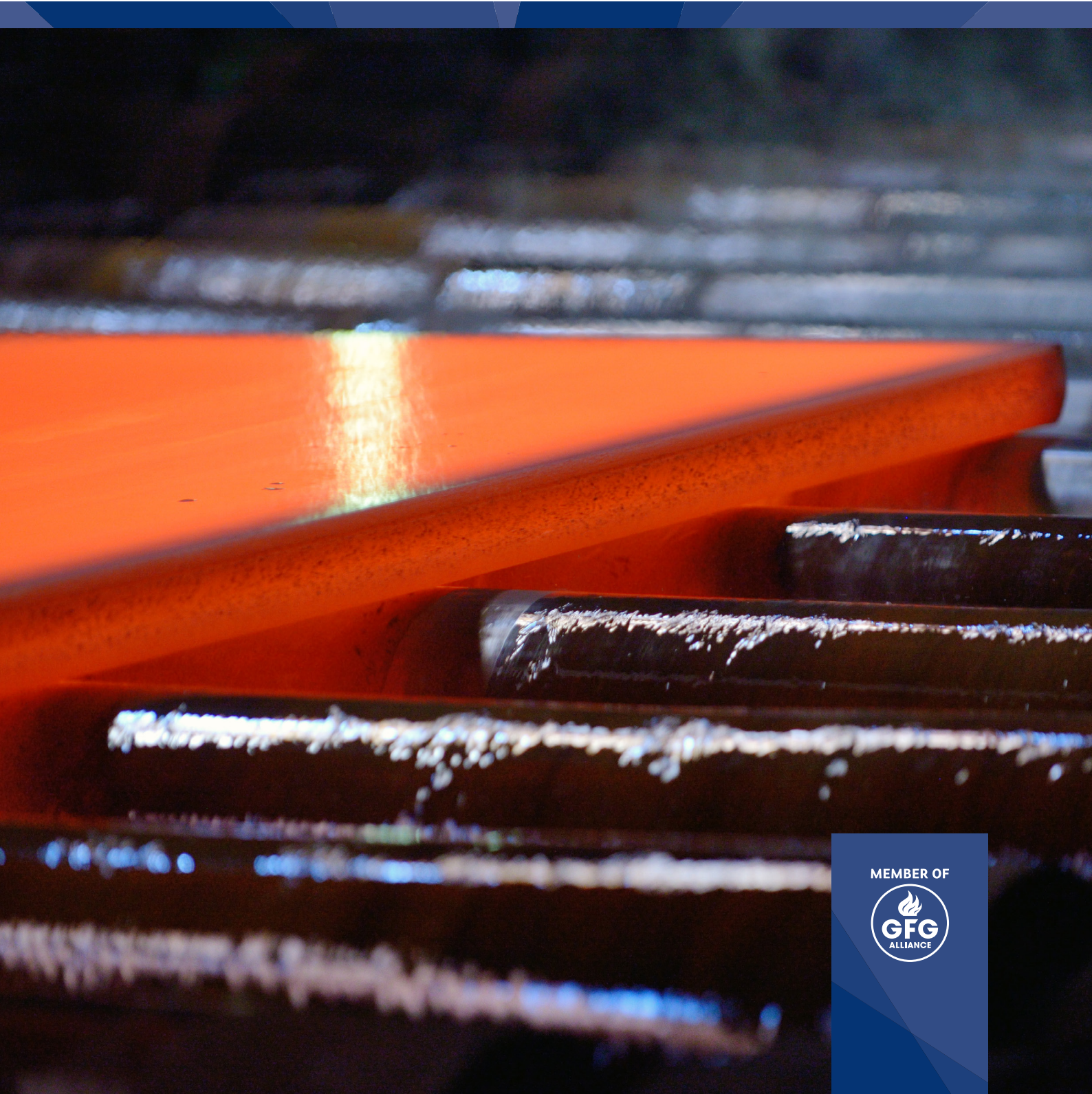


# Heavy Plates



LIBERTY Galați  
[www.libertysteelgroup.com](http://www.libertysteelgroup.com)



