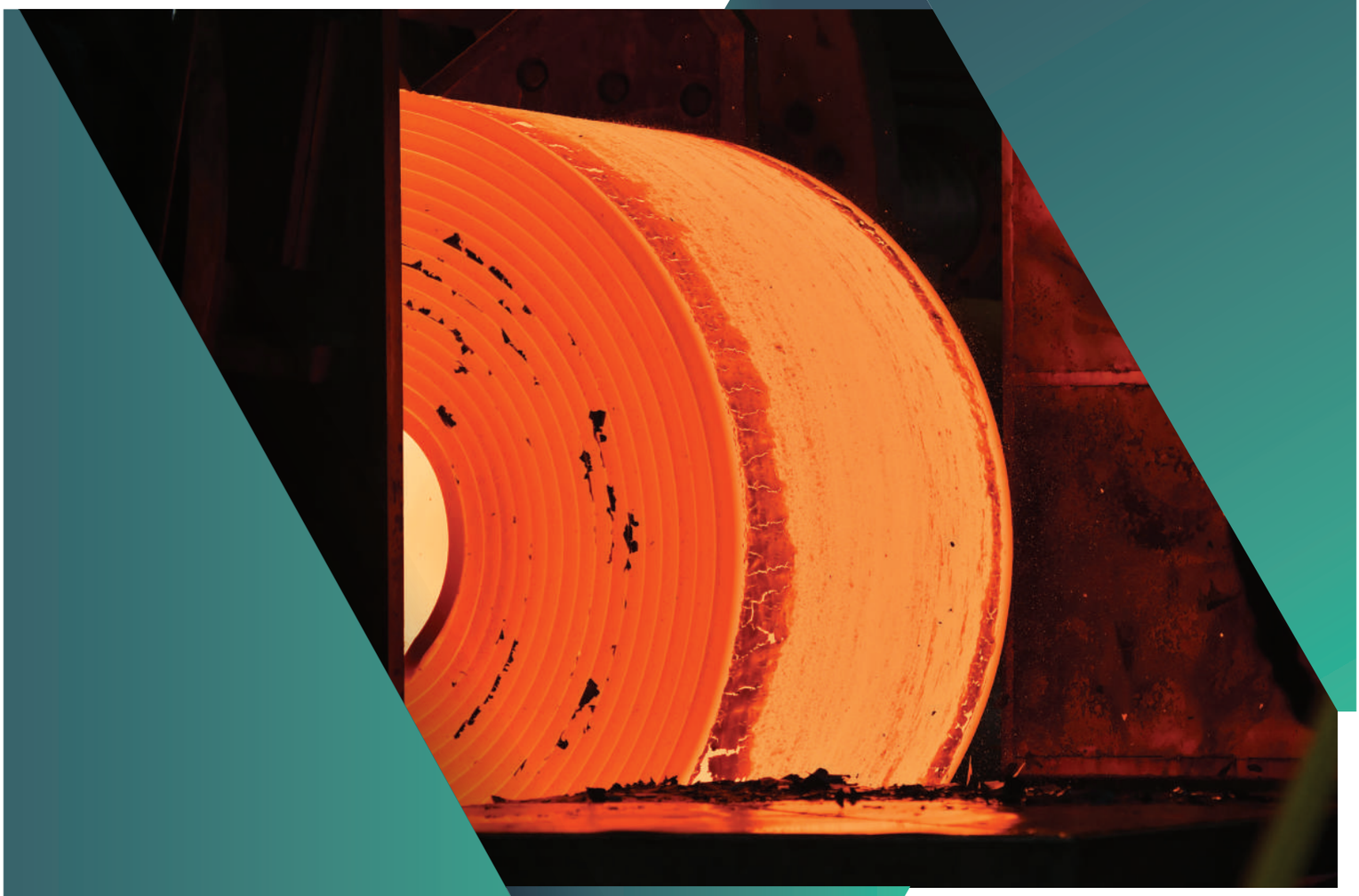
TOSYALI Demir Çelik

Yassı Yapısal



Tosyalı Demir Çelik

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TOSYALI Demir Çelik
Yassı Yapısal

