

FERRO GILAN COMPLEX

GENERAL CATALOGUE 2017

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2017



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by Zahed Zahedi and Studio
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Ferro Gilan Complex Architecture

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FERRO
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Environmental Control





Business Philosophies



Devotion to Excellence

FGC is determined to do all we can to continuously improve ourselves and our operations. Through study, research, development, and upgrading, we aim for the highest we can attain. We believe that today can be better than yesterday, and that tomorrow must be better than today. This effort to develop and break new records of excellence must be perpetual in all aspects of our operations.





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Company profile

Established in 2003 and set in the north of the country, Ferro Gilan Complex is Iran's first and largest private sector steel rolling company. Today, we are taking our strategy to the next level with the idea of helping our clients become high performance businesses. We are sharing our insights to identify gaps and opportunities and then plan courses of action that will enable our products to perform at the highest level.

By utilizing the state of the art technology Ferro Gilan current production capacity is 2.5 MTPA (million tons per annum) of hot rolled and 500.000 MTPA of cold rolled steel coils.

We have an unbeatable team of people from a wide range of backgrounds who generate continuous stream of new ideas every day. The pace at which we work and the size and variety of projects that we work on, create a truly dynamic environment for outstanding career development.

Ferro Gilan products are targeted at the quality conscious auto sector, construction industry and pipe manufacturers among many others.

Going forward, we see even more opportunities to help our clients achieve not just incremental improvements through projects or programs, but also improvements in overall business outcomes. We are committed to creating a sustainable path to growth, one that will lead to an exciting future for the local practice.





Environmental Control

Ferro Gilan Complex invests a lot of effort into improving environment conditions at all of the company's production facilities. All its modernization projects, both already implemented and currently in progress, imply state-of-the-art production technologies and ecologically safe equipment aimed to dramatically decrease the negative impact on the environment. We are also in close contact with the public, which enables us to promptly respond to the public's ecological concerns and improve our facilities' environment protection programs. Our environment protection activity is based on systematic monitoring of ecological data and oriented on minimization of negative impact on the environment. We pay particular attention to appraisal and minimization of ecological risks. One important issue is forming an integrated system of environment protection management, which allows us to take into account all significant ecological aspects and administer them. Ferro Gilan has managed to obtain certificates of compliance with ISO 14001 standard for its enterprises' ecology management system.

Significant funds are invested annually into projects implementing resource-saving and low-waste modern technologies; modernizing existing technological processes and other measures aimed at alleviating negative impact on the environment. Integrated modernization projects are among the most efficient, not only economically, but also ecologically. They do not only boost volumes and quality of production, but also help radically decrease impact on the environment.

Adherence to Quality of Products

FGC's products are all designed with the best interests and satisfaction of the customer in mind. We believe that our customers will always be willing to pay for the best, and that no improvement is of any use if it does not meet our customers' needs.

FGC attaches great importance, therefore, to quality in every stage of the production process, from the choice of raw materials all the way through to testing the finished product. Our services, from our first contact with the client to punctual delivery of the order, confirm this commitment to the quality satisfied customers require.

Belief in the Value of Our Personnel

FGC honours the contribution of every employee at every level of the organization. We know that good employees are the main reason for an organization's success. For this reason, we take care to hire only the best to work with us, and provide fair and attractive remuneration packages that include constant training and education. Quality of life for our employees is paramount; their occupational health and safety are assured, thus benefiting not only our personnel but also society as a whole.

Commitment to Honesty and Ethics

Dedication to Our Social and Environmental Responsibilities

FGC's concern for the environment and the common good stands upon the principle that we are a member of society. Any change in society is certain to affect our business. We are convinced that business, society, and the environment must all be developed in concert to ensure a sustainably successful enterprise. Our responsibility, therefore, is to take part in maintaining a good natural and social environment, balancing what we take with what we give in return.



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Human Capital

Ferro Gilan Complex is Iran's largest privately owned steel company and employs over 1200 people. Ferro Gilan's personnel are talented and ambitious, and so we not only seek to attract the best specialists, but also pay great attention to our employees' development, motivation and focus on career growth and self-realization.

We are proud of having created a strong and highly efficient team. The hardships we faced together and the heights we reached bonded us into a team that shares the same views, strong with professionalism, persistence and unity, a team that can tackle any task.

We strive so that our employees could realize their potential to the fullest, bring to life their most ambitious ideas, were satisfied and proud of their choice to work for Ferro Gilan. Our staff in their turn repay our care with many years of conscientious work and ensure the company's stability and leadership in the dynamic competitive environment. Acknowledgement of our employees' merits and the drive to ensure a worthy lifestyle for our staff and their families, attention and care for their problems – those are the basic principles of Ferro Gilan's social policies.

The company thinks of its enterprises' future, aware of the role they play in developing Iran's economy, restores and lovingly preserves professional traditions of its employees. Ferro Gilan Complex pursues a comprehensive policy of making working professions more popular among school children and attracting college graduates to the Group's enterprises.





Safety

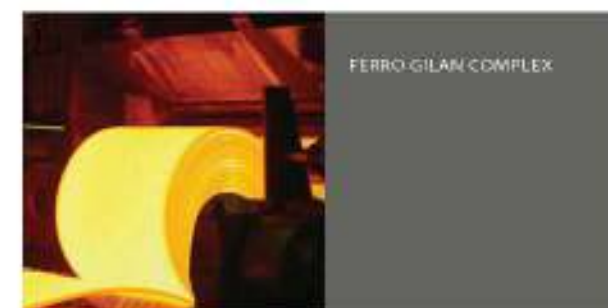
Employees are a key asset for any company. Human life and health are worth more than economic results and industrial achievements. Thus, no steady development and further expansion can be obtained without organized control over potentially dangerous sites and technological processes. Creating safe and comfortable work conditions, decreasing occupational hazards, and ensuring healthy life for future generations are an important part of Ferro Gilan's strategy.