MEMBER OF



**Liberty Galați is the largest integrated steel plant in Romania located in the south-eastern part of the country and one of the European leading manufacturers of metallurgical products.** The production facility is fully integrated starting from raw materials, sintering, blast furnace, steel shop, heavy plate mills, hot strip mill, cold rolling complex, galvanizing & organic coating lines. Liberty Galati has a nominal capacity of 1 million tons of hot rolled quarto plates. The mill is strategically located with easy access to the Danube river and the Black Sea. The mill offers a wide range of plates suitable for various applications.



## Applications

### Product widely used for:

- Construction: Structural steel for industrial constructions
- Shipbuilding Applications: Container ships, Tankers, Multi-purpose vessels, Coaster vessels, Tugs, Offshore support vessels, Pontoons, Floating docks, Barges, Yachts
- Windmills: Onshore and offshore wind towers
- Pipes & Tubes: Oil & gas applications, boilers, general purpose applications
- General purpose pipe Steel: Boiler pipes, Construction and Industrial pipes, Water pipes
- Pressure Vessels: Chemical industry applications - tank storage, transport, boilers & condensers
- Mining equipment and Yellow goods: High strength steel for lifting and transportation equipment
- Transport: road & rail applications

## Production Range

### Technical Delivery Conditions

- Chemical & Mechanical properties according to ordered standards.
- Delivery conditions:
  - AR - As rolled
  - N - Normalized
  - NR - Normalized rolling
  - TM - Thermo-mechanical controlled rolling
- For Furnace Normalized supply condition – thickness up to 130mm

(according with feasibility tables)

- Sizes and Tolerances according to: EN10029; ASTM A6; ASTM A20; JIS G 3193

### Quality Documents

Mill's quality documents according to EN 10204/2004 type 2.2; 3.1 (DB, TUV); 3.2 (LRS, BV, ABS, RINA and NKK).


### Marking

By painting, label marking and die stamping indicating: Made in Romania, LIBERTY Galati, number of contract, size, standard, plate number and heat number.

## Production Range continued...

Thickness [mm]	Width [mm]					Length [mm]	
	1500	3400	3600	3800	4000	min	max
6.00-9.00						6000	13000
9.01-12.00						5000	14000
12.01-20.00						5000	15000
20.01-40.00						4000	16000
40.01-130.00						2000	16000
130.01-200.00	/	/	/	/	/	2000	12000

Standard feasibility range

 Without mechanical properties

### Ultrasonic Testing According to:

EN 10160, ASTM A578 (Level A – max 100mm; Level B max 60mm; Level C - max 20 mm, ASTM A435, ISO 12094)

### UT Level / Thickness Plates Range

	E0	E1	E2	E3
S0	6-160mm	6-100mm	6-60mm	6-40mm
S1	6-100mm	6-100mm	6-60mm	6-40mm
S2	6-60mm	6-60mm	6-60mm	6-40mm
S3	6-40mm	6-40mm	6-40mm	6-40mm

Standard feasibility range

Prior acceptance by the mill is mandatory

### Z Test / Thickness Plates Range

	15-60mm	60-80mm	80-100mm
Z15			
Z25			
Z35			

Standard feasibility range

Prior acceptance by the mill is mandatory

### Dimensional capability

Thickness

- 6.00 - 40.00 mm shear cutting
- 40.01 – 200 mm flame cutting

Plate unit weight for width 1500-1900 mm: max. 11.3 MT

Plate unit weight for width over 1900 mm: max. 15 MT

Max. weight 18 MT with mill acceptance



### Z Testing According to:

EN 10164/2004; ASTM A770/2001

For plates of thickness less than 15 mm the standard does not require through-thickness tensile tests.

LIBERTY Galati guarantee plates with improved through-thickness properties in thickness range 6mm – 15mm, but does not perform tests.

