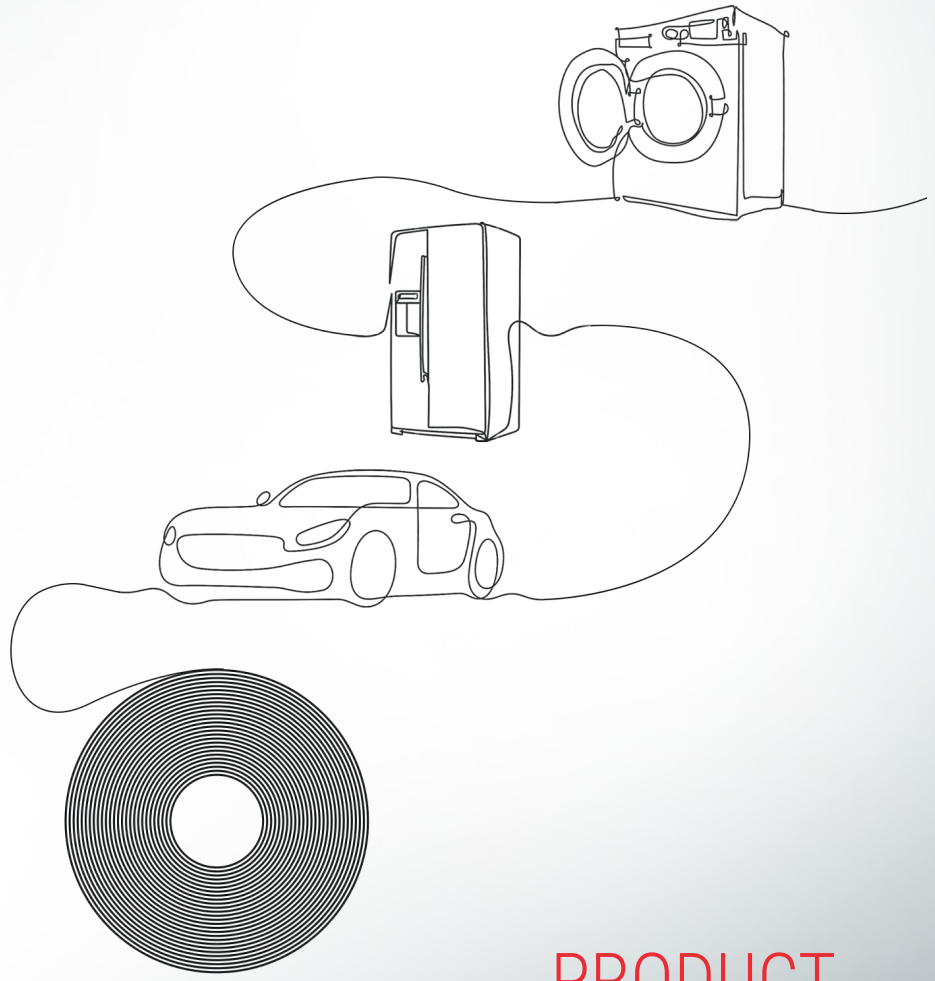
YILDIZLAR
YATIRIM
HOLDİNG

YILDIZ
DEMİR ÇELİK



PRODUCT
CATALOGUE

www.yildizdemircelik.com.tr

"Either do your job differently or do a different job."

This saying is most appreciated by those who realize that the age of the institution they work for is older than their own age... Every member of our family knows that working for us is a race of service. In this race that we are running with the effort to reach the best; the common goal of all of us is to continuously improve our service quality.

Our history dating back to the 1890s guides our every step, both as a responsibility on our shoulders and as a light that illuminates our path. Today, we are a power that our country is proud of with our facilities that create added value and employment for the land of our birth, and our internationally respected and preferred brands.

With the responsibility of being one of the largest companies in our country in terms of production, employment, added value and taxed income, we now have bigger targets. We reach every country in the world, far and near, with our products; we create our production values according to global norms. We produce the world's best products in Turkey and offer them to the world.

Even though our experience is as centuries old as the age of our organization; our excitement and passion are still as fresh as the first day. We will continue to shape the future for you with our more than 4500 employees and solution partners who share this passion and have the same excitement with us. Sincerely yours...

Board Chairman
FEHMİ YILDIZ

YILDIZLAR YATIRIM HOLDING

Yıldızlar Yatırım Holding, which was founded in the 1890s, operates in various sectors including forest products, fertilizer, chemical industry, iron and steel, maritime transportation, construction, real estate, insurance and port management.

With 13 facilities in 5 different countries and more than 4,500 employees, Yıldızlar Yatırım Holding is one of the largest industrial groups in Turkey. Yıldızlar Yatırım Holding's group companies export to more than 80 countries. Yıldız Entegre, the leading brand of the forest products industry, continues to contribute to Turkey's economy and strengthen its presence in the global geography with exports to more than 65 countries. İGSAŞ, which operates within the Holding, offers the high value-added fertilizer that Turkey needs to Turkish agriculture and industry. Yıldız Demir Çelik, the most dynamic member of the holding, which has been operating in the iron and steel sector for nearly 5 years, provides added value to the national economy with its flat steel sheet production, while introducing Turkish steel to countries around the world.

Yıldızlar Yatırım Holding combines its corporate principles, which are based on more than one hundred and thirty years of experience, with a modern management approach, and continues its activities with the vision of continuous development and the goal of becoming a global player in every sector in which it operates.

Yıldızlar Yatırım Holding, which contributes to our country's economy with all its companies and brands, continues to contribute to the development of different segments of the society with its social responsibility activities in a wide range of fields from education to sports, environment to culture and arts. In addition, with 'Akademi Yıldız', which was established in 2017 with the vision of developing all employees, preparing them for the future and transforming the corporation into a learning organization, it provides training and development opportunities to each employee and ensures that qualified human resources needed by its companies are trained.

Yıldız Demir Çelik continues to move forward in line with the perspective, vision and mission it has drawn with its professional staff in order to meet Turkey's flat steel needs and to become a dynamic and global player in the sector. Yıldız Demir Çelik's production facilities, which were established on a 300,000 m2 land in Kocaeli Alikahya Organized Industrial Zone and have an annual pickling/cold rolling capacity of 1,300,000 tons, produce a wide range of products for the use of different sectors such **as white goods, automotive, panel radiator, general manufacturing and construction.** Yıldız Demir Çelik is preparing to commission its second galvanizing line, which is targeted to produce 350,000 metric tons.

Yıldız Demir Çelik, which brings Turkish steel to more than 52 countries with its existing capacity and its future-oriented leading staff, continues to work rapidly for the hot investment it will make in line with its vision of "being integrated from hot to cold", which is among its goals in the coming period.

In addition to sectoral investments, Yıldız Demir Çelik also makes many investments in the environment, science and technology. Maintaining its visionary perspective as the first iron and steel company to use recycled gray water, Yıldız Demir Çelik invests in the future by using approximately 10 thousand m³ of recycled water every month, equivalent to the monthly municipal water consumption of 450 families of 4 people.

Yıldız Demir Çelik, which enables its customers to manage all their processes, especially stock and shipment tracking, quickly and easily on a single screen with its pioneering Stargate customer portal, brings its customers together with the "Shortcut of Steel" with the Steelgo project. With Steelgo, all orders placed until 16.00 during the day are shipped to customers the next day.

Yıldız Demir Çelik, which continues to work meticulously in the field of science, serves both its internal and external customers with its chemistry, mechanical, paint and color accredited laboratories. It performs input control and process control tests at critical points, alternative new raw material trials and research activities of all raw materials that directly affect the quality of the products used, in accordance with TS EN ISO / IEC 17025 standard with state-of-the-art devices and experienced personnel.

As Yıldız Demir Çelik;

Our Quality, Environment, OHS, Energy, Information Security and Customer Satisfaction Management Systems Policy;

With Risk Management and Performance Tracking Approach,

- Our product quality and diversity, our constantly renewed technological infrastructure and our strong sector experience integrated from iron to steel, our fast and competitive approaches,

- Our efficiency, productivity, data-driven decision-making processes and competitiveness, and our shareholders,

- With our professional and personal development trainings, reliable working conditions, eliminating hazards with the principle that occupational accidents and occupational diseases are preventable, minimizing the effects with risk assessment, taking into account the needs and expectations by establishing effective communication for the development of the OHS Management System and creating the necessary processes for participation and consultation of our employees,

- By using all our necessary resources, especially energy, efficiently, we will ensure that our society,

- With the principle of preventing environmental pollution at its source, our awareness and sustainability approach, our environment,

- Our country complies with all applicable legal and other requirements regarding Quality, Environment, OHS, Information Security, Energy Efficiency, Energy Use and Energy Consumption,

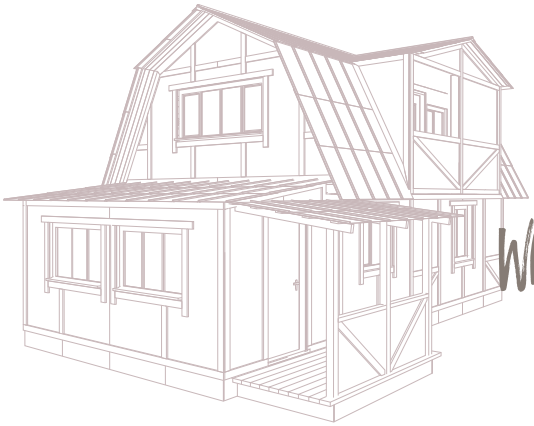
- Our world with a sense of sensitivity and social responsibility,

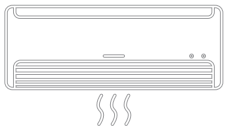
- We are always concerned with our researcher aspect and our approach that protects information by being aware of its importance,

We are committed to providing all necessary information and resources to continuously improve our management systems, energy performance and EnYS by meeting the feedback, needs and expectations of our stakeholders who aim to continuously review and improve quality, environment, occupational health and safety, information security and energy goals and targets with measurable performance indicators.

On behalf of all employees.

YILDIZ DEMİR ÇELİK



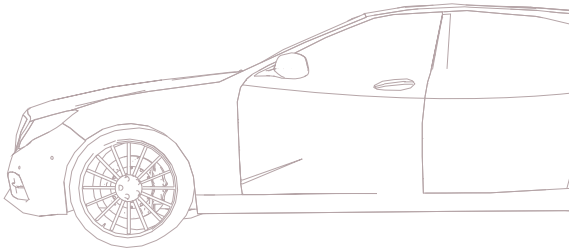


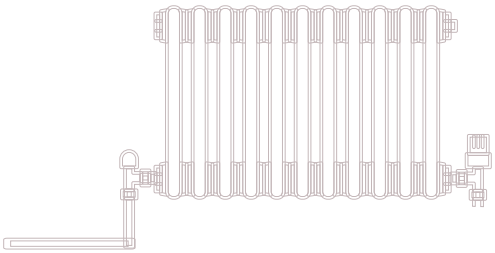
Our Vision.
Where are we running to?

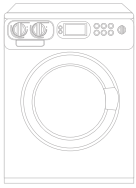
By 2030, we will be a global brand that is integrated from iron to steel and leaves its mark in every area where steel finds life.

Our Mission.
Why do we exist?

We exist to increase the competitiveness of our customers with our value-added products.







Our Vaules.
What do we draw strength from?

'People First'. From our innovative point of view. Our passion for quality. Our determination to succeed. Being one heart for the same goal.

Digital Ease in Iron and Steel

Yıldız Demir Çelik Online Customer Portal

YILDIZ
DEMİR ÇELİK

WITH STARGATE

SOLVE MANY TASKS FROM ONE SCREEN!

With Stargate, our online customer portal
from anywhere with an internet connection;

Follow your business from a single screen at any time,
experience the comfort and ease of our digital innovations!

To start using Stargate, simply request your username and
password from satis@yildizdemircelik.com.tr.

YILDIZ
DEMİR ÇELİK

PRODUCTION LINES

- Continuous Pickling and Tandem Line
- Electrolytic Cleaning Line
- Batch Annealing Line
- Temper Rolling Mill
- Hot Dip Continuous Galvanizing Line
- Color Coating Line
- Steel Service Center

CONTINUOUS PICKLING AND TANDEM LINE

Annual Production Capacity

1,300,000 Ton

ELECTROLYTIC CLEANING LINE

Annual Production Capacity

300,000 Ton

BATCH ANNEALING LINE

Annual Production Capacity

270,000 Ton

TEMPER ROLLING MILL

Annual Production Capacity

400,000 Ton

HOT DIP CONTINUOUS GALVANIZING LINE - 1

Annual Production Capacity

400,000 Ton

HOT DIP CONTINUOUS GALVANIZING LINE - 2

Annual Production Capacity

300,000 Ton

COLOR COATING LINE

Annual Production Capacity

150,000 Ton

STEEL SERVICE CENTER

Annual Production Capacity

Slitting Line-1

80,000 Ton

Slitting Line-2

80,000 Ton

Cut to Length Line

80,000 Ton

Trapezoidal Line

30,000 Ton

YILDIZ
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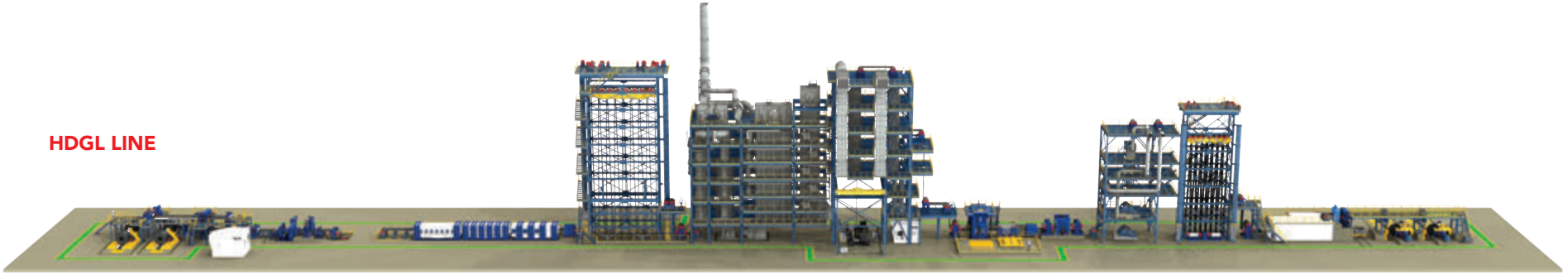
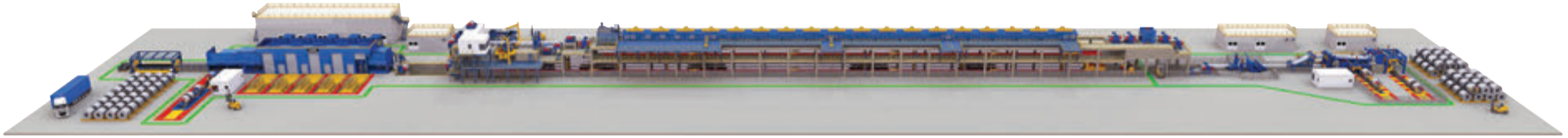
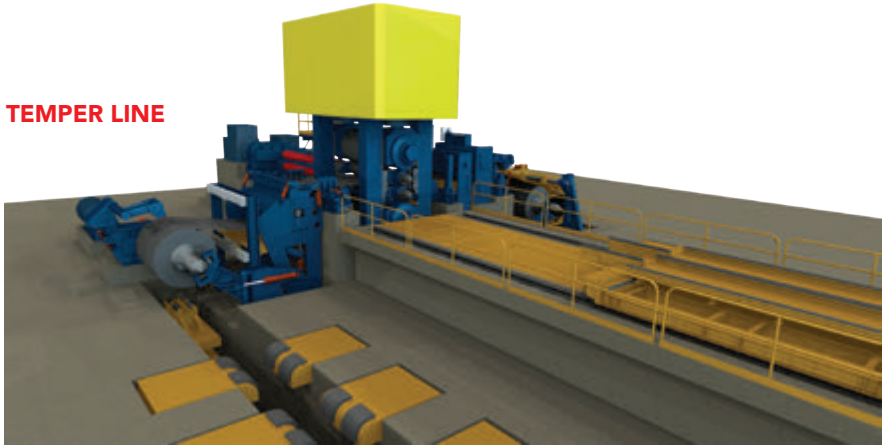
HDGL LINE

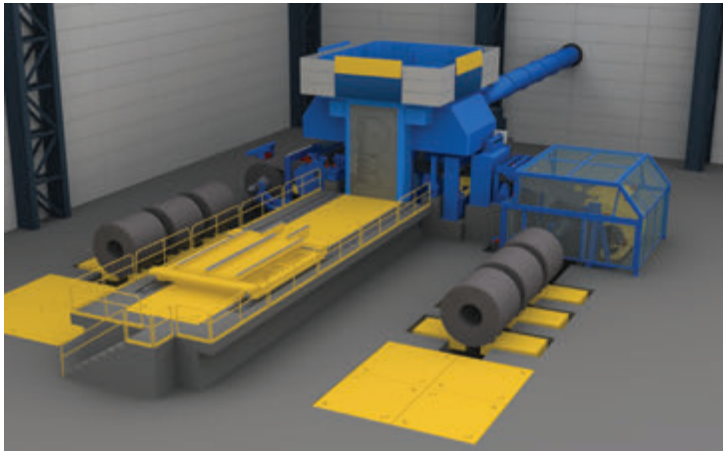


TANDEM LINE



TEMPER LINE





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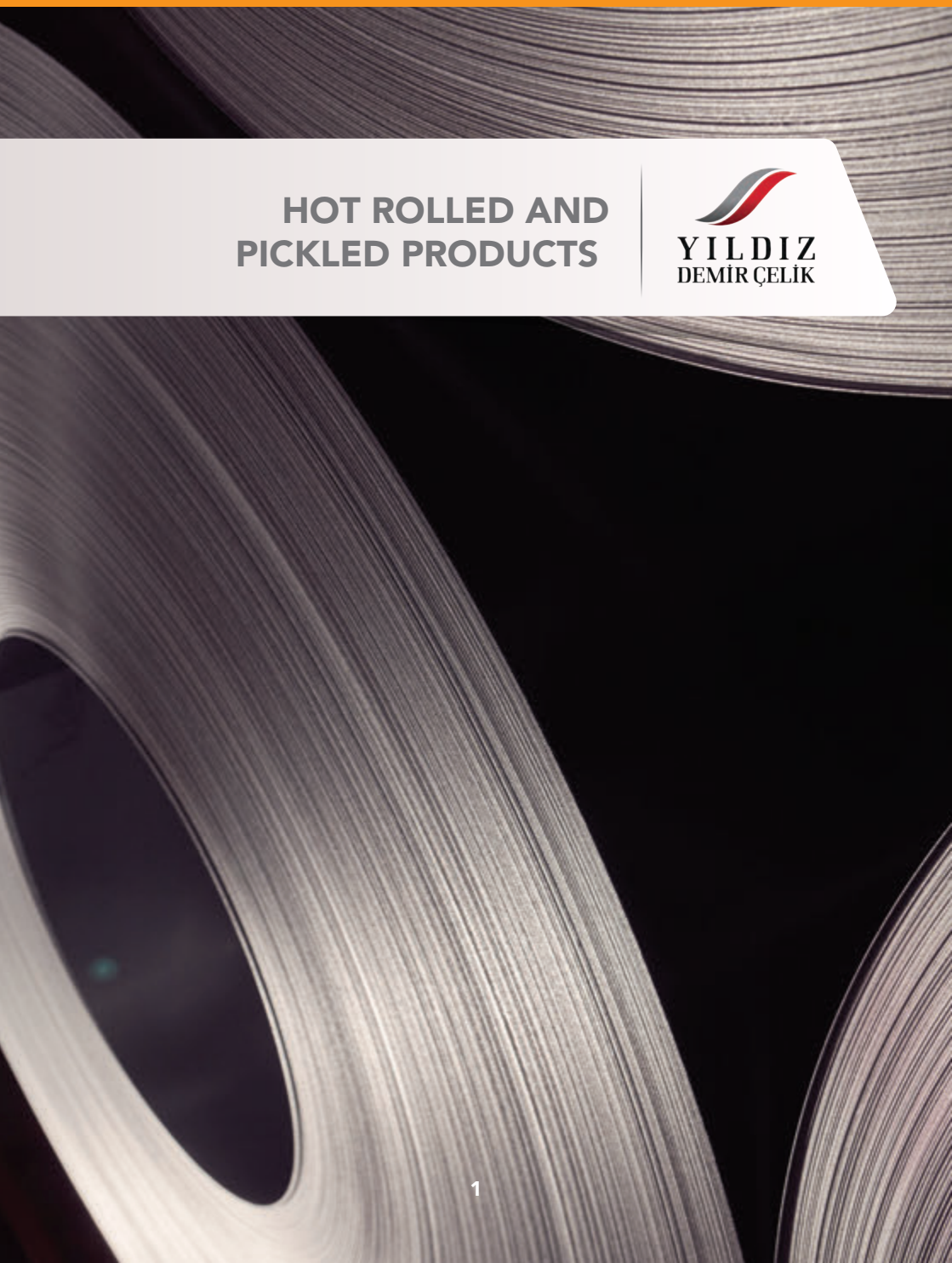
PRODUCTS AND QUALITY STANDARD EQUIVALENTS