Ensuring integrated approach to all issues of occupational safety is the principal goal in creating a management system for labor protection and safety on all levels. The ultimate goal is to make Ferro Gilan a leader in labor protection and safety among steel producers. The way to attain this goal lies in control and constant improvement of two key components — conditions of labor and personnel activity.

The chief components of continuous labor protection improvement are:

- Ensuring efficient training and professional development for employees in terms of labor protection and safety
- Knowledge, understanding and stringent compliance with safety requirements by every employee
- Involvement of all employees in ensuring safe labor conditions, using personnel motivation
- Prevention and minimization of economic losses linked with accidents and professional hazards
- Informing employees of work conditions, existing risks and measures on decreasing them;
- Distributing functions and responsibilities, exchange of experience between various management levels, orientation on safe production and technologies;
- Mandatory use of required individual and group protection
- Fostering intolerance of flouting safety requirements and labor protection rules
- Declaring industrial safety, appraisal of risks linked to exploitation of hazardous objects, as well as measures Ferro Gilan takes to lower such risks.

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Ferro Gilan Complex employing the most sophisticated state of the art technology Currently available in the steel industry products its products as per international standards in two main production plants. (Hot rolling mill & Cold rolling mill)
 1- Hot Rolling Mill. This plant has an annual productions capacity of 2.5 million tons, and produces its products as per the following international standards for the following uses. A) Standards;
 Hot rolled products are produced as per the standards listed below.
 ASTM,DIN,JIS,AFNOR,UNI,B S & EN (Euro Norm), full details are available in the tables below.
 B) Uses - general and structural - water, gas, oil pipes - pressure vessels - re-rolling - automotive & etc...

The Variety Of Qualities
 Being Produced at Ferro Gilan Complex

Hot Rolled Products

Table: 1

Standard	DIN	JIS	AFNOR	BS	SAE/AISI	A S T M	UNI	ISIRI
Application								
Drawing	(1614)	(G3131)	(36-301)	(1449)		A569	Fcp10	(3e93)
8	StW22	SPHC	0C	HR4		A621	Fcp11	1 Hot Rolled
Deep Drawing	StW23	SPHD	1C	HR3	1008	A621	Fcp12	2 Hot Rolled
	StW24	SPHE	2C	HR2	1010	A622	Fcp13	3 Hot Rolled
			3C	HR1				4 Hot Rolled
Re-Rolling	(1614)				1006			
	St 22				1008			
	PRSC23				1010			
	St24							
Auto Chassis	(17102)							
	QSTE380TM							
	QSTE420TM							

Table Of Comparison Of Flat Products
 Standards With Refrence To End Use



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Descaling Before Rolling

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Rolling Mill

The Variety Of Qualities
Being Produced at Ferro Gilan Complex:

Hot Rolled Products:

Table: 2

Standard Application	DIN	JIS	AFNOR	BS	SAE/AISI	A S T M	UNI	EURO NORM	ISIRI
Drawing & Deep Drawing		IG3131) SPHC SPHD SPHE		(1449) HR 37/23					
Re-Rolling	(17122) StE290 StE320	(3132) SPHT3				(5867) Fe410 Fe430			
Auto Chassis	(17100) PS1 37-2-3	IG3101) S5330 S5400	(A35-501) A33 A34-2 E24/2-3-4	(1449) 40/A-B-C-D-E	 1006 1008	 A283/A A283/C A589/573	(7070) Fe320 Fe330 Fe360 B-C-D	(10025) Fe110 S235JR S235JRG2 S235JO	(3694) Hot Rolled 235 2 and 3

Table Of Comparison Of Flat Products
Standards With Reference To End Use





Hot Coil Product

The Variety Of Qualities
Being Produced at Ferro Gilan Complex

Hot Rolled Products									
Standard Application	DIN	JIS	AFNOR	BS	SAE/AISI	A S T M	UNI	EURO NORM	ISIRI
Pipes and Profiles	5144 2-3	(G3106) SM400/A-B-C		(4380)	1010	A 203/D	Fe 410/B-C-D	S275JR D275JR G7 S275 JO	Hot Rolled 275 2 and 3
	5152-3	SM400/AB SM520/B/C	E28/2-3-4 E36/3-4	43A A2-B-C 50/A-B-C-D-D1	1015-1016 1018-1019 1010 1015-1016 1018-1019 1017-1020	A36 A284/C-D A 572/42 A753/65 A573/70	Fe 430/B-C-D Fe 510/B-C-DD	S355 JR S365 JR G2 S365 JO	Hot Rolled 355 2 and 3
Pressure Vessels	(17155) HI		(36-205) A 37 CP A 37 AP	(1051) 16-360 161-400 164-360		A 285/C A 59/422 A 414/C A515/55/65 A516/55/65	(28) Fe E 255-1 Fe E 235	(28) Fe 225-1 Fe E 235	

Table Of Comparison Of Flat Products
Standards With Reference To End Use

The Variety Of Qualities
Being Produced at Ferro Gilan Complex

Hot Rolled Products									
Standard Application	DIN	JIS	AFNOR	BS	SAE/AISI	A S T M	UNI	EURO NORM	ISIRI
Pressure Vessels	H II		A 42 CP	430-161		A 414 / D/E A 515/68-70	Fe E 265	Fe E 265	
	17 Mn4		A 42 AP	360-164		A 442-60			
			A48 CP	400-164		A 515/68-70 A229-90 A 515-70 A 414/F-G A 516-70 A 537-1	Fe E 295	Fe E 295	
			A48 AP						
Ship building									LLOYDS-B1 GRA RINA-83 GRA

Table Of Comparison Of Flat Products
Standards With Reference To End Use

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Descaling Before Rolling

The Variety Of Qualities
Being Produced at Ferro Gilan Complex

Hot Rolled Products

Table: 5

Standard Application	DIN	JIS	AFNOR	BS	SAE/AISI	A S T M	UNI	API5-L
E R W Pipes	(17172) STE- 280 STE- 320 STE- 360 STE- 335	(G3132) SPHT1 SPHT2 SPHT3 SPHT4					(7070) Fe 360 Fe 360 Fe 410 Fe 430 Fe 510	GR.8 X 42 X46 X52 X56
High Strength Drawing						(A 607) GR 45-50 GR55 GR60 GR65		