TOSYALI Demir Çelik
Yassı Yapısal

TOSYALI FOR A SUSTAINABLE LIFE

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

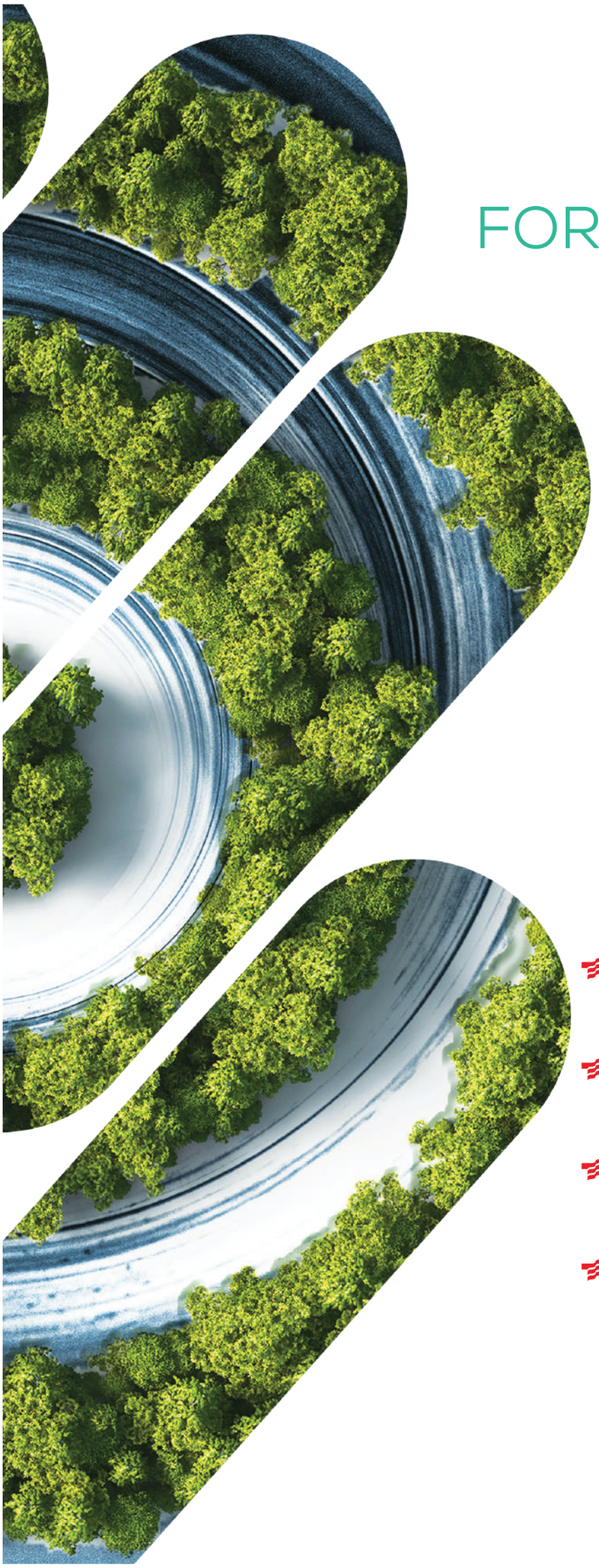
Our responsible production and consumption approach includes the use of eco-friendly technologies, and the generation of energy from renewable sources ensures that our production maintains a low carbon footprint. At the same time, our production with a high scrap ratio contributes to the circular economy.

With the commencement of the Solar Power Plant (SPP) project across our facilities, we take pride in having the world's largest rooftop Solar Power Plant. This project not only reduces our energy costs but also contributes to making our steel production one of the cleanest and greenest facilities globally.

At our R&D Center, we focus on sustainability-driven projects, constantly reducing our carbon footprint through process improvements. 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
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

TOSYALI Demir Çelik
Yassı Yapısal

Corporate Values

About Us

Tosyalı Sarıseki Steel Production Facility contains the "MOST"s in many categories. Today, the facility, built on an area of 500 thousand square meters, is the most compact facility not only in Türkiye but also in the world, with an annual production capacity of 4 million tons. We produce 500 different grades of steel using the most advanced technologies in the facility, which has the world's fastest slab casting machine. In this facility, which will put us ahead in global competition in compliance with Industry 4.0, we operate Quantum Arc furnaces that consumes less electrical energy for th e first time in Türkiye. With these new technologies, we use 30% less electrical energy, 15% less natural gas, and leave a 70% lower carbon footprint than blast furnaces and 20% lower than conventional arc furnaces, thanks to renewable energy sources and more efficient use of scrap.

With these new sustainability-oriented investments, Sarıseki becomes the center of green steel in Türkiye. We aim to further reduce these consumption values with new investments in clean and renewable energy sources such as solar energy and hydrogen. Sarıseki Facility has become one of Türkiye's exemplary facilities in value-added production and exports with its 2 giant quantum technology foundries and two ports and Sarıseki will contribute to the import substitution of approximately 4 million tons of flat steel. Thanks to wider coil production, our product range in the flat steel category will expand even further, making us an important global player in many different sectors, from automotive to white goods.

As Tosyalı, we make a significant contribution to the revival of the regional economy with our Sarıseki facility, which brings us to an annual production volume of 10 million tons, while also providing employment for additional 1500 people. We work hard for our goal of becoming an innovative, preferred and exemplary global company that pioneers the steel industry. We invest in renewable energy to provide the world with a steel-solid but sustainable future in which our children can live, and aim to utilize resources effectively and produce lasting values for future generations. With social responsibility and environmental awareness in the steel industry; we continue on our way with the determination of the first day to produce competitive products with high added value from raw materials to the final product, to improve continuously and to improve the lives we touch.

