



TOSYALI Demir Çelik

Yassı Yapısal



Tosyalı
Demir Çelik

www.tosyalidemircelik.com.tr

ENG



TOSYALI Demir Çelik

Yassı Yapısal



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TOSYALI FOR A SUSTAINABLE LIFE

As Tosyalı, we strengthen our position in the steel industry not only through product quality but also sustainability-focused efforts. By declaring "Tosyalı for a Sustainable Life" we commit to green steel and decarbonization initiatives, demonstrating our dedication to environmental responsibilities.

Our responsible production and consumption approach includes the use of eco-friendly technologies, and the generation of energy from renewable sources ensures that our production maintains a low carbon footprint. At the same time, our production with a high scrap ratio contributes to the circular economy.

With the start of the Solar Power Plant (SPP) project across our facilities, we are proud of having the world's largest rooftop Solar Power Plant. Therefore, we not only reduce our energy costs but also contribute to making our steel production facilities among the cleanest and greenest in the world. Through SPP investments planned for self-consumption, we will soon be able to meet a significant portion of our electricity demand from renewable energy.

At our R&D Center, we focus on sustainability-driven projects, constantly reducing our carbon footprint through process improvements. In addition, we are pursuing the use of hydrogen as an alternative to fossil fuels in production. Through innovation and technological advancements, we pave the way for environmentally friendly methods in steel production.

With a high rate of waste recycling and a commitment to the principles of the circular economy, we strive to leave a sustainable world for future generations. At Tosyalı, we take maximum effort to ensure a livable world for tomorrow. By taking steps today for a sustainable future, we play a pioneering role in the steel industry and maintain our determination to minimize environmental impacts.

GREEN STEEL



TOSYALI Demir Çelik
Yassı Yapısal

About Us

Tosyalı Demir Çelik İskenderun Facility stands out as one of Türkiye's most important production complexes in steel manufacturing, with its advanced technology and high-efficiency-oriented infrastructure. At Tosyalı Demir Çelik, the production of nearly 500 different steel grades is carried out using advanced technologies. Quantum Arc Furnaces, known worldwide for their energy efficiency, have been used in Türkiye for the first time—and exclusively—at this facility. This technology ensures a 30% reduction in electricity usage and a 15% reduction in natural gas consumption, while the use of renewable energy and efficient scrap utilization enables a carbon footprint that is 70% lower than blast furnaces and 20% lower than conventional arc furnaces.

Tosyalı Demir Çelik İskenderun Facility has two steel plants with a total liquid steel production capacity of 4 million tons per year, and a port with an annual handling capacity of 20 million tons, equipped with two berths. With its flat and long products that feature a low carbon footprint, it has become one of the key centers of green steel production in Türkiye. Thanks to its wide product range in the flat steel category, it is a strong global supplier for many industries, from construction to automotive and white goods.

Our Vision

To be the architect of a better future through green steel production.

Our Mission

To represent the best reference to the world as one of the most important and strategic iron and steel companies in Europe and Africa.



Environmentalist



World Company



Sustainability



Innovator



Experienced Staff



Efficiency Oriented



Industry Leading

Tosyalı Demir Çelik Flat Steel Production Facility



TOSYALI Demir Çelik
Yasa Yapısı

2020

Construction started on 459.000 m² area.



2023

Completion of construction and start of production



1500+

Direct employment

4 MILLION TONS

Annual crude steel production capacity of over 4 million tons

QUANTUM ARC FURNACE

Environmentally friendly, innovative and efficient production

Symbols and Abbreviations Used for Chemical Elements

Symbol	Element
C	Carbon
Mn	Manganese
P	Phosphorus
S	Sulphur
Si	Silicon
Al	Aluminium
Cu	Copper
N	Nitrogen
O	Oxygen
H	Hydrogen
Ca	Calcium
Ti	Titanium
V	Vanadium
Cr	Chromium
Ni	Nickel
Mo	Molybdenum
Nb	Niobium
B	Boron
Sn	Tin
Fe	Iron
Zn	Zinc
Pb	Lead
As	Arsenic
W	Tungsten
Zr	Zirconium

Symbols and Abbreviations Used for Mechanical Tests

Symbol	Explanation
R_e	Yield Strength (N/mm ²)
Rm	Tensile Strength (N/mm ²)
Rp 0,2	Tensile Strength at Elevated Temperature (N/mm ²)
A	Elongation
A_5	Elongation (L=5,6x√S0)
A50	Elongation (L=50 mm)
A80	Elongation (L=80 mm)
A80	Elongation (L=100 mm)
A200	Elongation (L=200 mm)
S_0	Cross sectional area of test sample (mm ²)
L_0	Initial length of test sample (mm)
d	Nominal Thickness (mm)
t	Tonne
Impact	Impact Test
KVc	Impact Energy (J)
Temp.	Test Temperature (0°C)
Bending	Bending Test
Btmr	Bending Test Mandrel Radius (mm)
Btmd	Bending Test Mandrel Diameter (mm)
Width	Transverse Test Sample
Length	Longitudinal Test Sample
HRB	Hardness Rockwell B
min.	Minimum
max.	Maximum
=	Equal
<	Less Than
≤	Less Than or Equal
>	Greater Than
≥	Greater Than or Equal
ppm	Parts per Million
DWTT	Drop Weight Tear Test
Std.	Standard
Af.	Elongation after fracture, expressed in percent and rounded to the nearest percent.

CERTIFICATES

CERTIFICATES

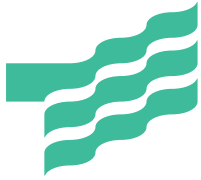
Certificate Name	Inspection Type
TS ISO / IEC 27001: 2013	Information Security Management System
ISO / 14001:2015	Environmental Management Systems
ISO 5001:2011	Energy Management Systems
OHSAS 18001:2007	Occupational Health and Safety Management Systems
ISO 9001:2015	Total Quality Management System
BS EN ISO 9001:2015	Long Products
Document of Environmental Permission and Licence	Production
TSE Certificate of Conformity to Turkish Standards	Long Products
CE Marking Certificate	Flat Products

CERTIFICATES

Institution	Country of Receipt	Standard
TÜV	TÜRKİYE	ISO 14001:2015
TÜV	TÜRKİYE	OHSAS 18001:2007
TÜV	TÜRKİYE	ISO 9001:2015
CARES	TÜRKİYE	ISO 9001:2015 BS 4449:2005
Ministry of Environment and Urbanisation and Climate Change	TÜRKİYE	National Legislations
TSE	TÜRKİYE	TS 708
CARES	UNITED KINGDOM	CARES Sustainability Scheme Appendix 01
CARES	UNITED KINGDOM	BS EN ISO 9001



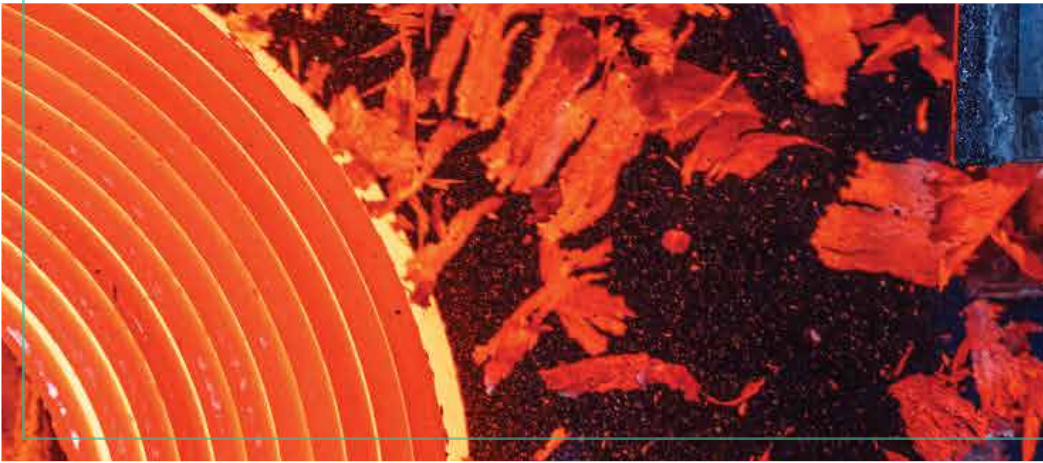
QUANTUM FURNACE
QUANTUM FURNACE
QUALITY
QUALITY
INVESTMENT
INVESTMENT
PRODUCT RANGE
PRODUCT RANGE
PRODUCTION
PRODUCTION
MACHINE
MACHINE
ELECTRONIC
ELECTRONIC
AUTOMATION
AUTOMATION
HIGH TECHNOLOGY
HIGH TECHNOLOGY
INDUSTRY 4.0
INDUSTRY 4.0
IRON & STEEL
IRON & STEEL
SUSTAINABILITY
SUSTAINABILITY
GREEN STEEL
GREEN STEEL
DECARBONISATION
DECARBONISATION



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Flat Steel Product Qualities and Application Fields



FLAT STEEL PRODUCT QUALITIES and APPLICATION FIELDS			
Application Field	Standard	Standard Quality	Tosyalı Quality No
HOT ROLLED STEELS SUITABLE FOR COLD ROLLING and GALVANIZING	DIN 1614-Part 1	St 22	TOS2881
		St 24	TOS2882
HOT ROLLED LOW CARBON STEELS SUITABLE FOR COLD FORMING	EN 10111-2008	DD11	TOS2885
		DD12	TOS2883
		DD13	TOS2884
		DD14	TOS2886
NON-ALLOYED GENERAL STRUCTURAL STEELS	EN 10025 Part 2-2004	S235JR	TOS3750
		S235JR+N-Low Si	TOS3680
		S235J2+N-Low Si	TOS3682
		S275JR	TOS4450
		S275J2+N	TOS4652
		S355J0	TOS5221
		S355JR	TOS5250
		S355J2	TOS5227
		S355J2+N	TOS5652
GENERAL STRUCTURAL STEELS SUITABLE FOR GALVANIZING and BENDING	EN 10025 Part 2-2004	S355J2C+N-Low Si	TOS5586
		S355JR+N-Low Si	TOS5680
		S355JR-Low Si	TOS5280
		S355J0-Low Si	TOS5281
		S355J2+N-Low Si	TOS5682
NON-ALLOYED GENERAL STRUCTURAL STEELS SUITABLE FOR GALVANIZING IN ACCORDANCE WITH CLASS 1 STANDARD	EN 10025 Part 2-2004	S355J2-Low Si	TOS5287
		S235JR-Low Si	TOS3780
		S235J0-Low Si	TOS3781
		S235J2-Low Si	TOS3782
		S235J2	TOS3727
		S275JR-Low Si	TOS4480
GENERAL STRUCTURAL STEELS SUITABLE FOR COLD FORMING, BENDING and PLASTERING	EN 10025 Part 2-2004	S275J0	TOS4421
		S275J2	TOS4427
		S235JRC	TOS3550
		S355J2C	TOS3752
		S235JRC+N	TOS3556
		S235JRC+N-Low Si	TOS3586
GENERAL STRUCTURAL STEELS SUITABLE FOR COLD FORMING, BENDING and PLASTERING	EN 10025 Part 2-2004	S275JRC	TOS4550
		S275J2C	TOS4452
		S275J2C+N	TOS4556
		S355JRC-Low Si	TOS5580
		S355J0C-Low Si	TOS5581
		S355J2C-Low Si	TOS5552
		S355J2C	TOS5552
		S355J2C+N	TOS5536
	EN 10025 Part 2-2004	S355JRC	TOS5550
		S355J2C+N	TOS5576
		S355J2C+N-Low Si	TOS5586

Flat Steel Product Qualities and Application Fields

FLAT STEEL PRODUCT QUALITIES and APPLICATION FIELDS			
Application Field	Standard	Standard Quality	Tosyalı Quality No
STEELS RESISTANT TO ATMOSPHERIC CORROSION	EN 10025 Part 5-2004	S235J0W	TOS3351
		S235J2W	TOS3352
		S355J0W	TOS5351
		S355J2W	TOS5352
		S355J0WP	TOS5361
		S355J2WP	TOS5362
HIGH-STRENGTH DUAL-PHASE STEELS SUITABLE FOR COLD FORMING	EN 10338-2009	HCT500X (DP 500)	TOS5267
HIGH-STRENGTH DUAL-PHASE WHEEL STEELS SUITABLE FOR COLD FORMING and PLASTERING	EN 10338-2010	HDT580X (DP 600)	TOS5268
HIGH-STRENGTH DUAL-PHASE HOT ROLLED STEELS SUITABLE FOR COLD ROLLING	EN 10338-2010	HCT600X (DP 600)	TOS5269
		HCT780X (DP 780)	TOS5270
BOILER STEELS	EN 10028 Part 2- 2008	P235GH	TOS3679
		P265GH	TOS3779
		P295GH	TOS4459
		P355GH	TOS5279
BOILER STEELS (ALLOYED)	EN 10028 Part 3- 2008	P355NL1	TOS5272
		P355NH	TOS5288
BOILER PIPE STEEL	EN 10217- 2-2005	P235GH-Low Si	TOS3789
	EN 10217- 3-2005	P275NL1-Low Si	TOS4485
LPG CYLINDER STEELS	EN 10120- 2008	P245NB	TOS4458
		P265NB	TOS4468
		P310NB	TOS5078
		P355NB	TOS5278
GENERAL STRUCTURAL STEELS SUITABLE FOR HEAT TREATMENT	EN 10083- Part 2-2006	28MN6	TOS7028
		C35E	TOS7035
		C60E	TOS7060
GENERAL STRUCTURAL STEELS SUITABLE FOR HEAT TREATMENT	EN 10083- Part 3-2006	30MnB5	TOS7030
		34MNB5	TOS7034
		26MNB5	TOS7033
		22MNB5	TOS7022
STEELS SUITABLE FOR COLD FORMING and BENDING WITH HIGH YIELD STRENGTH	EN 10149 Part 2-1995	S315MC-Low Si	TOS5788
		S355MC	TOS5760
		S355MC-Low Si	TOS5789
		S420MC-Low Si	TOS5780
		S460MC-Low Si	TOS5781
		S500MC	TOS5763
		S550MC	TOS5764
		S600MC	TOS5265
		S700MC	TOS5266
HOT ROLLED WELDABLE FINE GRAIN STRUCTURAL STEELS in NORMALIZED CONDITION	EN 10025 Part 3-2019	S460N	TOS4602
HOT ROLLED HIGH YIELD STRUCTURAL STEELS	EN 10025 Part 4-2019	S460M	TOS5862