Table Of Comparison Of Flat Products
Standards With Reference To End Use

Table: 6

DIN 17100		Hot Rolled Products For General Structures											
Steel Grade	Chemical Composition ¹⁾				Mechanical Properties								
	C max t<16	P max	S max	N ²⁾ max	R ³⁾ (min) N/mm ² t<16	R ¹¹⁾ N/mm ²		A(%) MIN ¹⁾				Impact test 10<t<16	
						t<3	3<t <100	1.5<t <2	2<t <2.5	2.5<t <3	3<t <40	Temp (°C)	J Min
St33	-	-	-	-	185	340 540	295 510	10	11	12	16	-	-
St37-2	0.17	0.05	0.05	0.009	235	360 510	340 470	17	18	19	24	+20	27
St37-3	0.17	0.04	0.04	-								+0	27
St44-2	0.21	0.05	0.05	0.009	275	510 690	410 540	14	15	16	20	+20	27
St44-3	0.2	0.04	0.04	-								+0	27
St52-3	0.2	0.04	0.04	-	355	340 540	490 630	14	15	16	20	+0	27

1) The values in the table apply to transverse test pieces with w>600 mm.

2) It is permissible to exceed the maximum value indicated, provided a phosphorus content per 0.001 %N of 0.005 % P below the maximum value indicated is mentioned. The nitrogen content may not, however exceed a value of 0.012 % N in the ladle analysis and 0.014 % N in the sample analysis.

3) The content may not exceed 0.55 % Si and 1.60 % Mn in the ladle analysis or 0.60 % Si and 1.70 Mn in the sample analysis.



Table 8

JIS G 3101-95 Hot Rolled Products For General Structures										
Steel Grade	Chemical Composition				Mechanical Properties					
						Re (Min) N/mm ²	Elongation (%)		Bendability	
	C	Mn	P max	S max	Rm N/mm ²	t<16	t<5	5<t <16	Angle of bending	Inside Radius
SS 330	-	-	0.05	0.05	330-430	205	26	21	180°	1/2t
SS 400	-	-	0.05	0.05	400-510	245	21	17	180°	3/2t

Table 9

DIN EN 10111 Material Specification For Hot Rolled Products For Cold Rolling															
Designation		Mat Number	Method Of Deoxidation	Chemical Composition				Tensile Properties					Bending Test	Validity Of Mechanical Properties	
								D)		m	Minimum Elongation %				
				L0 = 80mm		Lo = 5.65 N50									
				C %	Mn %	p %	S %				1.5 < e < 2	< <			1.5 < e < 2
StW22	DO11	1.0332	At The Description Of Manufacturer	0.12		0.045	0.045	170-360	170-340	440	23	24	28	1e	1 Month
HRSTW23	DO12	1.0398	Fully Killed	0.1		0.035	0.035	170-340	170-320	420	25	26	30	0	6 Month
Stw24	DO13	1.0335	Fully Killed	0.08		0.03	0.03	170-330	170-310	400	23	29	33	0	6 Month
-----	DO14	1.0389	Fully Killed	0.08	0.35	0.025	0.025	170-310	170-290	380	31	32	36	0	6 Month



Table: 10

DIN 1016 Permissible Deviation in thickness For Nominal Width				
Nominal Thickness	Permissible Deviation in thickness For Nominal Width			
	600 < W < 1200	1200 < W 1500	1500 < W < 1800	1800 < W < 2000
1.5 < t < 2	±0.17	±0.19	±0.21	—
2 < t < 2.5	±0.18	±0.21	±0.23	±0.25
2.5 < t < 3	±0.20	±0.22	±0.24	±0.26
3 < t < 4	±0.22	±0.26	±0.26	±0.27
4 < t < 5	±0.24	±0.28	±0.28	±0.29
5 < t < 6	±0.26	±0.30	±0.29	±0.31
6 < t < 8	±0.29	±0.33	±0.31	±0.35
8 < t < 10	±0.32	±0.36	±0.34	±0.40
10 < t < 12.5	±0.35	±0.38	±0.37	±0.43
12.5 < t < 15	±0.37	±0.42	±0.40	±0.46
15 < t < 17	±0.40	—	±0.45	±0.50

Table: 11

DIN 1016 Flatness Tolerance For Hot Rolled Sheet		
Nominal Width	Flatness Tolerances For Nominal Thicknesses	
	t < 20	2.0 < t < 3.0
600 < W < 1200	18	15
1200 < W < 1500	20	18
1500 < W < 2000	25	23

Table: 12

DIN 1016 Permissible Deviation From Nominal Width	
Nominal Width	Permissible Positive Deviation From Nominal Width For
600 < W < 2000	±20



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Discharged Slab From Furnace

Hot Rolled Products Dimensional Specification

Table: 13

Thickness (mm)		Width (mm)		
Min	Max	Min	Max	
		Trimmed Or Untrimmed Edge	Untrimmed Edge	Trimmed Edge
1.25	1.99	600	1050	1010
2.00	2.49	600	1265	1225
2.5	2.99	600	1280	1250
3.00	5.99	600	1300	1280
6.00	9.00	600	1320	1300 *
9.01	12.00	800	1350	1320
12.01	25.00	1000	1420	1400