Products	Euro EU	American ASTM	Japanese JIS
Hot Rolled Steels Suitable for Cold Forming	EN 10111 DD11	ASTM A1011 CS Type B	JIS G3131 SPHC
	EN 10111 DD12	ASTM A1011 DS Type A	JIS G3131 SPHD
	EN 10111 DD13	ASTM A1011 DS Type B	JIS G3131 SPHD
	EN 10111 DD14	-	JIS G3131 SPHE
Hot Rolled Unalloyed Structural Steels	EN 10025-2 S235JR	ASTM A1011 SS Gr36 Type 1	-
	EN 10025-2 S275JR	ASTM A1011 SS Gr40	-
	EN 10025-2 S355JR	ASTM A1011 SS Gr50	-
Steels Used Under Low Pressure	EN 10207 P275SL	-	-
Steels Used in Welded Tube Manufacturing	EN 10120 P245NB	-	JIS G3116 SG255
	EN 10120 P265NB	-	JIS G3116 SG295
	EN 10120 P310NB	-	JIS G3116 SG325
	EN 10120 P355NB	-	JIS G3116 SG365
Steels Used in Pressure Boiler Manufacturing	EN 10028 P235GH	-	-
	EN 10028 P265GH	-	-
	EN 10028 P295GH	-	-
	EN 10028 P355GH	-	-
High Strength Low Alloy Suitable for Cold Forming Hot Rolled Steels	EN 10149-2 S315MC	ASTM A1011 HSLAS Gr45 Class 2	-
	EN 10149-2 S355MC	ASTM A1011 HSLAS Gr50 Class 2	-
	EN 10149-2 S420MC	ASTM A1011 HSLAS Gr60 Class 2	-
	EN 10149-2 S460MC	ASTM A1011 HSLAS Gr65 Class 2	-
	EN 10149-2 S500MC	ASTM A1011 HSLAS Gr70 Class 2	-
Cold Rolled and Tempered Low Carbon Steels	EN 10130 DC01	ASTM A1008 CS Type B	JIS G3141 SPCC
	EN 10130 DC03	ASTM A1008 CS Type B	JIS G3141 SPCD
	EN 10130 DC04	ASTM A1008 DS Type A	JIS G3141 SPCE
	EN 10130 DC05	ASTM A1008 DDS	JIS G3141 SPCF
	EN 10130 DC06	ASTM A1008 EDDS	JIS G3141 SPCG
Cold Rolled Steels Suitable for Enameling	EN 10209 DC01 EK	-	-
	EN 10209 DC04 EK	-	-
Cold Rolled High Yield Strength Low Alloy Steels	EN 10268 HC260LA	-	-
	EN 10268 HC300LA	ASTM A1008 HSLAS Gr45	-
	EN 10268 HC340LA	ASTM A1008 HSLAS Gr50	-
	EN 10268 HC380LA	ASTM A1008 HSLAS Gr55	-
	EN 10268 HC420LA	ASTM A1008 HSLAS Gr60	-
Low Carbon Galvanized Steels	EN 10346 DX51D+Z	ASTM A653 CS Type C	JIS G3302 SGCC
	EN 10346 DX52D+Z	ASTM A653 CS Type B	JIS G3302 SGCD1
	EN 10346 DX53D+Z	ASTM A653 FS Type B	JIS G3302 SGCD2
	EN 10346 DX54D+Z	ASTM A653 DDS Type A	JIS G3302 SGCD3
	EN 10346 DX56D+Z	ASTM A653 EDDS	JIS G3302 SGCD4
Galvanized Structural Steel	EN 10346 S220GD+Z	ASTM A653 SS Gr33	-
	EN 10346 S250GD+Z	ASTM A653 SS Gr37	JIS G3302 SGC340
	EN 10346 S280GD+Z	ASTM A653 SS Gr40	JIS G3302 SGC400
	EN 10346 S320GD+Z	ASTM A653 HSLAS Gr50	JIS G3302 SGC440
	EN 10346 S350GD+Z	ASTM A653 HSLAS Gr55 Class 2	JIS G3302 SGC490
	EN 10346 S390GD+Z	-	-
	EN 10346 S420GD+Z	ASTM A653 HSLAS Gr60	-
	EN 10346 S450GD+Z	-	-
	EN 10346 S550GD+Z	ASTM A653 HSLAS Gr80	-
High Strength Low Alloy Galvanized Steels	EN 10346 HX260LAD+Z	-	-
	EN 10346 HX300LAD+Z	-	-
	EN 10346 HX340LAD+Z	-	-
	EN 10346 HX380LAD+Z	-	-
	EN 10346 HX420LAD+Z	-	-
Dual Phase Galvanized Steels	EN 10346 HCT590X+Z	-	-

HOT ROLLED AND PICKLED PRODUCTS

YILDIZ DEMİR ÇELİK



Product Description

It is the state of hot rolled products purified from surface scale by passing through the pickling process. Protection from atmospheric corrosion is ensured by lubrication after pickling.

Product Name and Descriptions

- PHR: Pickled hot rolled coil
- PHRM : Pickled hot rolled coil without trimmed edge

Hot Rolled and Pickled Products for Cold Forming

Standard: EN 10111:2009

CHEMICAL COMPOSITION (%)

Standard	Grade	C max.	Mn max.	P max.	S max.
EN 10111	DD11	0,12	0,60	0,045	0,045
	DD12	0,10	0,45	0,035	0,035
	DD13	0,08	0,40	0,030	0,030
	DD14	0,08	0,35	0,025	0,025

MECHANICAL PROPERTIES

Standard	Grade	R_e N/mm²		R_m (1) (max) N/mm²	A (%) min.			
					A_{80}			A_5
		1,5≤ t< 2	2≤ t≤ 5		t<1,5	1,5≤t<2	2≤t<3	3≤t<5
EN 10111	DD11	170 - 360	170 - 340	440	22	23	24	28
	DD12	170 - 340	170 - 320	420	24	25	26	30
	DD13	170 - 330	170 - 310	400	27	28	29	33
	DD14	170 - 310	170 - 290	380	30	31	32	36

Remarks

1.Tensile test values are applied to "transverse" test specimens.

Hot Rolled and Pickled Unalloyed Structural Steels

Standard: EN 10025-2:2019

CHEMICAL COMPOSITION (%)

Standard	Grade	C	Mn	P	S	Si	Cu	N	CEV (IIW) [1] max. (%)
		max.	max.	max.	max.	max.	max.	max.	t ≤ 30 mm
EN 10025-2	S235JR	0,17	1,40	0,035	0,035	-	0,55	0,012	0,35
	S235J0	0,17	1,40	0,030	0,030	-	0,55	0,012	0,35
	S235J2	0,17	1,40	0,025	0,025	-	0,55	-	0,35
	S275JR	0,21	1,50	0,035	0,035	-	0,55	0,012	0,40
	S275J0	0,18	1,50	0,030	0,030	-	0,55	0,012	0,40
	S275J2	0,18	1,50	0,025	0,025	-	0,55	-	0,40
	S355JR	0,24	1,60	0,035	0,035	-	0,55	0,012	0,45
	S355J0	0,20	1,60	0,030	0,030	0,55	0,55	0,012	0,45
	S355J2	0,20	1,60	0,025	0,025	0,55	0,55	-	0,45

Remarks
1.C equivalent is calculated according to the formula CEV (IIW) % = C + Mn / 6 + (Cr + Mo + V) / 5 + (Ni + Cu) / 15.
2.For grades not included in the table, please contact the Customer Technical Services Department.

MECHANICAL PROPERTIES

Standard	Grade	R_e (min) N/mm²	R_m [1] N/mm2		A (%) min.				
					A_{80}				A_5
			t<3	t≥3	1<t 1,5	1,5<t ≤ 2	2<t≤2,5	2,5<t≤3	3<t
EN 10025-2	S235JR	235	360-510	360-510	18	19	20	21	26
	S235J0	235	360-510	360-510	18	19	20	21	26
	S235J2	235	360-510	360-510	16	17	18	19	24
	S275JR	275	430-580	410-560	16	17	18	19	23
	S275J0	275	430-580	410-560	16	17	18	19	23
	S275J2	275	430-580	410-560	14	15	16	17	21
	S355JR	355	510-680	470-630	15	16	17	18	22
	S355J0	355	510-680	470-630	15	16	17	18	22
	S355J2	355	510-680	470-630	15	16	17	18	22

Remarks
1.Tensile test values are applied to "transverse" test specimens.
2.For grades not included in the table, please contact the Customer Technical Services Department.

Hot Rolled and Pickled Products Used in Under Low Pressure

Standard: EN 10207:2017

CHEMICAL COMPOSITION (%)

Standard	Grade	C max.	Mn	P max.	S max.	Si max.
EN 10207	P275SL	0,16	0,05-1,50	0,025	0,020	0,040

MECHANICAL PROPERTIES

Standard	Grade	R_e (min) N/mm²	R_m N/mm²	A (%) min.		
				A_{80}		A_5
				t≤2,5	2,5<t<3	3≤t≤5
EN 10207	P275SL	275	390-510	19	20	24

Remarks

1.Tensile test values are applied to "transverse" test specimens.

Hot Rolled and Pickled Products Used in Welded Tube Manufacturing

Standard: EN 10120:2017

CHEMICAL COMPOSITION (%)

Standard	Grade	C max.	Mn min.	P max.	S max.	Si max.	Al_{total} min.	N max.	Nb max.	Ti max.
EN 10120	P245NB	0,16	0,30	0,025	0,015	0,25	0,02	0,009	0,05	0,03
	P265NB	0,19	0,40	0,025	0,015	0,25	0,02	0,009	0,05	0,03
	P310NB	0,20	0,70	0,025	0,015	0,50	0,02	0,009	0,05	0,03
	P355NB	0,20	0,70	0,025	0,015	0,50	0,02	0,009	0,05	0,03

MECHANICAL PROPERTIES

Standard	Grade	R_e (min) N/mm²	R_m N/mm²	A (%)	
				A_{80} min.	A_5 min.
				t<3	3≤t≤5
EN 10120	P245NB	245	360-450	26	34
	P265NB	265	410-500	24	32
	P310NB	310	460-550	21	28
	P355NB	355	510-620	19	24

Remarks

1.Tensile test values are applied to "transverse" test specimens.

Hot Rolled and Pickled Products Used in Pressure Boiler Manufacturing

Standard: EN 10028-2:2017

CHEMICAL COMPOSITION (%)

Standard	Grade	C	Mn	P max.	S max.	Si max.	Al_{total} min.	N max.	Cr max.	Cu max.	Mo max.	Nb max.	Ti max.	V max.
EN 10028-2	P235GH	0,16 max	0,60-1,20	0,025	0,010	0,35	0,02	0,012	0,30	0,30	0,08	0,02	0,03	0,02
	P265GH	0,20 max	0,90-1,40	0,025	0,010	0,40	0,02	0,012	0,30	0,30	0,08	0,02	0,03	0,02
	P295GH	0,08-0,20	0,90-1,50	0,025	0,010	0,40	0,02	0,012	0,30	0,30	0,08	0,02	0,03	0,02
	P355GH	0,10-0,22	1,10,1,70	0,025	0,010	0,60	0,02	0,012	0,30	0,30	0,08	0,04	0,03	0,02

MECHANICAL PROPERTIES

Standard	Grade	R_e (min) N/mm²	R_m (1) N/mm²	A (%) min.
EN 10028-2	P235GH	235	360-480	24
	P265GH	265	410-530	22
	P295GH	295	460-580	21
	P355GH	355	510-650	20

Remarks

1.Tensile test values are applied to "transverse" test specimens.

Hot Rolled and Pickled High Strength Low Alloy Products for Cold Forming

Standard: EN 10149-2:2014

CHEMICAL COMPOSITION (%)										
Standard	**Grade**	**C max.**	**Si max.**	**Mn max.**	**P max.**	**S max.**	**Al max.**	**Nb[1] max.**	**V[1] max.**	**Ti[1] max.**
EN 10025-2	S315MC	0,12	0,50	1,2	0,025	0,020	0,02	0,09	0,2	0,15
	S355MC	0,12	0,50	1,4	0,025	0,020	0,02	0,09	0,2	0,15
	S420MC	0,12	0,50	1,6	0,025	0,015	0,02	0,09	0,2	0,15
	S460MC	0,12	0,50	1,6	0,025	0,015	0,02	0,09	0,2	0,15
	S500MC	0,12	0,50	1,7	0,025	0,015	0,15	0,09	0,2	0,15

1.Nb + V + Ti ≤ %0,22

Standard	**Grade**	**R_e (min) N/mm²**	**R_m [1] N/mm²**	**A (%) min.**		**Folding Mandrel Diameter (Transverse 180°)**
				A_{80}	**A_5**	
				t<3	**t≥3**	**Thickness (t) mm**
EN 10149-2	S315MC	315	390-510	20	24	0
	S355MC	355	430-550	19	23	0,5 t
	S420MC	420	480-620	16	19	0,5 t
	S460MC	460	520-670	14	17	1t
	S500MC	500	550-700	12	14	1t

Remarks
1.Tensile test values are applied to "longitudinal" test specimens.

Production Limits

HOT ROLLED AND PICKLED PRODUCTS						
Product Type	**Suitable for Cold Forming**	**Structural Steels**	**Suitable for Cold Forming**	**Pressure Vessel Steels**		
Grade	**Suitable for Drawing and Deep Drawing Steel**	**Medium and High Strength Steels**	**Low Alloy Medium and High Strength Steels**	**Used in Under Low Pressure Steels**	**Used in Welded Tube Manufacturing Steels**	**Used in Pressure Boiler Manufacturing Steels**
	DD11-DD12 DD13-DD14	S235JR-S275JR S355JR	S315MC-S355MC S420MC-S460MC S500MC	P275SL	P245NB-P265NB P315NB-P355NB	P235GH-P265GH P295GH-P355GH
Thickness (t) mm	**Width (w) mm**					
	Min.			**Max.**		
1,20-5,00	700			1600		

Remarks

1.The maximum order width for trimmed edge (PHR) products is 1600 mm.
2.Coil inner diameter is 610 mm. Minimum coil outside diameter is subject to negotiation. The maximum coil outside diameter is 2100 mm.
3.Maximum coil weight is 30,000 kg. Requests under 10.000 kg are subject to negotiation.
4.Surface flatness tolerance is applied for sheets cut to length from rolls and not for coils.
5.Coil breakage is not guaranteed.
6.Complaints of edge cracks and other edge defects on products without trimming edge are not accepted.
7.Products which surface cleaned with acid are lubricated against corrosion and packaged, unless otherwise stated.
8.Yıldız Demir Çelik is not responsible for any corrosion that may occur on the surface if the lubrication level is "low oil" or lubrication is not desired. The normal amount of oil is applied as 2000 mg/m² in total.
9.For information on the availability of unspecified grades, please contact the Customer Technical Services Department.

Hot Rolled Product Dimension Tolerances

Standard: EN 10051-2011

THICKNESS TOLERANCE

Thickness tolerance for low carbon steel grades suitable for cold forming

Thickness (t) mm	Width (w) mm		
	w≤1200	1200<w≤1500	1500<w≤1600
t≤2,00	±0,13	±0,14	±0,16
2,00<t≤2,50	±0,14	±0,16	±0,17
2,50<t≤3,00	±0,15	±0,17	±0,18
3,00<t≤4,00	±0,17	±0,18	±0,20
4,00<t≤5,00	±0,18	±0,20	±0,21

Thickness tolerance for steel grades with minimum yield strength R_e ≤ 300 MPa (Category A)

Thickness (t) mm	Width (w) mm		
	w≤1200	1200<w≤1500	1500<w≤1600
t≤2,00	±0,17	±0,19	±0,21
2,00<t≤2,50	±0,18	±0,21	±0,23
2,50<t≤3,00	±0,20	±0,22	±0,24
3,00<t≤4,00	±0,22	±0,24	±0,26
4,00<t≤5,00	±0,24	±0,26	±0,28

Hot Rolled Product Dimension Tolerances

Standard: EN 10051:2011

THICKNESS TOLERANCE

Thickness tolerance for steel grades with minimum yield strength 300<R_e≤360 MPa (Category B)

Thickness (t) mm	Width (w) mm		
	w≤1200	1200<w≤1500	1500<w≤1600
t≤2,00	±0,20	±0,22	±0,24
2,00<t≤2,50	±0,21	±0,24	±0,26
2,50<t≤3,00	±0,23	±0,25	±0,28
3,00<t≤4,00	±0,25	±0,28	±0,30
4,00<t≤5,00	±0,28	±0,30	±0,32

Thickness tolerance for steel grades with minimum yield strength 360<R_e≤420 MPa (Category C)

Thickness (t) mm	Width (w) mm		
	w≤1200	1200<w≤1500	1500<w≤1600
t≤2,00	±0,22	±0,25	±0,27
2,00<t≤2,50	±0,23	±0,27	±0,30
2,50<t≤3,00	±0,26	±0,29	±0,31
3,00<t≤4,00	±0,29	±0,31	±0,34
4,00<t≤5,00	±0,31	±0,34	±0,36

NOTE: For products with cut edges, thickness measurement is performed min. from the edges. 25 mm min. from the edges for products with untrimmed edges inside. 40 mm from the inside and from any point.