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

2020
Construction started on 459.000 m² area.

2023
Completion of construction and start of production

4 MILLION TONS
Annual crude steel production capacity of over 4 million tons

1500+
Direct employment

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/mm²)
Rm	Tensile Strength (N/mm²)
Rp 0,2	Tensile Strength at Elevated Temperature (N/mm²)
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 (mm²)
L_0	Initial length of test sample (mm)
d	Nominal Thickness (mm)
t	Tonne
Impact	Impact Test
KVc	Impact Energy (J)
Temp.	Test Temperature (0C)
Bending	Bending Test
Btmr	Bending Test Mandrel Radius (mm)
Btmd	Bending Test Mandrel Diameter (mm)
Width	Transverse Test Sample
Lenght	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

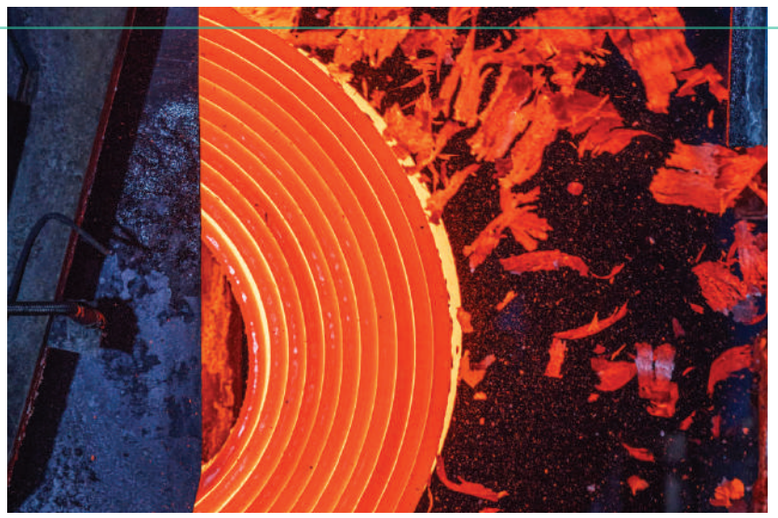
CERTIFICATES

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	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

The Content

Flat Steel Product Qualities and Application Fields



FLAT STEEL PRODUCT QUALITIES and APPLICATION FIELDS			
Application Field	Standard	Standard Quality	Tosçelik 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
		DD11 (1008)	TOS2883
		DD13	TOS2884
		DD14	TOS2886
NON-ALLOYED GENERAL STRUCTURAL STEELS	EN 10025 Part 2-2004	S235JR	TOS3750
		S235JR+N	TOS3650
		S235J2+N	TOS3652
		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	S355JR+N-Low Si	TOS5680
		S355JR-Low Si	TOS5280
		S355J0-Low Si	TOS5281
		S355J2+N-Low Si	TOS5682
		S355J2-Low Si	TOS5282
NON-ALLOYED GENERAL STRUCTURAL STEELS SUITABLE FOR GALVANIZING IN ACCORDANCE WITH CLASS 1 STANDARD	EN 10025 Part 2-2004	S235JR	TOS3780
		S235J0	TOS3781
		S235J2	TOS3782
		S275JR	TOS4480
		S275J0	TOS4421
		S275J2	TOS4482
GENERAL STRUCTURAL STEELS SUITABLE FOR COLD FORMING, BENDING and PLASTERING	EN 10025 Part 2-2004	S235JRC	TOS3550
		S355J2C	TOS3752
		S235JRC+N	TOS3556
		S275JRC	TOS4550
		S275J2C	TOS4452
		S275J2C+N	TOS4556
GENERAL STRUCTURAL STEELS SUITABLE FOR COLD FORMING, BENDING and PLASTERING	EN 10025 Part 2-2004	S355JRC-Low Si	TOS5580
		S355j0C-Low Si	TOS5581
		S355J2C-Low Si	TOS5552
		S355J2C	TOS5552
		S355J2C+N	TOS5536
		S355JRC	TOS5550

Flat Steel Product Qualities and Application Fields

FLAT STEEL PRODUCT QUALITIES and APPLICATION FIELDS			
Application Field	Standard	Standard Quality	Tosçelik Quality No
STEELS RESISTANT TO ATMOSPHERIC CORROSION	EN 10025 Part 5-2004	S235J0W	TOS3351
		S235J2W	TOS3352
		S355J0W	TOS5351
		S355J2W	TOS5352
		S355J0WP	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	EN 10028 Part 3- 2008	P355NL1	TOS5272
BOILER PIPE STEEL	EN 10217-2-2005	P235GH - Low Si	TOS3789
BOILER PIPE STEEL	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	TOS5759
		S355MC	TOS5760
		S420MC	TOS5761
		S460MC	TOS5262
		S500MC	TOS5263
		S550MC	TOS5264
		S600MC	TOS5265
		S700MC	TOS5266

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

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	TOS3770
		P265GH	TOS3771
		P295GH	TOS4457
		P355GH	TOS5271
BOILER STEELS	EN 10028 Part 3-2008	P355NL1	TOS5272
BOILER PIPE STEEL	EN 10217-2-2005	P35GH-Low Si	TOS3784
BOILER PIPE STEEL	EN 10217-3-2005	P275NL1-Low Si	TOS4483
LPG CYLINDER STEELS	EN 10120-2008	P245NB	TOS4458