Flat Steel Product Qualities and Application Fields



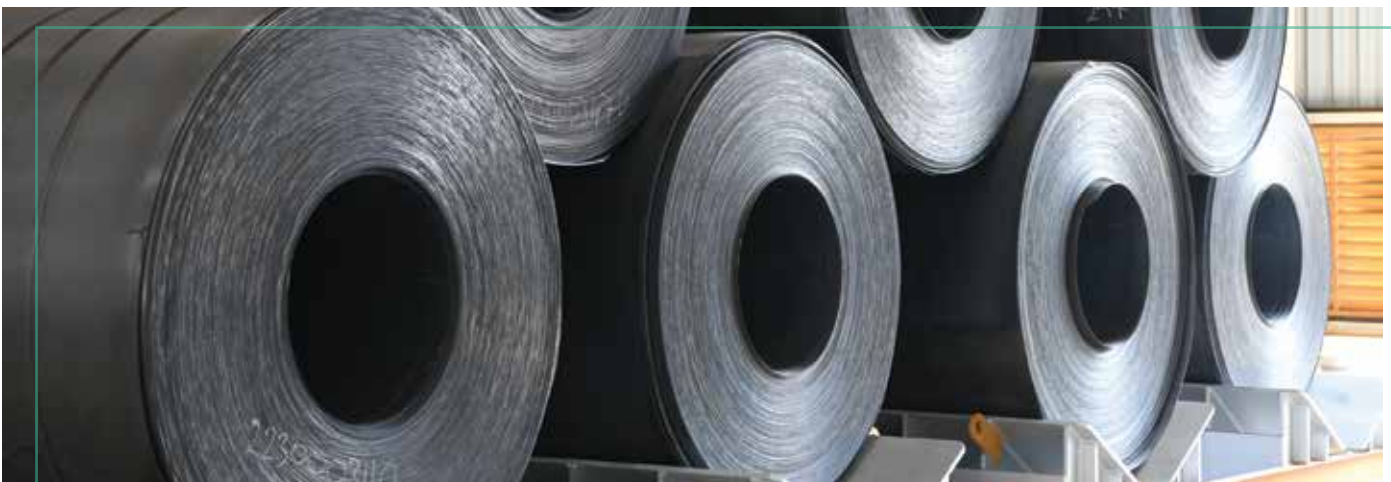
Cold Rolling Steels
Pressure Pipe Steels
LPG Cylinder Steels



Boiler Steels
Boiler Pipe Steels
Microalloyed Steels



Electrical Steels
Oil Drill Pipe Steels



Flat Steel Product Qualities and Application Fields

FLAT STEEL PRODUCT QUALITIES and APPLICATION FIELDS			
Application Field	Standard	Standard Quality	Tosyalı Quality No
MICROALLOYED STEELS SUITABLE FOR COLD ROLLING and GALVANIZING	EN 10149 Part 2-1995	S315MC-Low Si	TOS5788
		S355MC-Low Si	TOS5789
		S420MC-Low Si	TOS5780
		S460MC-Low Si	TOS5781
PRESSURE PIPE STEELS	EN 10217 Part 1-2005	P235TR1	TOS3760
		P235TR1-Low Si	TOS3785
OIL PIPE STEELS	API 5L 45 th Edition-2012 / ISO 3183-2012	A / L210 / PSL1	TOS9030
		B / L245 / PSL1	TOS9035
		X42 / L290 / PSL1	TOS9042
		X46 / L320 / PSL1	TOS9046
		X52 / L360 / PSL1	TOS9052
		X56 / L390 / PSL1	TOS9056
		X60 / L415 / PSL1	TOS9060
		L415NE / PSL2	TOS9062
		X65 / L450 / PSL1	TOS9065
		X70 / L485 / PSL1	TOS9070
OIL PIPE STEELS DESIRED WITH STANDARD YIELD TENSILE STRENGTH RATE	API 5L 45 th Edition-2012 / ISO 3183-2012	BM / L245M / PSL2	TOS9036
		X42M / L290M / PSL2	TOS9043
		X46M / L320M / PSL2	TOS9047
		X52M / L360M / PSL2	TOS9053
		X56M / L390M / PSL1	TOS9057
		X60M / L415M / PSL2	TOS9061
		X65M / L450M / PSL2	TOS9066
OIL PIPE STEELS SUITABLE FOR SRM PIPE PRODUCTION OR NORMALIZATION	API 5L 2012	X70M / L485M / PSL2	TOS9071
		BN / L245N / PSL2	TOS9136
		X42N / L290N / PSL2	TOS9143
OIL DRILLING PIPE STEELS	API 5L 2011	X46N / L320N / PSL2	TOS9147
		J55 Upgradeable (Tubing)	TOS9130
		J55 Upgradeable (Casing)	TOS9275
		J55 Upgradeable	TOS9230
		J55 Upgradeable	TOS9231
		J55 Regular	TOS9155
		J55 Regular	TOS9255
HOT ROLLED STEELS SUITABLE FOR COLD ROLLING FOR ELECTRICAL STEEL PRODUCTION	EN 10106-2007	5CTJ55	TOS9055
		M350 - 50A	TOS3550
		M400 - 50A	TOS4050
		M400 - 65A	TOS4065
		M470 - 50A	TOS4750
		M530 - 50A	TOS5350
		M530 - 65A	TOS5365

Flat Steel Product Qualities and Application Fields

HOT ROLLED STEELS SUITABLE FOR COLD ROLLING and GALVANIZING

Standard: DIN 1614-Part1-1986

Chemical Composition (%)

Tosyalı Quality No	Standard	Quality	C	Mn	P	S	N(1)	Al
			max	max	max	max	max	min
TOS2881	DIN 1614-1	St 22	0.10	0.45	0.035	0.035	0.007	—
TOS2882	DIN 1614-1	St 24	0.08	0.40	0.025	0.025	—	0.020

HOT ROLLED LOW CARBON STEELS SUITABLE FOR COLD FORMING

Standard: EN 10111-2008

Chemical Composition (%)

Tosyalı Quality No	Standard	Quality	C	Mn	P	S	Ti
			max	max	max	max	min
TOS2883	EN 10111	DD12	0.09	0.4	0.03	0.030	—
TOS2884	EN 10111	DD13	0.07	0.35	0.025	0.025	—
TOS2885	EN 10111	DD11	0.12	0.60	0.045	0.045	—
TOS2886	EN 10111	DD14	0.06	0.35	0.025	0.025	0.01

Explanations

1. $0.20 \leq \text{Cu} \% \leq 0.40$
2. Max. 50 ppm of boron is added to improve the forming property.
3. Deoxidation methods of these products are fully-killed. Minimum aluminium to nitrogen ratio is 2:1.

HOT ROLLED LOW CARBON STEELS SUITABLE FOR COLD FORMING

Standard: EN 10111-2008

Mechanical Properties

Tosyalı Quality No	Standard	Quality	Re		Rm(1)	A(%)			Bending
			N/mm²			A80		A5	(en.:180°)
			1.5≤d<2	2≤d≤8		1.5≤d<2	2≤d<3	3≤d<8	kmy
					max	min	min	min	d:thickness
TOS2883	EN 10111	DD12	170 - 340	170 - 320	420	25	26	30	0
TOS2884	EN 10111	DD13	170 - 330	170 - 310	400	28	29	33	0
TOS2885	EN 10111	DD11	170 - 360	170 - 340	440	23	24	28	1 d
TOS2886	EN 10111	DD14	170 - 310	170 - 290	380	31	32	36	1 d

NON-ALLOYED GENERAL STRUCTURAL STEELS

Standard: EN 10025-Part 2-2004

Chemical Composition (%)

Tosyalı Quality No	Standard	Quality	C (max.)		Mn	P	S	Cu	Al(1)	N(1)	Ceq(2)
			d≤16	16<d≤40	max	max	max	max	min	max	max
TOS3750	EN 10025-2	S235JR	0.17	0.17	1.4	0.035	0.035	0.55	—	0.012	0.35
TOS3650	EN 10025-2	S235JR+N	0.17	0.17	1.4	0.025	0.025	0.55	0.200	—	0.35
TOS3652	EN 10025-2	S235J2+N	0.17	0.17	1.4	0.025	0.025	0.55	0.020	—	—
TOS4450	EN 10025-2	S275JR	0.21	0.21	1.5	0.035	0.035	0.55	—	0.012	0.40
TOS4652	EN 10025-2	S275J2+N	0.18	0.18	1.5	0.025	0.025	0.55	0.020	—	0.40

NON-ALLOYED GENERAL STRUCTURAL STEELS

Standard: EN 10025-Part 2-2004

Mechanical Properties

Tosyalı Quality No	Standard	Quality	Re		Rm(4)		A(%, min.					Impact (length)(2)	
			N/mm²		N/mm²		A80			A5			
			min		min / max		min						
			d: thickness, mm		d: thickness, mm		d: thickness, mm				Temp.	min.	
			≤16	16<d≤40	d<3	3≤d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d≤40	°C	J
TOS3750	EN 10025-2	S235JR	235	225	360-510	360-510	16	17	18	19	24	20	27(3)
TOS3650	EN 10025-2	S235JR+N	235	225	360-510	360-510	16	17	18	19	24	20	27
TOS3652	EN 10025-2	S235J2+N	235	225	360-510	360-510	16	17	18	19	24	-20	27
TOS4450	EN 10025-2	S275JR	275	265	430-580	410-560	14	15	16	17	21	20	27(3)
TOS4652	EN 10025-2	S275J2+N	275	265	430-580	410-560	14	15	16	17	21	-20	27



HOT ROLLED WELDABLE FINE GRAIN STRUCTURAL STEELS in NORMALIZED CONDITION																	
Standard: EN 10025-Part 3-2019																	
Chemical Composition (%)																	
Tosyalı Quality No	Standard	Quality	C	Mn	Si	P	S	Cr	Al	Cu	Mo	Ti	V	Nb	Ni	N	CE(IIW)
			max	max	max	max	max	max	min	max	max	max	max	max	max	max	max%
TOS4602	EN 10025-3	S460N	0,20	1,00-1,70	0,60	0,030	0,025	0,30	0,02	0,55	0,10	0,05	0,20	0,05	0,80	0,025	0,53

- Explanations**
- If sufficient nitrogen-binding elements are present, the minimum total aluminium content does not apply.
 - Carbon equivalent, CEV (IIW) % = C + Mn / 6 + (Cr + Mo + V) / 5 + (Ni + Cu) / 15

HOT ROLLED WELDABLE FINE GRAIN STRUCTURAL STEELS in NORMALIZED CONDITION										
Standard: EN 10025-Part 3-2019										
Mechanical Properties										
Tosyalı Quality No	Standard	Quality	R _e N/mm ² (kg/mm ²)			R _m N/mm ² (kg/mm ²)	A (%) min	Impact (Long)		Bend (Trans, 180°) mrb (d:thickness)
			d≤16	16<d≤40	40<d≤60			Temp.	KV _c	
			min	min	min			°C	J	
TOS4602	EN 10025-3	S460N	460 (46.9)	440 (44.9)	-	540-720 (55.1-73.4)	17	-20	40	4 d

NON-ALLOYED GENERAL STRUCTURAL STEELS												
Standard: EN 10025-Part 2-2004												
Chemical Composition (%)												
Tosyalı Quality No	Standard	Quality	C (max)		Si	Mn	P	S	Cu	Al(1)	N(1)	Ceq(2)
			d≤16	16<d≤40	max	max	max	max	max	min	max	max
TOS5221	EN 10025-2	S355J0	0.20	0.20	0.55	1,6	0.030	0.030	0.55	—	0.012	0.45
TOS5250	EN 10025-2	S355JR	0.24	0.24	0.55	1,6	0.035	0.035	0.55	—	0.012	0.45
TOS5227	EN 10025-2	S355J2	0.20	0.20	0.55	1,6	0.025	0.025	0.55	—	—	0.45
TOS5652	EN 10025-2	S355J2+N(1)	0.20	0.20	0.55	1,6	0.025	0.025	0.55	0.020	—	0.45

- Explanations**
- If the chemical composition of the steel contains min. 0.020% aluminum, the upper limit of nitrogen is not applied.
 - For the calculation of Ceq, the formula %CE (IIW) = C+Mn/6+(C+Mo+V)/5+(Ni+Cr)/15 is used.