Hot Rolled Product Dimension and Shape Tolerances

Standard: EN 10051:2011

LENGTH TOLERANCE

Length tolerance for steel grades suitable for cold forming

Nominal Length (L) mm	Tolerance mm	
L	Bottom	Top
L<2000	0	+10
2000≤L<8000	0	+0,005 x L
8000≤L	0	+40

WIDTH TOLERANCE

Nominal Width (w) mm	Tolerance mm			
	Uncut Edges		Edges Trimmed	
	Bottom	Top	Bottom	Top
w≤1200	0	20	0	3
1200<w≤1600	0	20	0	5

SURFACE FLATNESS TOLERANCE

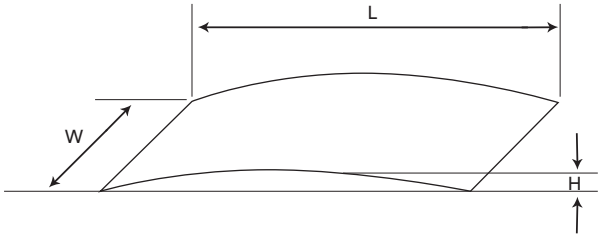
Tolerance for steel grades with minimum yield strength R_e≤300 MPa (Category A)

Nominal Thickness (t) mm	Nominal Width (w) mm	Tolerance	Special Tolerance (H)
t≤2,00	w≤1200	18	9
	1200<w≤1500	20	10
	w>1500	25	13
2,00<t≤5,00	w≤1200	15	8
	1200<w≤1500	18	9
	w>1500	23	12

Tolerance for steel grades with minimum yield strength 300<R_e<900 MPa (Category B, C)

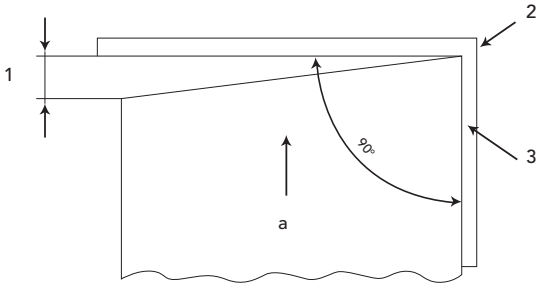
Nominal Thickness (t) mm	Nominal Width (w) mm	Tolerance by Category	
		B	C
t≤5,00	w≤1200	18	23
	1200<w≤1500	23	30
	w>1500	28	38

Note: "Narrow surface flatness" tolerance values for B and C group grades are determined by negotiation at the order stage.



OUT OF SQUARENESS TOLERANCE

The out of squareness tolerance is a maximum of 1% of the actual width of the product. The out of squareness is the amount of deviation determined by the orthogonal projection of the transverse edge on the longitudinal edge.



1. Out of squareness
2. Square
3. Side edge
a. Rolling direction

COLD ROLLED PRODUCTS

YILDIZ DEMİR ÇELİK

Product Description

These are products produced by cold rolling, annealing and tempering of hot rolled sheet metal whose surface has been cleaned by pickling process. If no batch annealing and tempering process is applied after the cold rolling process, the product is called "Full Hard".

Product Name and Descriptions

- BCR: Batch annealed and tempered coil
- BCRM: Batch annealed and tempered coil without trimmed edge
- CRF: Cold rolled non-annealed (Full Hard) coil
- CRFM: Cold rolled non-annealed coil without trimmed edge

Cold Rolled and Tempered Low Carbon Steels

Standard: EN 10130:2008

CHEMICAL COMPOSITION (%)						
Standard	**Grade**	**C max.**	**P max.**	**S max.**	**Mn max.**	**Ti max.**
EN 10130	DC01	0,12	0,045	0,045	0,60	-
	DC03	0,10	0,035	0,035	0,45	-
	DC04	0,08	0,030	0,030	0,40	-
	DC05	0,06	0,025	0,025	0,35	-
	DC06	0,02	0,020	0,020	0,25	0,30

MECHANICAL PROPERTIES						
Standard	**Grade**	**R_e [2] N/mm²**	**R_m [1] N/mm²**	**A_{80} (%) min. [3]**	**r_{90} min. [4]**	**n_{90} min. [4]**
EN 10130	DC01	140-280	270-410	28	-	-
	DC03	140-240	270-370	34	1,3	-
	DC04	140-210	270-350	38	1,6	0,18
	DC05	140-180	270-330	40	1,9	0,20
	DC06	120-170	270-330	41	2,1	0,22

Remarks

1. Tensile test values are applied to "transverse" test specimens.
2. Yield strength values are increased by 20 N/mm² for thicknesses 0.5 mm < t ≤ 0.7 mm and by 40 N/mm² for thicknesses t ≤ 0.5 mm.
3. % elongation values are reduced by 2 units for thicknesses 0.5 mm < t ≤ 0.7 mm and by 4 units for thicknesses t ≤ 0.5 mm.
4. The values r_{90} and n_{90} only apply to products with a thickness of 0.5 mm or more.

Cold Rolled and Tempered Low Carbon Steels

Standard: ASTM A1008

CHEMICAL COMPOSITION (%)

Standard	Grade	C	Mn max.	P max.	S max.	Al min.	Cu max.	Ni max.	Cr max.	Mo max.	V max.	Nb max.	Ti max.
ASTM A1008	CS Type A	0,10	0,60	0,025	0,035		0,20	0,20	0,15	0,06	0,008	0,008	0,025
	CS Type B	0,02-0,15	0,60	0,025	0,035	-	0,20	0,20	0,15	0,06	0,008	0,008	0,025
	CS Type C	0,08	0,60	0,10	0,035	-	0,20	0,20	0,15	0,06	0,008	0,008	0,025
	DS Type A	0,08	0,50	0,02	0,02	0,01	0,20	0,20	0,15	0,06	0,008	0,008	0,025
	DS Type B	0,02-0,08	0,50	0,02	0,02	0,02	0,20	0,20	0,15	0,06	0,008	0,008	0,025
	DDS	0,06	0,50	0,02	0,02	-	0,20	0,20	0,15	0,06	0,008	0,008	0,025
	EDDS	0,02	0,40	0,02	0,02	-	0,10	0,10	0,15	0,03	0,10	0,10	0,15

MECHANICAL PROPERTIES

Standard	Grade	R_e N/mm²	A_{50} (%) min.	r_m	n
EN 10130	CS Type A	140-275	30	-	-
	CS Type B				
	CS Type C				
	DS Type A	150-240	36	1,3-1,7	0,17-0,22
	DS Type B				
	DDS	115-200	38	1,4-1,8	0,20-0,25
	EDDS	105-170	40	1,7-2,1	0,23-0,27

1.Tensile test values are applied to "longitudinal" test specimens.
2.The mechanical values indicated are reference values.

Cold Rolled Steels Suitable for Enameling

Standard: EN 10209:2013

CHEMICAL COMPOSITION (%)					
Standard	**Grade**	**C max.**	**Mn max.**	**P max.**	**S max.**
EN 10209	DC01 EK	0,08	0,60	0,045	0,050
EN 10209	DC04 EK	0,08	0,50	0,030	0,050

MECHANICAL PROPERTIES					
Standard	**Grade**	**R_e (2) (max) N/mm²**	**R_m (1) N/mm²**	**A_{80} (3) (%) min.**	**Warranty Periods**
					No Yield Marks and Mechanical Values
EN 10209	DC01 EK	270	270-390	30	6 month
EN 10209	DC04 EK	220	270-350	36	6 month

Remarks
1.Tensile test values are applied to "transverse" test specimens.
2.Yield strength values are increased by 20 N/mm² for thicknesses 0.5 mm < t ≤ 0.7 mm and by 40 N/mm² for thicknesses t < 0.5 mm.
3.% Elongation values are reduced by 2 units for thickness range 0.5 mm < t≤ 0.7 mm and by 4 units for thicknesses t ≤ 0.5 mm.

Low Carbon Non-annealed (Full Hard) Steels

CHEMICAL COMPOSITION (%)					
Standard	**Grade**	**C max.**	**Mn max.**	**P max.**	**S max.**
EN 10130	DF01	0,12	0,6	0,045	0,045

Non-annealed (Full Hard) Strapping Steels

CHEMICAL COMPOSITION (%)					
Standard	**Grade**	**C max.**	**Mn max.**	**P max.**	**S max.**
EN 1623	S215GF	0,18	1,5	0,03	0,02

Remarks
1.For grades not listed in the table, please contact the Customer Technical Services Department.

Cold Rolled Structural Steels

Standard: ASTM A1008

CHEMICAL COMPOSITION (%)															
Standard	Grade	C max.	Mn max.	P max.	S max.	Al max.	Si max.	Cu max.	Ni max.	Cr max.	Mo max.	V max.	Nb max.	Ti max.	N max.
ASTM A1008	SS Grade 33 Type 1	0,20	0,60	0,035	0,035	-	-	0,20	0,20	0,15	0,06	0,008	0,008	0,025	-
	SS Grade 33 Type 2	0,15	0,60	0,200	0,035	-	-	0,20	0,20	0,15	0,06	0,008	0,008	0,025	-
	SS Grade 40 Type 1	0,20	1,35	0,035	0,035	-	-	0,20	0,20	0,15	0,06	0,008	0,008	0,025	-
	SS Grade 40 Type 2	0,15	0,60	0,200	0,035	-	-	0,20	0,20	0,15	0,06	0,008	0,008	0,025	-
	SS Grade 45	0,20	1,35	0,070	0,025	0,080	0,06	0,20	0,20	0,15	0,06	0,008	0,008	0,008	0,03
	SS Grade 50	0,20	1,35	0,035	0,035	-	-	0,20	0,20	0,15	0,06	0,008	0,008	0,025	-

MECHANICAL PROPERTIES				
Standard	Grade	R_e N/mm²	R_m (1) N/mm²	A_{50} (%) min.
ASTM A1008	SS Grade 33 Type 1	230	330	22
	SS Grade 33 Type 2			
	SS Grade 40 Type 1	275	360	20
	SS Grade 40 Type 2			
	SS Grade 45	310	410	20
	SS Grade 50	340	450	18

Remarks

1.Tensile test values are applied to "longitudinal" test specimens.

Cold Rolled Structural Steels

Standard: DIN 1623

CHEMICAL COMPOSITION (%)					
Standard	Grade	C max.	Mn max.	P max.	S max.
DIN 1623	S215G	0,18	1,5	0,03	0,025

MECHANICAL PROPERTIES				
Standard	Grade	R_e N/mm²	R_m (1) N/mm²	A_{80} (%) min.
DIN 1623	S215G	215	360-510	20

Remarks

1.Tensile test values are applied to "transverse" test specimens.

Cold Rolled High Yield Strength Low Alloy Steels

Standard: EN 10268:2014

CHEMICAL COMPOSITION (%)									
Standard	**Grade**	**C max.**	**Si max.**	**Mn max.**	**P max.**	**S max.**	**Al Min**	**Ti(1) max.**	**Nb(1) max.**
EN 10268	HC260LA	0,10	0,50	1,00	0,030	0,025	0,015	0,15	0,09
	HC300LA	0,12	0,50	1,40	0,030	0,025	0,015	0,15	0,09
	HC340LA	0,12	0,50	1,40	0,030	0,025	0,015	0,15	0,09
	HC380LA	0,12	0,50	1,60	0,030	0,025	0,015	0,15	0,09
	HC420LA	0,14	0,50	1,60	0,030	0,025	0,015	0,15	0,09

Remarks
1.Nb + Ti + V + B ≤ % 0.22

MECHANICAL PROPERTIES				
Standard	**Grade**	**R_e N/mm²**	**R_m(1) N/mm²**	**A_{80}(2) (%) min.**
EN 10268	HC260LA	260-330	350-430	26
	HC300LA	300-380	380-480	23
	HC340LA	340-420	410-510	21
	HC380LA	380-480	440-580	19
	HC420LA	420-520	470-600	17

Remarks
1.Tensile test values are applied to "transverse" test specimens.
2.% Elongation values are reduced by 2 units in the thickness range 0,5 mm < t ≤ 0,70 mm and by 4 units in thicknesses t ≤ 0,5 mm.

Production Limits

COLD ROLLED PRODUCTS								
Product Type	**Low Carbon Steels for Drawing and Deep Drawing**						**Low Carbon Enameled Steels**	
Grade	DC01		DC03 - DC04		DC05 - DC06		DC01EK - DC04EK	
Thickness (t) mm	**Width (w) mm**		**Width (w) mm**		**Width (w) mm**		**Width (w) mm**	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
0,20-0,24	700	1000	-	-	-	-		
0,25-0,27	700	1100	-	-	-	-	-	-
0,28-0,39	700	1250	-	-	-	-	-	-
0,40-0,49	700	1300	700	1200	700	1100	700	1300
0,50-2,50	700	1300	700	1300	700	1300	700	1300

Product Type	**Low Carbon Steels for Drawing and Deep Drawing**						**Structural Steels**			
Grade	CS Type B		DS Type A		DDS-EDDS		S215G		SS Grade 33-SS Grade 40 SS Grade 45-SS Grade 50	
Thickness (t) mm	**Width (w) mm**		**Width (w) mm**		**Width (w) mm**		**Width (w) mm**		**Width (w) mm**	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
0,20-0,24	700	1000	-	-	-	-				
0,25-0,27	700	1100	-	-	-	-	-	-	-	-
0,28-0,39	700	1250	-	-	-	-	-	-	-	-
0,40-0,49	700	1300	700	1200	700	1100	-	-	-	-
0,50-2,50	700	1300	700	1300	700	1300	700	1300	700	1300

Remarks

1.The minimum order width is 700 mm.
2.Orders over 2 mm thickness are subject to negotiation.
3.Coil inner diameter is 508 mm. 610 mm is subject to negotiation. Coil outside diameter is minimum 900 mm and maximum 2100 mm.
4.Coil weight is minimum 5,000 kg and maximum 30,000 kg.
5.Specific surface roughness (R_a) values are subject to negotiation.
6.Requests for surface quality B are subject to negotiation.
7.Surface flatness tolerance is applied for sheets cut to length from coil and not for coils.
8.If no special oil quantity is specified, normal lubrication is applied for domestic orders (Total 1500 mg/m^2) and export orders (Total 2000 mg/m^2).
9.Orders with a maximum surface roughness (Ra) of 0.40 µm (glossy) are only accepted in surface quality A.
10.Yıldız Demir Çelik is not responsible for any corrosion that may occur on the surface if the lubrication level is "low oil" or lubrication is not desired.
11.The yield strength maximum value for grade DC01 is valid for 8 days from the date the product is ready. It is recommended to use the product within 6 weeks.
12.For grades not listed in the table, please contact the Customer Technical Services Department.

Production Limits

COLD ROLLED PRODUCTS				
Product Type	**Cold Rolled High Yield Strength Steels**			
Grade	HC260LA - HC300LA - HC340LA		HC380LA - HC420LA	
Thickness (t) mm	**Width (w) mm**		**Width (w) mm**	
	Min	Max	Min	Max
0,60-0,79	700	1300	-	-
0,80-2,5	700	1300	700	1300

Remarks

1.The minimum order width is 700 mm.
2.Orders over 2 mm thickness are subject to negotiation.
3.Coil inner diameter is 508 mm. 610 mm is subject to negotiation. Coil outside diameter is minimum 900 mm and maximum 2100 mm.
4.Coil weight is minimum 5,000 kg and maximum 30,000 kg.
5.Specific surface roughness (Ra) values are subject to negotiation.
6.Requests for surface quality B are subject to negotiation.
7.Surface flatness tolerance is applied for sheets cut to length from coil and not for coils.
8.If no special oil quantity is specified, normal lubrication is applied for domestic orders (Total 1500 mg/m^2) and export orders (Total 2000 mg/m^2).
9.Orders with a maximum surface roughness (Ra) of 0.40 µm (glossy) are only accepted in Surface quality A.
10.Yıldız Demir Çelik is not responsible for any corrosion that may occur on the surface if the lubrication level is "low oil" or lubrication is not desired.
11.You can contact the Customer Technical Services Department for quality and dimensions not specified in the table.

Production Limits

FULL HARD PRODUCTS WITHOUT HEAP ANNEALING				
Product Type	**Low Carbon Steels for Continuous and Batch Annealing**		**Strapping Steels**	
Grade	DF01		S215GF	
Thickness (t)	**Width (w) mm**		**Width (w) mm**	
	Min.	Max.	Min.	Max.
0,20-0,23	700	1100	-	-
0,24-0,26	700	1200	-	-
0,27-0,35	700	1250	-	-
0,36-0,49	700	1300	-	-
0,50-0,79	700	1500	700	1500
0,80-2,00	700	1600	700	1600
2,01-2,50	700	1300	-	-

Remarks

1.The minimum order width is 700 mm.
2.CRF products are only available in 508 mm inner diameter. 610 mm is subject to negotiation.
3.CRF products are produced for subsequent continuous annealing (CA) unless otherwise specified. The suitability for different annealing methods should be specified at the order stage.
4.Minimum coil outside diameter is subject to negotiation. The maximum is 2100 mm.
5.Coil weight is subject to minimum negotiation. The maximum is 30,000 kg.
6.Depending on the thickness, surface roughness in the range Ra 0.30-2.00 µ is guaranteed. Low values can be seen for thin thicknesses. Orders requesting special surface roughness values are subject to negotiation.
7.Mechanical properties are not guaranteed.
8.Orders requesting special thickness tolerances are subject to negotiation.
9.The coils can have a maximum of 10 m off gauge at the beginning and 10 m off gauge at the end, for a total of 20 m. Thickness tolerance and surface quality of off gauge parts are not guaranteed.
10.A maximum telescopicity of 5 mm between the two windings is guaranteed. Telescopicity is not guaranteed for the first 5 and last 5 windings.
11.Rolling oil and iron dust may be present on each surface of the product up to approx. 400 mg/m^2. No protective oil is applied.
12.Surface smoothness tolerance does not apply.
13.For Full Hard products, a welding point can be found at the beginning and end of the coil (5 meters).
14.For thicknesses below 0.35 mm, metal sleeves are used.
15.You can contact the Customer Technical Services Department for quality and dimensions not specified in the table.