Flat Steel Product Qualities and Application Fields

FLAT STEEL PRODUCT QUALITIES and APPLICATION FIELDS			
Application Field	Standard	Standard Quality	Tosçelik Quality No
MICROALLOYED STEELS SUITABLE FOR COLD ROLLING and GALVANIZING	EN 10149 Part 2-1995	S315MC	TOS5788
		S355MC	TOS5789
		S420MC	TOS5780
		S460MC	TOS5781
PRESSURE PIPE STEELS	EN 10217 Part 1-2005	P235TR1	TOS3760
		P235TR2	TOS3762
		P235TR1 - Low Si	TOS3785
		P235TR2 - Low Si	TOS3787
OIL PIPE STEELS	API 5L 45th Edition-2012 / ISO 3183-2012	A / L210 / PSL1	TOS9030
		B / L245 / PSL1	TOS9035
		X42 / L290 / PSL1	TOS9042
		X46 / L320 / PSL1	TOS9046
		X52 / L360 / PSL1	TOS9062
		X60 / L415 / PSL1	TOS9060
		X65 / L450 / PSL1	TOS9065
		X70 / L485 / PSL1	TOS9070
OIL PIPE STEELS DESIRED WITH STANDARD YIELD TENSILE STRENGTH RATE	API 5L 45th 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 / L245M / PSL2	TOS9066
		X70M / L485M / PSL2	TOS9071
OIL PIPE STEELS SUITABLE FOR SRM PIPE PRODUCTION OR NORMALIZATION	API 5L 2012	BN / L245N / PSL2	TOS9136
		X42N / L290N / PSL2	TOS9143
		X46N / L320N / PSL2	TOS9147
OIL DRILLING PIPE STEELS	API 5L 2011	J55 Upgradeable (Tubing)	TOS9130
		J55 Upgradeable (Casing)	TOS9275
		J55 Upgradeable	TOS9230
		J55 Upgradeable	TOS9231
		J55 Regular	TOS9155
		J55 Regular	TOS9255
		5CTJ55	TOS9055
HOT ROLLED STEELS SUITABLE FOR COLD ROLLING FOR ELECTRICAL STEEL PRODUCTION	EN 10106-2007	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 (%)								
Tosçelik 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 (%)								
Tosçelik Quality No	Standard	Quality	C	Mn	P	S	N(1)	Al
			max	max	max	max	max	min
TOS2883	EN 10111	DD12	0.10	0.45	0.035	0.035	—	0.020
TOS2884	EN 10111	DD13	0.08	0.40	0.030	0.030	—	0.020
TOS2885	EN 10111	DD11	0.12	0.60	0.045	0.045	—	—
TOS2886	EN 10111	DD14	0.08	0.35	0.025	0.025	—	—

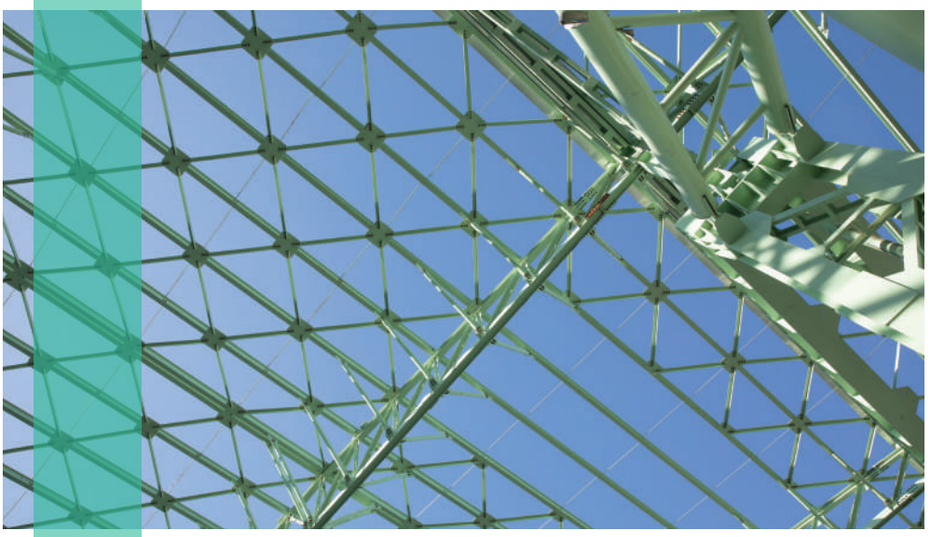
MECHANICAL PROPERTIES									
Tosçelik Quality No	Standard	Quality	Re		Rm(1)	A(%)			Bending
			N/mm²			A80		A5	(en.;180°)
			1.5≤d<2	2≤d≤8		1.5≤d<2	2≤d<3	3≤d<8	kmy
					max	min	min	min	d:thickness
TOS2883	EN 10111	DD12	170 - 340	170 - 320	420	25	26	30	0
TOS2884	EN 10111	DD13	170 - 330	170 - 310	400	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 Compostion (%)											
Tosçelik 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	1.4	0.035	0.035	0.55	—	0.012	0.40
TOS4652	EN 10025-2	S275J2+N	0.18	0.18	1.4	0.025	0.025	0.55	0.020	—	0.40

MECHANICAL PROPERTIES													
Tosçelik 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

Fields of Usage

- Vehicle Manufacturing
- Bridge Construction
- Steel Construction
- Pressure Tanks and Equipments



NON-ALLOYED GENERAL STRUCTURAL STEELS												
Standard: EN 10025-Part 2-2004												
Chemical Composition (%)												
Tosçelik 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

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														
Standard: EN 10025-Part 2-2004														
Mechanical Properties														
Tosçelik 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

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. Impact test is not applied for products with a thickness less than 6 mm.
4. Impact test is done upon request.