NON-ALLOYED GENERAL STRUCTURAL STEELS													
Standard: EN 10025-Part 2-2004													
Mechanical Properties													
Tosyalı Quality No	Standard	Quality	Re		Rm(2)		A(%), min.					Impact (length)(3)	
			N/mm²		N/mm²		A80			A5			
			min.		min / max		min.						
			d: thickness, mm		d: thickness, mm		d: thickness, mm					Temp.	min.
				16<d≤40	d<3	3≤d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d<40	°C	J
TOS5221	EN 10025-2	S355J0	355	345	510-680	470-630	13	14	15	16	20	0	27(4)
TOS5250	EN 10025-2	S355JR	355	345	510-680	470-630	13	14	15	16	20	20	27
TOS5227	EN 10025-2	S355J2	355	345	510-680	470-630	13	14	15	16	20	-20	27(4)
TOS5652	EN 10025-2	S355J2+N(1)	355	345	510-680	470-630	13	14	15	16	20	-20	27

- Explanations**
- For the qualities with "+N" in the quality code, "hot forming" and/or "normalizing" can be performed by the customer.
 - Tensile test values are valid for "transverse" test samples.
 - Impact test is not applied for products with a thickness less than 6 mm.
 - Impact test is done upon request.

NON-ALLOYED GENERAL STRUCTURAL STEELS SUITABLE FOR GALVANIZING and BENDING

Standard: EN 10025-Part 2-2004

Chemical Composition (%)

Tosyalı Quality No	Standard	Quality	C (max)		Mn	P	S	Cu	Al(1)	N(1)	Ceq(2)
			d≤16	16<d≤40	max	max	max	max	max	max	max
TOS3780	EN 10025-2	S235JR	0.17	0.17	1,4	0,035	0,035	0,55	—	0,012	0,35
TOS3781	EN 10025-2	S235J0	0.17	0.17	1,4	0,030	0,030	0,55	—	0,012	0,35
TOS3782	EN 10025-2	S235J2	0.17	0.17	1,4	0,025	0,025	0,55	—	0,012	0,35
TOS4480	EN 10025-2	S275JR	0.21	0.21	1,5	0,035	0,035	0,55	—	0,012	0,40
TOS4481	EN 10025-2	S275J0	0.18	0.18	1,5	0,030	0,030	0,55	—	0,012	0,40
TOS4482	EN 10025-2	S275J2	0.18	0.18	1,5	0,025	0,025	0,55	—	0,012	0,40

Explanations

- If the chemical composition of the steel contains min. 0.020% aluminum, the upper limit of nitrogen is not applied.
- For the calculation of Ceq, the formula %CE (IIW) = C+Mn/6+(C+Mo+V)/5+(Ni+Cr)/15 is used.

NON-ALLOYED GENERAL STRUCTURAL STEELS SUITABLE FOR GALVANIZING and BENDING

Standard: EN 10025-Part 2-2004

Mechanical Properties

Tosyalı Quality No	Standard	Quality	Re		Rm(1)		A(%), min.					Impact (length)(3)	
			N/mm ²				A80			A5			
			min.		min / max		min.					Temp.	min.
			d: thickness, mm		d: thickness, mm		d: thickness, mm						
			≤16	16<d≤40	d≤3	3≤d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d≤40		
TOS3780	EN 10025-2	S235JR	235	225	360 - 510	360 - 510	16	17	18	19	24	20	27(3)
TOS3781	EN 10025-2	S235J0	235	225	360 - 510	360 - 510	16	17	18	19	24	0	27(3)
TOS3782	EN 10025-2	S235J2	235	225	360 - 510	360 - 510	16	17	18	19	24	-20	27(3)
TOS4480	EN 10025-2	S275JR	275	265	430 - 580	410 - 560	14	15	16	17	21	20	27(3)
TOS4481	EN 10025-2	S275J0	275	265	430 - 580	410 - 560	14	15	16	17	21	0	27
TOS4427	EN 10025-2	S275J2	275	265	430 - 580	410 - 560	14	15	16	17	21	-20	27

Explanations

- For the qualities with "+N" in the quality code, "hot forming" and/or "normalizing" can be performed by the customer.
- Tensile test values are valid for "transverse" test samples.
- Impact test is not applied for products with a thickness less than 6 mm.
- Impact test is done upon request.

NON-ALLOYED GENERAL STRUCTURAL STEELS SUITABLE FOR GALVANIZING IN ACCORDANCE WITH CLASS 1 STANDARD

Standard: EN 10025-Part 2-2004

Chemical Composition (%)

Tosyalı Quality No	Standard	Quality	C (max)		Si	Mn	P	S	Cu	Al(1)	N(1)	Ceq(2)
			d≤16	16<d≤40								
TOS5680	EN 10025-2	S355JR+N-Low Si	0.24	0.24	0.55	1,6	0.035	0.035	0.55	—	0.012	0.45
TOS5280	EN 10025-2	S355JR-Low Si	0.24	0.24	0.55	1,6	0.035	0.035	0.55	—	0.012	0.45
TOS5281	EN 10025-2	S355J0-Low Si	0.20	0.20	0.55	1,6	0.030	0.030	0.55	—	0.012	0.45
TOS5682	EN 10025-2	S355J2+N-Low Si	0.20	0.20	0.55	1,6	0.025	0.025	0.55	—	—	0.45
TOS5287	EN 10025-2	S355J2-Low Si	0.20	0.20	0.55	1,6	0.025	0.025	0.55	—	—	0.45

Explanations

1. If the chemical composition of the steel contains min. 0.020% aluminum, the upper limit of nitrogen is not applied.
2. For the calculation of Ceq, the formula %CE (IIW) = C+Mn/6+(C+Mo+V)/5+(Ni+Cr)/15 is used.

NON-ALLOYED GENERAL STRUCTURAL STEELS SUITABLE FOR GALVANIZING IN ACCORDANCE WITH CLASS 1 STANDARD

Standard: EN 10025-Part 2-2004

Mechanical Properties

Tosyalı Quality No	Standard	Quality	Re		Rm(2)		A(%, min.					Impact (length)(3)	
			N/mm ²				A80				A5		
			min.		min / max		min.					Temp.	min.
			d: thickness, mm		d: thickness, mm		d: thickness, mm						
			≤16	16<d≤40	d≤3	3<d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3<d≤40	°C	J
TOS5680	EN 10025-2	S355JR+N(1)-Low Si	355	345	510-680	470-630	13	14	15	16	20	20	27(4)
TOS5280	EN 10025-2	S355J-Low Si	355	345	510-680	470-630	13	14	15	16	20	20	27(4)
TOS5281	EN 10025-2	S355J0-Low Si	355	345	510-680	470-630	13	14	15	16	20	0	27(4)
TOS5682	EN 10025-2	S355J2+N(1)-Low Si	355	345	510-680	470-630	13	14	15	16	20	-20	27(4)
TOS5287	EN 10025-2	S355J2-Low Si	355	345	510-680	470-630	13	14	15	16	20	-20	27(4)

Explanations

1. For the qualities with "+N" in the quality code, "hot forming" and/or "normalizing" can be performed by the customer.
2. Tensile test values are valid for "transverse" test samples.
3. The impact test is not applied for products with a thickness less than 6 mm.
4. Impact test is done upon request.



GENERAL STRUCTURAL STEELS SUITABLE FOR COLD FORMING, BENDING and PLASTERING

Standard: EN 10025-Part 2-2004

Chemical Composition (%)

Tosyalı Quality No	Standard	Quality	C (max)		Mn	P	S	Ca (ppm)	Al(1)	Ceq(2)
			d≤16	16<d≤40	max	max	max		min.	max
TOS3550	EN 10025-2	S235JRC	0.17	0.17	1,4	0,035	0,035	20	0,020	0,35
TOS3552	EN 10025-2	S235J2C	0.17	0.17	1,4	0,025	0,025	20	0,020	0,35
TOS3556	EN 10025-2	S235JRC+N	0.17	0.17	1,4	0,035	0,035	20	0,020	0,35
TOS4550	EN 10025-2	S275JRC	0.21	0.21	1,5	0,035	0,035	0,55	0,020	0,40
TOS4552	EN 10025-2	S275J2C	0.18	0.18	1,5	0,025	0,025	20	0,020	0,40
TOS4556	EN 10025-2	S275J2C+N	0.18	0.18	1,5	0,025	0,025	20	0,020	0,40

Explanations

- If the chemical composition of the steel contains min. 0.020% aluminum, the upper limit of nitrogen is not applied.
- For the calculation of Ceq, the formula $\%CE (IIW) = C + Mn/6 + (C + Mo + V)/5 + (Ni + Cr)/15$ is used.

GENERAL STRUCTURAL STEELS SUITABLE FOR COLD FORMING, BENDING and PLASTERING

Standard: EN 10025-Part 2-2004

Mechanical Properties

Tosyalı Quality No	Standard	Quality	Re		Rm(3)		A(%), min.					Impact (length)(4)	
			N/mm²				A80			A5			
			min.		min / max		min.						
			d:thickness, mm		d:thickness, mm		d:thickness, mm					Sic.	min.
			≤16	16<d≤40	d<3	3≤d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d≤40	°C	J
TOS3550	EN 10025-2	S235JRC	235	225	360-510	360-510	16	17	18	19	24	20	27(5)
TOS3552	EN 10025-2	S235J2C	235	225	360-510	360-510	16	17	18	19	24	-20	27(5)
TOS3556	EN 10025-2	S235JRC+N (1)(2)	235	225	360-510	360-510	16	17	18	19	24	20	27(5)
TOS4550	EN 10025-2	S275JRC (2)	275	265	430-580	410-560	14	15	16	17	21	20	27(5)
TOS4552	EN 10025-2	S275J2C	275	265	430-580	410-560	14	15	16	17	21	-20	27(5)
TOS4556	EN 10025-2	S275J2C+N (1)(2)	275	265	430-580	410-560	14	15	16	17	21	-20	27(5)

Explanations

- For the qualities with "+N" in the quality code, "hot forming" and/or "normalizing" can be performed by the customer.
- For the qualities with "C" in the quality code, "cold forming" and/or "cold flanging" can be performed by the customer.
- Tensile test values are valid for "transverse" test samples.
- Impact test is not applied for products with a thickness less than 6 mm.
- Impact test is done upon request.

GENERAL STRUCTURAL STEELS SUITABLE FOR COLD FORMING, BENDING and PLASTERING										
Standard: EN 10025-Part 2-2004										
Mechanical Properties										
Tosyalı Quality No	Standard	Quality	Bending (1) (width, ≤90°, btmr)							
			Thickness, d (mm)							
			6<d≤7	7<d≤8	8<d≤10	10<d≤12	12<d≤14	14<d≤16	16<d≤18	18<d≤20
TOS3550	EN 10025-2	S235JRC	10	12	16	20	25	28	36	40
TOS3552	EN 10025-2	S235J2C	10	12	16	20	25	28	35	40
TOS3556	EN 10025-2	S235JRC+N	10	12	16	20	25	28	36	40
TOS4550	EN 10025-2	S275JRC	12	16	20	25	28	32	40	45
TOS4552	EN 10025-2	S275J2C	12	16	20	25	28	32	40	45
TOS4556	EN 10025-2	S275JRC+N	12	16	20	25	28	32	40	45

GENERAL STRUCTURAL STEELS SUITABLE FOR COLD FORMING, BENDING and PLASTERING												
Standard: EN 10025-Part 2-2004												
Chemical Composition (%)												
Tosyalı Quality No	Standard	Quality	C (max)		Si	Mn	P	S	Cu	Al(1)	N(1)	Ceq(2)
			d≤16	16<d≤40	max	max	max	max	max	min	max	max
TOS5580	EN 10025-2	S355JRC-Low Si	0.24	0.24	0.55	1,6	0.035	0.035	0.55	—	0.012	0.45
TOS5581	EN 10025-2	S355J0C-Low Si	0.24	0.24	0.55	1,6	0.035	0.035	0.55	—	0.012	0.45
TOS5582	EN 10025-2	S355J2C-Low Si	0.20	0.20	0.55	1,6	0.025	0.025	0.55	—	—	0.45
TOS3552	EN 10025-2	S355J2C	0.20	0.20	0.55	1,6	0.025	0.025	0.55	0.020		0.45
TOS5576	EN 10025-2	S355J2C+N	0.20	0.20	0.55	1,6	0.025	0.025	0.55	0.020	—	0.45
TOS5586	EN 10025-2	S355J2+N-Low Si	0.24	0.24	0.55	1,6	0.035	0.035	0.55	—	0.012	0.45
TOS5550	EN 10025-2	S355JRC	0.24	0.24	0.55	1,6	0.035	0.035	0.55	—	0.012	0.45

Explanations

- If the chemical composition of the steel contains min. 0.020% aluminum, the upper limit of nitrogen is not applied.
- For the calculation of Ceq, the formula %CE (IIW) = C+Mn/6+(C+Mo+V)/5+(Ni+Cr)/15 is used.