Cold Rolled Product Dimension Tolerances

Standard: EN 10131:2006

THICKNESS TOLERANCE

Thickness is measured at any point at a minimum distance of 40 mm from the edges.
As for slitted width ≤ 80mm and cut to length products, the thickness is measured in the middle of axis.

Thickness tolerances for grades with minimum yield strength R_e < 260 N/mm²

Thickness (t) mm	Nominal Tolerances		Special Tolerances	
	Width (w) mm		Width (w) mm	
	w≤1200	1200<w≤1300	w≤1200	1200<w≤1300
0,20≤t≤0,40	±0,030	±0,040	±0,020	±0,025
0,40<t≤0,60	±0,030	±0,040	±0,025	±0,030
0,60<t≤0,80	±0,040	±0,050	±0,030	±0,035
0,80<t≤1,00	±0,050	±0,060	±0,035	±0,040
1,00<t≤1,20	±0,060	±0,070	±0,040	±0,050
1,20<t≤1,60	±0,080	±0,090	±0,050	±0,060
1,60<t≤2,00	±0,100	±0,110	±0,060	±0,070
2,00<t≤2,50	±0,120	±0,130	±0,080	±0,090

Thickness tolerances for grades with minimum yield strength 260 ≤ R_e < 340 N/mm²

Thickness (t) mm	Nominal Tolerances		Special Tolerances	
	Width (w) mm		Width (w) mm	
	w≤1200	1200<w≤1300	w≤1200	1200<w≤1300
0,20≤t≤0,40	±0,040	±0,050	±0,025	±0,030
0,40<t≤0,60	±0,040	±0,050	±0,030	±0,035
0,60<t≤0,80	±0,050	±0,060	±0,035	±0,040
0,80<t≤1,00	±0,060	±0,070	±0,040	±0,050
1,00<t≤1,20	±0,070	±0,080	±0,050	±0,060
1,20<t≤1,60	±0,090	±0,110	±0,060	±0,070
1,60<t≤2,00	±0,120	±0,130	±0,070	±0,080
2,00<t≤2,50	±0,140	±0,150	±0,100	±0,110

Cold Rolled Product Dimension Tolerances

Standard: EN 10131:2006

THICKNESS TOLERANCE

Thickness tolerances for grades with minimum yield strength 340 ≤ R_e ≤ 420 N/mm²

Thickness (t) mm	Nominal Tolerances		Special Tolerances	
	Width (w) mm		Width (w) mm	
	w≤1200	1200<w≤1300	w≤1200	1200<w≤1300
0,20≤t≤0,40	±0,040	±0,050	±0,030	±0,035
0,40<t≤0,60	±0,050	±0,060	±0,035	±0,040
0,60<t≤0,80	±0,060	±0,070	±0,040	±0,050
0,80<t≤1,00	±0,070	±0,080	±0,050	±0,060
1,00<t≤1,20	±0,090	±0,100	±0,060	±0,070
1,20<t≤1,60	±0,110	±0,120	±0,070	±0,080
1,60<t≤2,00	±0,140	±0,150	±0,080	±0,100
2,00<t≤2,50	±0,160	±0,180	±0,110	±0,120

Thickness tolerances for grades with minimum yield strength 420 > R_e N/mm²

Thickness (t) mm	Nominal Tolerances		Special Tolerances	
	Width (w) mm		Width (w) mm	
	w≤1200	1200<w≤1300	w≤1200	1200<w≤1300
0,20≤t≤0,40	±0,050	±0,060	±0,035	±0,040
0,40<t≤0,60	±0,050	±0,070	±0,040	±0,050
0,60<t≤0,80	±0,060	±0,080	±0,050	±0,060
0,80<t≤1,00	±0,080	±0,100	±0,060	±0,070
1,00<t≤1,20	±0,100	±0,110	±0,070	±0,080
1,20<t≤1,60	±0,130	±0,140	±0,080	±0,100
1,60<t≤2,00	±0,160	±0,170	±0,100	±0,110
2,00<t≤2,50	±0,190	±0,200	±0,130	±0,140

Cold Rolled Product Dimension Tolerances

Standard: EN 10131:2006

WIDTH TOLERANCE

a) For products with a width of equal and greater than 600mm

Nominal Width (w) mm	Tolerance (mm)	
	Bottom	Top
w≤1200	0	+4
1200<w≤1300	0	+5

b) For sliced products width of less than 600 mm

Nominal Thickness (t) mm	Genişlik Toleransı (mm)							
	w<125		125<w<250		250≤w≤400		400≤w≤600	
	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top
t<0,6	0	0,4	0	0,5	0	0,7	0	1
0,6≤t<1,0	0	0,5	0	0,6	0	0,9	0	1,2
1≤t<2,0	0	0,6	0	0,8	0	1,1	0	1,4

LENGTH TOLERANCE

Nominal Length (L) mm	Tolerance (mm)	
	Bottom	Top
L<2000	0	6
2000≤L	0	%0.3xL

Cold Rolled Product Dimension and Shape Tolerances

Standard: EN 10131:2006

SURFACE FLATNESS TOLERANCE

Deviation from flatness is determined by measuring the deviation in distance between product and a flat horizontal surface on which is placed flatness tolerances is only applied to sheet products.

Surface flatness tolerances for grades with minimum yield strength R_e < 260 N/mm²

Tolerance Class	Nominal Width (w) mm	Max. Wave Height (mm)		
		t < 0,7	0,7 ≤ t < 1,2	t ≥ 1,2
Normal	w < 600	7	6	5
	600 ≤ w < 1200	10	8	7
	1200 ≤ w < 1300	12	10	8
Private	w < 600	4	3	2
	600 ≤ w < 1200	5	4	3
	1200 ≤ w < 1300	6	5	4

Surface flatness tolerances for grades with minimum yield strength 260 ≤ R_e < 340 N/mm²

Tolerance Class	Nominal Width (w) mm	Max. Wave Height (mm)		
		t < 0,7	0,7 ≤ t < 1,2	t ≥ 1,2
Normal	600 ≤ w < 1200	13	10	8
	1200 ≤ w < 1300	15	13	11
Private	600 ≤ w < 1200	8	6	5
	1200 ≤ w < 1300	9	8	6

Remarks

1.For width less than 600 mm, surface flatness tolerances are subject to agreement at the time of order.
2.Surface flatness tolerances for grades with minimum yield strength ≥ 340 N/mm² are subject to agreement at the time of order.

Cold Rolled Product Dimension and Shape Tolerances

Standard: EN 10131:2006

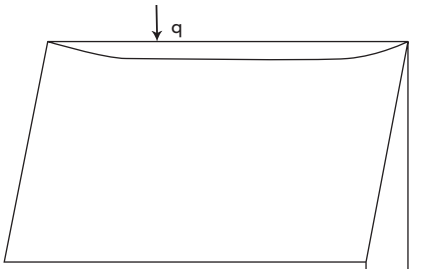
EDGE CAMBER TOLERANCE

Edge camber is the maximum distance between a straight line joining the two ends of a long edge and that long edge.
The edge camber measurement is performed on the concave edge of the product. Edge camber measurement length is the length measured from any point on the edge.
No special tolerances apply for edge camber.

Product Type (t) mm	Product Dimensions (mm)		Measure Length (L) mm	Tolerance (mm)
	Width	Length		
Sheet-Plate	≥600	≥2000	2000	5
		<2000	Gerçek uzunluk (L)	+0,0025 x L
Coil	≥600	-	2000	5
Slitted Coil	<600	-	2000	5

OUT OF SQUARENESS TOLERANCE

The tolerance for out of squareness is a maximum of 1% of the actual width of the product. Corner perpendicularity is the amount of deviation determined by the orthogonal projection of the transverse edge on the longitudinal edge.



q : Edge camber
u : Out of squareness

GALVANIZED PRODUCTS

YILDIZ DEMİR ÇELİK

Product Description

These are products produced by hot-dip zinc coating of both surfaces of cold rolled or hot rolled products whose surface has been cleaned with acid. A or B surface quality production is possible with chromate, oil or organic coating.

Product Name and Descriptions

- GHR: Hot rolled zinc coated (galvanized) coil
- GHRM: Hot rolled zinc coated (galvanized) coil without trimmed edge
- GCR: Cold rolled zinc coated (galvanized) coil
- GCRM: Cold rolled zinc coated (galvanized) coil without trimmed edge

Low Carbon Galvanized Steels for Drawing and Deep Drawing

Standard: EN 10346:2015

CHEMICAL COMPOSITION (%)							
Standard Equivalent		C	Si	Mn	P	S	Ti
Standard	Grade	max.	max.	max.	max.	max.	max.
EN 10346	DX51D+Z	0,18	0,50	1,20	0,12	0,45	0,30
	DX52D+Z	0,12	0,50	0,60	0,10	0,45	0,30
	DX53D+Z	0,12	0,50	0,60	0,10	0,45	0,30
	DX54D+Z	0,12	0,50	0,60	0,10	0,45	0,30
	DX56D+Z	0,12	0,50	0,60	0,10	0,45	0,30

MECHANICAL PROPERTIES						
Standard Equivalent		R_e	R_m (1)	A_{80} (2) (%)	r_{90} (4)	n_{90}
Standard	Grade	N/mm²	N/mm²	min.	min	min
EN 10346	DX51D+Z	-	270-500	22	-	-
	DX52D+Z	140-300(3)	270-420	26	-	-
	DX53D+Z	140-260	270-380	30	-	-
	DX54D+Z	120-220	260-350	36	1,6	0,18
	DX56D+Z	120-180	260-350	39	1,9	0,21

Remarks

1. Tensile test values are applied to "transverse" test specimens.
2. The minimum % elongation values are reduced by 2 units for products in the thickness range 0,50 mm < t ≤ 0,70 mm including coating and by 4 units for products in the thickness range t ≤ 0,50 mm.
3. The yield strength value is applied to temper rolled products.
4. For products with a thickness above 1.5 mm, the r_{90} value is reduced by 0.2 units.
5. The upper limit of yield strength of DX52D+Z grade without temper rolling process is 360 MPa.

Low Carbon Galvanized Steel for Drawing and Deep Drawing

Standard: ASTM A653

CHEMICAL COMPOSITION (%)														
Standard	**Grade**	**C**	**Mn max.**	**P max.**	**S max.**	**Al max.**	**Cu max.**	**Ni max.**	**Cr max.**	**Mo max.**	**V max.**	**Nb max.**	**Ti max.**
ASTM A653	CS Type A	0,10 max	0,60	0,030	0,035	-	0,25	0,20	0,15	0,06	0,008	0,008	0,025
	CS Type B	0,02-0,15	0,60	0,030	0,035	-	0,25	0,20	0,15	0,06	0,008	0,008	0,025
	CS Type C	0,08 max	0,60	0,100	0,035	-	0,25	0,20	0,15	0,06	0,008	0,008	0,025
	FS Type A	0,10 max	0,50	0,020	0,035	-	0,25	0,20	0,15	0,06	0,008	0,008	0,025
	FS Type B	0,02-0,10	0,50	0,020	0,030	-	0,25	0,20	0,15	0,06	0,008	0,008	0,025
	DDS Type A	0,06 max	0,50	0,020	0,025	0,010	0,25	0,20	0,15	0,06	0,008	0,008	0,025
	EDDS	0,02 max	0,40	0,020	0,020	0,010	0,25	0,20	0,15	0,06	0,100	0,100	0,150

MECHANICAL PROPERTIES						
Standard	**Grade**	**R_e N/mm²**	**R_m N/mm²**	**A_{50} (%) min.**	**r_m**	**n**
ASTM A653	CS Type A	170-380	-	20	-	-
	CS Type B	205-380	-	20	-	-
	CS Type C	140-410	-	15	-	-
	FS Type A ve	170-310	-	26	1,0-1,4	0,17-0,21
	DDS Type A	140-240	-	32	1,4-1,8	0,19-0,24
	EDDS	105-270	-	40	1,6-2,1	0,22-0,27

Remarks

1.Tensile test values are applied to "longitudinal" test specimens.
2.The mechanical values indicated are reference values.

Galvanized Structural Steel

Standard: EN 10346:2015

CHEMICAL COMPOSITION (%)						
Standard	**Grade**	**C max.**	**Si max.**	**Mn max.**	**P max.**	**S max.**
EN 10346	S220GD+Z	0,20	0,60	1,70	0,10	0,045
	S250GD+Z	0,20	0,60	1,70	0,10	0,045
	S280GD+Z	0,20	0,60	1,70	0,10	0,045
	S320GD+Z	0,20	0,60	1,70	0,10	0,045
	S350GD+Z	0,20	0,60	1,70	0,10	0,045
	S390GD+Z	0,20	0,60	1,70	0,10	0,045
	S420GD+Z	0,20	0,60	1,70	0,10	0,045
	S450GD+Z	0,20	0,60	1,70	0,10	0,045
	S550GD+Z	0,20	0,60	1,70	0,10	0,045

MECHANICAL PROPERTIES				
Standard	**Grade**	**R_e N/mm² min**	**R_m (1) N/mm² min**	**A_{80} (2) (%) min.**
EN 10346	S220GD+Z	220	300	20
	S250GD+Z	250	330	19
	S280GD+Z	280	360	18
	S320GD+Z	320	390	17
	S350GD+Z	350	420	16
	S390GD+Z	390	460	16
	S420GD+Z	420	480	15
	S450GD+Z	450	510	14
	S550GD+Z	550	560	-

Remarks

1.Tensile test values are applied to "longitudinal" test specimens.
2.If the yield point is not obvious, a value of Rp 0.2 is applied. If the yield point is significant, the R_eH value is applied.
3.The minimum % elongation value is reduced by 4 units for products with t (thickness) ≤0,50 mm and by 2 units for products with thickness range 0,50 mm < t ≤0,70 mm. Thicknesses including coating.

Galvanized Structural Steel

Standard: ASTM A653

CHEMICAL COMPOSITION (%)												
Standard	**Grade**	**C max.**	**Mn max.**	**P max.**	**S max.**	**Cu max.**	**Ni max.**	**Cr max.**	**Mo max.**	**V max.**	**Nb max.**	**Ti max.**
ASTM A653	SS Grade 33	0,20	1,35	0,10	0,04	0,25	0,20	0,15	0,06	0,008	0,008	0,025
	SS Grade 37	0,20	1,35	0,10	0,04	0,25	0,20	0,15	0,06	0,008	0,008	0,025
	SS Grade 40	0,25	1,35	0,10	0,04	0,25	0,20	0,15	0,06	0,008	0,008	0,025
	SS Grade 50 Class 1,2,4	0,25	1,35	0,20	0,04	0,25	0,20	0,15	0,06	0,008	0,008	0,025
	SS Grade 50 Class 3	0,25	1,35	0,04	0,04	0,25	0,20	0,15	0,06	0,008	0,008	0,025
	SS Grade 55	0,25	1,35	0,04	0,04	0,25	0,20	0,15	0,06	0,008	0,008	0,025
	SS Grade 60	0,25	1,35	0,04	0,04	0,25	0,20	0,15	0,06	0,008	0,008	0,025

MECHANICAL PROPERTIES				
Standard	**Grade**	**R_e (min) N/mm²**	**R_m (min)[1][2] N/mm²**	**A_{50}[2] (%) min.**
ASTM A653	SS Grade 33	230	310	20
	SS Grade 37	255	360	18
	SS Grade 40	275	380	16
	SS Grade 50 Class 1	340	450	12
	SS Grade 50 Class 2	340	-	12
	SS Grade 50 Class 3	340	480	12
	SS Grade 50 Class 4	340	410	12
	SS Grade 55	380	480	11
	SS Grade 60	410	480	10

Remarks

1.Tensile test values are applied to "longitudinal" test specimens.
2.The mechanical values indicated are reference values.

High Strength Low Alloy Galvanized Steels

Standard: EN 10346:2015

CHEMICAL COMPOSITION (%)									
Standard	**Grade**	**C max**	**Si max**	**Mn max**	**P max**	**S max**	**Al_{total} (min)**	**Nb max**	**Ti max**
EN 10346	HX260LAD+Z	0,11	0,5	1,0	0,03	0,50	0,15	0,09	0,15
	HX300LAD+Z	0,12	0,5	1,4	0,03	0,50	0,15	0,09	0,15
	HX340LAD+Z	0,12	0,5	1,4	0,03	0,50	0,15	0,09	0,15
	HX380LAD+Z	0,12	0,5	1,5	0,03	0,50	0,15	0,09	0,15
	HX420LAD+Z	0,12	0,5	1,6	0,03	0,50	0,15	0,09	0,15

MECHANICAL PROPERTIES				
Standard	**Grade**	**R_e N/mm²**	**R_m (1) N/mm²**	**A_{80} (2) (%) min.**
EN 10346	HX260LAD+Z	260-330	350-430	26
	HX300LAD+Z	300-380	380-480	23
	HX340LAD+Z	340-420	410-510	21
	HX380LAD+Z	380-480	440-560	19
	HX420LAD+Z	420-520	470-590	17

Remarks

1.The tensile test is applied to "transverse" test specimens.
2.If the yield point is not obvious, a value of Rp 0.2 is applied. If the yield point is significant, the R_eL value is applied.
3.The minimum % elongation value is reduced by 4 units for products with t ≤ 0,50 mm and by 2 units for products in the thickness range 0,50 mm < t ≤ 0,70 mm. Thicknesses including coating.

Dual Phase Galvanized Steels for Cold Forming

Standard: EN 10346:2015

CHEMICAL COMPOSITION (%)											
Standard	Grade	C max.	Si max.	Mn max.	P max.	S max.	Al max.	Cr+Mo max.	Nb+Ti max.	V max.	B max.
EN 10346	HCT590X+Z	0,15	0,75	2,5	0,04	0,015	0,015-1,5	1,4	0,15	0,2	0,005

MECHANICAL PROPERTIES				
Standard	Grade	R_e (2) N/mm²	R_m (1) N/mm² min	A_{80} (%) min.
EN 10346	HCT590X+Z	330-430	590	20

Remarks
1.The tensile test is applied to "longitudinal" test specimens.
2.If the yield point is not obvious, a value of Rp 0.2 is applied. If the yield point is significant, the R_eL value is applied.