NON-ALLOYED GENERAL STRUCTURAL STEELS SUITABLE FOR GALVANIZING and BENDING

Standard: EN 10025-Part 2-2004

Chemical Composition (%)

Tosçelik 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

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 and BENDING

Standard: EN 10025-Part 2-2004

Mechanical Properties

Tosçelik Quality No	Standard	Quality	Re		Rm(1)		A(%), min.					Impact (length)(3)	
			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
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

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. Impact test is not applied for products with a thickness less than 6 mm.
4. 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 (%)												
Tosçelik Quality No	Standard	Quality	C (max)		Si	Mn	P	S	Cu	Al(1)	N(1)	Ceq(2)
			d≤16	16<d≤40	max						max	
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
TOS5282	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														
Tosçelik Quality No	Standard	Quality	Re		Rm(2)		A(%), min.						Impact (length)(3)	
			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		ºC	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)
TOS5282	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 (%)

Tosçelik 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

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.

GENERAL STRUCTURAL STEELS SUITABLE FOR COLD FORMING, BENDING and PLASTERING

Standard: EN 10025-Part 2-2004

Mechanical Properties

Tosçelik 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.
			≤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

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

MECHANICAL PROPERTIES									
Tosçelik 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 (%)											
Tosçelik 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	S255JRC-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
TOS5536	EN 10025-2	S355J2C+N	0.20	0.20	0.55	1,6	0.025	0.025	0.55	0.020	—	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

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.

GENERAL STRUCTURAL STEELS SUITABLE FOR COLD FORMING, BENDING and PLASTERING													
Standard: EN 10025-Part 2-2004													
Mechanical Properties													
Tosçelik 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)
TOS5536	EN 10025-2	S355J2C+N	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

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

Tosçelik 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
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.

STEELS RESISTANT TO ATMOSPHERIC CORROSION

Standard: EN 10025-Part 2-2004

Chemical Composition (%)

Tosçelik 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
TOS3550	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
TOS3552	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
TOS3556	EN 10025-2	S355J0W	0,16	0.45-1.60	0,45	0,040	0,040	0.35-0.85	-	0.20-0.60	-	0,01
TOS4550	EN 10025-2	S355J2W	0,16	0.45-1.60	0,45	0,035	0,035	0.35-0.85	-	0.20-0.60	-	0,01
TOS4552	EN 10025-2	S355J0WP	0,16	1-Jan	0,45	0,05-	0,040	0.25-1.35	-	0.20-0.60	-	0,01
TOS4556	EN 10025-2	S355J2WP	0,16	1-Jan	0,45	0,05-	0,035	0.25-1.35	-	0.20-0.60	-	0,01

MECHANICAL PROPERTIES

Tosçelik Quality No	Standard	Quality	Re		Rm(1)		A (%)				Impact (length)(2)	
			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<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 (%)

Tosçelik 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.

MECHANICAL PROPERTIES

Tosçelik Quality No	Standard	Quality	Re(1)	Rm(1)	A(%)	Strain-Hardening Exponent
			N/mm²		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 (%)

Tosçelik 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.

MECHANICAL PROPERTIES

Tosçelik Quality No	Standard	Quality	Re(1)	Rm(1)	A(%)	Strain-Hardening Exponent
			N/mm²		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 (%)

Tosçelik 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

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

MECHANICAL PROPERTIES

Tosçelik Quality No	Standard	Quality	Re(1)	Rm(1)	A(%)
			N/mm²		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

Explanations

1. Tensile test shall be applied for lateral direction.

BOILER STEELS

Standard: EN 10028-Part 2-2008

Chemical Composition (%)

Tosçelik Quality No	Standard	Quality	C	Si	Mn	P	S	Al	Nb	Cr(1)	Cu(1)	Mo(1)	Ni(1)
			max	max	min / max	max	max	min	max	max	max	max	max
TOS3679	EN 10028-2	P235GH	0.16	0.35	0.60-1.20	0.025	0.020	0.020	0.020	0.30	0.30	0.08	0.30
TOS3779	EN 10028-2	P265GH	0.20	0.40	0.80-1.20	0.025	0.020	0.020	0.020	0.30	0.30	0.08	0.30
TOS4459	EN 10028-2	P295GH	0.08-0.20	0.40	0.90-1.50	0.025	0.015	0.020	0.020	0.30	0.30	0.08	0.30
TOS5279	EN 10028-2	P355GH	0.10-0.22	0.60	1.10-1.70	0.025	0.015	0.020	0.020	0.30	0.30	0.08	0.30

Explanations

1. Cr+Cu+Mo+Ni≤%0.70
2. For the thicknesses less than 6 mm, min. Mn amount can be reduced by 0.20%.

MECHANICAL PROPERTIES

Tosçelik Quality No	Standard	Quality	Re (min.)		Rm(1)	A5(%)	Darbe (2) (en)		Rp 0.02(1) (min.) T:300°C	
			N/mm²		N/mm²	min.	Sıc.	KVc (min.)	N/mm²(kg / mm²)	
			d≤16	16<d≤40						
TOS3679	EN 10028-2	P235GH	235	225	360-480	24	-20	27	153	147
TOS3779	EN 10028-2	P265GH	265	265	410-530	22	-20	27	173	166
TOS4459	EN 10028-2	P295GH	295	295	460-580	22	-20	27	192	189
TOS5279	EN 10028-2	P355GH	355	345	510-650	20	-20	27	232	225

Explanations

1. The tensile test values are applied to the "Transverse" test samples.
2. It is valid for the coil thickness of T≤6 mm.