GENERAL STRUCTURAL STEELS SUITABLE FOR COLD FORMING, BENDING and PLASTERING													
Standard: EN 10025-Part 2-2004													
Mechanical Properties													
Tosyalı Quality No	Standard	Quality	Re		Rm(3)		A(%), min.					Impact (length) (4)	
			N/mm²				A80			A5			
			min.		min / max		min.						
			d:thickness, mm		d:thickness, mm		d:thickness, mm					Temp.	min.
			d≤16	16<d≤40	d<3	3≤d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d≤40	°C	J
TOS5580	EN 10025-2	S355JRC-Low Si	355	345	510-680	470-630	13	14	15	16	20	20	27(5)
TOS5581	EN 10025-2	S355J0C-Low Si	355	345	510-680	470-630	13	14	15	16	20	0	27(5)
TOS5582	EN 10025-2	S355J2C-Low Si	355	345	510-680	470-630	13	14	15	16	20	-20	27(5)
TOS3552	EN 10025-2	S355J2C	355	345	510-680	470-630	13	14	15	16	20	-20	27(5)
TOS5576	EN 10025-2	S355J2C+N	355	345	510-680	470-630	13	14	15	16	20	-20	27(5)
TOS5586	EN 10025-2	S355J2+N-Low Si	355	345	510-680	470-630	13	14	15	16	20	-20	27(5)
TOS5550	EN 10025-2	S355JRC	355	345	510-680	470-630	13	14	15	16	20	20	27(5)

Explanations

- For the qualities with "+N" in the quality code, "hot forming" and/or "normalizing" can be performed by the customer.
- For the qualities with "C" in the quality code, "cold forming" and/or "cold flanging" can be performed by the customer.
- Tensile test values are valid for "transverse" test samples.
- The impact test is not applied for products with a thickness below 6 mm.
- Impact test is done upon request.

GENERAL STRUCTURAL STEELS SUITABLE FOR COLD FORMING, BENDING and PLASTERING										
Standard: EN 10025-Part 2-2004										
Mechanical Properties										
Tosyalı Quality No	Standard	Quality	Bending (1) width, ≤90°, b _{tmr})							
			Thickness, d (mm)							
			6<d≤7	7<d≤8	8<d≤10	10<d≤12	12<d≤14	14<d≤16	16<d≤18	18<d≤20
TOS5580	EN 10025-2	S355JRC-Low Si	—	—	—	—	—	—	—	—
TOS5582	EN 10025-2	S355J2C-Low Si	12	16	20	25	32	36	45	50
TOS3552	EN 10025-2	S355J2C	12	16	20	25	32	36	45	50
TOS5536	EN 10025-2	S355J2C+N	12	16	20	25	32	36	45	50
TOS5550	EN 10025-2	S355JRC	—	—	—	—	—	—	—	—

Explanation

- The values are valid for bending tests performed at angles of 90 degrees and less.

HOT ROLLED HIGH YIELD STRUCTURAL STEELS																		
Standart: EN 10025-Part 4-2019																		
Chemical Composition (%)																		
Tosyalı Quality No	Standard	Quality	C	Mn	Si	P	S	Cr	Al	Cu	Mo	Ti	V	Nb	Ni	N	CE(IIW) max%	
			max	max	max	max	max	max	min	max	max	max	max	max	max	max	d≤16	d>16
TOS5862	EN 10025-4	S460M	0,16	1,70	0,60	0,030	0,025	0,30	0,020	0,55	0,20	0,05	0,20	0,05	0,80	0,025	0,45	0,46

Explanation

- If sufficient nitrogen-binding elements are present, the minimum total aluminium content does not apply.
- Carbon equivalent, CEV (IIW) % = C + Mn / 6 + (Cr + Mo + V) / 5 + (Ni + Cu) / 15

HOT ROLLED HIGH YIELD STRUCTURAL STEELS									
Standard: EN 10025-Part 4-2019									
Mechanical Properties									
Tosyalı Quality No	Standard	Quality	R _e N/mm ² (kg/mm ²)		R _m N/mm ² (kg/mm ²)	A (%) min	Impact (Long)		Bend (Trans, 180°) mdb (d:thickness)
			d≤16 min	16<d≤20 min			Sic.	KV _c	
							°C	J	
TOS5862	EN 10025-4	S460M	460 (46.9)	440 (44.9)	540-720 (55.1-73.4)	17	-20	40	4 d

STEELS RESISTANT TO ATMOSPHERIC CORROSION												
Standart: EN 10025-Part 2-2004												
Chemical Composition (%)												
Tosyalı Quality No	Standard	Quality	C	Mn	Si	P	S	Cr	Ni	Cu	Al	N ppm
			max	min / max	max	max	max	min / max		min / max		max
TOS3351	EN 10025-2	S235J0W	0,16	0.15-0.70	0,45	0,040	0,040	0.35-0.85	-	0.20-0.60	-	0,01
TOS3352	EN 10025-2	S235J2W	0,16	0.15-0.70	0,45	0,040	0,035	0.35-0.85	-	0.20-0.60	-	0,01
TOS5351	EN 10025-2	S355J0W	0,16	0.45-1.60	0,50	0,040	0,040	0.35-0.85	-	0.20-0.60	-	0,01
TOS5352	EN 10025-2	S355J2W	0,16	0.45-1.60	0,50	0,035	0,035	0.35-0.85	-	0.20-0.60	-	0,01
TOS5361	EN 10025-2	S355J0WP	0,16	1.00	0,75	0,05-1,6	0,040	0.25-1.35	-	0.20-0.60	-	0,01
TOS5362	EN 10025-2	S355J2WP	0,16	1.00	0,75	0,05-1,6	0,035	0.25-1.35	-	0.20-0.60	-	0,01

STEELS RESISTANT TO ATMOSPHERIC CORROSION												
Standard: EN 10025-Part 2-2004												
Mechanical Properties												
Tosyalı Quality No	Standard	Quality	Re		Rm(l)		A (%)				Impact (length)(2)	
			N/mm²				A80		A5			
			min.		min / max		min.				Temp.	min.
			d: thickness, mm		d: thickness, mm		d: thickness, mm					
			d≤16	16<d≤40	d<3	3≤d<100	1.5<d≤2	2<d≤2.5	2<d≤3	2<d≤40	°C	J
TOS3351	EN 10025-5	S235J0W	235	225	360-510	360-510	19	20	21	26		27(3)
TOS3352	EN 10025-5	S235J2W	235	225	360-510	360-510	17	18	19	24	-20	27(3)
TOS5351	EN 10025-5	S335J0W	355	345	510-680	470-630	16	17	18	22	0	27(3)
TOS5352	EN 10025-5	S335J2W	355	345	510-680	470-630	14	15	16	20	-20	27(3)
TOS5361	EN 10025-5	S335J0WP	355	345	510-680	470-630	16	17	18	22	0	27(3)
TOS5362	EN 10025-5	S335J2WP	355	345	510-680	470-630	14	15	16	20	-20	27(3)

Explanations

1. Tensile test values are valid for "transverse" test samples.
2. Impact test is applied to longitudinal sample.
3. Impact test is done upon request.

HIGH-STRENGTH DUAL-PHASE STEELS SUITABLE FOR COLD FORMING													
Standard: EN 10025-Part 2-2004													
Chemical Composition (%)													
Tosyalı Quality No	Standard	Quality	C	Mn	Si	P	S	Al	Mo	Nb	N ppm	Cu	Cr
			min / max	min / max	min / max	max	max	min / max	max	max	max	min / max	min / max
TOS5267	EN 10338	HCT500X (DP 500)	0.06-0.08	1.10-12	0.20-0.30	0.020	0.005	0.030-0.060	0.05	0.005	100	0.15-0.20	0.10-0.20

Explanation

1. It is valid for the coil thickness of T≤6 mm.

HIGH-STRENGTH DUAL-PHASE STEELS SUITABLE FOR COLD FORMING						
Standard: EN 10025-Part 2-2004						
Mechanical Properties						
Tosyalı Quality No	Standard	Quality	Re(1)	Rm(1)	A(%)	Strain-Hardening Exponent
			N/mm ²		A80	n
			min / max	min.	min.	min.
TOS5267	EN 10338	HDT500X (DP 600)	300-380	500	19	0.13

Explanation

1. Tensile test shall be applied for lateral direction.

HIGH-STRENGTH DUAL-PHASE WHEEL STEELS SUITABLE FOR COLD FORMING and PLASTERING														
Standard: EN 10338-2010														
Chemical Composition (%)														
Tosyalı Quality No	Standard	Quality	C	Mn	Si	P	S	Al	Mo+Cr	V	Nb+Ti	B ppm	Cu	Cr
			max	max	max	max	max	max	max	max	max	max	max	min
TOS5268	EN 10338	HCT580X (DP 600)	0,17	2,2	0,80	0,080	0,015	2,0	1,00	0,20	0,15	50	-	-

Explanation

1. It is valid for the coil thickness of T≤6 mm.
2. Tensile test shall be applied for lateral direction.

HIGH-STRENGTH DUAL-PHASE WHEEL STEELS SUITABLE FOR COLD FORMING and PLASTERING						
Standard: EN 10338-2010						
Mechanical Properties						
Tosyalı Quality No	Standard	Quality	Re(1)	Rm(1)	A(%)	Strain-Hardening Exponent
			N/mm ²		A80	n
			min / max	min.	min.	min.
TOS5268	EN 10338	HDT580X (DP 600)	330-480	580	19	0.13

HIGH-STRENGTH DUAL-PHASE HOT ROLLED STEELS SUITABLE FOR COLD ROLLING

Standard: EN 10338-2010

Chemical Composition (%)

Tosyalı Quality No	Standard	Quality	C	Mn	Si	P	S	Al	Mo+Cr	V	Nb+Ti	B ppm	Cu	Cr
			min / max	min / max	min / max	max	max	min / max	max	max	max	max	min / max	min / max
TOS5269	EN 10338	HCT600X (DP 600)	0.07-0.1	1.30-1.45	0.20-0.30	0.020	0.008	0.025-0.06	0.75	0.01	0.020	100	0.15-0.20	0.50-0.70
TOS5270	EN 10338	HCT780X (DP 780)	0.09-0.11	1.70-1.9	0.20-0.30	0.020	0.005	0.03-0.06	-	-	-	5	0.10-0.20	0.20-0.30

Explanation

- It is valid for the coil thickness of T≤6 mm.

HIGH-STRENGTH DUAL-PHASE HOT ROLLED STEELS SUITABLE FOR COLD ROLLING

Standard: EN 10338-2010

Mechanical Properties

Tosyalı Quality No	Standard	Quality	Re(l)	Rm(l)	A(%)
			N/mm ²		A80
			min / max	min.	min.
TOS5269	EN 10338	HDT600X (DP 600)	340-420	600	20
TOS5270	EN 10338	HCT780X (DP 780)	450-560	780	14

Explanation

- Tensile test shall be applied for lateral direction.

BOILER STEELS

Standard: EN 10028-Part 2-2008

Chemical Composition (%)

Tosyalı Quality No	Standard	Quality	C	Si	Mn	P	S	Al	Nb	Cr(l)	Cu(l)	Mo(l)	Ni(l)	N	Ti	V
			max	max	min / max	max	max	min	max	max	max	max	max	max	max	max
TOS3679	EN 10028-2	P235GH	0.16	0.35	0.60-1.20	0.025	0.010	0.020	0.020	0.30	0.30	0.08	0.30	0.012	0.03	0.02
TOS3779	EN 10028-2	P265GH	0.20	0.40	0.80-1.20	0.025	0.010	0.020	0.020	0.30	0.30	0.08	0.30	0.012	0.03	0.02
TOS4459	EN 10028-2	P295GH	0.08-0.20	0.40	0.90-1.50	0.025	0.010	0.020	0.020	0.30	0.30	0.08	0.30	0.012	0.03	0.02
TOS5279	EN 10028-2	P355GH	0.10-0.22	0.60	1.10-1.70	0.025	0.010	0.020	0.040	0.30	0.30	0.08	0.30	0.012	0.03	0.02

Explanation

- Cr+Cu+Mo+Ni≤%0.70
- For product thicknesses <6 mm, a minimum manganese content of 0.20% lower than specified is permitted.
- A ratio N/Al≥2 shall apply.

BOILER STEELS

Standard: EN 10028-Part 2-2008

Mechanical Properties

Tosyalı Quality No	Standard	Quality	Re N/mm ²			R N/mm ²	A5(%)	Impact (length)		Rp 0.02(1) (min.) T:300°C N/mm²(kg / mm²)		
			d≤16	16<d≤40	40<d≤50			min.	Temp.	KVc (min.)	d≤16	16<d≤40
TOS3679	EN 10028-2	P235GH	235	225	215	360-480	24	-20	27	153	147	140
TOS3779	EN 10028-2	P265GH	265	255	245	410-530	22	-20	27	173	166	160
TOS4459	EN 10028-2	P295GH	295	290	285	460-580	21	-20	27	192	189	186
TOS5279	EN 10028-2	P355GH	355	345	335	510-650	20	-20	27	232	225	219

Explanation

- Tensile test values apply to 'transverse' test pieces.
- The tensile test for proof strength at elevated temperature is carried out on request.
- Impact test is not required for thickness thinner than 6 mm.
- Depending on agreement the minimum impact energy can be specified as 40 J in the purchase order.

BOILER STEELS (ALLOYED)

Standard: EN 10028-Part 2-2008

Chemical Composition (%)

Tosyalı Quality No	Standard	Quality	C	Si	Mn	P	S	Al	Cr	Ni	Cu	Mo	V	Ti	Nb
			max	max	max	max	max	min	max	max	max	max	max	max	max
TOS5272	EN 10028-3	P355NL1	0.18	0.50	1.10-1.70	0.025	0.010	0.02	0.30	0.50	0.30	0.08	0.1	0.03	0.05
TOS5288	EN 10028-3	P355NH	0.18	0.50	1.10-1.70	0.025	0.010	0.02	0.30	0.50	0.30	0.08	0.1	0.03	0.05

Explanation

- For thicknesses below 6 mm, the minimum Mn content may be reduced by 0.20%.