Production Limits

GALVANIZED PRODUCTS										
Cold Rolled and Continuous Galvanized Products										
Product Type	**Low Carbon Grades and Structural Steels Suitable for Cold Forming**				**Ultra Low Carbon and IF Steels**					
Grade	DX51D+Z-CS Type C S220GD+Z-S250GD+Z SS Grade 33-SS Grade 37		DX52D+Z-CS Type A CS Type B-FS Type A-FS Type B		DX53D+Z, DDS Type A		DX54D+Z		DX56D+Z, EDDS	
Coated Thickness (t) mm	**Width (w) mm**		**Width (w) mm**		**Width (w) mm**		**Width (w) mm**		**Width (w) mm**	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
0,20-0,22	700	1100	-	-	-	-	-	-	-	-
0,23-0,34	700	1250	-	-	-	-	-	-	-	-
0,35-0,39	700	1350	700	1350	-	-	-	-	-	-
0,40-0,49	700	1350	700	1350	700	1350	700	1350	700	1350
0,50-0,59	700	1550	700	1550	700	1550	700	1550	700	1550
0,60-0,69	700	1550	700	1550	700	1550	700	1550	700	1550
0,70-0,79	700	1550	700	1550	700	1550	700	1550	-	-
0,80-0,99	700	1550	700	1550	700	1550	700	1550	-	-
1,00-1,20	700	1550	700	1550	700	1550	700	1550	-	-
1,21-2,00	700	1550	700	1550	700	1550	700	1550	-	-

*Production limits over 0.20-0.30 mm thickness range and 1300 mm width are subject to negotiation.

Product Type	High Strength Structural Steels									
Grade	S280GD+Z SS Grade 40		S320GD+Z SS Grade 50 Class 1,2,3,4		S350GD+Z SS Grade 55		S390GD+Z-S420GD+Z S450GD+Z-SS Grade 60		S550GD+Z SS Grade 80 Class 1	
Coated Thickness (t) mm	Width (w) mm		Width (w) mm		Width (w) mm		Width (w) mm		Width (w) mm	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
0,25-0,34	700	1250	-	-	-	-	-	-	-	-
0,35-0,39	700	1350	-	-	-	-	-	-	-	-
0,40-0,49	700	1350	700	1300	-	-	-	-	-	-
0,50-0,59	700	1550	700	1300	-	-	-	-	-	-
0,60-0,69	700	1550	700	1300	700	1300	-	-	700	1300
0,70-0,79	700	1550	700	1300	700	1300	-	-	700	1300
0,80-0,99	700	1550	700	1300	700	1300	700	1300	700	1300
1,00-1,20	700	1550	700	1300	700	1300	700	1300	700	1300
1,21-2,00	700	1550	700	1300	700	1300	700	1300	-	-

*Production limits over 0.20-0.30 mm thickness range and 1300 mm width are subject to negotiation.

Remarks

1.Coil inner diameter is 508 mm. Coil outside diameter is minimum 900 mm and maximum 2100 mm. 610 mm is subject to negotiation.
2.Coil weight is minimum 5,000 kg and maximum 30,000 kg.
3.Unless otherwise specified, all B surface orders are produced with surface roughness in the range 0.61-1.90 µm. Special Ra values are subject to negotiation.
4.Total coating thickness is min 50 gr/m² and max 600 gr/m².
5.Surface flatness is not guaranteed for coils. Complaints of wave defects are not accepted if the ordered coils are cut to length and used without the use of appropriate straightening equipment and practice. For this purpose, it is recommended to order products cut to length.
6.As surface quality, A (as coated) and B (improved surface, skinpass treated) surface qualities are produced.
7.For B surface grades, Skinpass process can be done brightly upon request. Unless specified, B surface products have a matt appearance.
8.All grades are produced A surface quality unless otherwise specified. Chemical passivation is applied to protect the surface from corrosion during storage and transportation conditions, unless otherwise specified For longer protection, passivation and lubrication are recommended together. Yıldız Demir Çelik is not responsible for any corrosion that may occur if surface protection is not required.
9.If Skinpass is not desired, the yield strength value (R_e) and the absence of yield marks are not guaranteed.
10.Orders with a maximum surface roughness (Ra) of 0.40µm (glossy) are only accepted in surface quality A.
11.Marking is not performed unless otherwise specified. Marking can be applied on one surface and one edge.
12.For orders over 275 gr/m² coated, the winding type is produced as a staggered winding.
13.You can contact the Customer Technical Services Department for quality and dimensions not specified in the table.

Production Limits

GALVANIZED PRODUCTS						
Cold Rolled and Continuous Galvanized Products						
Product Type	**High Strength Low Alloy Steels**				**Dual Phase Steels**	
Grade	HX260LAD+Z, HX300LAD+Z, HX340LAD+Z		HX380LAD+Z,HX420LAD+Z		HCT590X+Z	
Coated Thickness (t) mm	**Width (w) mm**		**Width (w) mm**		**Width (w) mm**	
	Min	Max	Min	Max	Min	Max
0,60-0,79	700	1300	-	-	-	-
0,80-0,99	700	1300	700	1300	700	1300
1,00-1,20	700	1300	700	1300	700	1300
1,21-2,00	700	1300	700	1300	700	1300

*Production limits over 1300 mm width are subject to negotiation.

Remarks

1.Coil inner diameter is 508 mm. Roll out diameter is minimum 900 mm and maximum 2100 mm. 610 mm is subject to negotiation.
2.Coil weight is minimum 5,000 kg and maximum 30,000 kg.
3.Unless otherwise specified, all B surface orders are produced with surface roughness in the range 0.61-1.90 µm. Special Ra values are subject to negotiation.
4.Total coating thickness is min 50 gr/m² and max 600 gr/m².
5.Surface flatness is not guaranteed for coils. Complaints of wave defects are not accepted if the ordered coils are cut to length and used without the use of appropriate straightening equipment and practice. For this purpose, it is recommended to order products cut to length.
6.As surface quality, A (as coated) and B (improved surface, skinpass treated) surface qualities are produced.
7.For B surface grades, Skinpass process can be done brightly upon request. Unless specified, B surface products have a matt appearance.
8.All grades are produced in A surface quality unless otherwise specified and chemical passivation treatment is applied to protect the surface against corrosion under storage and transportation conditions unless otherwise specified. For longer protection, passivation and lubrication are recommended together. Yıldız Demir Çelik is not responsible for any corrosion that may occur if surface protection is not required.
9.If Skinpass is not desired, the yield strength value (R_e) and the absence of yield marks are not guaranteed.
10.Orders with a maximum surface roughness (Ra) of 0.40µm (glossy) are only accepted in surface quality A.
11.Marking is not performed unless otherwise specified. Marking can be applied on one surface and one edge.
12.For orders over 275 gr/m² coated, the winding type is produced as a staggered winding.
13.You can contact the Customer Technical Services Department for quality and dimensions not specified in the table.

Production Limits

GALVANIZED PRODUCTS												
Product type	**Hot Rolled, Pickled and Continuous Galvanized Zinc Coated Galvanized Steel**											
Grade	**Steel Grades for Drawing and Deep Drawing**						**Galvanized Structural Steel**					
	Low Carbon				Ultra Low Carbon		Medium and High Strength					
	DX51D+Z-CS Type C		DX52D+Z-CS Type A-CS Type B		DX53D+Z DX54D+Z		S220GD+Z-S250GD+Z -SS Grade 33 -SS Grade 37		S280GD+Z-S320GD+Z-S350GD+Z-SS Grade 40-SS Grade 50 Class1,2,3,4 -SS Grade 55		S390GD+Z-S420GD+Z S450GD+Z-SS Grade 60	
Thickness (t) mm uncoated	**Width (w) mm**		**Width (w) mm**		**Width (w) mm**		**Width (w) mm**		**Width (w) mm**		**Width (w) mm**	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
2,00-3,00	700	1300	700	1300	700	1300	700	1300	700	1300	700	1300
3,10-3,50	700	1000	-	-	-	-	700	1000	700	1000	-	-
3,51-4,00	700	1000	-	-	-	-	700	1000	-	-	-	-

Product type	**High Strength Low Alloy Steels**			
Grade	HX260LAD+Z-HX300LAD+Z-HX340LAD+Z		HX380LAD+Z-HX420LAD+Z	
Coated Thickness (t) mm	**Width (w) mm**		**Width (w) mm**	
	Min	Max	Min	Max
2,00-3,00	700	1300	700	1300
3,10-3,50	700	1000	-	-

Remarks

1.Coil inner diameter is 610 mm. 508 mm inner diameter subject to negotiation.
2.Maximum coil weight is 30,000 kg. Under 5,000 kg is subject to negotiation.
3.Total coating thickness min. 50 gr/m² maximum 600 gr/m².
4.Surface flatness tolerance is applied only for cut to length products and not for coil products.
5.As surface quality, A (as coated) and B (improved surface, skinpass treated) surface qualities are produced.
6.For B surface grades, Skinpass process can be done brightly upon request. Unless specified, B surface products have a matt appearance.
7.All grades are produced in A surface; chromated and oil-free unless otherwise specified. For surface protection, the presence or absence of one or both chromate and oil may be desirable. Yıldız Demir Celik is not responsible for the risk of corrosion on the surface of chromate-free + oil-free products.
8.If Skinpass is not desired, the yield strength value (R_e) and the absence of yield marks are not guaranteed.
9.Orders with a maximum surface roughness (Ra) of 0.40 µm (glossy) are only accepted in surface quality A.
10.Marking is not performed unless otherwise specified. Marking can be applied on one surface and one edge.
11.For orders over 275 gr/m² coated, the winding type can be produced as a staggered type.
12.You can contact the Customer Technical Services Department for quality and dimensions not specified in the table.

Coating Mass Table

Total Coating Weight (Two Surfaces) gr/m2	Min Coating Weight (Two Surfaces Total) gr/m2		Surface quality
	Three-point test value	Two-point test value	
Z100	100	85	A, B
Z140	140	120	A, B
Z200	200	170	A, B
Z225	225	195	A, B
Z275	275	235	A, B
Z350*	350	300	A
Z450*	450	385	A
Z600*	600	510	A

*These coatings are not applicable for IF and Bake-Hardening grades. Coating amount not in the table are subject to negotiation. The coating type is flowerless.

Remarks

1.As surface quality, A (as coated) and B (improved surface) surface qualities are produced. Unless specified, production is made in accordance with surface quality A.
2.Surfaces that are not temper rolled have a glossy appearance and may show signs of flow marks.
3.Marking can be applied on one surface and one edge. (on request)
4.Galvanized products can be produced as coil, cut to length and slitted.
5.Galvanized products can be produced as trimmed and untrimed.
6.A surface grades are subjected to chemical passivation treatment to protect the surface against corrosion under storage and transportation conditions unless otherwise specified. Passivation and lubrication is recommended for longer protection. No guarantee is given against corrosion that may occur if surface protection is not requested.

Galvanized Product Dimension Tolerances

Standard: EN 10143:2006

THICKNESS TOLERANCE

Thickness tolerances for grades with minimum yield strength R_e < 260 N/mm²

Nominal Thickness (t) mm	Nominal Tolerances			Special Tolerances		
	Width (w) mm			Width (w) mm		
	≤ 1200	1200 < w ≤ 1500	>1500	≤ 1200	1200 < w ≤ 1500	>1500
0,2 < t ≤ 0,4	± 0,040	± 0,050	± 0,060	± 0,030	± 0,035	± 0,040
0,4 < t ≤ 0,6	± 0,040	± 0,050	± 0,060	± 0,035	± 0,040	± 0,045
0,6 < t ≤ 0,8	± 0,050	± 0,060	± 0,070	± 0,040	± 0,045	± 0,050
0,8 < t ≤ 1,0	± 0,060	± 0,070	± 0,080	± 0,045	± 0,050	± 0,060
1,0< t ≤ 1,2	± 0,070	± 0,080	± 0,090	± 0,050	± 0,060	± 0,070
1,2 < t ≤ 1,6	± 0,100	± 0,110	± 0,120	± 0,060	± 0,070	± 0,080
1,6 < t ≤ 2,0	± 0,120	± 0,130	± 0,140	± 0,070	± 0,080	± 0,090
2,0 < t ≤ 2,5	± 0,140	± 0,150	± 0,160	± 0,090	± 0,100	± 0,110
2,5 < t ≤ 3,0	± 0,170	± 0,170	± 0,180	± 0,110	± 0,120	± 0,130

Thickness tolerances for DX51D and S550GD and grades with yield strength 260 ≤ R_e < 360 N/mm2

Nominal Thickness (t) mm	Nominal Tolerances			Special Tolerances		
	Width (w) mm			Width (w) mm		
	≤1200	1200 < w ≤ 1500	>1500	≤ 1200	1200 < w ≤ 1500	>1500
0,2 < t ≤ 0,4	± 0,050	± 0,060	± 0,070	± 0,035	± 0,040	± 0,045
0,4 < t ≤ 0,6	± 0,050	± 0,060	± 0,070	± 0,040	± 0,045	± 0,050
0,6 < t ≤ 0,8	± 0,060	± 0,070	± 0,080	± 0,045	± 0,050	± 0,060
0,8 < t ≤ 1,0	± 0,070	± 0,080	± 0,090	± 0,050	± 0,060	± 0,070
1,0< t ≤ 1,2	± 0,080	± 0,090	± 0,110	± 0,060	± 0,070	± 0,080
1,2 < t ≤ 1,6	± 0,110	± 0,130	± 0,140	± 0,070	± 0,080	± 0,090
1,6 < t ≤ 2,0	± 0,140	± 0,150	± 0,160	± 0,080	± 0,090	± 0,110
2,0 < t ≤ 2,5	± 0,160	± 0,170	± 0,180	± 0,110	± 0,120	± 0,130
2,5 < t ≤ 3,0	± 0,190	± 0,200	± 0,200	± 0,130	± 0,140	± 0,150

Remarks

1.Thickness is measured at any point at a minimum distance of 40 mm from the edges.
2.For slitted coil or sheet/plate products with a width ≤ 80 mm, the thickness is measured at the center of the axis.
3.Normal and special thickness tolerances are increased by ± 0.01mm for Z450 and Z600 total coating weights.
4.Production with 25% thickness tolerance is subject to negotiation.

Galvanized Product Dimension Tolerances

Standard: EN 10143:2006

THICKNESS TOLERANCES

Thickness tolerances for grades with yield strength 360 ≤ R_e < 420 N/mm2

Nominal Thickness (t) mm	Nominal Tolerances			Special Tolerances		
	Width (w) mm			Width (w) mm		
	≤ 1200	1200 < w ≤ 1500	>1500	≤ 1200	1200 < w ≤ 1500	> 1500
0,2 < t ≤ 0,4	± 0,050	± 0,060	± 0,070	± 0,040	± 0,045	± 0,050
0,4 < t ≤ 0,6	± 0,060	± 0,070	± 0,080	± 0,045	± 0,050	± 0,060
0,6 < t ≤ 0,8	± 0,070	± 0,080	± 0,090	± 0,050	± 0,060	± 0,070
0,8 < t ≤ 1,0	± 0,080	± 0,090	± 0,110	± 0,060	± 0,070	± 0,080
1,0< t ≤ 1,2	± 0,100	± 0,110	± 0,120	± 0,070	± 0,080	± 0,090
1,2 < t ≤ 1,6	± 0,130	± 0,140	± 0,160	± 0,080	± 0,090	± 0,110
1,6 < t ≤ 2,0	± 0,160	± 0,170	± 0,190	± 0,090	± 0,110	± 0,120
2,0 < t ≤ 2,5	± 0,180	± 0,200	± 0,210	± 0,120	± 0,130	± 0,140
2,5 < t ≤ 3,0	± 0,220	± 0,220	± 0,230	± 0,140	± 0,150	± 0,160

Thickness tolerances for grades with yield strength 420 ≤ R_e < 900 N/mm2

Nominal Thickness (t) mm	Nominal Tolerances			Special Tolerances		
	Width (w) mm			Width (w) mm		
	≤1200	1200 < w ≤ 1500	>1500	≤ 1200	1200 < w ≤ 1500	>1500
0,2 < t ≤ 0,4	± 0,060	± 0,070	± 0,080	± 0,045	± 0,050	± 0,060
0,4 < t ≤ 0,6	± 0,060	± 0,080	± 0,090	± 0,050	± 0,060	± 0,070
0,6 < t ≤ 0,8	± 0,070	± 0,090	± 0,110	± 0,060	± 0,070	± 0,080
0,8 < t ≤ 1,0	± 0,090	± 0,110	± 0,120	± 0,070	± 0,080	± 0,090
1,0< t ≤ 1,2	± 0,110	± 0,130	± 0,140	± 0,080	± 0,090	± 0,110
1,2 < t ≤ 1,6	± 0,150	± 0,160	± 0,180	± 0,090	± 0,110	± 0,120
1,6 < t ≤ 2,0	± 0,180	± 0,190	± 0,210	± 0,110	± 0,120	± 0,140
2,0 < t ≤ 2,5	± 0,210	± 0,220	± 0,240	± 0,140	± 0,150	± 0,170
2,5 < t ≤ 3,0	± 0,240	± 0,250	± 0,260	± 0,170	± 0,180	± 0,190

Remarks

1.Thickness is measured at any point at a minimum distance of 40 mm from the edges.
2.For slitted coil or sheet/plate with a width ≤ 80 mm, the thickness is measured at the center of the axis.
3.Normal and special thickness tolerances are increased by ± 0.01mm for Z450 and Z600 total coating weights.
4.Production with 25% thickness tolerance is subject to negotiation.

Galvanized Product Dimension and Shape Tolerances

Standard: EN 10143:2006

WIDTH TOLERANCES

For products with width of equal and greater than 600mm

Nominal Width (w) mm	Width (w) mm Tolerances	
	min	max
600 < w ≤ 1200	0	5
1200 < w ≤ 1500	0	6
1500<w	0	7

Slitted coils and cut to length products with width less than 600 mm

Nominal Thickness (t) mm	Width (w) mm Tolerances							
	w < 125		125 < w ≤ 250		250 < w ≤ 400		400 < w ≤ 600	
	min	max	min	max	min	max	min	max
t < 0,6	0	0,4	0	0,5	0	0,7	0	1
0,6 ≤ t < 1,0	0	0,5	0	0,6	0	0,9	0	1,2
1,0 ≤ t < 2,0	0	0,6	0	0,8	0	1,1	0	1,4
2,0 ≤ t ≤ 3,0	0	0,7	0	1	0	1,3	0	1,6

Note: The width is measured perpendicular to the longitudinal axis of the product.

LENGTH TOLERANCE

Nominal Length (L) mm	Normal Tolerances (mm)	Normal Tolerances (mm)
L < 2000	min	max
	0	6
L ≥ 2000	0	0,3 x L

Note: The length is measured along the long side of the sheet.

SURFACE FLATNESS TOLERANCE

Surface smoothness tolerances for grades with minimum yield strength 260 ≤ R_e ≤ 360 N/mm² and for DX51D and S550GD

Tolerance Class	Nominal Width	Max Wave Height for Nominal Thickness (t)		
		t<0,7	0,7 ≤ t < 1,6	1,6 ≤ t < 3,0
Normal	w < 1200	10	8	
	1200 ≤ w < 1500	12	10	
	1500 ≤ w	17	15	
Special (FS)	w < 1200	5	4	3
	1200 ≤ w < 1500	6	5	4
	1500 ≤ w	8	7	6

Note: Surface flatness tolerance is applied for sheets cut to length from coil and not for rolled products.