# Grades and standards

## Structural Steel for General Application

Thickness Capability [mm] <25 30 40 50 60 70 80 120 160 180 200

EN 10025/2	S235JR/J0/J2 class 1																					
	S235JR/J0 class 3																					
	S235JR/J0																					
	S235J2 class 3																					
	S275JR/J0 class 3																					
	S275JR/J0																					
	S275J2 class 3																					
	S275JR/J0 class 3																					
	S355JR/J0																					
	S355J2 class 3																					
	S355JR/J0/J2 _CEV max 0.43																					
	S355JR/J0/J2 _CEV max 0.40																					
	S355K2																					
	S235J2C																					
	S235J2C class 1																					
	S235J2C class 3																					
	S275J2C																					
	S275J2C class 3																					
	S355J2C																					
S355J2C class 3																						
S355K2C																						
ASTM A36/ A36M	A36																					

Standard feasibility range

Prior acceptance by the mill is mandatory

(IMP) Informal Mechanical Properties (not guaranteed)

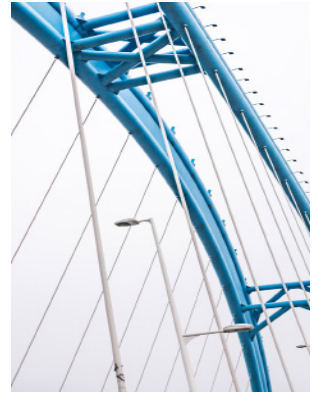
## Weldable Fine Grain Structural Steels - Normalised

Thickness Capability [mm] <25 30 40 50 60 70 80 100 120 160 180 200

EN 10025/3	S275N/NL																					
	S355N/NL																					
	S355NL class 3																					
	S420N																					
	S420NL																					
	S420N class 3																					
	S460N																					
	S460NL																					
	S460N class 3																					
ASTM A572/ A572M	A572 Gr60 Type1 / Type2																					
A572 Gr70																						

Standard feasibility range

Prior acceptance by the mill is mandatory



# Grades and standards continued...

## Steels for Quenching and Tempering

Thickness Capability [mm]      <25    30    40    50    60    70    80    100    120    130

EN ISO 683-1/2018 EN 10083: 2006	C45										
	C45+N										
	C45E										

Standard feasibility range      Prior acceptance by the mill is mandatory

Delivery state C45 (+U) - untreated  
Delivery state C45+N - Normalizing heat treatment



## TMCP Steel - Weldable fine grain structural steel

Thickness Capability [mm]      <16    20    25    30    40    50    60    70    80

EN 10025/4-2019	S275M									
	S275ML									
	S355M									
	S355ML									
	S420M									
	S420ML									
	S460M									
	S460ML									
EN 10149/2-2013	S355MC									
	S420MC									
	S460MC									
	S500MC									
	S550MC									



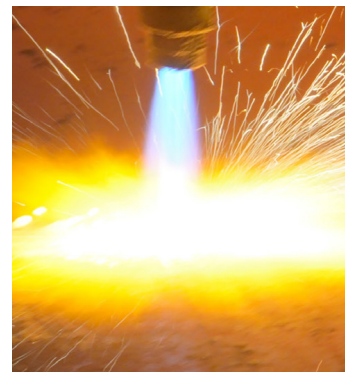
Standard feasibility range      Prior acceptance by the mill is mandatory      Customized Range

Delivery state – Thermomechanical rolled weldable fine grain structural steels. CEV lower than 0.40% for high grades. Impact test down to -50°C. Suitable for bending process, suitable for flanging without cracking. Up to Z35 through-thickness tensile tests.