BOILER STEELS (ALLOYED)

Standard: EN 10028-Part 2-2008

Mechanical Properties

Tosyalı Quality No	Standard	Quality	Re N/mm ²			R N/mm ²	A5(%)	Impact (length)		Rp 0.02(l) (min.) T:300°C N/mm ² (kg / mm ²)		
			d≤16	16<d≤40	40<d≤60			Temp.	KVc (min.)	d≤16	16<d≤40	40<d≤50
TOS5272	EN 10028-3	P355NH	355	345	335	490-630	22	-20	30	232	225	219
TOS5288	EN 10028-3	P355NL1	355	345	335	490-630	22	-40	27	232	225	219

Explanation

- Tensile test values apply to 'transverse' test pieces.
- The tensile test for proof strength at elevated temperature is carried out on request.
- Impact test is not required for thickness thinner than 6 mm.

BOILER PIPE STEELS

Standard: EN 10217 2-2002

Chemical Composition (%)

Tosyalı Quality No	Standard	Quality	C	Si	Mn	P	S	Al	Cr(l)	Cu(l)	Mo(l)	Nb(l)	V	Ti
			max	max	max	max	max	min	max	max	max	max	max	max
TOS3789	EN 10217-2	P235GH- Low Si	0.16	0.35	0.60-1.20	0.025	0.010	0.020	0.30	0.30	0.08	0.02	0.020	0.030

Explanation

- Cr+Cu+Mo+Ni≤ %0.70.

BOILER PIPE STEELS

Standard: EN 10217 2-2002

Mechanical Properties

Tosyalı Quality No	Standard	Quality	Re N/mm ²			R N/mm ²	A5(%)	Impact (length)		Rp 0.02(l) (min.) T:300°C N/mm ² (kg / mm ²)		
			d≤16	16<d≤40	40<d≤50			Temp.	KVc (min.)	d≤16	16<d≤40	40<d≤50
TOS3789	EN 10217-2	P235GH	235	225	215	360-480	24	-20	27	153	147	140

Explanations

- Tensile test values are valid for "transverse" test samples.
- The tensile test for proof strength at elevated temperature is carried out on request.
- Impact test is not required for thickness thinner than 6 mm.
- Depending on agreement the minimum impact energy can be specified as 40 J in the purchase order.

PRESSURE PIPE STEELS												
Standard: EN 10217-Part 1 -2005												
Chemical Composition (%)												
Tosyalı Quality No	Standard	Quality	C	Mn	Si	P	S	Cr	Ni	Al	Cu	Mo
			max	max	max	max	max	min	max	max	max	max
TOS3760	EN 10217-1	P235TR1	0.16	1,2	0.35	0.025	0.020	0.30	0.30	-	0.30	0.08
TOS3785	EN 10217-1	P235TR1-Low Si	0.16	1,2	0.35	0.025	0.015	0.30	0.30	-	0.30	0.08

Explanation

- For P235TR1 qualities, Cu+Cr+Mo+Ni=0.70% max

PRESSURE PIPE STEELS													
Standart: EN 10217-Part 1 -2005													
Mechanical Properties													
Tosyalı Quality No	Standard	Quality	Re (min.)		Rm(1)	A(%)		Impact (length)(2) min.					
			N/mm ²					Temp.	KVc	Temp.	KVc	Temp.	KVc
			d≤16	16<d≤40	min / maks	l	t						
			min.	min.		min.	min.	min.	°C	J	°C	J	°C
TOS3760	EN 10217-1	P235TR1	235	225	360-500	25	23	0	-	-10	-	0	-
TOS3785	EN 10217-1	P235TR1-Low Si	235	225	360-500	25	23	0	-	-10	-	0	-

Explanations

- Tensile test values are valid for transverse test samples.
- Impact test is applied to "longitudinal and transverse" test samples.
- l: longitudinal / t: transverse

LPG CYLINDER STEELS											
Standard: EN 10120-2008											
Chemical Composition (%)											
Tosyalı Quality No	Standard	Quality	C	Mn	Si	P	S	N	Nb	Al	Ti
			max	min	max	max	max	min	max	min	max
TOS4458	EN 10120	P245NB	0.16	0.30	0.25	0.025	0.015	0.009	0.050	0.020	0.03
TOS4468	EN 10120	P265NB	0.19	0.40	0.25	0.025	0.015	0.009	0.050	0.020	0.03
TOS5078	EN 10120	P310NB	0.20	0.70	0.50	0.025	0.015	0.009	0.050	0.020	0.03
TOS5278	EN 10120	P355NB	0.20	0.70	0.50	0.025	0.015	0.009	0.050	0.020	0.03

Explanation

- If Al/N is more than 2,2 and Nb and Ti is added, N is allowed up to 0,012%

LPG CYLINDER STEELS						
Standart: EN 10120-2008						
Mechanical Properties						
Tosyalı Quality No	Standard	Quality	Re	Rm(l)	A(%)	
			N/mm²	N/mm²	A80 (min)	A5 (min)
			min.		d≤3	3≤d≤5
TOS4458	EN 10120	P245NB	245	360-450	26	34
TOS4468	EN 10120	P265NB	265	410-500	24	32
TOS5078	EN 10120	P310NB	310	460-550	21	28
TOS5278	EN 10120	P355NB	355	510-620	19	24

Explanation

- Tensile test shall be applied for lateral direction.

OIL PIPE STEELS											
Standart: API 5L 45 th Edition-2012/ISO 3183-2012											
Chemical Composition (%)											
Tosyalı Quality No	Standard	Quality	C(3)	Mn(3)	P	S	Cr	Ni	Cu	Mo	B
			max	max	max	max	max	max	max	max	ppm, max
TOS9030 (5)	API 5L/ ISO 3183	A / L210 / PSL1	0.22	0.90	0.030	0.030	0.50	0.50	0.50	0.15	10
TOS9035(1,2,5)	API 5L/ ISO 3183	B / L245 / PSL1	0.26	1.2	0.030	0.030	0.50	0.50	0.50	0.15	10
TOS9042 (1,5)	API 5L/ ISO 3183	X42 / L290 / PSL1	0.26	1.3	0.030	0.030	0.50	0.50	0.50	0.15	10
TOS9046 (1,5)	API 5L/ ISO 3183	X46 / L320 / PSL1	0.26	1.4	0.030	0.030	0.50	0.50	0.50	0.15	10
TOS9052 (1,5)	API 5L/ ISO 3183	X52 / L360 / PSL1	0.26	1.4	0.030	0.030	0.50	0.50	0.50	0.15	10
TOS9056 (1,5)	API 5L/ ISO 3183	X56 / L390 / PSL1	0.26	1.4	0.030	0.030	0.50	0.50	0.50	0.15	10
TOS9060 (1,6)	API 5L/ ISO 3183	X60 / L415 / PSL1	0.26	1.4	0.030	0.030	0.50	0.50	0.50	0.15	10
TOS9062 (1,6)	API 5L/ ISO 3183	X60 / L415NE / PSL2	0.23	1.4	0.025	0.015	0.30	0.30	0.25	0.10	10
TOS9065 (1,6)	API 5L/ ISO 3183	X65 / L450 / PSL1	0.26	1.45	0.030	0.030	0.50	0.50	0.50	0.15	10
TOS9070 (1,6)	API 5L/ ISO 3183	X70 / L485 / PSL1	0.26	1.65	0.030	0.030	0.50	0.50	0.50	0.15	10

Explanations

1. Nb+V+Ti≤0.15
2. 2) Nb+V≤0.06
3. 3) For each reduction of 0.01 % for carbon, an increase of 0.05 % for manganese is permitted, up to a maximum of 1.65 % for L245, L290, L320 and L360 grades, 1.75 % for X56, X60 and X65 grades, 2.00% for X70 grade.
4. 4) For L360/X52 and lower grades, 0.5 % , Cr : % 0.5, Ni : % 0.5 and Mo : % 0.15 is permitted.
5. 5) Suitable for ERW Pipe Manufacturing
6. 6) Suitable for Spiral Welded Pipe Manufacturing

OIL PIPE STEELS					
Standart: API 5L 45 th Edition-2012/ISO 3183-2012					
Mechanical Properties					
Tosyalı Quality No	Standard	Quality	Re	Rm(1)	Af(%)
			N/mm ²		
			min	min	
TOS9030	API 5L/ ISO 3183	A / L210 / PSL1	210	335	"2"
TOS9035	API 5L/ ISO 3183	B / L245 / PSL1	245	415	"2"
TOS9042	API 5L/ ISO 3183	X42 / L290 / PSL1	290	415	"2"
TOS9046	API 5L/ ISO 3183	X46 / L320 / PSL1	320	435	"2"
TOS9052	API 5L/ ISO 3183	X52 / L360 / PSL1	360	465	"2"
TOS9056	API 5L/ ISO 3183	X56 / L390 / PSL1	390	495	"2"
TOS9060	API 5L/ ISO 3183	X60 / L415 / PSL1	415	520	"2"
TOS9062	API 5L/ ISO 3183	X60 / L415NE / PSL2	415	520	"2"
TOS9065	API 5L/ ISO 3183	X65 / L450 / PSL1	450	535	"2"
TOS9070	API 5L/ ISO 3183	X70 / L485 / PSL1	485	570	"2"

Explanations

1. Tensile test values are valid for "transverse" test samples.
2. Af % = 1940 Axc 0.2 / U0.9 (Axc: cross-sectional area, mm², U: minimum tensile strength, N/mm²)

OIL PIPE STEELS SUITABLE FOR SRM PIPE PRODUCTION OR NORMALIZATION

Standard: API 5L 45th Edition-2012/ISO 3183-2012

Chemical Composition (%)

Tosyalı Quality No	Standard	Quality	C (5)	Mn (5)	Si	P	S	Cr	Ni	Cu	Mo	Ti	V	Nb	B	C equivalence	
			max	max	max	max	max	min	max	max	max	max	max	max	max	CEIWW	CEPCM
TOS9036 (1,2,6)	API 5L/ISO 3183	BM/L245M/PSL2	0.22	1.2	0.45	0,025	0,015	0,30	0,30	0,50	0,15	0,04	0,05	0,05	10	0,43	0,25
TOS9043 (2,6)	API 5L/ISO 3183	X42M/L290M/PSL2	0.22	1.3	0.45	0,025	0,015	0,30	0,30	0,50	0,15	0,04	0,05	0,05	10	0,43	0,25
TOS9047 (2,3,6)	API 5L/ISO 3183	X46M/L320M/PSL2	0.22	1.3	0.45	0,025	0,015	0,30	0,30	0,50	0,15	0,04	0,05	0,05	10	0,43	0,25
TOS9053 (2,3,6)	API 5L/ISO 3183	X52M/L360M/PSL2	0.22	1.4	0.45	0,025	0,015	0,30	0,30	0,50	0,15	"3"	"3"	"3"	10	0,43	0,25
TOS9057 (2,3,7)	API 5L/ISO 3183	X56M/L390M/PSL2	0.22	1.4	0.45	0,025	0,015	0,30	0,30	0,50	0,15	"3"	"3"	"3"	10	0,43	0,25
TOS9061 (4,7)	API 5L/ISO 3183	X60M/L450M/PSL2	0.12	1.6	0.45	0,025	0,015	0,50	0,50	0,50	0,50	"3"	"3"	"3"	10	0,43	0,25
TOS9066 (4,7)	API 5L/ISO 3183	X65M/L450M/PSL2	0.12	1.6	0.45	0,025	0,015	0,50	0,50	0,50	0,50	"3"	"3"	"3"	10	0,43	0,25
TOS9071 (4,7)	API 5L/ISO 3183	X65M/L450M/PSL2	0.12	1.7	0.45	0,025	0,015	0,50	0,50	0,50	0,50	"3"	"3"	"3"	10	0,43	0,25

Explanations

1. Nb+V≤0.06
2. 2) Cu 0.5 % , Cr 0.3 % , Ni 0.3 % and Mo 0.15%
3. 3) Nb+V+Ti≤0.15
4. 4) Cu 0.5 % , Cr 0.5 % , Ni 0.5 % and Mo 0.5%
5. 5) For each reduction of 0.01 % for carbon, an increase of 0.05 % for manganese is permitted, up to a maximum of 1.50 for X42PSL2, X46PSL2 and X52PSL2, 1.65 % for X56PSL2, X60PSL2 and X65PSL2 grades and up to a maximum 2.00 % for X70PSL2 grade.
6. 6) Suitable for ERW Pipe Manufacturing
7. 7) Suitable for Spiral Welded Pipe Manufacturing

OIL PIPE STEELS SUITABLE FOR SRM PIPE PRODUCTION OR NORMALIZATION

Standard: API 5L 45th Edition-2012/ISO 3183-2012

Mechanical Properties

Tosyalı Quality No	Standard	Quality	Rt (0,5)		Rm(1)		Rt(0,5)/Rm	A50(%)	Impact (3)(4) (width)		DWTT (transverse)
			N/mm²						Temp.	KVc (min)	% Continuous Fracture Field
			min.	max	min.	max					
TOS9036	API 5L/ ISO 3183	BM / L245M / PSL2	245	450	415	760	0,93	“2”	0	40	85
TOS9043	API 5L/ ISO 3183	X42M / L290M / PSL2	290	495	415	760	0,93	“2”	0	40	85
TOS9047	API 5L/ ISO 3183	X46M / L320M / PSL2	320	525	435	760	0,93	“2”	0	40	85
TOS9053	API 5L/ ISO 3183	X52M / L360M / PSL2	360	530	460	760	0,93	“2”	0	40	85
TOS9057	API 5L/ ISO 3183	X56M / L390M / PSL2	390	545	490	760	0,93	“2”	0	40	85
TOS9061	API 5L/ ISO 3183	X60M / L415M / PSL2	415	565	520	760	0,93	“2”	0	40	85
TOS9066	API 5L/ ISO 3183	X65M / L450M / PSL2	450	600	535	760	0,93	“2”	0	54	85
TOS9071	API 5L/ ISO 3183	X70M / L485M / PSL2	485	635	570	760	0,93	“2”	0	68	85

Explanations

1. Tensile tests are applied to "Transversal" test samples.
2. A50 % = 1944 So0.2 / U0.9 (SO : Cross sectional area,mm² ; U : tensile strength N / mm²)
3. Impact tests are not carried out if nominal thickness is lesser than 6 mm.
4. Impact tests are carried out if it is customer's request in order.
5. DWT tests are applied to "Transverse" test samples.