* Only For 6 mm Thickness



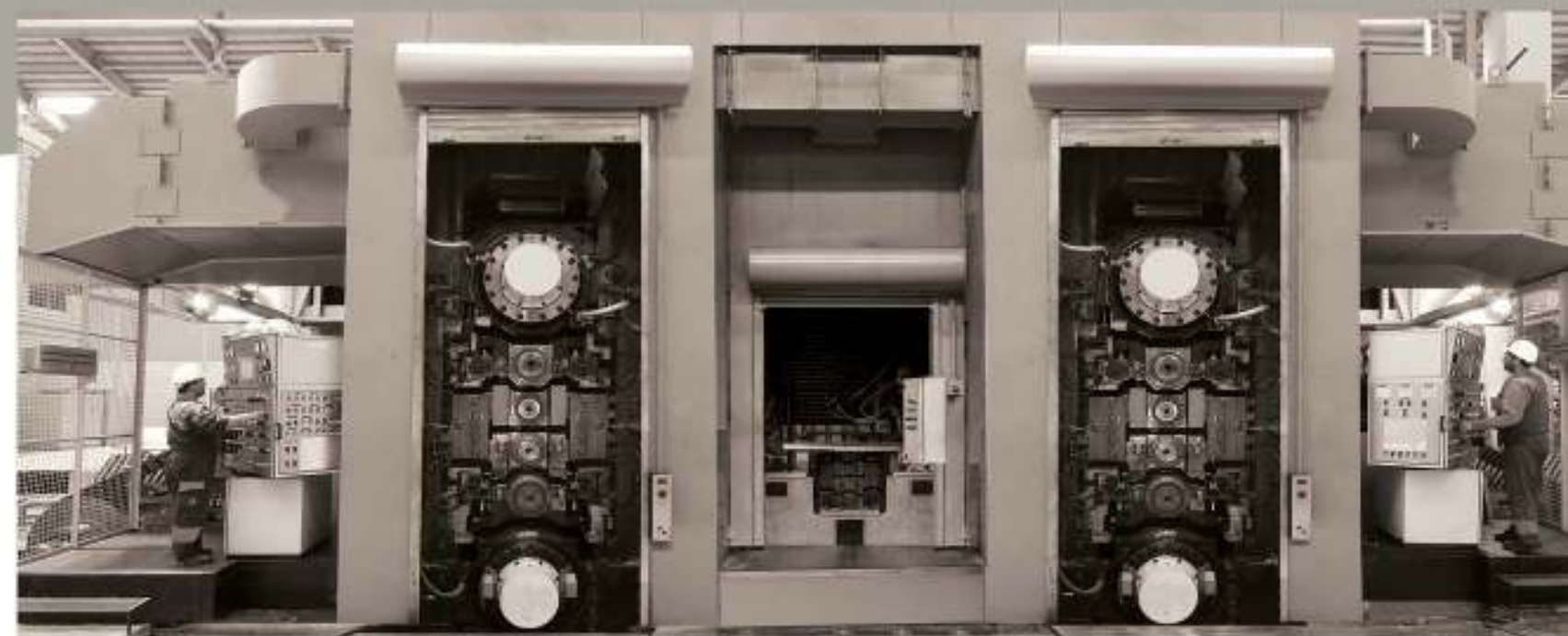


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Cold Rolling Mill

In metalworking, rolling is a metal forming process in which metal stock is passed through one or more pairs of rolls to reduce the thickness and to make the thickness uniform. The concept is similar to the rolling of dough. Rolling is classified according to the temperature of the metal rolled. If the temperature of the metal is above its recrystallization temperature, then the process is known as hot rolling. If the temperature of the metal is below its recrystallization temperature, the process is known as cold rolling. In terms of usage, hot rolling processes more tonnage than any other manufacturing process, and cold rolling processes the most tonnage out of all cold working processes. Roll stands holding pairs of rolls are grouped together into rolling mills that can quickly process metal, typically steel, into products such as structural steel (I-beams, angle stock, channel stock, and so on), bar stock, and rails. Most steel mills have rolling mill divisions that convert the semi-finished casting products into finished products.





Cold Rolling Mill

This plant has an annual production capacity of 500,000 tons, and produces its products as per the following international standards for the following uses.

A) Standards:

Hot rolled products are produced as per the standards listed below.

ASTM, DIN, JIS, AFNOR, UNI, B S & En (Euro Norm). Full details are available in the tables below.

B) Uses

- General and structural
- Automotive industry
- Home appliances
- Pipes
- Metal forming and deep drawing, etc...

Dimensional and Weight specifications

Product	Inside Diameter (mm)	Thickness (mm)	Width (mm)	Weight (Ton)
Pickled coils	760	1.25 to 5	600 to 1650	5 to 30
Cold rolled*	610	0.17 to 4	600 to 1650	

*Cold rolled products include full hard products.





The Variety Of Qualities
Being Produced at Ferro Gilan Complex

Pickled Products

Table: T4

Standard Application	DIN	JIS	AFNOR	BS	SAE/AISI	A S T M	UNI	EURO NORM
Drawing	(1614) S1W22 RBSW23 S1W24	(3131) SPHC SPHD SPHE	(36-301) 1C 2C 3C	(1449) HR3 HR2 HR1 HR1	1008 1006	A283 A621 A621 A621	(5067) FeP11 FeP12 FeP13	
Auto Chassis & Auto Wheel Ring		(1313) SAPH310 SAPH370 SAPH400 SAPH440		(1449) HR 37/23				
Pressure Vessels		(1316) SG 255		(36-211) BS 1	1012 1015	A414D A414E	Fe E 235KR Fe E 265KR	Fe E 235KR Fe E 265KR
Pipe		(1332) SPHT - 1 SPHT - 2 SPHT - 3 SPHT - 4						

Table Of Comparison Of Flat Products
Standards With Refrence To End Use





The Variety Of Qualities
Being Produced at Ferro Gilan Complex

Pickled Products

Table: 15

Standard/ Application	DIN	JIS	AFNOR	BS	SAE/AISI	A S T M	UNI	EURO NORM
General and Application Structural	(117100) S533		(A35-S01) AB33		1006/1008	A283/A	(7070) Fe 320	(25) Fe 310
		S5330	A34-2		1006-1008	A283/B	Fe 330	
	RS4 37 (2-3)	S5400	E 24 (2-3-4)	(4360) 40 (A-B-C-D)	1008-1009 1010-1015	A 283/C A573/58	Fe 360 (2-3-4)	Fe 360 (A-B-C-D)
		(G3106) CLASS 1 SM 400 (A-B-C)			1009-1010 1015-1016 1018-1019	A 283/D A 36 A284/C-D	Fe 410 (B-C-D)	
	S544 (2-3)		E 28 (2-3-4)	A3 (A-B-C-D-E)	1009-1010 1015-1016 1018-1019	A572-42 A573/65	Fe 430 (B-C-D)	Fe 430 (A-B-C-D)