Galvanized Product Dimension Tolerances

Standard: EN 10143:2006

SURFACE FLATNESS TOLERANCE

Surface flatness tolerances for grades with minimum yield strength R_e < 260 N/mm²

Tolerance Class	Nominal Width (w) mm	Max Wave Height for Nominal Thickness (t)			
		t<0,7	0,7 ≤ t < 1,6	1,6 ≤ t < 3,0	3 ≤ t ≤ 5
Normal	w < 1200	10	8		15
	1200 ≤ w < 1500	12	10		18
Special	w < 1200	5	4	3	8
	1200 ≤ w < 1500	6	5	4	9

Surface flatness tolerances for grades with minimum yield strength 260 ≤ R_e < 360 N/mm² and grades DX51D and S550GD

Tolerance Class	Tolerance Class mm	Max Wave Height for Nominal Thickness (t)			
		t<0,7	0,7 ≤ t < 1,6	1,6 ≤ t < 3,0	3 ≤ t ≤ 5
Normal	w < 1200	13	10		18
	1200 ≤ w < 1500	15	13		25
Special	w < 1200	8	6	5	9
	1200 ≤ w < 1500	9	8	6	12

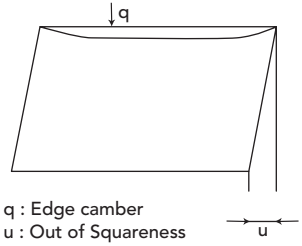
Remarks

1.Surface flatness tolerance for grades with minimum yield strength R_e ≥ 360 N/mm² is subject to negotiation at the order stage.

EDGE CAMBER TOLERANCE

- Edge camber is the maximum distance between a straight line joining the two ends of a long edge and that long edge.
- The edge camber measurement is performed on the concave edge of the product.
- Edge camber measurement length is the length measured from any point on the edge.
- For sheet products with a width greater than 600 mm, for sheet lengths of 2000 mm and more, the measurement length is taken as 2000 mm and a tolerance of 5 mm is applied.
- If the sheet length is less than 2000 mm, the actual length of the product is taken as the gauge length and a tolerance of 0.25% of the actual length is applied.
- For roll products, the gauge length is 2000 mm with a tolerance of 5 mm.

OUT OF SQUARENESS TOLERANCE



q : Edge camber
u : Out of Squareness

- Out of Squareness is the amount of deviation determined by orthogonal projection of the transverse edge onto the longitudinal edge.
- Out of Squareness tolerance can be a maximum of 1 % of the actual width of the sheet.

COLOR COATED PRODUCTS

YILDIZ DEMİR ÇELİK

Product Description

They are products produced with paint application on galvanized and cold sheet metal.

Product Name and Descriptions

- PPG : Color Coated Galvanized Coil
- PPC : Color Coated Cold Rolled Coil

TOP COAT PAINT	
Paint Type	**Paint Type Description**
SP	*Polyester
HD SP	High Strength Polyester
PVDF	**Polyvinylidene Fluoride
PVC(P)	Plastisol
PUR-PA	Polyamide Modified Polyurethane
PUR	Polyurethane
SP WR	Polyester Wrinkle

(*/**) Double surface application is possible.

PRIMER PAINT	
Primer Type	**Liner Type Description**
SP (CF)	Polyester Liner Chrome Free
SP (FLCF)	Polyester Flex Liner Chrome Free
*PVC(P)-PR	Plastisol Primer

(*) Plastisol is applied with top coats.

BACKCOAT PAINT	
Backcoat	**Backcoat Type Description**
EP	Epoxy
EP-SP	Epoxy Polyester

Coating Types

Protective Film Coating (Cold Lamination)

These films are applied to protect PVC coated sheet metal or painted surfaces from external factors such as scratches, contamination etc. during transportation, forming, assembly etc. operation processes. They can be applied in various thicknesses (standard 35 microns) as transparent or colored. They are used temporarily to be removed from the painted surface after transportation, forming or assembly.

PVC Film Coating (Hot Lamination)

PVC film (Polyvinyl Chloride) laminated on the sheet surface can be used in indoor or outdoor environments. It offers a wide range of usage possibilities with smooth surface, textured and patterned alternatives. With the paint applied on the back surface of the metal, the polyurethane foam adheres better to the metal. On request, the coated metal surface can be covered with a removable transparent protective film for additional protection.

PET Film Coating (Hot Lamination)

PET film (Polyethylene Terephthalate), which can be applied to sheet metal surfaces, offers a wide range of colors and patterns. This product, which can be used indoors and outdoors, is one of the most popular products in today's coating industry with its excellent chemical resistance, stain resistance for refrigerators, easy cleaning and high scratch resistance.

Comparable Characteristics of Paint Types

Specifications	Polyester (PE)	PVDF	Plastisol (PVC)	Pur-PA	HD SP
Color Durability	Good	Excellent	Good	Very Good	Excellent
Gloss Durability	Good	Excellent	Good	Very Good	Excellent
Chalking Resistance	Good	Excellent	Good	Good	Excellent
Corrosion Resistance	Good	Very Good	Excellent	Very Good	Very Good
Moisture Resistance	Good	Excellent	Excellent	Excellent	Very Good
Formability	Good	Excellent	Excellent	Excellent	Excellent
Friction Resistance	Good	Very Good	Excellent	Excellent	Excellent

Advantages of PVDF Top Coats
- External strength
- Color resistance
- Gloss resistance
- Chalking
- Flexibility
- Impact resistance
- Abrasion resistance
- Oil resistance
- Solvent resistance
- Ease of implementation
- Corrosion resistance

Advantages of Polyester Paints
- Flexibility
- Abrasion resistance
- Pencil Hardness
- Corrosion resistance
- Moisture Resistance
- Interface Adhesion
- Color and gloss options
- Ease of implementation
- Impact resistance

Advantages of Purpa Paints
- High scratch resistance
- High flexibility capability

Advantages of PVC Paints
- Very high corrosion and moisture resistance
- Suitable for bending and forming

Usage Areas of Pre-Painted Steel Sheets Depending on Paint Type

Application Areas of Polyester Topcoat Paints
- Roof and facade cladding
- Sandwich panels
- Coil painted garage doors
- Rainwater drainage systems
- White goods products
- Suspended ceiling
- Clamp construction
- Tool bag

Application Areas of PVDF Topcoats
- Roof and facade cladding
- Sandwich panels
- Composite panel
- Advertisement panels
- Where color and gloss stability is desired

Usage Areas of Plastisol (PVC) Topcoats
- Roof and facade cladding
- Areas where corrosion resistance is desired

Application Areas of Polyamide Modified Polyurethane Topcoats
- Roof and facade cladding
- Shutter and shutter systems
- Coil painted garage doors
- Where high scratch resistance is desired

Production Limits

COLOR COATED PRODUCTS						
Cold Rolled and Continuous Galvanized Color Coated Products						
Product Type	**Low Carbon Grades and Structural Steels for Cold Forming**					
Grade	DX51D+Z S220GD+Z S250GD+Z S280GD+Z		DX52D+Z		DX53D+Z DX54D+Z	
Painted Thickness (mm)	**Width (mm)**		**Width (mm)**		**Width (mm)**	
	Min.	Max.	Min.	Max.	Min.	Max.
0,27 - 0,30	700	1150	-	-	-	-
0,31 - 0,34	700	1250	-	-	-	-
0,35 - 0,42	700	1250	700	1150	-	-
0,43 - 0,52	700	1300	700	1250	700	1000
0,53 - 0,62	700	1300	700	1300	700	1100
0,63 - 0,72	700	1300	700	1300	700	1200
0,73 - 1,23	700	1300	700	1300	700	1300

Cold Rolled and Continuous Galvanized Color Coated Products				
Grade	**Structural Steels**			
Painted Thickness (mm)	S320GD+Z		S350GD+Z	
	Width (mm)		**Width (mm)**	
	Min.	Max.	Min.	Max.
0,43 - 0,52	700	1250	-	-
0,53 - 0,62	700	1300	-	-
0,63 - 0,72	700	1300	700	1300
0,73 - 1,23	700	1300	700	1300

Remarks

1.The minimum order width is 700 mm.
2.Galvanized and color coated steel grades are produced in accordance with EN 10346:2015 and EN 10169:2010 standards. Production of DX53D+Z and DX54D+Z grades is subject to negotiation.
3.Coil inner diameter is 508 mm. 610 mm is subject to negotiation.
4.The maximum package weight for coil products is 8,000 kg. Maximum 2,500 kg for cold laminated coils (film-coated products).
5.Total zinc coating weight of PPG and PPGC products is maximum 275 gr/m² and minimum 50 gr/m². Coating requests over 275 gr/m² are subject to negotiation. Impact resistance, bending and deep drawing are not guaranteed for coatings of 200 g/m² and above.
6.Surface flatness tolerance is applied for sheets cut to length from coil and not for coils.
7.Unless otherwise specified by the customer for coated products, the top surface coat color is RAL9002 (Off-White) and the bottom surface backcoat (White) is applied. Unless otherwise specified, topcoat paint is applied on primer for the top surface and only backcoat is applied for the bottom surface. In painted products, standard SP(CF) primer type is used as primer on the top surface and SemiGloss SP is used as top coat paint type. For painted products, only backcoat paint type EP-SP is used on the bottom surface. Epoxy backcoat can also be applied upon request.
8.Unless otherwise specified, 5 micron primer, 20 micron topcoat, 7 micron backcoat are applied. Painted sheet guarantee is not given for requests below the specified thicknesses. The expected corrosion resistance, paint flaking, color and gloss loss are not guaranteed for requests with paint type PVC(P) and paint thickness below 150 microns.
9.Order thicknesses for plastisol and wrinkle type painted products are galvanized coated product thicknesses. Paint coating thickness is excluded.
10.When cold lamination is requested, 35 micron and transparent film is applied unless otherwise specified. Wrinkle and cold laminated products are produced with cardboard sleeves.
11.For project continuation productions, no color shade guarantee is given unless the order is specified as a continuation of the relevant project production (production batch).
12.Sleeve productions are subject to negotiation.
13.You can contact the Customer Technical Services Department for quality and dimensions not specified in the table.

Color Coated Product Tolerances

Tests	Polyester, Pvdf, Polyurethane Paints		Plastisol
Top Paint Thickness	Standard: 20 ± 2mm Upon request: 15 ± 2mm In Metallic Colors: 18 ± 2mm	Total Top Paint Thickness: 25 ± 3mm Metallic, Phosphorescent and Pearlescent Total in Colors Top Paint Thickness: 23 ± 3mm	Order Paint Thickness: ± %10
Top Paint Primer Thickness	5 ± 1µm		5 ± 1µm
Bottom Paint Thickness	7 ± 1mm		
Top Paint Color Difference	ΔE ≤1 (ΔE ≤2 for Metallic, Phosphorescent and Pearlescent colors)		ΔE≤ 2
60° Top Paint Gloss %	Matt ≤12 12 < Low Gloss ≤ 22 23 ≤ Semi gloss ≤ 45 46 ≤ Gloss ≤ 75 75< High Gloss		
Topcoat MEK Wipe Test	≥ 100 (≥ 50 for metallic, phosphorescent and pearlescent colored paints)		Not applicable
Undercoating MEK Wipe Test	≥50		≥50
Topcoat Adhesion Test After Deep Drawing	≥ 6mm - 0 % ≥ 6,5mm - 0 % PVDF		≥ 7mm - 0 %
Undercoat Adhesion Test After Deep Drawing	≥ 6mm - 0 %		≥ 6mm - 0 %
Top Crayon Hardness*	Min. F		Not applicable
Top Paint T-Bend Test	Max. 2T		Max. 0,5T
Reverse Impact Test	≥ 10 J		Not applicable

*For polyurethane paints, pencil hardness is not considered. For plastisol paints, pencil hardness and MEK erasure are not considered.

Color Coated Product Dimension and Shape Tolerances

THICKNESS TOLERANCE

Thickness tolerances for grades with minimum yield strength R_e < 260 N/mm²

Nominal Thickness (t) mm	Nominal Tolerances			Special Tolerances		
	Width (w) mm			Width (w) mm		
	w ≤ 1200	1200 ≤ w < 1500	>1500	w ≤ 1200	1200 ≤ w < 1500	>1500
0,20 < t ≤ 0,40	±0,04	±0,05	±0,06	±0,030	±0,035	±0,040
0,40 < t ≤ 0,60	±0,04	±0,05	±0,06	±0,035	±0,040	±0,045
0,60 < t ≤ 0,80	±0,05	±0,06	±0,07	±0,040	±0,045	±0,050
0,80 < t ≤ 1,00	±0,06	±0,07	±0,08	±0,045	±0,050	±0,060
1,00 < t ≤ 1,20	±0,07	±0,08	±0,09	±0,050	±0,060	±0,700

Thickness tolerances for grade DX51D and grades with yield strength 260 ≤ R_e < 360 N/mm²

Nominal Thickness (t) mm	Nominal Tolerances			Special Tolerances		
	Width (w) mm			Width (w) mm		
	w ≤ 1200	1200 ≤ w < 1500	>1500	w ≤ 1200	1200 ≤ w < 1500	>1500
0,20 < t ≤ 0,40	±0,05	±0,06	±0,07	±0,035	±0,040	±0,045
0,40 < t ≤ 0,60	±0,05	±0,06	±0,07	±0,040	±0,045	±0,050
0,60 < t ≤ 0,80	±0,06	±0,07	±0,08	±0,045	±0,050	±0,060
0,80 < t ≤ 1,00	±0,07	±0,08	±0,09	±0,050	±0,060	±0,700
1,00 < t ≤ 1,20	±0,08	±0,09	±0,11	±0,060	±0,700	±0,800
1,20 < t ≤ 1,60	±0,11	±0,13	±0,14	±0,070	±0,800	±0,900

Remarks

1.Thickness is measured at any point at a minimum distance of 40 mm from the edges.
2.For slitted coils or cut to length products with a width of 80 mm, the thickness is measured at th center of the axis.
3.Normal and special thickness tolerances are increased by ± 0.01mm for Z450 and Z600 total coating weights.
4.Production with 25% thickness tolerance is subject to negotiation.

Color Coated Product Dimension and Shape Tolerances

Standard: EN 10143:2006

WIDTH TOLERANCES

For products with width of equal and greater than 600mm

Nominal Width (w)	Tolerances (mm)	
	min.	max.
600 < w ≤ 1200	0	5
1200 < w ≤ 1500	0	6

Sliced products with width less than 600 mm

Nominal Thickness (t) mm	Tolerances (mm)							
	w ≤ 125		125 ≤ w < 250		250 ≤ w < 400		400 ≤ t < 600	
	min.	max.	min.	max.	min.	max.	min.	max.
t < 0,60	0	0,4	0	0,5	0	0,7	0	1,0
0,6≤ t < 1,0	0	0,5	0	0,6	0	0,9	0	1,2

Note: The width is measured perpendicular to the longitudinal axis of the product.

LENGTH TOLERANCE

Nominal Length (L) mm	Normal Tolerances (mm)	
	min.	max.
L < 2000	0	6,0
L ≥ 2000	0	0,3 x L

Note: The length is measured along the long side of the sheet.

SURFACE FLATNESS TOLERANCE

Surface flatness tolerances for grades with minimum yield strength 260 ≤ R_e < 360 N/mm² and DX51D+Z

Tolerance Class	Nominal Width (w) Tolerance	Max Wave Height (mm) for Nominal Thickness (t) mm	
		t < 0,7	0,7 ≤ t <1,6
Normal	w < 1200	10	8
	1200 ≤ w < 1500	12	10
	w ≤ 1500	17	15
Special (FS)	w < 1200	5	4
	1200 ≤ w < 1500	6	5
	w ≤ 1500	8	7

Note: Flatness can be guaranteed for materials shipped cut to length. Surface flatness requirements for coil materials are subject to negotiation.

Color Coated Product Dimension and Shape Tolerances

Tolerance Class	Nominal Width (w) Tolerance	Max Wave Height mm for Nominal Thickness (t) mm	
		t < 0,7	0,7 ≤ t <1,6
Normal	w < 1200	13	10
	1200 ≤ w < 1500	15	13
Special (FS)	w < 1200	8	6
	1200 ≤ w < 1500	9	8

EDGE CAMBER TOLERANCE

• Edge camber is the maximum distance between a straight line joining the two ends of a long edge and that long edge.

• The edge camber measurement is made on the concave edge of the product.

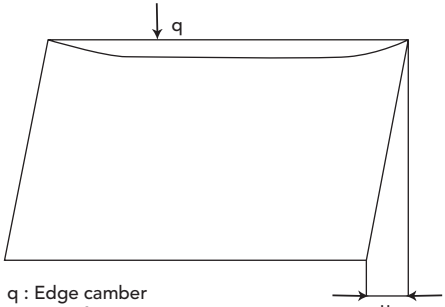
• Edge camber measurement length is the length measured from any point on the edge.

• For sheet products with a width greater than 600 mm, for sheet lengths of 2000 mm and more, the length of measurement is taken as 2000 mm and a tolerance of 5 mm is applied.

• If the sheet length is less than 2000 mm, the actual length of the product is taken as the gauge length and a tolerance of 0.25% of the actual length is applied.

• For coil products, the length measurement is 2000 mm with a tolerance of 5 mm.

OUT OF SQUARENESS TOLERANCE



q : Edge camber
u : Out of Squareness

• Out of Squareness is the amount of deviation determined by orthogonal projection of the transverse edge onto the longitudinal edge.

• Out of Squareness tolerance can be a maximum of 1 % of the actual width of the sheet.

