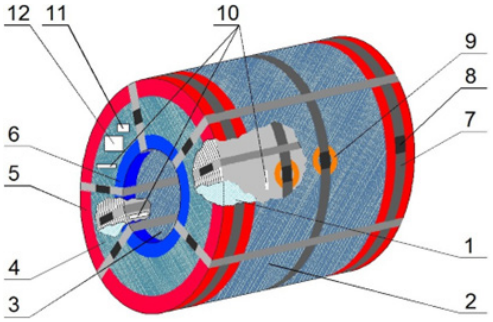
1. cross piece (notched)
2. longitudinal bar
3. fibre-reinforced foiled paper
4. plastic plate
5. paper edge protector (L1 and LDS1) or plastic edge protector (L2 and LDS2)
6. metal banding strap
7. metal banding seal
8. label „A"
9. label „C"

In case of a length above 3200 mm the packaging according to the DASZ 34 standards shall apply.



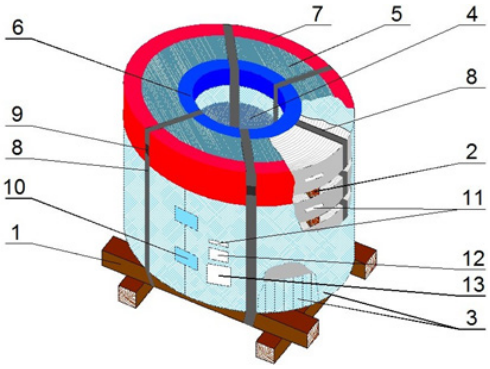
PACKAGING OF WIDE COILS WITH HORIZONTAL EYE (DASZ 36)

1. fibre-reinforced foiled paper
2. outer corrugated plastic board
3. inner corrugated plastic board
4. corrugated plastic side protecting ring
5. plastic outer edge protector
6. plastic inner edge protector
7. metal strap
8. metal seal protector
9. spacer
10. label „CS"
11. label „A"
12. label „C"



PACKAGING OF SLIT COILS WITH VERTICAL EYE (DASZ 36)

1. pallet
2. wooden spacer
3. fibre-reinforced foiled paper
4. inner corrugated plastic board
5. corrugated plastic ring
6. plastic inner edge protector
7. plastic outer edge protector
8. metal strap
9. metal seal protector
10. adhesive tape
11. label „CS"
12. label „A"
13. label „C"



APPROBATED (CERTIFIED) PRODUCTS

Materials for pressure equipment manufacturing: from non-alloy structural steels wide coil and from wide coil cut-to-length sheets.

a) approved according to AD 2000 MERKBLATT W0 Certified by: ÉMI TÜV SÜD
b) approved according to PED 2014/68/EU Certified by: ÉMI TÜV SÜD
c) approved according to PER 2016/1105 Certified by: ÉMI TÜV SÜD

Hot rolled products for construction purposes with CE-mark

according to 305/2011/EU – CPR (EN 10025-1) Certified by: ÉMI TÜV

Hot rolled plates of non-alloy and fine grain steel for construction purposes (UKCA)

according to 305/2011/EU – CPR (EN 10025-1) Certified by: ÉMI TÜV SÜD.

Certifications are available on request

The products made by LIBERTY Steel Group in Hungary are always supplied with a Conformity Statement of Producer and agreement shall be reached about the type of statement at the time of placing the order. The available types of statements are included by standard EN 10204.

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LIBERTY

MEMBER OF GFG ALLIANCE