OIL PIPE STEELS SUITABLE FOR SRM PIPE PRODUCTION OR NORMALIZATION

Standard: API 5L 45th Edition-2012/ISO 3183-2012

Chemical Composition (%)

Tosyalı Quality No	Standard	Quality	C(4)	Mn(4)	Si	P	S	Cr	Ni	Cu	Mo	Ti	V	Nb	B	C equivalence	
			max	max	max	max	max	max	max	max	max	max	max	max	ppm, max	CEI IW	CEPCM
TOS9136 (1,2)	API 5L/ISO 3183	BN/L245NPSL2	0,22	1,2	0,45	0,025	0,015	0,30	0,30	0,50	0,15	0,04	0,05	0,05	10	0,43	0,25
TOS9143 (2)	API 5L/ISO 3183	X42N/L290N/PSL2	0,22	1,3	0,45	0,025	0,015	0,30	0,30	0,50	0,15	0,04	0,05	0,05	10	0,43	0,25
TOS9147 (2,3)	API 5L/ISO 3183	X46N/L320N/PSL2	0,22	1,3	0,45	0,025	0,015	0,30	0,30	0,50	0,15	0,04	0,05	0,05	10	0,43	0,25

Explanations

- Nb and V can be found in the composition of these qualities as long as Nb+V≤0.06.
- Max. percentage of Cu, Cr, Ni and Mo can be 0.5%, 0.3%, 0.3% and 0.15% respectively.
- As long as the max values are Nb+V+Ti≤0.15, Nb, V and Ti can be found in the composition of these qualities.
- For every 0.01% decrease in the C value specified in the standard, the Mn value is increased by 0.05%. In this case the Mn value is max 1.50% for X42PSL2 and X46PSL2.

OIL PIPE STEELS SUITABLE FOR SRM PIPE PRODUCTION OR NORMALIZATION

Standard: API 5L 45th Edition-2012/ISO 3183-2012

Mechanical Properties

Tosyalı Quality No	Standard	Quality	Rt(0,5)		Rm(1)		Rt(0,5)/Rm	A50(%)	Impact(3)(4) (width)		DWTT (transverse)
			N/mm²						Temp.	KVc (min)	% Continuous Fracture Field
			min	max	min	max	max	min	°C	J	min
TOS9136	API 5L/ISO 3183	BN/L245N/PSL2	245	450	415	760	0,93	"2"	0	40	85
TOS9143	API 5L/ISO 3183	X42N/L290N/PSL2	290	495	415	760	0,93	"2"	0	40	85
TOS9147	API 5L/ISO 3183	X46N/L320N/PSL2	320	525	435	760	0,93	"2"	0	40	85

Explanations

- Tensile test values are valid for transverse test samples.
- A50%=1944 S0.2/U0.9 (S: Cross Sectional Area, mm², U: Tensile Strength N/mm²)
- Impact test is not applied for products with a thickness less than 6 mm.
- DWTT test is applied to transverse test samples.



OIL PIPE STEELS SUITABLE FOR SRM PIPE PRODUCTION OR NORMALIZATION

Standard: API 5L 45th Edition-2012/ISO 3183-2012

Chemical Composition (%)

Tosyalı Quality No	Standard	Quality	C (5)	Mn (5)	Si	P	S	Cr	Ni	Cu	Mo	Ti	V	Nb	B	C equivalence	
			max	max	max	max	max	max	max	max	max	max	max	max	ppm, max	CEIIW	CEPCM
TOS9036 (1.2.6)	API 5L/ ISO3183	BM/L245NPSL2	0.22	1,2	0,45	0,025	0,015	0,30	0,30	0,50	0,15	0,04	0,05	0,05	10	0,43	0,25
TOS9043 (2.6)	API 5L/ ISO3183	X42M/L290M/PSL2	0.22	1,3	0,45	0,025	0,015	0,30	0,30	0,50	0,15	0,04	0,05	0,05	10	0,43	0,25
TOS9047 (2.3.6)	API 5L/ ISO3183	X46M/L320M/PSL2	0.22	1,3	0,45	0,025	0,015	0,30	0,30	0,50	0,15	0,04	0,05	0,05	10	0,43	0,25
TOS9053 (2.3.6)	API 5L/ ISO3183	X52M/L360M/PSL2	0.22	1,4	0,45	0,025	0,015	0,30	0,30	0,50	0,15	"3"	"3"	"3"	10	0,43	0,25
TOS9057 (2.3.7)	API 5L/ ISO3183	X56M/L390M/PSL2	0.22	1,4	0,45	0,025	0,015	0,50	0,30	0,50	0,15	"3"	"3"	"3"	10	0,43	0,25
TOS9061 (4.7)	API 5L/ ISO3183	X60M/L415M/PSL2	0.22	1,6	0,45	0,025	0,015	0,50	0,50	0,50	0,50	"3"	"3"	"3"	10	0,43	0,25
TOS9066 (4.7)	API 5L/ ISO3183	X65M/L450M/PSL2	0.12	1,6	0,45	0,025	0,015	0,50	0,50	0,50	0,50	"3"	"3"	"3"	10	0,43	0,25
TOS9071 (4.7)	API 5L/ ISO3183	X70M/L485M/PSL2	0.12	1,7	0,45	0,025	0,015	0,50	0,50	0,50	0,50	"3"	"3"	"3"	10	0,43	0,25

OIL DRILL PIPE STEELS																			
Standard: API 5CT-2011																			
Chemical Composition (%)																			
Tosyalı Quality No	Standard	Quality	C	Mn	Si	P	S	Cr	Ni	Sn	Cu	Al	Mo	V	Ti	N	B	Ca	Nb
			min / max	min / max	min/ max	max	max	max	max	max	min	min/ max	max	max	max	ppm max	ppm max	ppm	max
TOS9130	API 5CT	J55 Upgradeable (Tubing)	0.25-0.30	1.20-1.40	0.15-0.25	0.015	0.005	0.10	0.07	0.012	0.15	0.015-0.050	0.030	0.008	0.010	90	5	15-50	—
TOS9275	API 5CT	J55 Upgradeable (Casing)	0.23-0.27	1.20-1.40	0.15-0.30	0.020	0.005	0.15-0.35	0.07	0.012	0.15	0.045-max	0.030	0.008	0.010	100	5	15-50	—
TOS9230	API 5CT	J55 Upgradeable	0.23-0.27	1.20-1.40	—	0.020	0.010	—	—	—	—	—	—	0.010	—	—	5	—	—
TOS9231	API 5CT	J55 Upgradeable	0.24-0.27	1.25-1.35	0.15-0.25	0.020	0.005	0.20-0.30	—	—	—	—	0.08-12	0.010	—	—	5	15-50	—
TOS9155	API 5CT	J55 regular	0.17-0.23	0.90-1.45	0.30	0.020	0.015	0.10	0.10	0.015	0.15	0.015-0.050	0.080	0.06	0.020	100	5	15-50	0.05
TOS9255	API 5CT	J55 regular	0.22-0.26	1.10-1.30	0.15-0.30	0.020	0.008	0.10	0.07	0.012	0.15	0.015-0.050	0.040	0.008	0.010	90	5	15-50	—
TOS9055	API 5CT	J55	0.025-0.029	1.25-1.40	0.20-0.25	0.015	0.005	—	0.07	0.012	0.15	0.045-max	0.030	0.008	0.018-0.035	100	Oct-25	15-50	—

OIL DRILL PIPE STEELS									
Standard: API 5CT-2011									
Mechanical Properties									
Tosyalı Quality No	Standard	Quality	Re		Rm(1)		A50(%)	Impact (length)(2)	
			N/mm²					Temp.	KVc (min)
			min.	max	min.	max	min.	°C	J
TOS9130	API 5CT	J55 Upgradeable (Tubing)	379	552	517	—	-3	-20	27
TOS9275	API 5CT	J55 Upgradeable (Casing)	379	552	517	—	-3	-20	27
TOS9230	API 5CT	J55 Upgradeable	379	552	517	—	-3	-20	27
TOS9231	API 5CT	J55 Upgradeable	379	552	517	—	-3	-20	27
TOS9155	API 5CT	J55 Regular	379	552	517	—	-3	-20	27
TOS9255	API 5CT	J55 Regular	379	552	517	—	-3	-20	27
TOS9055	API 5CT	5CT J55 Upgradeable	379	552	517	—	-3	-20	27

Explanations

1. Tensile and impact tests are applied to longitudinal test samples.
2. Impact test is not applied for products with a thickness less than 6 mm.
3. A50% = 1944 S 0.2/U 0.9 (S: Cross Sectional Area, mm²; U: Tensile Strength N/mm²)

HOT ROLLED STEELS SUITABLE FOR COLD ROLLING FOR ELECTRICAL STEEL PRODUCTION

Tosyalı Quality No	Standard	Quality Standard	C (max)	Mn (max)	Si (min.)	P (min / max)	S (max)	Al (min / max)	N (max)
TOS3850	EN 10106-2007	M350-50A	0.040	070	2.10	0.015-0.10	0.025	0.15 - 0.90	0.0090
TOS4050	EN 10106-2007	M400-50A	0.040	060	1.50	0.015-0.10	0.025	0.15 - 0.70	0.0090
TOS4065	EN 10106-2007	M400-65A	0.040	060	2.30	0.015-0.10	0.025	0.90 - 1.30	0.0090
TOS4750	EN 10106-2007	M470-50A	0.050	070	0.90	0.015-0.10	0.025	0.15 - 0.70	0.0090
TOS4765	EN 10106-2007	M470-65A	0.040	060	1.50	0.015-0.10	0.025	0.15 - 0.80	0.0090
TOS5350	EN 10106-2007	M530-50A	0.050	070	0.70	0.015-0.10	0.025	0.10 - 0.60	0.0090
TOS5365	EN 10106-2007	M530-65A	0.040	070	1.30	0.015-0.10	0.025	0.15 - 0.70	0.0090



FLAT STEEL PRODUCTS



TOSYALI Demir Çelik
Yassı Yapısal

STEEL QUALITIES

1	DIN 1614-Part 1 (St 22, St 22-(Low Copper), RRSt 23, St 24, RRSt 23- Boron, St-Boron)
	EN 10111-2008 (DD11-(Low Copper), DD12, DD13, DD11, DD11-(High-Strength), DD12-Boron, DD13-Boron, DD11, DD11-Particular-1, DD11
2	EN 10025 Part 2-2004 (S235JR, S235JR+N, S235JR+Cu, S235J2+N, S235JR, S235JR (Cu+Cr+Ni<0.35)
	S235J0 (Cu+Cr+Ni<0.35), S235J0 (Cu+Cr+Ni<0.35), S235J0, S235J2, S235JRC, S235J2C, S235JRC+N, S235JRC Custom, S235J2C
	Rev 27, S235JR-Addition SS095 Rev 4, S235JR+N-Low Si, S235JR+N
	S235JR Hoop Steel, S235JR Hoop Steel with Low Si
	API 5L 45th Edition-2012/ISO 3183-2012(A / L219 / PSL1, B / L245 / PSL1, BN / L245N / PSL2
	EN 10025 Part 5-2004 (S235J0W, S235J2W)
	EN 10028-Part 2-2008 (P235GH)
	EN 10120-2008 (P245NB)
3	EN 10217 Part 1-2005 (P235TR1, P235TR2, P235TR1-Low Si, P235TR2-Low Si)
	EN 10217 Part 2-2005 (P235GH-Low Si)
	API 5L 45th Edition-2012/ISO 3183-2012 (X42 / L290 / PSL1,X46 / L320 / PSL1,X42N PSL2 / L290N PSL2, X46 / L320 / PSL1
	EN 10025 Part 2-2004 (S275JR, S275J2+N, S275JR, S275J2, S275JRC, S275J2C, S275JRC+N-Custom, S275J2C+N, S275JRC
	Custom, S275J2+N-Custom, S275JR+N-Low Si)
	EN 10028-Part 2-2008(P265GH, P295GH)
	EN 10120-2008 (P265NB, P310NB)
	EN 10149-Part 2-1995 (S355MC, S355MC-Addition SS088 Rev 10, S315MC, S355MC, S355MC-Custom, S280MC-Custom, S315MC, S355MC)
4	EN 10207-2005 (P275SL)
	EN 10217-3-2005 (P275NL1-Low Si)
	EN10025-Part 2-2004 (E335, s355j0, S355JR, S355J2, S355J2+N, S355J2+N+Cu, S355JR+N-Low Si, S355JR-Low Si, S355J0-Low Si,
	S355J2+N-Low Si, S355J2-Low Si, S355JRC-Low Si, S355J0C-Low Si, S355J2C-Low Si, S355J2C, S355J2C+N, S355JRC,
	S355J2C+N-Custom, S355JR-Custom, S355J2C+N-Custom, S355JRC Custom
	S355J0-Custom, S355JR+N-Low Si (Fe510DTCL), S355JR+N (Fe520DTCL), S355JR+N (Fe510DTCL1))
	EN 10025 Part 5-2004 (S355J0W, S355J2W, S355J0WP, S355J2WP)
	EN 10028 Part 2-2008 (P355GH) EN 10028-Part 3-2008 (P355NL1) EN10083-Part 2-2006(28Mn6)
5	EN 10028 Part 3-2006 (30MnB5, 34MnB5, 27MnCrB5-2, 26MnB5, 22MnB5)
	EN 10338-2009 (HCT500X (DP 500))
	EN 10338-2010 (HDT580X (DP 600), HCT600X (DP600))
	EN 10120-2008 (P355NB)
	API 5CT-2011(J55 Upgradeable (Tubing), J55 Upgradeable (Casing), J55 Upgradeable, J55 Regular, 5CT J55 Upgradeable)
6	EN 10025 Part 3- 2004 (S355N)
	EN 10083-Part 2-2006 (C35E, C35E-Cr, C45E-Custom)
7	EN 10083-Part 2 - 2006 (C60E, C60E-Addition, C60E-1Cr)
	API 5L 45th Edition-2012/ISO 3183-2012 (X52 / L360 / PSL1, X56 / L390 / PSL1, X60 / L415 / PSL1, X52M / L360M / PSL2, X56M /
8	L390M / PSL2, X60M / L415M / PSL2
	EN 10149-Part 2-1995 (S420MC (HL-2242-01), S420MC, S420MC-with Si, S420MC, S420MC, HX420LAD)
	API 5L 45th Edition-2012 / ISO 3183-2012 (X65 / L450 / PSL1, X65 / L450 / PSL2,, X70 / L485 / PSL1, X70 / L485 / PSL2)
9	EN 10025-Part 3-2004 (S420N-Custom (SAH540))
	EN 10149-Part 2-1995 (S460MC (HL-600-02), S460MC, S460MC-with Si, S460MC)
	EN 10025-Part 3-2004 (S460N)
9	EN 10149-Part 2-1995(S500MC, S500MC-with Si, S550C, S550MC-with Si, S600MC, S650MC, S700MC)
	EN 10338-2010 (HCT780X (DP 780))