## Offshore Steel - Weldable Structural Steels for Fixed Offshore Structures

Thickness Capability [mm]      <15    20    25    30    40    50    60

EN 10225	S355G2+N								
	S355G3+N								
	S355G5+M								
	S355G6+M								
	S355G7+M								
	S355G8+M								
	S355G9+M								
	S355G10+M								



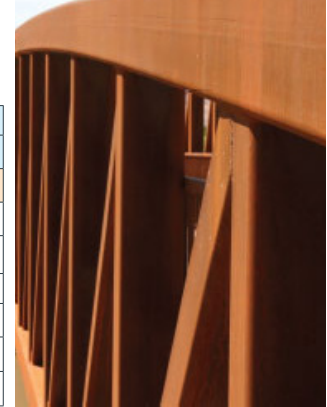
Standard feasibility range      Prior acceptance by the mill is mandatory

Delivery state – (N) Normalizing rolled; (M) Thermomechanical rolled weldable fine grain structural steels. CEV lower than 0.40% for high grades. Impact test down to -60grdC. Suitable for bending process, suitable for flanging without cracking. Option 10 ; Option 11 – PWHT Option 12 - Strain ageing test Option 13 – Trough thickness test (Z35)

## Grades and standards continued...

### Structural Steel with Improved Corrosion Resistance

Thickness Capability [mm]		<12	30	50	60	70	80	100
EN 10025/5	S235J0/J2W +N	✓	✓	✓	✓	✓	✓	✓
	S355J0/J2W +N	✓	✓	✓	✓	✓	✓	✓
	S355K2W +N	✓	✓	✓	✓	✓	✓	✓
	S355J0/J2WP +N	✓	✓	✓	✓	✓	✓	✓
ASTM A588/A588M	A588 Grade A	✓	✓	✓	✓	✓	✓	✓
	A588 Grade B	✓	✓	✓	✓	✓	✓	✓
ASTM A709/A709M	A709 Grade 50W [345 W] Type A	✓	✓	✓	✓	✓	✓	✓
	A709 Grade 50W [345 W] Type B	✓	✓	✓	✓	✓	✓	✓
GOST 6713-91	15HSND-2	✓	✓	✓	✓	✓	✓	✓