Table Of Comparison Of Flat Products
Standards With Reference To End Use:

Pickled Products
Dimensional Specification

Table: 16

Thickness (mm)		Width (mm)		
Min	Max	Min	Max	
			Un Trimmed Edge	Trimmed Edge
1.25	2.49	700	1250	1230
2.5	2.99	700	1500	1470
3	3.99	700	1600	1570
4	5	700	1700	1670



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The Variety Of Qualities
Being Produced at Ferro Gilan Complex

Cold Rolled Products

Table: 17

Standard Application	DIN	JIS	AFNOR	BS	SAE/AISI	A S T M	UNI	EURO NORM	EN	ISIRI
House Appliances Car Body Drawing	(1623-1) St12 PRSt 13 St 14	(G3141) SPCC SPCD SPCE	(A36-401) C E ES	(1449-1) CRSP 4 CRSP 3 CRSP1	1008 1006	A 366 A 619 A 620	(S866) Fe P01 Fe P02 Fe P03	(130) Fe P01 Fe P02 Fe p03 Fe p04	(10133) DC01 DC03 DC04	(S723) Cold Rolled 1 Cold Rolled 2 Cold Rolled 3 Cold Rolled 4
Enameling	EN2 EN4		EME	CRSP 3VE	1008		FeP02	Fe p01		
Pipes Furniture	(1623-1) St 12	SPCC	C	CRSP4			FeP01	Fe p02		
Radiators & Drums	St 12 RRSt 13	SPCC SPCD	C E	CRSP 4 CRSP3	1008	A 366 A 619	Fe P01 Fe P02	Fe P01 Fe P02		
Industrial & Light Structures	(1623-2) St 37-3G St 44-3G					(A 611) GRADE B GRADE C GRADE D1 GRADE D2	(7958) Fe 330 Fe 360 Fe 410			S722 Cold Rolled 220 2 And 3 Cold Rolled 2 And 3

Full hard Coil Will Be Delivered Based On Order By
Customer And Chemical Composition Will Be Guaranteed





Table 18

DIN EN 10130		Material Specification For Cold Rolled Products											Surface Quality	Absence Of Stretcher Strain Marks	
Designation		Mat Number	Method Of Dioxidation	Chemical Composition				Tensile Properties							
								d	m			n 90 % min			Validity Of Mechanical Properties
				max											
C %	Mn %	p %	S %	N/mm ²	N/mm ²										
St12	DC01	1.033	At The Manufacture Description	0.12	0.6	0.045	0.045	(-/280)	270-410	28	—	—	—	A B	3 Month
St13	DC03	1.0347	Fully Killed	0.1	0.045	0.035	0.035	(-/240)	270-370	34	—	—	—	A B	6 Month
St14	DD04	1.0338	Fully Killed	0.08	0.4	0.03	0.03	(-/210)	270-350	38	1.6	0.18	—	A B	6 Month
—	DC05	1.0312	Fully Killed	0.08	0.35	0.025	0.025	(-/180)	270-330	40	1.9	0.2	—	A B	6 Month





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Coil Weight Range:
Coils Can Be Produced With The Following Weights.

Table: 21

Coil Width (mm)		Coil Weight (ton)	
Min	Max	Min	Max
600	740	3.2	11.5
741	840	4	13
841	940	4.5	14.5
941	1040	5	16
1041	1140	5.5	17.5
1141	1240	6	19.5
1241	1335	6.5	21
1336	1435	7	22
1436	1553	7.5	24
1536	1650	8	27





Electrolytic Cleaning Line (E.C.L.)

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Table: 19

EN 10131 Tolerances On Thickness For Cold Rolled Products						
Nominal Thickness	Normal Tolerances For A Nominal Width Of			Special Tolerance For A Nominal Width Of		
	< 1200	> 1200 to < 1500	> 1500	< 1200	> 1200 to < 1500	> 1500
> 0.35 > 0.4	+0.04	±0.05	-----	+0.025	+0.035	-----
> 0.4 > 0.6	+0.05	±0.06	+0.07	+0.035	+0.045	+0.05
> 0.6 > 0.8	±0.06	±0.07	±0.08	±0.04	±0.05	±0.05
> 0.8 > 1.00	+0.07	±0.08	0.09	+0.045	+0.06	+0.06
> 1.00 > 1.20	+0.08	±0.09	+0.10	+0.055	+0.07	+0.07
> 1.20 > 1.60	+0.1	±0.11	±0.11	±0.07	+0.08	±0.08
> 1.60 > 2.00	+0.12	±0.13	+0.13	±0.08	+0.09	+0.09
> 2.00 > 2.5	±0.14	±0.15	±0.15	±0.10	±0.11	±0.11
> 2.5 < 3.00	+0.16	±0.17	+0.17	±0.11	+0.12	+0.12





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Electrolytic cleaning Line (E.C.L)

Cold rolled coils processed in cold rolling mills have a thin film of residual rolling oil on the surface rolling. The alkaline cleaning of cold rolled coils totally clean surface of the strip before annealing. This electro-chemical cleaning process is called Electrolytic Cleaning and the processing line the Electrolytic line.

The Technology

An ECL line cleans the strip surface of oil and dirt by chemical action, using an alkaline solution. The strip passes between electrodes which are immersed in tanks containing the electrolyte. This technique is more effective in cleaning cold rolled steel than conventional cleaning processes used on high speed electro tinning and alkaline cleaning lines.