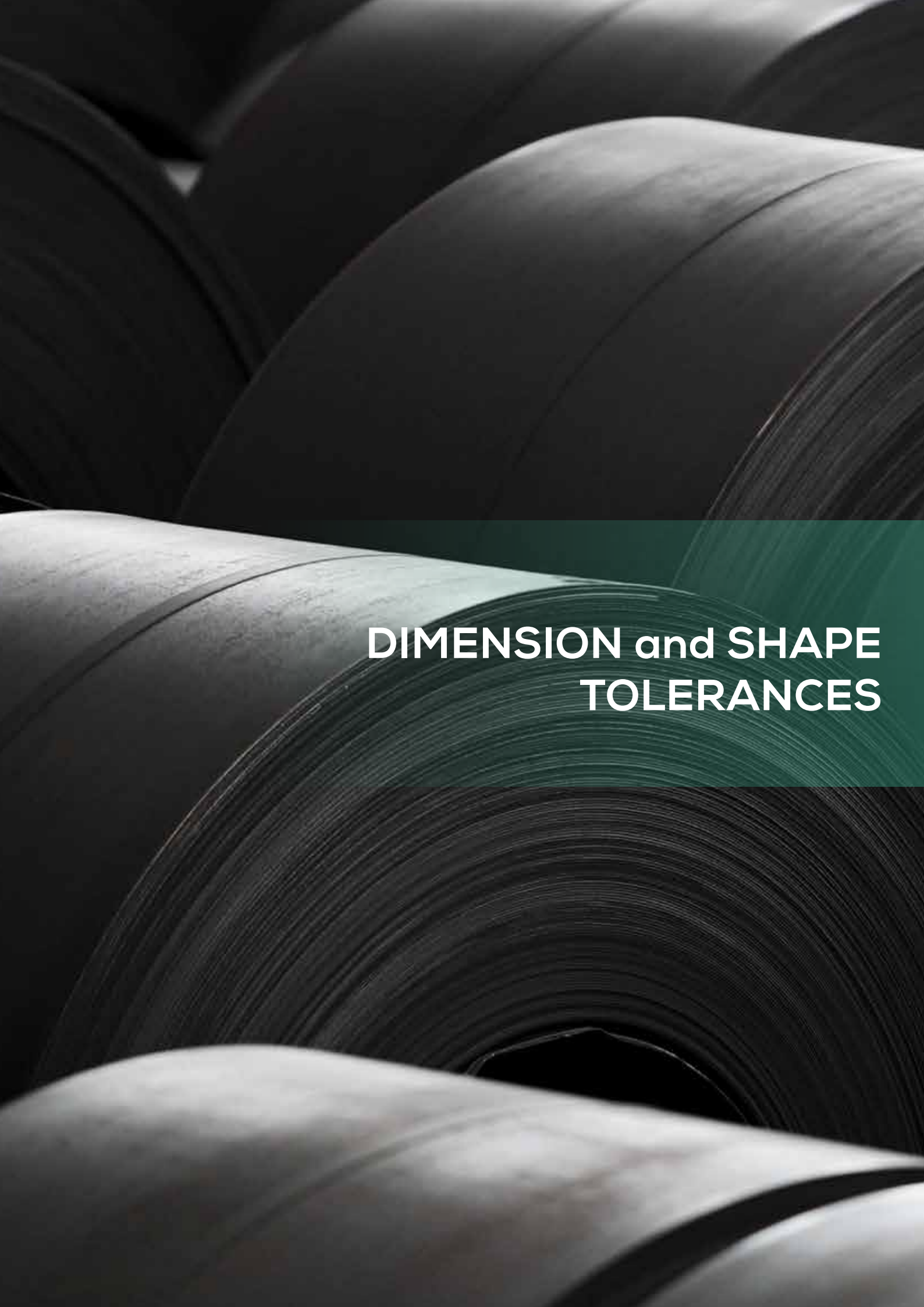
STANDARD HOT ROLLED COIL PRODUCTION LIMITS

Thickness (mm)	Max. Width (mm)								
	Group-1	Group-2	Group-3	Group-4	Group-5	Group-6	Group-7	Group-8	Group-9
1.00-1.14	1000**	1000**							
1.15-1.19	1000	1000							
1.20-1.29	1250	1250							
1.30-1.39	1250*	1250*							
1.40-1.49	1400*	1400*	1150						
1.50-1.59	1500*	1500*	1250	1250					
1.60-1.69	1500	1500	1300	1300					
1.70-1.79	1550	1550	1350*	1350	1000				
1.80-1.99	1650	1550	1400*	1400	1200	1000	1000		
1.00-2.09	1650	1600	1500*	1500*	1250	1000	1200*	1000*	1000*
2.10-2.19	1650	1600	1500*	1500*	1250	1000	1250	1250*	1000
2.20-2.29	1650	1600	1550	1550	1250	1100	1450	1450	1200
2.30-2.39	1650	1650	1650	1650	1450	1150	1450	1450	1200
2.40-2.49	1650	1650	1650	1650	1450	1250	1450	1450	1250
2.50-2.59	1650	1650	1650	1650	1450	1250	1450	1450	1250*
2.60-2.89	1650	1650	1650	1650	1450	1250	1450	1450	1250
2.90-2.99	1650	1650	1650	1650	1650	1450	1450	1450	1250*
3.00-3.09	1650	1650	1650	1650	1650	1650	1650	1650	1650
3.10-3.39	1650	1650	1650	1650	1650	1650	1650	1650	1650
3.40-3.89	1650	1650	1650	1650	1650	1650	1650	1650	1650
3.90-3.99	1650	1650	1650	1650	1650	1650	1650	1650	1650
4.00-4.39	1650	1650	1650	1650	1650	1650	1650	1650	1650
4.40-4.99	1650	1650	1650	1650	1650	1650	1650	1650	1650
5.00-5.79	1650	1650	1650	1650	1650	1650	1650	1650	1650
5.80-18.99	1650	1650	1650	1650	1650	1650	1650	1650	1650
19.00-26.00	1650	1650	1650	1650	1650	1650	1650	1500	1500

Explanations

- There may be limit changes on the basis of quality for the (*) marked groups.
- The limits in the (**) marked groups is only valid for domestic market orders. Export orders are subject to negotiation.



The background of the image is a close-up, high-contrast photograph of several large, dark-colored metal coils. The coils are stacked, creating a series of overlapping, curved surfaces that catch the light, highlighting the texture of the metal. A semi-transparent green gradient bar is positioned horizontally across the middle of the image, serving as a backdrop for the text.

DIMENSION and SHAPE TOLERANCES

HOT ROLLED COIL TOLERANCES

General Application

The specified tolerances are not valid for the total of "90/thickness (mm)" meter long part of the beginning and ending of the coils with untrimmed edges. However, the length of the part excluded from tolerance cannot be more than 20 meters. (DIN EN 10 051-1997)

Thickness Tolerances (DIN EN 10051 - 1997)

- Thickness tolerance for hot rolled low carbon steels suitable for cold forming.

Thickness (mm)	Width (mm)		
	W≤1200	1200<W≤1500	1500<W≤1650
≤2.00	0.13	0.14	0.16
2.00≤2.50	0.14	0.16	0.17
2.50≤3.00	0.15	0.17	0.18
3.00≤4.00	0.17	0.18	0.20
4.00≤5.00	0.18	0.20	0.21
5.00≤6.00	0.20	0.21	0.22
6.00≤8.00	0.22	0.23	0.23

- Thickness tolerance for group A qualities that have normal deformation resistance at high temperature.

Thickness (mm)	Width (mm)		
	W≤1200	1200<W≤1500	1500<W≤1650
≤2.00	0.17	0.19	0.21
2.00≤2.50	0.18	0.21	0.23
2.50≤3.00	0.20	0.22	0.24
3.00≤4.00	0.22	0.24	0.26
4.00≤5.00	0.24	0.26	0.28
5.00≤6.00	0.26	0.28	0.29
6.00≤8.00	0.29	0.30	0.31
8.00≤10.00	0.32	0.33	0.34
10.00≤12.50	0.35	0.36	0.37
12.50≤15.00	0.37	0.38	0.40
15.00≤25.00	0.40	0.42	0.45

- The specified tolerances for group A qualities will be increased by 15%, 30% and 40% respectively for group B,C and D qualities.

Slab	
Thickness	200-250 mm
Width	700-1650 mm
Length	5800-12100 mm

Hot Rolled Coil (HRC)	
Thickness	1.00-25.4 mm
Width	700-1650 mm
Coil Weight	10-26 tonnes
Coil Inner Diameter	762 mm

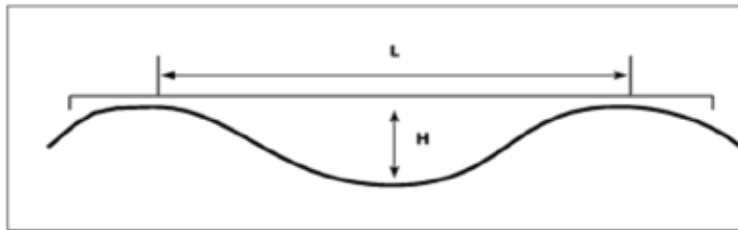
WIDTH TOLERANCES

The width tolerances are as follows in accordance with DIN EN 10051 standard.

Width (mm)	Tolerance (mm)	
	Trimmed Edge Coil	
	min (mm)	max (mm)
$W \leq 1200$	0	20
$1200 < W \leq 1500$	0	20
$1500 < W \leq 1650$	0	25

SURFACE FLATNESS TOLERANCE

The surface flatness measurement is schematically given below.



- Surface smoothness tolerances for group A qualities with normal deformation resistance.

Thickness (mm)	Width (mm)	Surface Smoothness Tolerance H (mm)	Narrowed Surface Flatness Tolerance (mm)
$t \leq 2$	$W \leq 1200$	18	9
	$1200 < W \leq 1500$	20	10
	$W > 1500$	25	13
$2 < t \leq 25$	$W \leq 1200$	18	8
	$1200 < W \leq 1500$	18	7
	$W > 1500$	23	12

- Surface flatness tolerances for qualities with high deformation resistance.

Group	Surface Flatness (mm)
Thickness	Width (mm)
$t \leq 25\text{mm}$	$w \leq 1200$
B	18
C	23
D	Should be discussed during ordering stage.

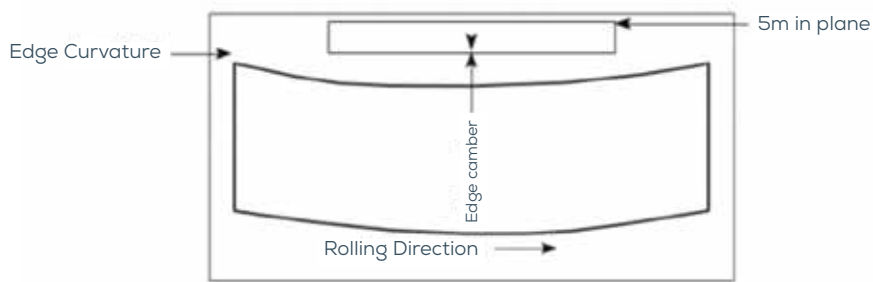
VERTEX PERPENDICULARITY TOLERANCE

Corner perpendicularity is the amount of deviation detected by orthogonal projection of the transverse edge over the longitudinal edge and is shown schematically below. (DIN EN 10051-1997) The maximum corner perpendicularity tolerance is 1% of the product width.