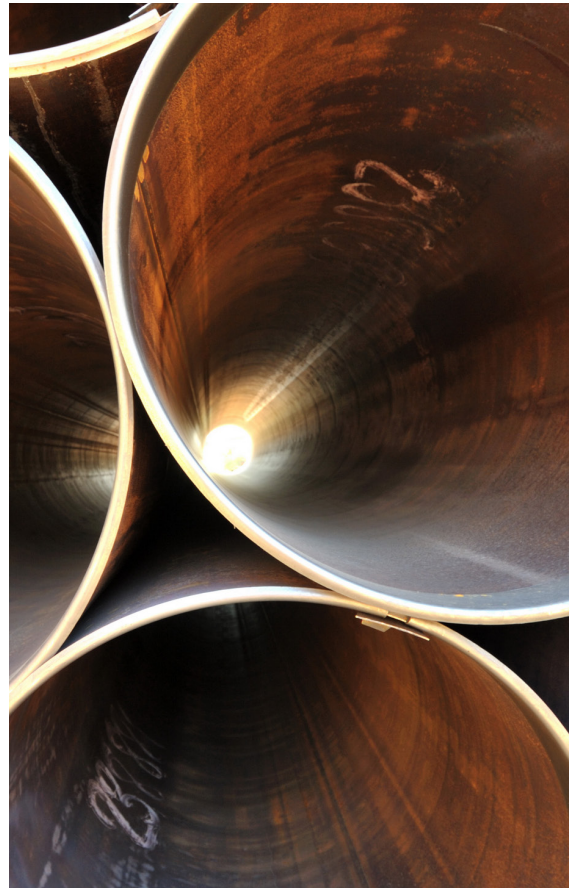
Standard feasibility range

Prior acceptance by the mill is mandatory

### Pipeline Steels

Thickness Capability [mm] <15 20 25 30 40

API5L / ISO 3183 (EN 10208/1/2) - Normalizing rolled					
Grade B / L245 N	✓	✓	✓	✓	✓
X42 / L290 N	✓	✓	✓	✓	✓
X46 / L320 N	✓	✓	✓	✓	✓
X52 / L360 N	✓	✓	✓	✓	✓
X56 / L390 N	✓	✓	✓	✓	✓
X60 / L415 N	✓	✓	✓	✓	✓
API5L / ISO 3183 (EN 10208/1/2) - Thermomechanical controlled rolling (TMCP)					
Grade B / L245 M	✓	✓	✓	✓	✓
X42 / L290 M	✓	✓	✓	✓	✓
X46 / L320 M	✓	✓	✓	✓	✓
X52 / L360 M	✓	✓	✓	✓	✓
X56 / L390 M	✓	✓	✓	✓	✓
X60 / L415 M	✓	✓	✓	✓	✓
X65 / L450 M	✓	✓	✓	✓	✓
X70 / L485 M	✓	✓	✓	✓	✓
GOST					
ST3sp - K46	✓	✓	✓	✓	✓
15GF - K50	✓	✓	✓	✓	✓
17G1S - K52	✓	✓	✓	✓	✓
15G2SF - K55	✓	✓	✓	✓	✓



Standard feasibility range

Prior acceptance by the mill is mandatory

# Grades and standards continued...

## Structural Steel for Bridges

Thickness Capability [mm]                      15      20      30      32      40      50

GOST 6713-91	15HSND-2						
STAS 12187-88	OL 37 EP						
	OL 52 EP						

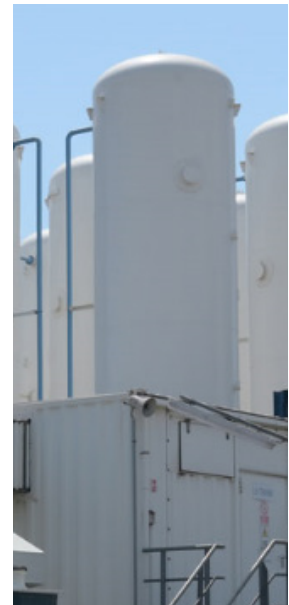
Standard feasibility range                      Prior acceptance by the mill is mandatory



## Boilers & Pressure Vessel Steels

Thickness Capability [mm]                      <25      30      36      40      50      60      70      80      100

EN 10028-2	P235GH/ P265GH								
	P295GH								
	P355GH								
	16Mo3								
EN 10028-3	P275NH								
	P275NL1/ NL2								
	P355N/NH								
	P355NL1/NL2								
ASTM A 515/A515M	P460NL1/NL2								
	A515 G60								
ASTM A 516/A516M	A515 G70(CVN)								
	A515 G60(CVN)								
	A516 G60								
	A516 G60(PWHT)								
	A516 G70(CVN)								
	A516 G70								
ASTM A 537/A537M	A516 G70(PWHT)								
	A537 CLS1								



Standard feasibility range                      Prior acceptance by the mill is mandatory

(A516 – 4 Cycles Post-Weld Heat Treatment (PWHT) as per ASME, guaranteed 1 cycle without request, Z test, Shear area, CVN -46° Celsius )  
 Legend: CVN – Charpy V Notch

# Grades and standards continued...

## Shipbuilding

ASTM A131/A131M	A; B; D; E; AH32; DH32; EH32; FH32; AH36; FH36; DH36; EH36
BV; LR; ABS; RINA	A; B; D; E; AH32; DH32; EH32; AH36; DH36; EH36
GL	A; B; D; E; A32; D32; E32; A36; D36; E36
DNV	NVA; NVB; NVD; NVE; NVA32; NVD32; NVE32;NVA36; NVD36; NVE36
DNV-GL	VL A; VL B; VL D; VL E; VL A32; VL D32; VL E32;VL A36; VL D36; VL E36; VL F 32; VL F 36
NKK	KA; KB; KD; KE; KA32; KD32; KE32; KA36; KD36;KE36

Delivery state – According to class societies requirements (LR, DNV GL, BV, ABS, RINA, NKK)