Fact Sheet

Following Figures Have Been Achieved:

Contaminants	Incoming Strip	Outgoing Clean Strip
Oil And Dirt	500 mg / sq. per side Max	15 mg / sq. per side Max
Iron Fines	250 mg / sq. per side Max	10 mg / sq. per side Max

Input Material	Cold Rolled Steel (Full Hard)	Strip Thickness	0.20 mm (min) - 1.50 mm (max)
Yield Strength	250 to 420 Mpc	Type Of Line	Electrolytic Cleaning, Coil To Coil Process.
Coil Size	LD630 mm OD 900 mm (min) / 1900 mm (max)	Line Speed	Process: 200 mpm max Threading: 30 mpm
Coil Weight	3000 Kgs max	Surface Roughness	0.8 to Ra
Strip Width	750 mm (min) / 1650 mm (max)	Annual Production Capacity	200000 MT (Approx)



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Annealing Line

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Tension leveling lines (T.LL)

Tension Leveling

In many cases, the sheet metal flatness required of today's strip metal processors can only be achieved by the use of tension levelers. Precision flatness is obtained when the metal's fiber lengths are made uniform across the entire width of the strip by elongating the metal beyond its yield point. When the strip is passed through the leveler under tension internal stresses within the metal are eliminated, and flatness or shape correction to tolerances approaching zero "I" units can be achieved.

Tension Leveler

Consists of an un-driven leveler arrangement with entry and exit tension bridges. The degree of elongation required to level the strip is primarily determined by the differential in speed or tension generated between the two bridges. This is controlled automatically by a microprocessor based system. Bridges vary in configuration and complexity, depending on the type and dimensions of the strip metal to be processed. They can be equipped with several different drive system. These include closed-loop mechanical differential, all-electric drives and combination electro-mechanical drives.

Incoming Coil Data

Coil Size	ID:610 mm OD:900 mm(min) / 1900 mm(max)
Coil Weight	30000 Kg max
Strip Width	750 mm(min) / 1650 mm(max)
Strip Thickness	0.15 - 0.70 mm (Full Hard) 0.3 - 2.0 mm (Annealed)

Outgoing Coil Data

Coil Size	ID:610 mm (With Rubber Sleeve) OD:900 mm(min) / mm(max)
Line Speed	250 mpm (TL Mode) 400 mpm (Trimming and Rewinding Mode)
Threading Speed	25 mpm
Suggested Tentative Product Mix	20 % Below Thickness 0.50 mm (Width 900 mm to 1250 mm) 40 % Thickness 0.50 to 1.0 mm (Width 900 mm to 1650 mm)
Annual Production Capacity	1/10 th OF Line Input Flatness OR 5.1 Units- Whichever is Maximum



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HICON/H2 ® bell annealers for steel strip

Both the mechanical properties and the surface finish are important quality factors for cold-rolled strip. Both factors are influenced considerably by heat treatment. HICON/H2® annealing technology achieves excellent results at low cost per ton annealed.

Wide range of applications

Low carbon steel

- soft steels
- CQ, DQ, DDQ, EDDQ, SEDDQ
- IF grades
- ULCN steels
- high tensile strength steels
- micro alloyed steels
- phosphor alloyed steels
- bake hardening grades
- high strength IF steels
- isotropic IF steels