BOILER STEELS															
Standard: EN 10028-Part 2-2008															
Chemical Composition (%)															
Tosçelik 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

Explanation

1. For the thicknesses thinner than 6 mm, min. Mn quantities can be reduced by 0.20%

MECHANICAL PROPERTIES								
Tosçelik Quality No	Standard	Quality	Re (min.)	Rm (1)	A5 (%)	Impact (2) (width)		Rp 0.02(1) (min.) T:300°C
			N/mm²			Temp.	KVc (min.)	N/mm² (kg / mm²)
			d≤16	N/mm²	min	°C	J	d≤16
TOS5272	EN 10028-3	P355NL1	355	490-630	22	-40	27	232

BOILER PIPE STEELS														
Standard: EN 10217 2-2002														
Chemical Composition (%)														
Tosçelik Quality No	Standard	Quality	C	Si	Mn	P	S	Al	Cr(1)	Cu(1)	Mo(1)	Nb(1)	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	1,2	0,025	0,020	0,020	0,30	0,30	0,08	0,010	0,020	0,030

Explanation

1. Cr+Cu+Mo+Ni≤ %0.70.

MECHANICAL PROPERTIES										
Tosçelik Quality No	Standard	Quality	Re(1)	Rm(1)	A (%)		Impact (length)(2)		Impact (width)(2)	
							Temp.	KVc	Temp.	KVc
			N/mm²	N/mm²	l	t		min		min
			min	min. / max	min	min	°C	J	°C	J
TOS3789	EN 10217-2	P235GH-Low Si	235	360-500	25	23	0	40	0	27

Explanations

1. Tensile test values are valid for "transverse" test samples.
2. Impact test is valid for samples including 16mm thickness. It can be made longitudinally and transversely.
3. l: longitidunal / t: transverse

PRESSURE PIPE STEELS

Standard: EN 10217-Part 1 -2005

Chemical Composition (%)

Tosçelik 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
TOS3762	EN 10217-1	P235TR2	0.16	1,2	0.35	0.025	0.020	0.30	0.30	0.02	0.30	0.08
TOS3785	EN 10217-1	P235TR1-Düşük Si	0.16	1,2	0.35	0.025	0.015	0.30	0.30	-	0.30	0.08
TOS3787	EN 10217-1	P235TR2-Düşük Si	0.16	1,2	0.35	0.025	0.015	0.30	0.30	0.02	0.30	0.08

Explanation

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

MECHNICAL PROPERTIES

Tosçelik Quality No	Standard	Quality	Re (min.) N/mm²		Rm(1) N/mm²	A(%)		Impact (length)(2) min.					
			d≤16	16<d≤40	min / maks	l	t	Temp.	KVc l	Temp.	KVc l	Temp.	KVc t
			min.	min.		min.	min.	°C	J	°C	J	°C	J
TOS3760	EN 10217-1	P235TR1	235	225	360-500	25	23	0	-	-10	-	0	-
TOS3762	EN 10217-1	P235TR2	265	225	360-500	25	23	0	40	-10	28	0	27
TOS3785	EN 10217-1	P235TR1-Low Si	295	225	360-500	25	23	0	-	-10	-	0	-
TOS3787	EN 10217-1	P235TR2-Low Si	355	225	360-500	25	23	0	40	-10	28	0	27

Explanations

1. Tensile test values are valid for transverse test samples.
2. Impact test is applied to ''Longitidunal and Transverse'' test samples.
3. l: longitidunal / t: transverse

OIL PIPE STEELS

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

Chemical Composition (%)

Tosçelik 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
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 and Ti can be found in the composition of these qualities as long as Nb+V+Ti≤0.15.
2. Nb and V can be found in the composition of these qualities as long as Nb+V≤0.06.
3. 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 1.65% for L245, L290, L320 and L360 qualities, max 1.75% for X56, X60 and X65 qualities and max 2.00% for X70 quality.
4. For L360/X52 and lower qualities, max. percentage of Cu, Cr, Ni and Mo can be 0.5%, 0.5%, 0.5% and 0.15% respectively.
5. Suitable for ERW pipe production.
6. Suitable for spiral welded pipe production.

MECHANICAL PROPERTIES					
Tosçelik Quality No	Standard	Quality	Re	Rm(1)	Af(%)
			N/mm²		
			min	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"
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 DESIRED WITH STANDARD YIELD TENSILE STRENGTH RATE																	
Standart: API 5L 45th Edition-2012/ISO 3183-2012																	
Chemical Composition (%)																	
Tosçelik 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	CEIIW	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 and V can be found in the composition of these qualities as long as Nb+V≤0.06.
2. Max. percentage of Cu, Cr, Ni and Mo can be 0.5%, 0.3%, 0.3% and 0.15% respectively.
3. 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.
4. Max. percentage of Cu, Cr, Ni and Mo can be 0.5%, 0.5%, 0.5% and 0.5% respectively.
5. 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 1.65% for L245, L290, L320 and L360 qualities, max 1.75% for X56, X60 and X65 qualities and max 2.00% for X70 quality.
6. Suitable for ERW pipe production.
7. Suitable for spiral welded pipe production.