EDGE CURVATURE TOLERANCE

The edge curvature of hot rolled coils cannot exceed 20 mm in any 5 meters of the roll length. (DIN EN 10051-1997)



TELESCOPICITY

Telescopicity can be maximum 60 mm outward.

Inner radius of the coil can change by 7% in horizontal and vertical axis. (DIN 1016-1987)

COIL SIZE, WEIGHT AND LIMITS

Coil inner diameter tolerances, maximum weight and outer diameter information are given below.

Coil Inner Diameter	762 + 0/-50
Coil Outer Diameter	Max. 2100 mm
Coil Weight	Max. 26 tonnes

SLICED TAPE STANDARDS

Slicing is done on S700MC Quality rolls, 1-14mm thick and 2000mm wide bands.

THICKNESS

Nominal Thicknesses	Nominal Width Tolerances			
	≤1200	$\gt 1200$ ≤ 1500	$\gt 1500$ ≤ 1800	$\gt 1800$
≤2,00	±0,17	±0,19	±0,21	-
$\gt 2,00 \leq 2,50$	±0,18	±0,21	±0,23	±0,25
$\gt 2,50 \leq 3,00$	±0,20	±0,22	±0,24	±0,26
$\gt 3,00 \leq 4,00$	±0,22	±0,24	±0,26	±0,27
$\gt 4,00 \leq 5,00$	±0,24	±0,26	±0,28	±0,29
$\gt 5,00 \leq 6,00$	±0,26	±0,28	±0,29	±0,31
$\gt 6,00 \leq 8,00$	±0,29	±0,30	±0,31	±0,35
$\gt 8,00 \leq 10,00$	±0,32	±0,33	±0,34	±0,40
$\gt 10,00 \leq 12,50$	±0,35	±0,36	±0,37	±0,43
$\gt 12,50 \leq 15,00$	±0,37	±0,38	±0,40	±0,46

WIDTH

Nominal Width		Tolerances			
		Just as it came out of the mill		Smoothed edges	
		Min.	Max.	Min.	Max.
≤1200	≤1200	0	20	0	+3
$\gt 1200$	≤1500	0	20	0	+5
$\gt 1500$		0	2	0	+6

For flattened materials, tolerances apply to products with a nominal thickness of 10 mm. For products with a nominal thickness greater than 10mm, the upper tolerances must be applied when inquiring or ordering.

SMOOTHNESS

Nominal Thickness	Nominal Width	Flatness Tolerance	Special Tolerances Regarding Straightness
$\leq 2,00$ $\gt 2,00 \leq 25$	$\gt 1200$	18	9
	≤1200	20	10
	≤1500	25	13
	≤1200	15	8
	≤1500	18	9
	$\gt 1500$	23	12

LENGTH BASED CUTTING and PACKING STANDARDS

Up to S700MC Quality tapes are produced in rolls with a thickness of 1-25mm and a maximum width of 2000mm by the cut-to-length method.

Nominal Thicknesses	Nominal Width Tolerances			
	≤1200	>1200 ≤1500	>1500 ≤1800	>1800
≤2,00	±0,17	±0,19	±0,21	-
>2,00 ≤2,50	±0,18	±0,21	±0,23	±0,25
>2,50 ≤3,00	±0,20	±0,22	±0,24	±0,26
>3,00 ≤4,00	±0,22	±0,24	±0,26	±0,27
>4,00 ≤5,00	±0,24	±0,26	±0,28	±0,29
>5,00 ≤6,00	±0,26	±0,28	±0,29	±0,31
>6,00 ≤8,00	±0,29	±0,30	±0,31	±0,35
>8,00 ≤10,00	±0,32	±0,33	±0,34	±0,40
>10,00 ≤12,50	±0,35	±0,36	±0,37	±0,43
>12,50 ≤15,00	±0,37	±0,38	±0,40	±0,46
>15,90 ≤25,00	±0,40	±0,42	±0,45	±0,50

VISION GREEN

“

As Tosyalı, our vision is to contribute to building a sustainable world via ensuring environmental production in our facilities, with the help of technology, innovation and renewable energy usage. Within our responsible ecosystem management approach, we produce green steel products in every category of the steel. We produce **less carbon emission, consume less water, focus on renewable energy resources, produce with highest efficiency and recycle all our wastes.**

We believe that a sustainable world is possible with the green transformation of the steel industry.

Fuat Tosyalı

Chairman of the Board
of Directors of Tosyalı Holding

Tosyalı proudly presents a new umbrella brand to represent its green steel vision in every touch point of its operation.

Tosyalı V-Green

This is not just a brand, it is also the strongest indicator of sustainability actions those have been taking place for many years at Tosyalı and will continue by highest determination.

In all our production facilities, we focus on new generation green steel production and under the umbrella of V-Green, we introduce environment friendly products for our suppliers.

How we are making this vision live in Tosyalı?

We produce green steel with the help of;

- technology usage,
- innovation,
- renewable energy resources,
- recycling in every touch point production and
- operating with highest efficiency.

We aim to be the world's leading sustainable green steel producer with the lowest carbon footprint.

“

“V” are ready to be “Green”!

V-Green.
Vision Green.



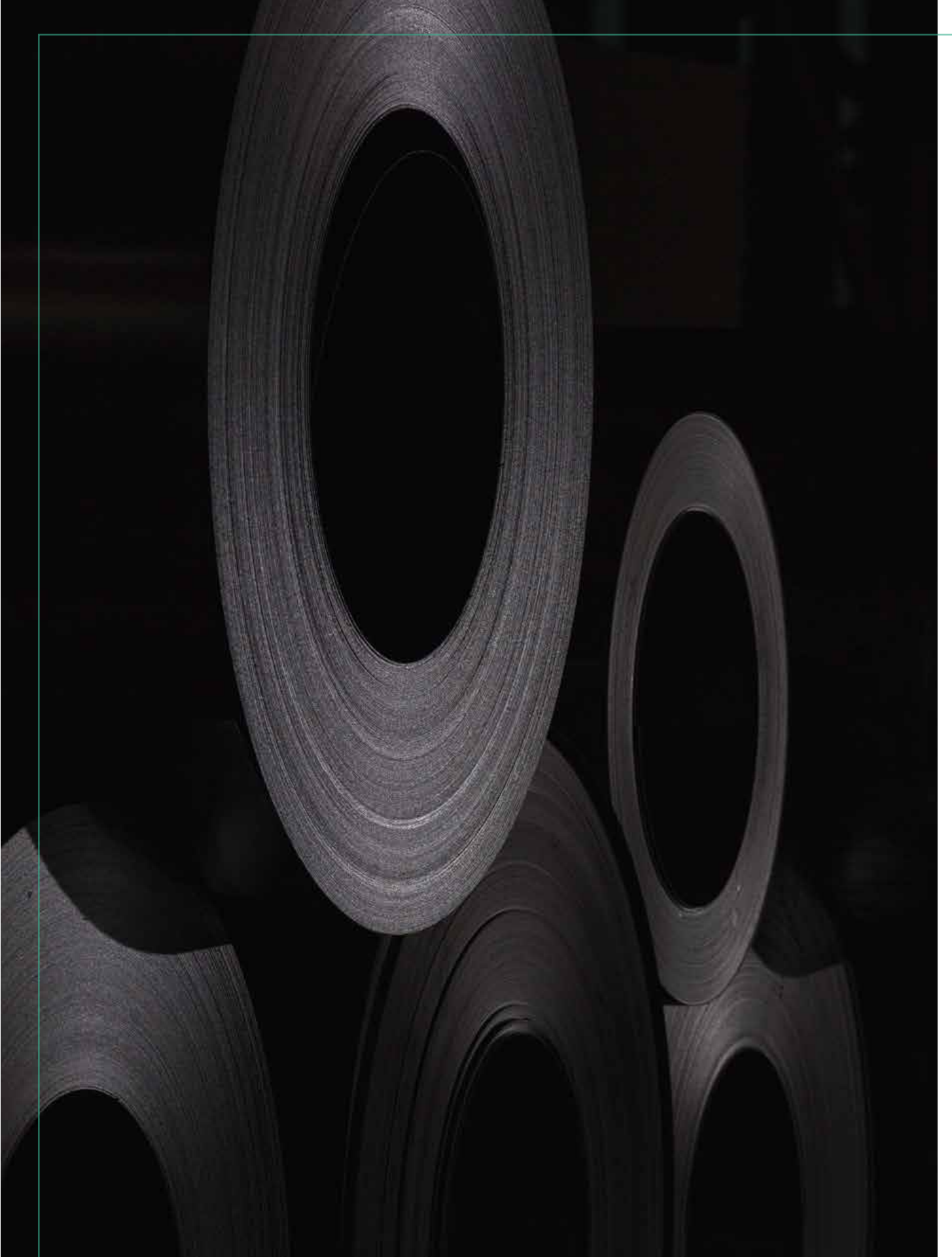
TOSYALI FOR A SUSTAINABLE LIFE

Steel is in life today, at the forefront of change and transformation tomorrow, and at the center of life in the future.

Leader in Green Steel for Today and Tomorrow

-  Türkiye's steel producer with the lowest carbon footprint
-  Partnership with world giants in circular economy
-  Sustainability-oriented R&D projects and investments
-  Leading the steel industry in the use of renewable energy sources





TOSYALI Demir Çelik
Yassı Yapısal



TOSYALI Demir Çelik
Yassı Yapısal



TOSYALI Demir Çelik

Yassı Yapısal

İskenderun Factory

Organized Industrial Zone, Sarıseki
İskenderun / Hatay / Türkiye

+90 (326) 656 21 30

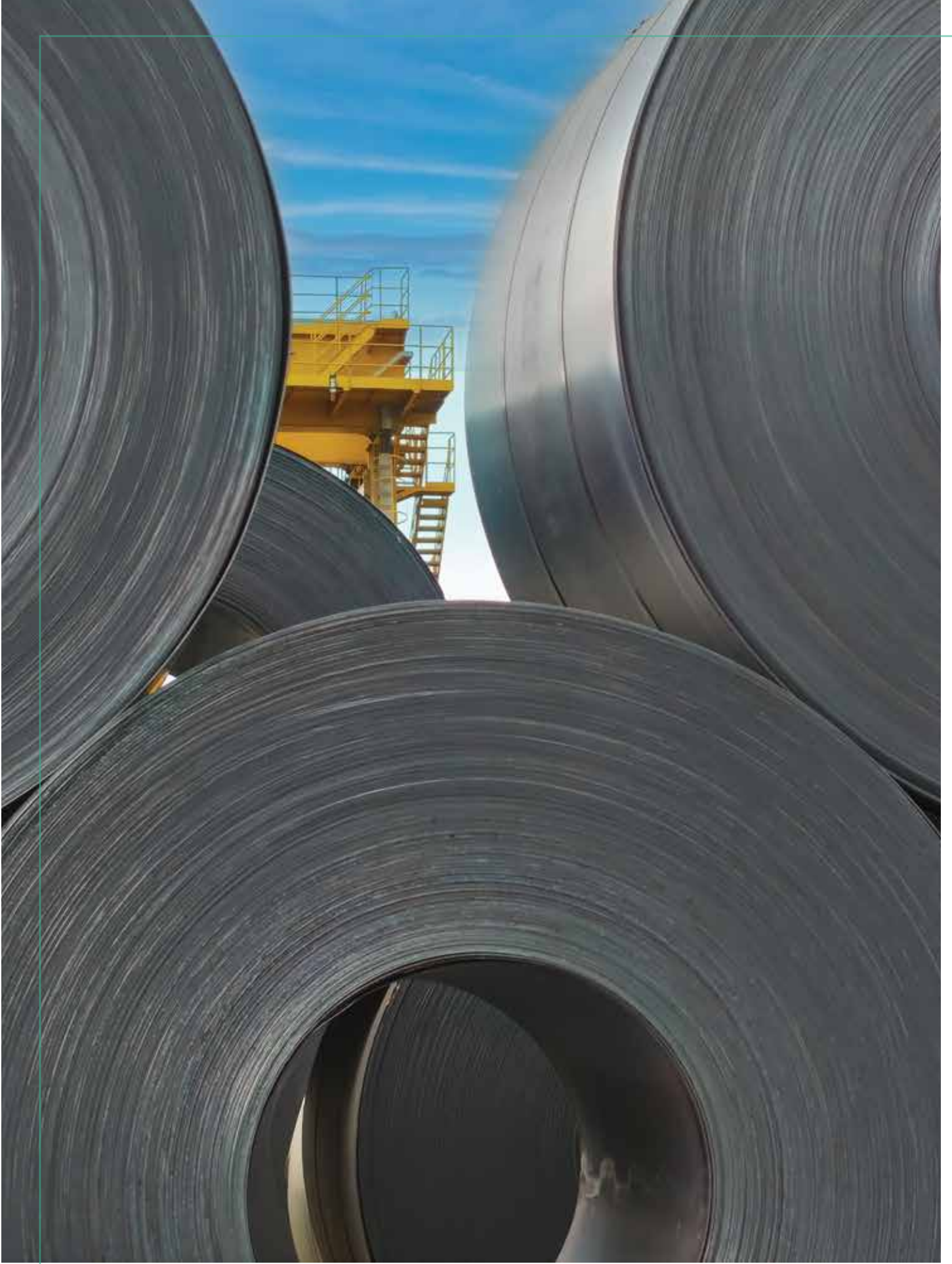
Port Service

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