Tin plate

- T1 to T4

Silicon steels

- non - oriented steels
- oriented steels

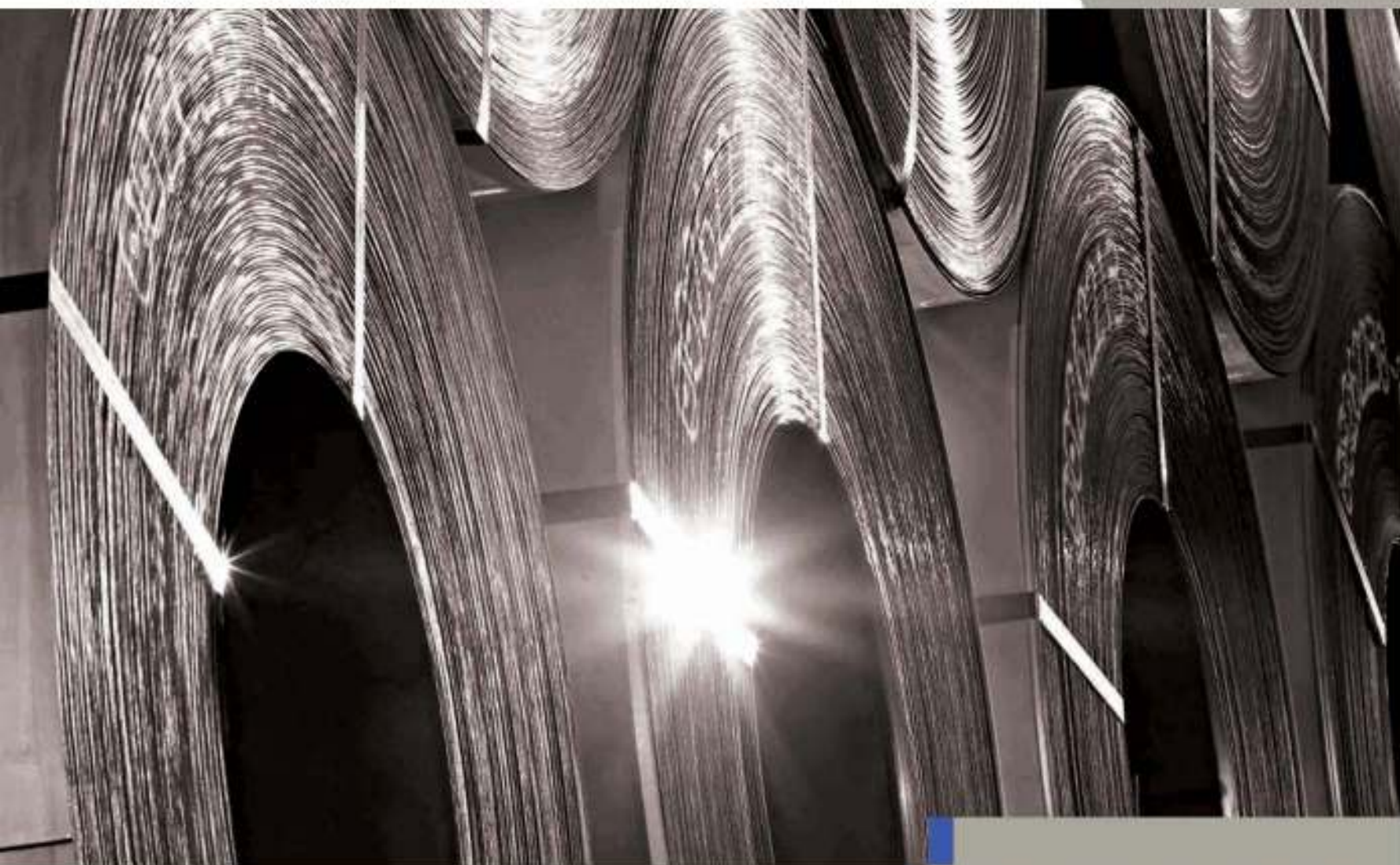
Medium to high carbon steels

- non-alloyed steels
- low-alloyed steels
- high - alloyed steels (HSS etc.)

Rust - resistant and acid - resistant steels

- martensitic Cr steels
- FERRITIC Cr steels





Surface Finish And Roughness Values

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Technical specification of products
Hot, pickled and Cold Rolled products

- Hot Rolled Standards:

ISIRI 3693 JIS G 3132-90
 ISIRI 3694 JIS G 3131-90
 ASTM A 6-94 JIS G 3193-90
 ASTM A 568-93 DIN 1543
 ASTM A 365-93 DIN 1016
 EN 10051-91

- Pickled standards

Width tolerance: Thickness tolerance:
 ASTM A568 M/93a ASTM A568 M/93a
 EU 51/82
 EU 112/82 DIN 1543
 AFNOR NF A46.51/84 DIN 1016
 BS 1449/83 JIS G 3132/90
 JIS G 3193/90 JIS G 3131/90
 DIN 1543 JIS G3193/90
 DIN 1016/72
 EN 10051-91

- Cold Rolled standards:

EU 131/77 NORMAL
 UNI 7958/79
 UNI 6623/77 NORMAL
 AFNOR NF 46402/81 NORMAL
 BS 1449 18/89
 JIS G 3141/90 (TOLLA A) NORMAL
 DIN 1541/75 NORMAL
 EN 10131 – 1991
 ISIRI 5723
 ISIRI 5722





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Surface Appearance

Table: 22

Standard Code	Standard
MA	UNI 5866:EU 130
A	EN10130-1999
3	DIN 1623
GP	B.S 1449-1
CLASS2	ASTM, SAE/AISI
STD.JIS	JIS G 3141
X	AFNOR NF A 36 ,401
UNXPOSE	ISIRI 5723
MB	UNI 5866:EU 130
B	EN10130-1999
5	DIN 1623
FF	B.S 1449-1
CLASS1	ASTM, SAE/AISI
7	AFNOR NF A 36 ,401
EXPOSE	ISIRI 5723

Cold Products

Surface Protection

Depending on the type of product and also product quality required, the cold rolled are divided in to two groups shown on the table.

Group	Remarks
Not-Oiled	In this case, the surface of all products are oil - free according to customer requirements. Product with MB appearance should definitely be delivered Oil Free. Full - hard and annealed products are delivered in Oiled.
Oiled	Unless Specified cases, all products are Oiled. The surface of products will be corrosion resistant, using a thin layer of oil.

Guaranty

A) Oiled Surface

In the case of using steel straps and angles in order to protect the edge in packing. Our products are guaranteed against staining 2 month after delivery.



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Surface Finish And Roughness Values

Table: 23

Surface Finish	Roughness		EN	DIN	Code National Standard	END Use
	Micron	Micron Inch				
Bright	< 0.4	< 16	RB	b	< 0.4	A
Semi Bright	< 0.87	< 35	RL	q	< 0.87	A
Normal	0.62 - 1.87	25 - 75	RM	m	0.62 - 1.87	B
Matt	1.00 - 1.87	40 - 75	RM	m	1.00 - 1.87	C
Rough	1.50 - 2.55	60 - 90	RR	r	1.50 - 2.25	D

A: Furniture

B: House Appliances, Drums, Radiators, Structural And General Use

C: Automobile

D: Enamelling

Full Hard Products Are Presented With Following Roughness:

A: Less Than 0.27 Micron

B: 0.35 to 0.55 Micron

C: 0.75 to 1.1 Micron





Packing

Packaging Storage and Delivery

In order to maintain quality right to the customer door step, Ferro Gilan has built large covered storage areas and has its own fleet of lorries to ensure safe and fast delivery.





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Research dedicated to market and products