MECHANICAL PROPERTIES											
Tosçelik Quality No	Standard	Quality	Rt (0,5)		Rm(1)		Rt(0,5)/Rm	A50(%)	Impact (3)(4) (width)		DWTT (transversal)
			N/mm²						Temp.	KVc (min)	%Continuous Fracture Field
			min.	max.	min.	max.		min.	°C	J	min.
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 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)
3. Impact test is not applied for products with a thickness less than 6 mm.
4. Impact test is done upon request.
5. DWTT test is applied to transverse test samples.

Suitable for Bending

Homogeneous Structure

More Resistant to Corrosion

OIL PIPE STEELS SUITABLE FOR SRM PIPE PRODUCTION OR NORMALIZATION																
Standard: API 5L 45th Edition-2012/ISO 3183-2012																
Chemical Composition (%)																
Tosçelik 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	CEIIW	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

1. Nb and V can be found in the composition of these qualities as long as Nb+V≤0.06.
2. Max. percentage of Cu, Cr, Ni and Mo can be 0.5%, 0.3%, 0.3% and 0.15% respectively.
3. 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.
4. 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

Chemical Composition (%)

Tosçelik 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

MECHANICAL PROPERTIES

Tosçelik Quality No	Standard	Quality	Rt(0,5) N/mm²		Rm(1) N/mm²		Rt(0,5)/Rm	A50(%)	Impact(3)(4)(width) Temp.	Impact(3)(4)(width) KVc (min)	DWTT (transverse) % 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

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

OIL DRILL PIPE STEELS

Standard: API 5CT-2011

Chemical Composition (%)

Tosçelik 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-maks	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	—	—	—	—	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-maks	0.030	0.008	0.018-0.035	100	Oct-25	15-50	—

MECHANICAL PROPERTIES

Tosçelik 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 longitidunal 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									
Tosçelik Quality No	Standard	Qualities	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, S23JRC, S235J2C, S25JRC+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)
	EN 10217 Part 1-2005 (P235TR1, P235TR2, P235TR1-Low Si, P235TR2-Low Si)
	EN 10217 Part 2-2005 (P235GH-Low Si)
3	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)
	EN 10207-2005 (P275SL)
	EN 10217-3-2005 (P275NL1-Low Si)
4	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, S3355J0WP, S355J2WP)
	EN 10028 Part 2-2008 (P355GH) EN 10028-Part 3-2008 (P355NL1) EN10083-Part 2-2006(28Mn6)
	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)
5	API 5CT-2011(J55 Upgradeable (Tubing), J55 Upgradeable (Casing), J55 Upgradeable, J55 Regular, 5CT J55 Upgradeable)
	EN 10025 Part 3- 2004 (S355N)
	EN 10083-Part 2-2006 (C35E, C35E-Cr, C45E-Custom)
6	EN 10083-Part 2 - 2006 (C60E, C60E-Addition, C60E-1Cr)
7	API 5L 45th Edition-2012/ISO 3183-2012 (X52 / L360 / PSL1, X56 / L390 / PSL1, X60 / L415 / PSL1, X52M / L360M / PSL2, X56M / L390M / PSL2, X60M / L415M / PSL2
	EN 10149-Part 2-1995 (S420MC (HL-2242-01), S420MC, S420MC-with Si, S420MC, S420MC, HX420LAD)
8	API 5L 45th Edition-2012 / ISO 3183-2012 (X65 / L450 / PSL1, X65 / L450 / PSL2,, X70 / L485 / PSL1, X70 / L485 / PSL2)
	EN 10025-Part 3-2004 (S420N-Custom (SAH540))
	EN 10149-Part 2-1995 (S460MC (HL-600-02), S460MC, S460MC-with Si, S460MC)
9	EN 10025-Part 3-2004 (S460N)
	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.

TOSYALI Demir Çelik
Yassı Yapısal

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 ton
Coil Inner Diameter	762 mm

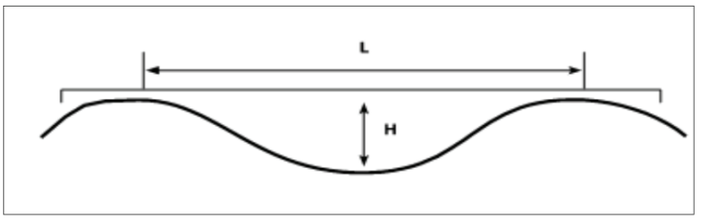
WIDTH TOLERANCES

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≤1200	0	20
1200<W≤1500	0	20
1500<W≤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.

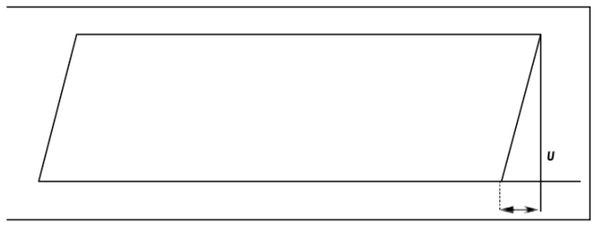
Thickness (mm)	Width (mm)	Surface Smoothness Tolerance H (mm)	Narrowed Surface Flatness Tolerance (mm)
t≤2	W≤1200	18	9
	1200<W≤1500	20	10
	W>1500	25	13
2<t≤25	W≤1200	18	8
	1200<W<1500	18	7
	W>1500	23	12

Surface flatness tolerances for qualities with high deformation resistance.