STEEL SERVICE CENTER PRODUCTS

YILDIZ DEMİR ÇELİK

CUT TO LENGTH LINE

YILDIZ DEMİR ÇELİK

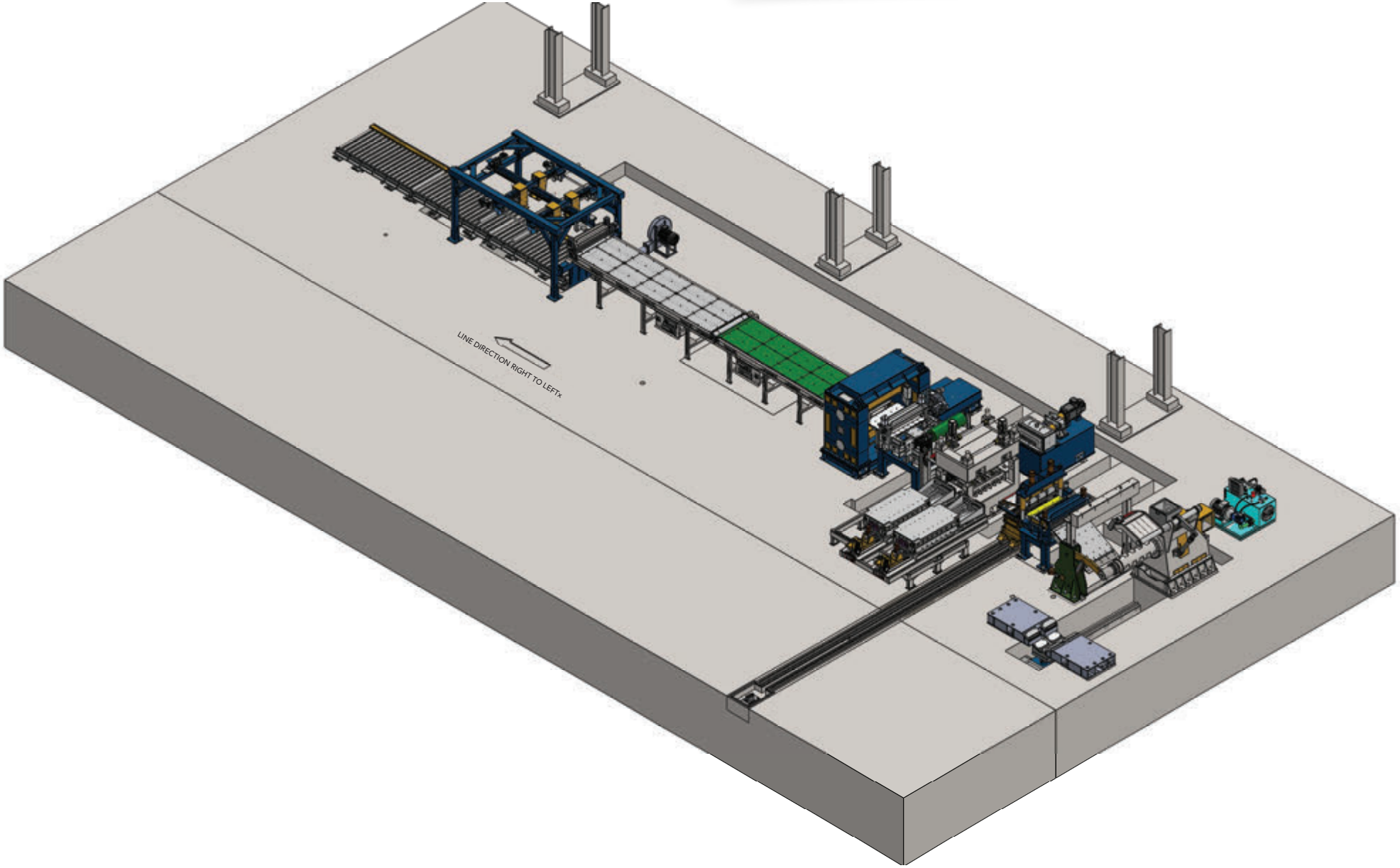
Product Name and Descriptions

- PHRC: Hot rolled and pickled surface sheet
- GCRC: Cold rolled zinc coated sheet
- GHRC: Hot rolled zinc coated sheet
- BCRC: Cold rolled and batch annealed sheet
- PPGC: Color coated and galvanized sheet

Material	PHR, CR, GI, PPG
Tensile Strength	Max. 600 N/mm2
Yield Strength	Max. 450 N/mm2
Min. - Max. Coil Width	700 mm- 1300 mm
Max. Coil Outside Diameter	2100 mm
Entrance Coil Inner Diameter	508 mm - 610 mm
Max. Material Thickness	3,00 mm
Min. Material Thickness	0.25 mm (ironing for 0.45 mm and above)
Min. Cutting Length	400 mm
Max. Cutting Length	3000 mm
Height Range	± 0.50 mm - up to 2000 mm
Max. Stack Height	1000 mm
Max. Package Weight	10.000 kg

Dimension and Shape Tolerances

The tolerances of EN 10131 for cold rolled products, EN 10143 for galvanized products and EN 10051 for pickled products are applied.


LINE DIRECTION RIGHT TO LEFT

SLITTING LINE

YILDIZ DEMİR ÇELİK

Product Name and Descriptions

- PHRS: Hot rolled and pickled slitted coil
- GCRS: Cold rolled zinc coated slitted coil
- GHRS: Hot rolled zinc slitted coil
- BCRS: Cold rolled and batch annealed slitted coil
- PPGS: Pre-painted and galvanized slitted coil

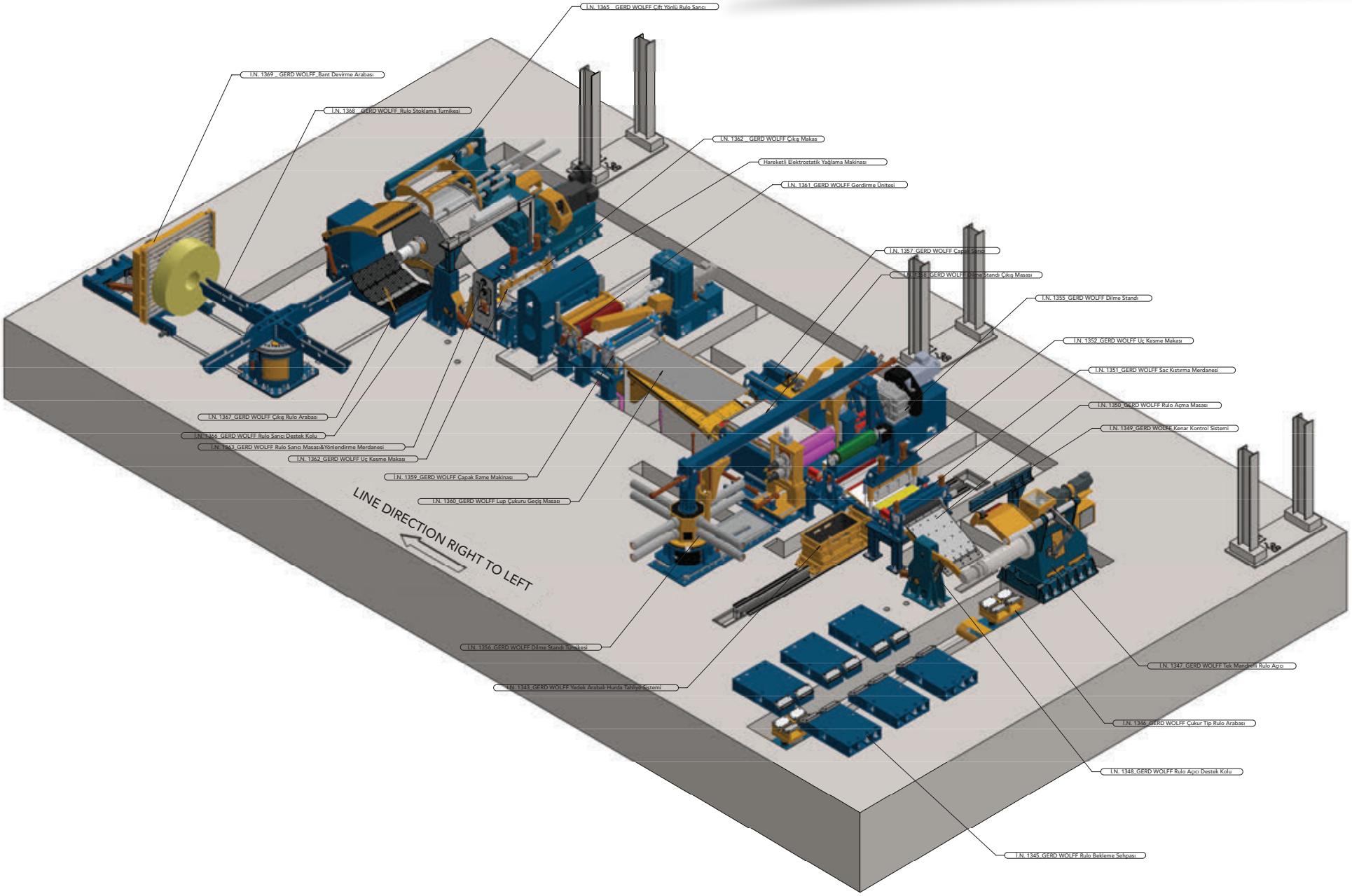
Material	Cold, Galvanized and Painted Products
Tensile Strength	Max.600 N/mm2
Yield Strength	Max.450 N/mm2
Max. Coil Weight	30.000 kg
Max. - Min. Slitting Width	20 mm - 900 mm
Max. Coil Outside Diameter	2100 mm
Entrance Coil Inner Diameter	470 mm - 610 mm
Max. Material Thickness	5,00 mm
Min. Material Thickness	0,25 mm
Protective Oils	Available

Width Tolerances for Products Produced on Slitting Line

	Nominal Width (w) mm	**Width Tolerances by Material Thickness (t) mm (for widths below 600 mm)**			
		t<0,60	**0,60≤ w<1**	**1≤w2**	**2≤w≤3**
Normal Tolerances	w<125	0 /+0,4	0 /+0,5	0 /+0,6	0 /+0,7
	125≤ w <250	0 /+0,5	0 /+0,6	0 /+0,8	0 /+1,0
	250≤w<400	0 /+0,7	0 /+0,9	0 /+1,1	0 /+1,3
	400w<600	0 /+1,0	0 /+1,2	0 /+1,4	0 /+1,6
Special Tolerances	w<125	0 /+0,2	0 /+0,2	0 /+0,3	0 /+0,4
	125≤ w <250	0 /+0,2	0 /+0,3	0 /+0,4	0 /+0,5
	250≤w<400	0 /+0,3	0 /+0,4	0 /+0,5	0 /+0,6
	400w<600	0 /+0,5	0 /+0,6	0 /+0,7	0 /+0,8

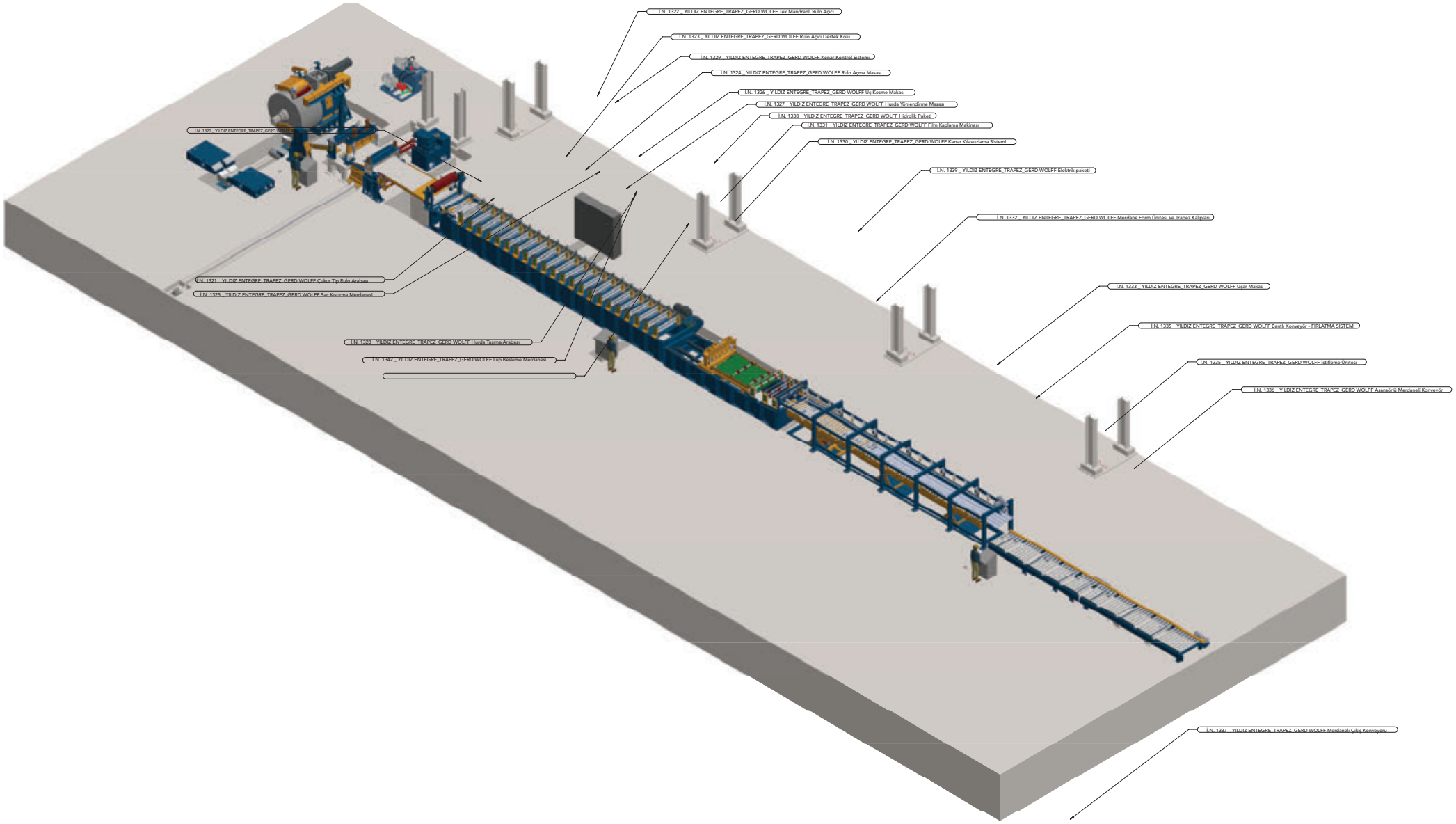
Dimension and Shape Tolerances

The tolerances of EN 10131 for cold rolled products, EN 10143 for galvanized products and EN 10051 for pickled products are applied.


I.N. 1365 _ GERD WOLFF Çift Yönlü Rulo Sarıcı
I.N. 1369 _ GERD WOLFF_Bant Devirme Arabası
I.N. 1368 _ GERD WOLFF_Rulo Stoklama Turnikesi
I.N. 1362 _ GERD WOLFF Çıkış Makas
Hareketli Elektrostatik Yağlama Makinası
I.N. 1361_GERD WOLFF Gerdirme Ünitesi
I.N. 1357_GERD WOLFF Capak Sarıcı
I.N. 1358_GERD WOLFF Dilme Standı Çıkış Masası
I.N. 1355_GERD WOLFF Dilme Standı
I.N. 1352_GERD WOLFF Uç Kesme Makası
I.N. 1351_GERD WOLFF Sac Kıstırma Merdanesi
I.N. 1350_GERD WOLFF Rulo Açma Masası
I.N. 1349_GERD WOLFF Kenar Kontrol Sistemi
I.N. 1367_GERD WOLFF Çıkış Rulo Arabası
I.N. 1366_GERD WOLFF Rulo Sarıcı Destek Kolu
I.N. 1363_GERD WOLFF Rulo Sarıcı Masası&Yönlendirme Merdanesi
I.N. 1362_GERD WOLFF Uç Kesme Makası
I.N. 1359_GERD WOLFF Capak Ezme Makinası
I.N. 1360_GERD WOLFF Lup Çukuru Geçiş Masası
LINE DIRECTION RIGHT TO LEFT
I.N. 1356_GERD WOLFF Dilme Standı Turnikesi
I.N. 1343_GERD WOLFF Yedek Arabalı Hurda Tahliye Sistemi
I.N. 1347_GERD WOLFF Tek Mandrenli Rulo Açıcı
I.N. 1346_GERD WOLFF Çukur Tip Rulo Arabası
I.N. 1348_GERD WOLFF Rulo Açıcı Destek Kolu
I.N. 1345_GERD WOLFF Rulo Bekleme Sehpası

TRAPEZOIDAL LINE

YILDIZ
DEMİR ÇELİK

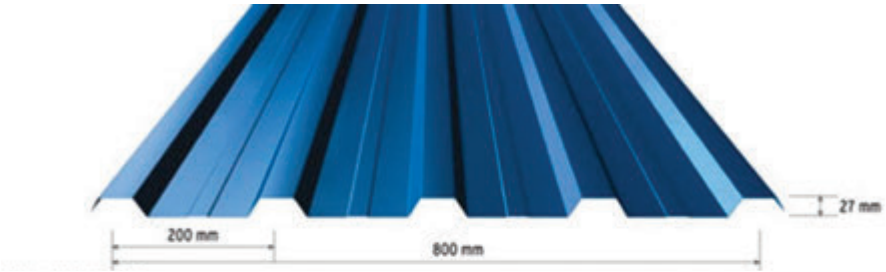

I.N. 1322 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Tek Mandrenli Rulo Açıcı
I.N. 1323 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Rulo Açıcı Destek Kolu
I.N. 1329 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Kenar Kontrol Sistemi
I.N. 1324 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Rulo Açma Masası
I.N. 1326 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Uç Kesme Makası
I.N. 1327 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Hurda Yönlendirme Masası
I.N. 1338 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Hidrolik Paketi
I.N. 1331 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Film Kaplama Makinası
I.N. 1330 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Kenar Kılavuzlama Sistemi
I.N. 1339 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Elektrik paketi
I.N. 1332 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Merdane Form Ünitesi Ve Trapez Kalıpları
I.N. 1333 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Uçar Makas
I.N. 1335 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Bantlı Konveyör - FIRLATMA SİSTEMİ
I.N. 1335 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF İstifleme Ünitesi
I.N. 1336 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Asansörlü Merdaneli Konveyör
I.N. 1337 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Merdaneli Çıkış Konveyörü
I.N. 1321 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Çukur Tip Rulo Arabası
I.N. 1325 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Saç Kesteme Merdanesi
I.N. 1328 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Hurda Taşıma Arabası
I.N. 1342 _ YILDIZ ENTEGRE_TRAPEZ_GERD WOLFF Lup Besleme Merdanesi

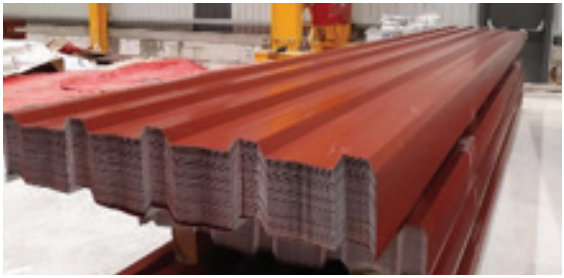
Product Name and Descriptions

- GCRT: Cold rolled galvanized trapezoid
- PPGT: Pre-painted and galvanized trapezoid

Material	CR, Galvanized, Painted
Trapezoidal Form	27x200
Useful Width	860 mm (5 Hadve) - 1050 mm (6 Hadve)
Max. Material Thickness	1,20 mm
Min. Material Thickness	0,30 mm
Min. Cutting Length	500 mm
Max. Cutting Length	12.000 mm
Height Range	±1.00 mm - up to 2000 mm
Max. Stack Height	800 mm
Maximum Package Weight	8.000 kg

*Trapeze products are produced according to TS 822 2019 Standard.