Thickness Capability [mm]      25      50      60      70      80      100

SHIP-A/B						
SHIP-D						
SHIP-D32						
SHIP-D36						
SHIP-E/E32						
SHIP-E36						
SHIP-F36						

Standard feasibility range

Prior acceptance by the mill is mandatory







## Grades and standards continued...

Register	Grade	Deoxidation	12 mm cut for wide strip	<15	20	25	30	35	40	50	60	100
NKK	KA, KB	Killed Si+Mn	AR, NR, N									
	KD	Killed Si+Mn+Al	AR, NR, N						N			
	KE	Killed Si+Mn+Al	N									
	KA32, KD32, KA36, KD36	Killed Si+Mn+Al	NR, N				N					
	KE32, KE36	Killed Si+Mn+Al+N	N									
RINA	A, B	Si Killed	AR									
	A, B, C	FG Al	AR, NR, N						NR, N			
	E	FG Al	N									
	AH32, AH36	FG Al	NR, N						N			
	AH32, AH36	FG Al+Nb	N									
	DH32, DH36	FG Al	NR, N				N					
	DH32, DH36	FG Al+Nb	N									
	EH32, EH36	FG Al	N									
RINA Z25	All Grades Z15, Z25											
ABS	A, B	Si Killed	AR									
	A, B, D	Si - Al Killed	NR, N			N						
	E	Si - Al Killed	N									
	AH32, AH36, DH32, DH36	FG Al+Nb+V+Ti	NR, N			N						
	EH32, EH36	FG Al+Nb+V+Ti	N									
	A, B, D (sheets HSM)	Si - Al Killed	NR									
	AH32, AH36, DH32, DH36 (sheets HSM)	FG Al+Nb+V+Ti	NR									
ABS Z25	All Grades Z15, Z25											
ABS Z35/ up to 60 mm	All Grades Z35											



## Grades and standards continued...

Register	Grade	Deoxidation	12 mm cut for wide strip	<15	20	25	30	35	40	50	60	100
DNL_GL	VL A, VL b, VL D	FG AI	AR									
	VL A, VL b, VL D, VL E	FG AI+Nb	N									
	VL A, VL b, VL D	FG AI+Nb	NR									
	VL E	FG AI	N									
	VL A32, VL A36, VL D32, VL D36	FG AI+Nb	NR									
	VL A32, VL A36, VL D32, VL D36, VL E36	FG AI+Nb	N									
	VL E36	FG AI	N									
	VL F36	FG AI+Nb	N									
	VL 410-0 A, VL 460-0 A	FG AI	AR									
	VL 410-0 N, VL 410-0 FN, VL 460-0 N, VL 460-0 FN, VL 490-0 N, VL 490-0 FN, VL 510-0 FN	FG AI	N									
	VL 4-2	FG AI+Nb+V	N									
	VL A, VL b, VL D, VL E (sheets HSM)	FG AI	NR, N									
	VL A32, VL A36, VL D32, VL D36, VL E36 (sheets HSM)	FG AI	NR, N									
DNL_GL Z25,Z35	VL A, VL B, VL D, VL E											
	VL A32, VL A36, VL D32, VL D36, VL E36											

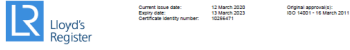
Legend: Deoxidation K - killed | FG - fine grain. Delivery condition AR - as rolled | NR - normalized rolled | N - normalized

Homologation	Grade	Deoxidation	12 mm cut for wide strip	<15	20	25	30	36	45	50	60	100
TUV + PED	P235GH, P265GH, P295GH, P355GH	Plates	N									
	S235JR, S235J2, S275JR, S275J2, S355J2	Plates	N									
	S355K2	Plates	N									
	S235JR, S235J2, S275JR, S275J2, S355J2, S355K2	Plates	CR									
	P275NH, P275NL1, P275 NL2	Plates	N									
	P355N, P355NH, P355NL1, P355 NL2	Plates	N									
	P460NH, P460NL1, P460NL2	Plates	N									
	S235JR, S235J2, S275JR, S275J2, S355J2	Strip, plate from strip	CR, N									