Group	Surface Flatness (mm)
Thickness	**Width (mm)**
t≤25mm	w≤1200
B	18
C	23
D	Should be discussed during ordering stage.

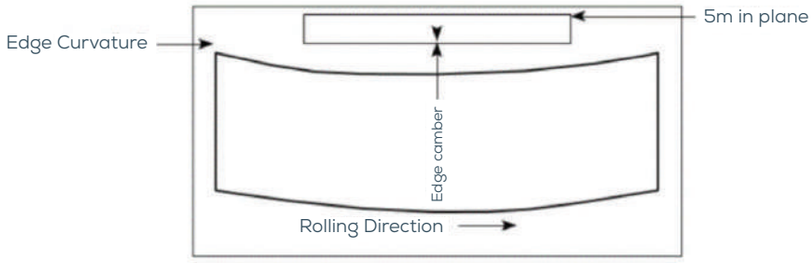
VERTEX PERPENDICULARITY TOLERANCE

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 horizantal 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

As Tosyalı, our vision is to contribute to building a sustainable world via ensuring environmentally 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 operations.

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;

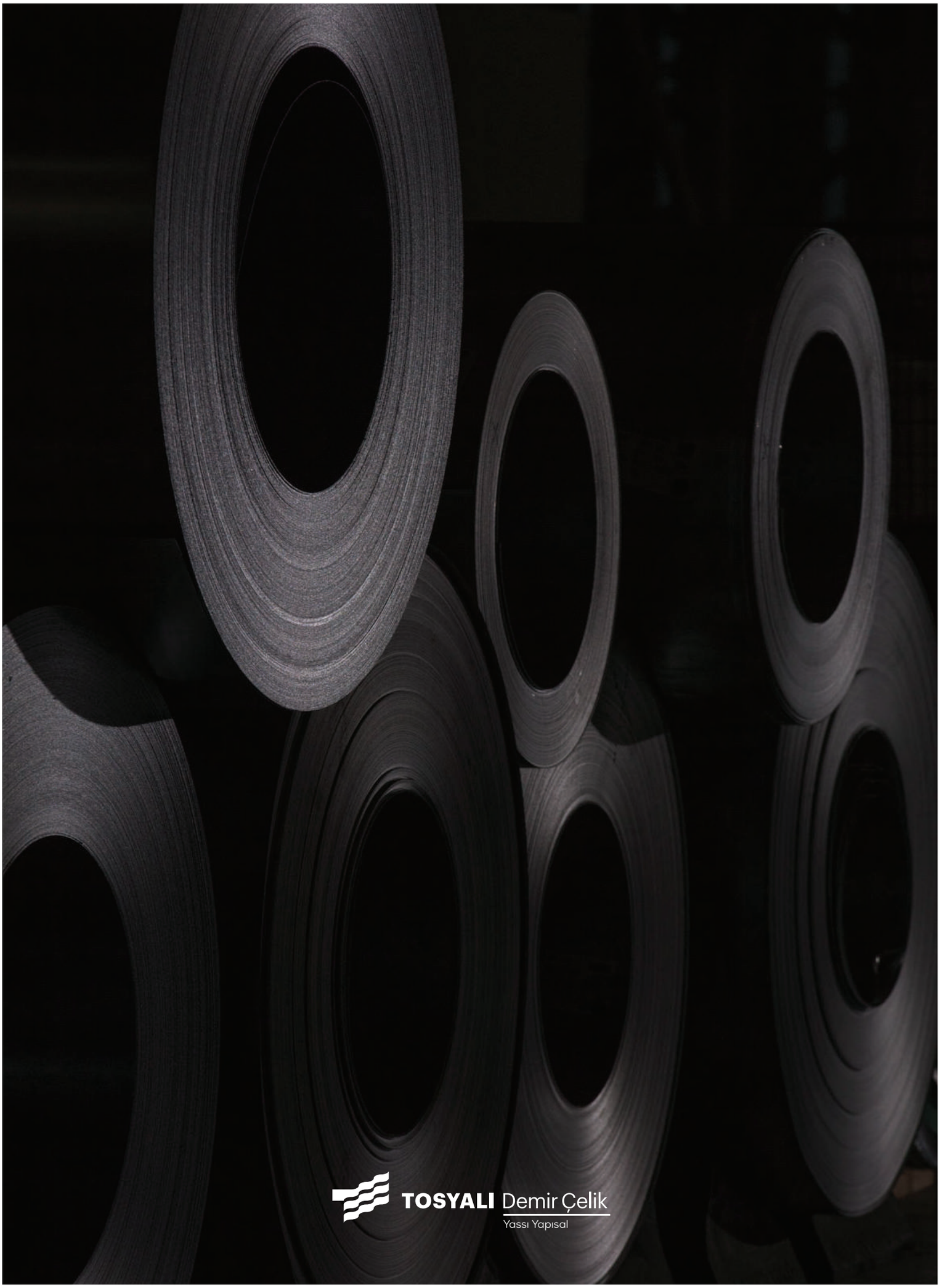
- technology usage,
- innovation,
- renewable energy resources,
- recycling in every touch point production and
- operating with highest efficiency.

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 V-GREEN®
VISIONGREEN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Edition : 2024 / 01