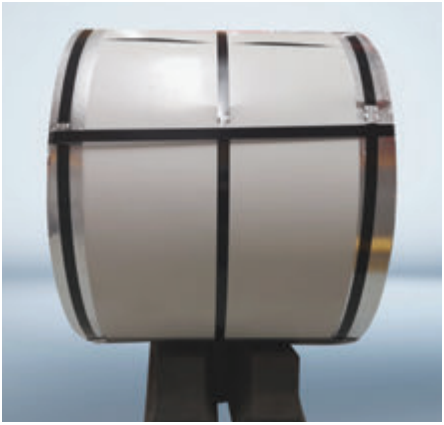


Domestic Packaging

Wrapped with kraft paper, inside-outside flange is used. Make 3 hoops from the outer 2 centers. Plastic strapping is used for painted products. In other products, steel strapping is used.

Export Packaging

Wrapped with kraft paper, covered with nylon, inner and outer sheet metal and propylene side cover. The inner outer flange is 3 hoops from the outside and 4 hoops from the hub.



LABORATORY AND TESTS

YILDIZ
DEMİR ÇELİK

Yıldız Demir Çelik Mechanical Testing and Metallography Laboratory

Yıldız Demir Çelik A.Ş. With its laboratories, Chemistry, Mechanics, Paint and Color Laboratories, it serves both its internal customers and external customers.

Our laboratories have been performing input control tests of all raw materials that directly affect product quality, alternative new raw material trials and research activities in accordance with the standards with the latest technology devices and experienced personnel since 2018 with high customer satisfaction, accurate and reliable service understanding.

Yıldız Demir Çelik A.Ş. Its laboratories are accredited by TÜRKAK according to TS EN ISO/IEC 17025 standard for tensile tests, galvanized coating weight and tests applied to painted sheets.

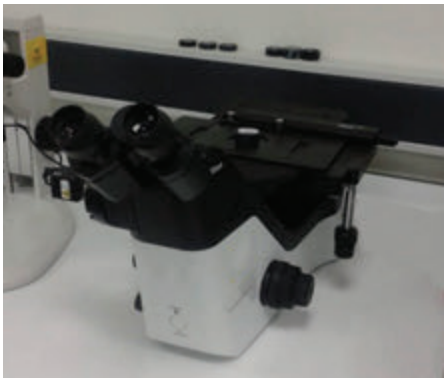
Mechanical tests and metallographic tests of our final products produced by pickled, cold rolled and galvanized processes and intermediate products for process control purposes are carried out.

Tensile Device

Surface Roughness Measurement Instrument

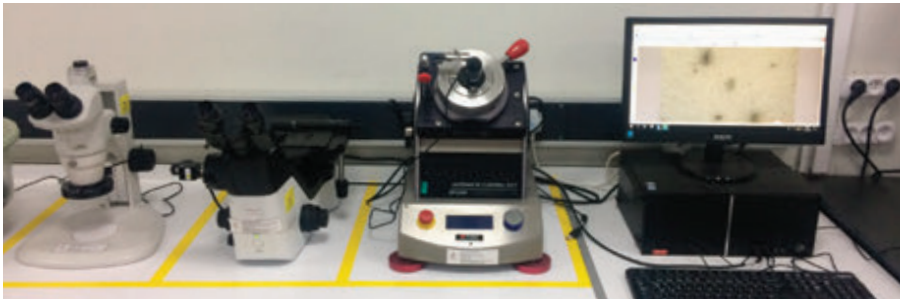
Hardness Tester

Metallographic Inspection Instruments



Metal Microscope

Stereo Microscope



Mechanics and Metallography Laboratory

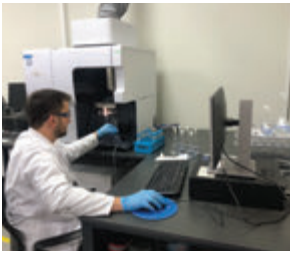
Yıldız Demir Çelik Mechanical Chemistry and Paint & Color Laboratories

Chemistry Laboratory

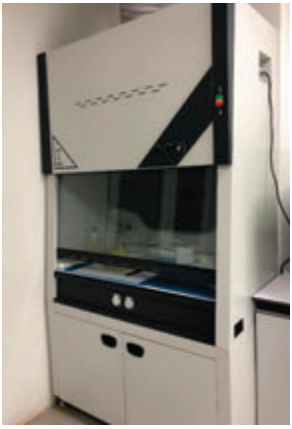
In the chemistry laboratories within Yıldız Demir Çelik, many tests are carried out using the latest technology devices and current international standards. Some of these are raw material input control tests, tests of chemicals used in production process tanks, zinc crucible analysis, final control tests of galvanized products.

Our laboratory, which has advanced devices such as an ICP-OES tester, an optical emission spectrometer, a salt water fog test cabinet used in corrosion tests, continues to incorporate the latest technology products in line with its needs every day.

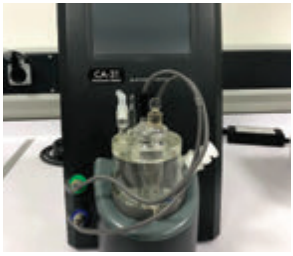
In addition, with the devices provided for oil analysis, both input control tests and process tests are carried out in accordance with the standards with the trained, researcher, young and dynamic engineers, chemists and laboratories.



ICP-OES Device

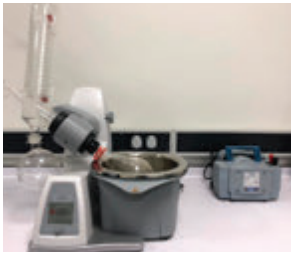


Fume Hood



Moisture Analyzer

Ash Furnace

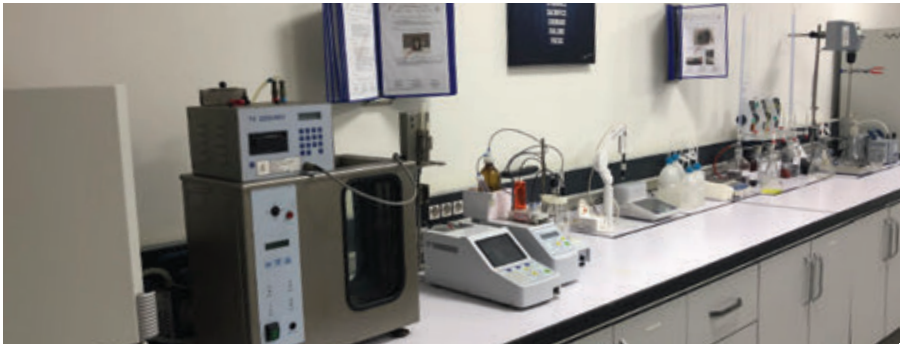


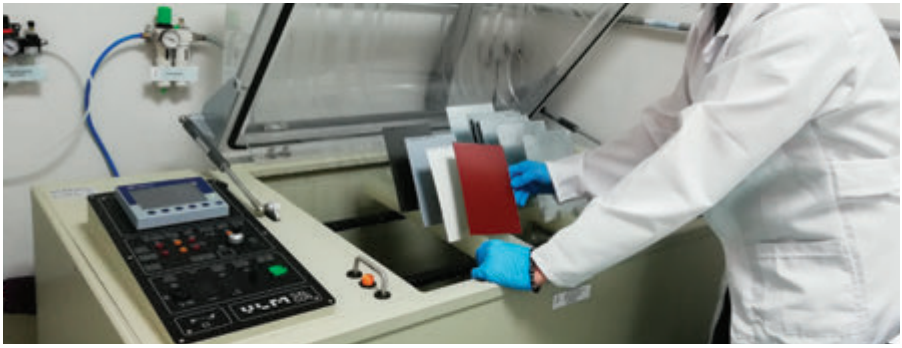
Evaporator

Conductivity and pH Device

Particle Counting Device

Chemistry Laboratory





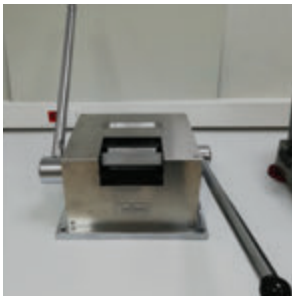
Paint and Color Laboratory

The paint and color laboratory performs input control tests on each batch of paint received for use in production based on the relevant specifications and international standards. In addition, with the state-of-the-art technology devices within the laboratory, it takes samples from each coil produced and performs control tests in accordance with international standards, and shares the results through the automation system for the use of the relevant units until the certification process.

Color management is kept stable with a single master for each color through benchmarking, calibrations and verifications.

The corrosion resistance of painted sheets is tested regularly and in a controlled manner with a salt water fog test chamber. Research and improvements are meticulously carried out in this laboratory with our trained, researcher, young and dynamic engineers and laboratories.

Curing Oven



T-Bend Tester

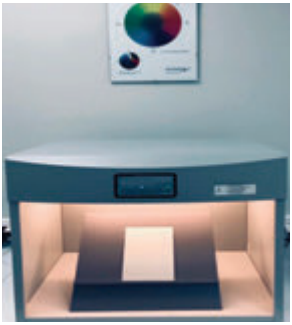
Reverse Impact Device

Thickness Measurement Device

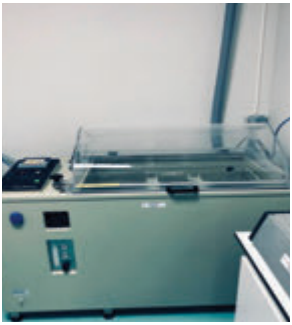
Automatic Applicator Device

Glossmeter

Precision Balance

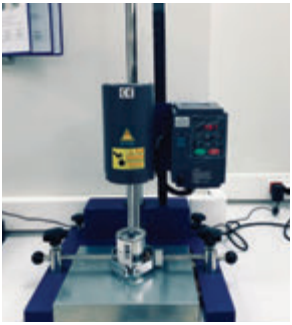


Light Cabinet

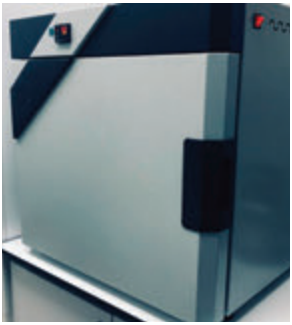


Corrosion Cabinet

Color Measurement Device

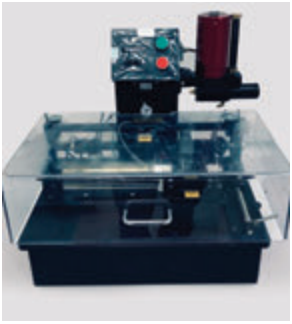


Mixer



Oven

Cupping Device



Mek Test Machine

The tests performed in our Chemistry - Paint and Color Laboratories, the equipment used and the standards applied are as follows.

Lab	Device/Equipment	Analysis	Standards
Chemistry & Paint Lab.	Neurtal Salt Spray Fog Test Chamber	Neurtal Salt Spray Fog Test (NSSFT)	EN 13528-8/ ASTM B117/ISO 9227
Paint & Color Lab.	Dry Film Thickness Measurement Device	Dry Film Thickness Measurement Test	EN 13523-1/ TS EN ISO 2808:2007
Paint & Color Lab.	Gloss Meter	Gloss Measurement Test	EN 13523-2
Paint & Color Lab.	Color Spectrometer	Color Measurement Test	EN 13523-3
Paint & Color Lab.	Pencil Hardness Set	Pencil Hardness Test	EN 13523-4
Paint & Color Lab.	Reverse Impact Test Device	Reverse Impact Resistance Test	EN 13523-5
Paint & Color Lab.	Cupping Tester	Cupping Test	EN 13523-6
Paint & Color Lab.	Cross Cut Set	Adhesion Test	EN 13523-6
Paint & Color Lab.	T-Bending Tester	T-bend Test	EN 13523-7
Paint & Color Lab.	MEK Rub Tester	MEK (Methyl Ethyl Ketone) Rub Resistance Test	EN 13523-11
Paint & Color Lab.	Pycnometer	Wet Color Coat Paint Density Analysis	TS EN ISO 2811-1
Paint & Color Lab.	Viscosity Container	Paint Viscosity Analysis	TS EN ISO 2431
Paint & Color Lab.	Grindometer	Paint Particle Size Analysis	ASTM D1210
Paint & Color Lab.	Applicator Bar	Wet Color Coating	-
Chemistry Lab.	Optical Emission Spectrophotometer	Wet Color Coating	ASTM E 415
Chemistry Lab.	Automatic Model Viscosity Meter	Oil Products-Transparent and Opaque Fluids-Kinematic Viscosity Determination	TS 1451 EN ISO 3104
Chemistry Lab.	Karl Fisher Moisture Analyzer	Oil Analysis	ASTM E 1064
Chemistry Lab.	Automatic Titrator	Petroleum Products, Water Analysis	TS 6147 EN ISO 12937
Chemistry Lab.	Particle Counter	Pollution Analysis	ISO 4406:1999
Chemistry Lab.	Herschel Emulgator	Water Separability of Petrollium Oils and Synthetic Fluids	ASTM 1401
Chemistry Lab.	Open Cup Flammability Point Tester	Petroleum Products Explosion and Fire Point Detection	TS EN ISO 2592
Chemistry Lab.	Ash Furnace	High Temperature Analysis	-
Chemistry Lab.	ICP-OES	Elemental Analysis	YDÇ Instructions and Methods

CORPORATE INFORMATION

YILDIZ
DEMİR ÇELİK

The ports of Yıldız Entegre and İGSAŞ, which are companies of Yıldızlar Yatırım Holding, located at the two most strategic points of the Marmara Sea, also provide logistical convenience to Yıldız Demir Çelik.

Customer Technical Services Activities

Our Customer Technical Services (CTS) team acts as the voice of the customer. Analyzes customer needs, demands and expectations in the most accurate way, shares them with the relevant units, and coordinates the fulfillment of demands and needs. With the technical support it provides, it contributes to the efficiency and cost advantage of our customers by encouraging the use of the right cost product in the right place.

If necessary, customer-specific solutions are developed by working with customer-specific specifications and customer satisfaction is ensured.

General and specific information that may be needed about our products is shared with our customers through regular customer visits and customer trainings, and environments suitable for understanding their expectations and needs are created at every opportunity.

Any technical support needed before and after sales is provided by our Customer Technical Services team.

Complaint Management Process

The complaint management process is managed by the Customer Technical Services team. With our customer-oriented process management approach, all kinds of customer feedback are handled within the scope of the Complaint Management Process according to ISO 10002:2014.

In case of any product nonconformity, an on-site inspection is carried out by Yıldız Demir Çelik Customer Technical Services team as soon as possible after notification. The complaint is examined and finalized within the scope of the sales contract and the relevant production standards.

Complaints should be filed with the coil number on the Yıldız Demir Çelik product label. The issues to be considered in the complaint application process are specified in the order form / sales contract.

(For detailed information, please contact Customer Technical Services Department)

Trials and Product Placement / Development Activities

New product demands of our customers are followed as trial production. Customer new product trials are specially produced and monitored in coordination with the Customer Technical Services team, separate from standard production. The MTH team is responsible for monitoring whether the trial product meets the expectations at the place of use.

Our Customer Technical Services team is also responsible for the coordination and follow-up of the placement and development of the product, which is available in Yıldız Demir Çelik products but is new for that place of use, in the new place of use.

TÜV NORD

SERTİFİKA

IATF 16949:2010'ye göre

Destek fonksiyonları

Fonksiyon

TÜV NORD

SERTİFİKA

IATF 16949:2010'ye göre

Yıldız Entegre Ağaç Sanayi ve Ticaret A.Ş.
Alikahya O.S.B. 2.Cadde No. 2. İzmit
41310 Kocaeli
Türkiye

Sıcak haddelenmiş ve asitle yüzeyi temizlenmiş çelik rulo, soğuk haddelenmiş ve asitle yüzeyi temizlenmiş dilimiş veya boy kesilmiş çelik, soğuk haddelenmiş çelik rulo, soğuk haddelenmiş dilimiş veya boy kesilmiş çelik, galvanizli çelik rulo, galvanizli dilimiş veya boy kesilmiş çelik


TÜV NORD

SERTİFİKA

ISO 9001 : 2015'e göre
yönetim sistemi

Yıldız Demir Çelik Sanayi A.Ş.
Alikahya O.S.B. Mahallesi, 2. Cad., No 2/1, İzmit,
TR41310 Kocaeli,
Türkiye

Her türlü demir çelik yarı mamul ve mamullerin temin edilmesi, alımı, satımı, bu faaliyetlere ilişkin gümrük, dış ticaret, üretim, lojistik, yönetim ve idari organizasyon faaliyetleri

IAF DAkkS


TÜV NORD

SERTİFİKA

ISO 14001 : 2015'e göre
yönetim sistemi

Yıldız Demir Çelik Sanayi A.Ş.
Alikahya O.S.B. Mahallesi, 2. Cad., No 2/1, İzmit,
TR41310 Kocaeli,
Türkiye

Her Türlü Demir Çelik Yarı Mamul ve Mamullerin Hazırlanması ile Asitlenmiş Sac, Full Hard Sac, Soğuk Haddelenmiş Sac, Galvanizli ve Boyalı Sac ile Çelik Servis Merkezi (Dilme, Boy Kesme, Trapez) Üretimi

IAF DAkkS


TÜV NORD

SERTİFİKA

EN ISO 50001 : 2018'e göre
enerji yönetim sistemi

Yıldız Demir Çelik Sanayi A.Ş.
Alikahya O.S.B., 2. Cad., No 2, İzmit,
Kocaeli,
Türkiye

Her türlü demir çelik yarı mamul ve mamullerin temin edilmesi, alımı, satımı

IAF DAkkS

TÜV NORD

SERTİFİKA

ISO 10002:2018'e göre
şikayet yönetimi süreci

Yıldız Demir Çelik Sanayi A.Ş.
Alikahya O.S.B. Muhafesiz, 2. Cad., No 2/1, İzmit,
TR41210 Kocaeli,
Türkiye

Her türlü demir çelik yarı mamul ve mamullerin temin edilmesi, alımı, satımı, bu faaliyetlere ilişkin gümrük, dış ticaret, üretim, lojistik, yönetim ve idari organizasyon faaliyetleri

TÜV NORD

SERTİFİKA

ISO/IEC 27001 : 2013'e göre
yönetim sistemi

Yıldız Demir Çelik Sanayi A.Ş
Alikahya O.S.B., 2. Cad., No 2, İzmit,
TR-41710 Kocaeli,
Türkiye

TÜRK AKREDİTASYON KURUMU

AKREDİTASYON SERTİFİKASI

YILDIZDEMİR ÇELİK SANAYİ A.Ş


TÜRK STANDARDLARI ENSTİTÜSÜ
TÜRK STANDARDLARINA UYGUNLUK BELGESİ
TURKISH STANDARDS INSTITUTION
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