### Standard feasibility range

Legend: Delivery condition CR - Controlled rolled | N - normalized

# Galati Systems & Products Certifications



Current issue date: 12 March 2022  
Expiry date: 12 March 2023  
Certificate number: ISO 14001-18 March 2011

## Certificate of Approval

This is to certify that the Management System of  
**LIBERTY GALATI S.A.**

1 Smeardan St., 800968 Galati, Romania

has been approved by Lloyd's Register to the following standards:

**ISO 14001:2015**

Approval number(s): ISO 14001 - 0027517

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

The scope of this approval is applicable to:

On site activities including and associated with: Development, production (including associated support processes) and delivery of sinter, hot iron, lime, liquid steel, continuous cast blanks, hot rolled plates, hot rolled and cold rolled strips and plates, pickled and oiled hot rolled strips, galvanized strips and plates, organic coated strips, energetic fluids, auxiliary products coming from the manufacturing flow. Port operator for loading/unloading of ships, goods storage and stacking, cleaning of holds and stores of ships.

Daniel Oliva Marcilio de Souza

Area Operations Manager - South Europe

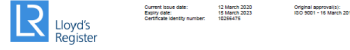
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for and on behalf of Lloyd's Register Quality Assurance Limited



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Current issue date: 12 March 2022  
Expiry date: 12 March 2023  
Certificate number: ISO 9001-18 March 2011

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**LIBERTY GALATI S.A.**

Sr. Smeardan, nr. 1, 800968 Galati, Romania

has been approved by Lloyd's Register to the following standards:

**ISO 9001:2015**

Approval number(s): ISO 9001 - 0027516

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The scope of this approval is applicable to:

Development, production (including associated support processes) and delivery of sinter, hot iron, lime, liquid steel, continuous cast blanks, hot rolled plates, hot rolled and cold rolled strips and plates, pickled and oiled hot rolled strips, galvanized strips and plates, organic coated strips, energetic fluids, auxiliary products coming from the manufacturing flow. Port operator for loading/unloading of ships, goods storage and stacking, cleaning of holds and stores of ships.

Daniel Oliva Marcilio de Souza

Area Operations Manager - South Europe

Issued by Lloyd's Register (Romania) (SR)

for and on behalf of Lloyd's Register Quality Assurance Limited



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Current issue date: 16 September 2019  
Expiry date: 16 September 2021  
Certificate number: OHSAS 18001-16 September 2009

## Certificate of Approval

This is to certify that the Management System of  
**LIBERTY GALATI S.A.**

1 Smeardan St., 800968 Galati, Romania

has been approved by Lloyd's Register to the following standards:

**OHSAS 18001:2007**

Approval number(s): OHSAS 18001 - 0027429

The scope of this approval is applicable to:

On-site activities including and associated with:  
Manufacturing of casting, sheet, cast slab, hot & cold rolled and plates.

Daniel Oliva Marcilio de Souza

Area Operations Manager - South Europe

Issued by Lloyd's Register (Romania) (SR)

for and on behalf of Lloyd's Register Quality Assurance Limited



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Current issue date: 16 September 2019  
Expiry date: 16 August 2021  
Certificate number: ISO 50001-16 September 2019

## Certificate of Approval

This is to certify that the Management System of  
**LIBERTY GALATI S.A.**

1 Smeardan St., 800968 Galati, Romania

has been approved by Lloyd's Register to the following standards:

**ISO 50001:2011**

Approval number(s): ISO 50001 - 0027429

The scope of this approval is applicable to:

Activities performed in the perimeter of Liberty Galati SA related with production of hot rolled heavy steel plates, hot rolled steel strips and sheets, cold rolled steel strips and sheets, galvanized steel strips and sheets.

Daniel Oliva Marcilio de Souza

Area Operations Manager - South Europe

Issued by Lloyd's Register (Romania) (SR)

for and on behalf of Lloyd's Register Quality Assurance Limited



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# Contact with the mill

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For further information visit [www.libertysteelgroup.com](http://www.libertysteelgroup.com)