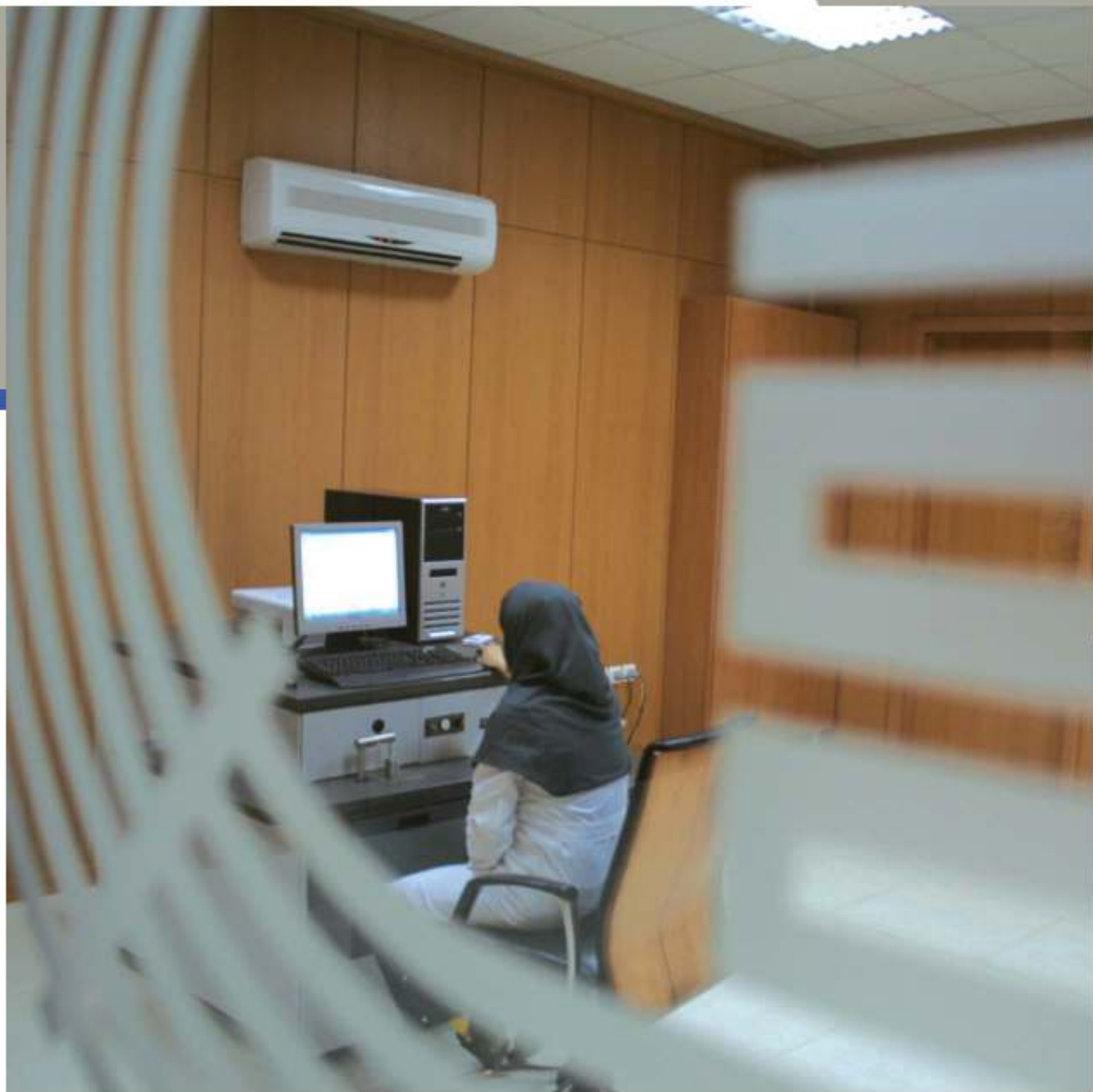
Ferro Gilan's R&D is highly business-oriented, ensuring a shorter time-to-market and improved competitiveness in the following fields.

- Automotive
- Packaging
- Construction
- General Industry



FERRO GILAN COMPLEX

R&D + Laboratory



Research dedicated to process

Process R&D is indispensable for the implementation of new steel products and solutions but also to meet the following objectives:

- Cost reduction through improved productivity and reliability in our production processes;
- Improved environmental performance through reduced emissions; increased product and by-product recycling; energy saving; flexibility in the use of raw materials and energy resources; and the systematic study of the impact of our products and processes on the environment through Life Cycle Assessment (LCA).

Upstream process: from raw material selection to hot rolling operations

downstream process: from cold rolling to finishing operations

QUALITY

As the largest private sector steel rolling company in Iran Ferro Gilan Complex , has based its strategy on establishing suitable customer communication lines and setting high standards in order to achieve customer satisfaction. With this in mind Ferro Gilan complex not only controls quality throughout production by inspections, but has taken steps in creating one of the most modern and well equipped laboratories in the country, capable of carrying out all required test to ensure that products are delivered as per customer's specifications. Ferro Gilan Complex is also certified by ISO 9001:2000





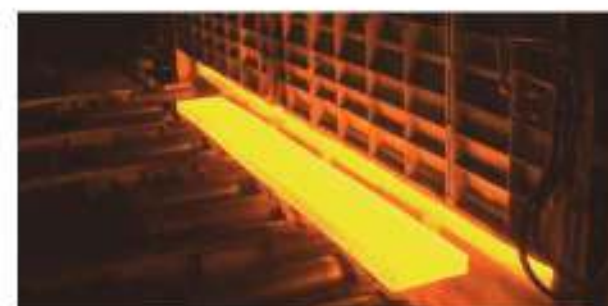


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Perfection does not begin at the manufacturing plant. It begins in the mind.

It is a challenge that Ferro Gilan Complex has overcome through diligence and discipline and by encouraging its employees to develop a sense of pride in their jobs.



Packing for
Hot Rolled Products
**FERRO
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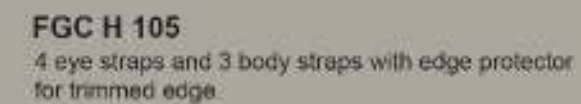
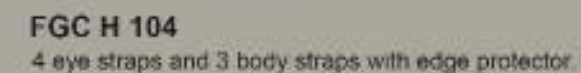
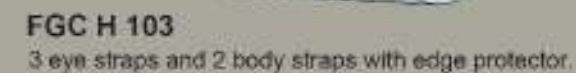
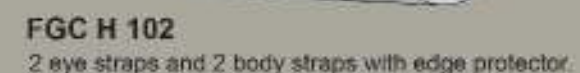
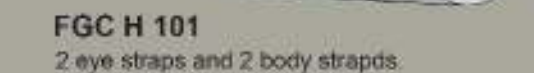


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Packing Sample

Products are packed to customer requirements, some packing option for different types of product are shown in the following pages. Customer are only requested to quote the specific code number of the preferred packaging.





note :

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note :

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