



Descaling Before Rolling



FERRO GILAN COMPLEX



Rolling Mill

The Variety Of Qualities
Being Produced at Ferro Gilan Complex

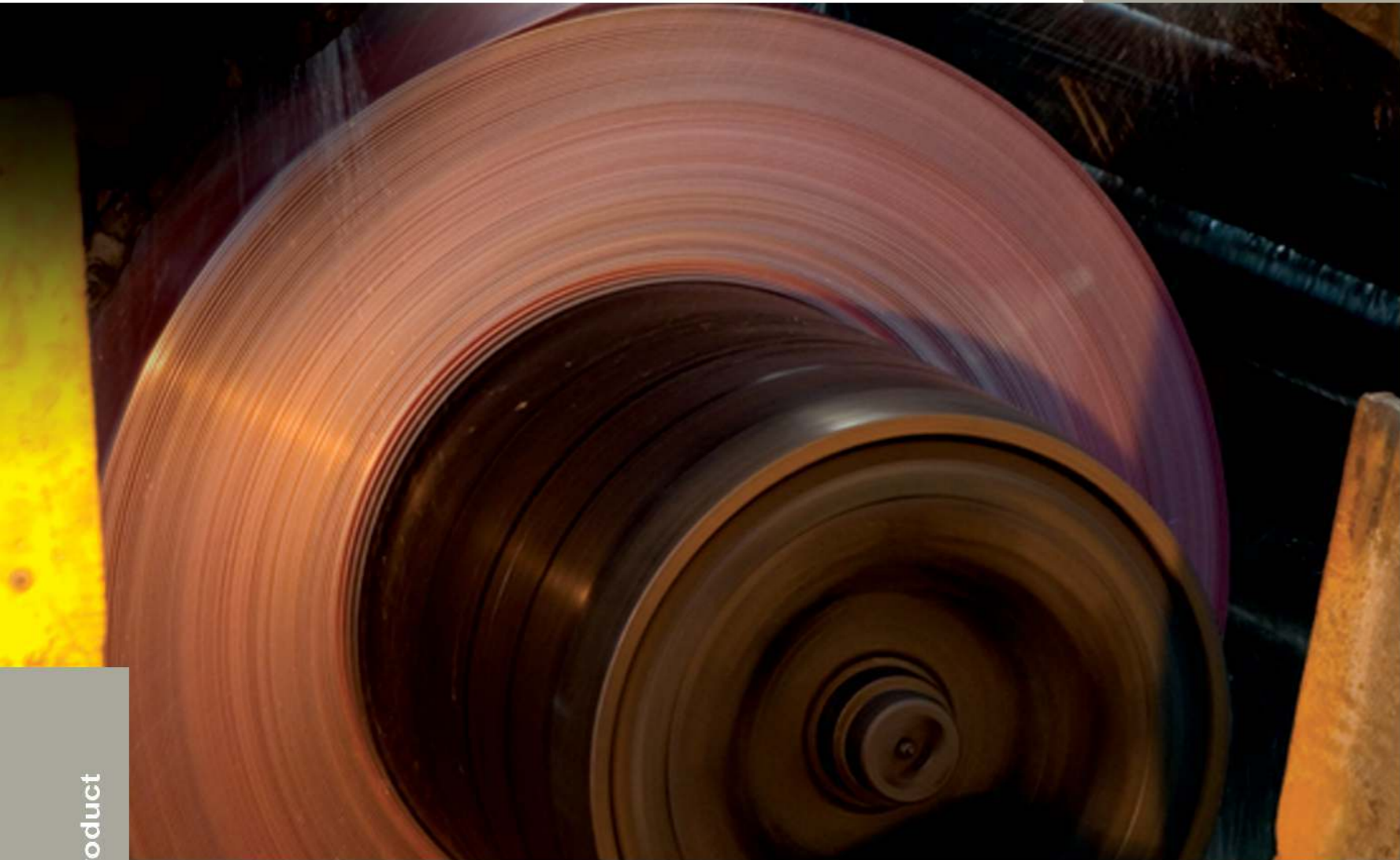
Hot Rolled Products

Table: 2

Standard / Application	DIN	JIS	AFNOR	BS	SAE/AISI	A S T M	UNI	EURO NORM	ISIRI
Drawing & Deep Drawing		(G3131) SPHC SPHD SPHE		(1449) HR 37/23					
Re-Rolling	(17172) StE290 StE320	(3132) SPHT3				(5867) Fe410 Fe430			
Auto Chassis	(17100) RSt 37 2-3	(G3101) S5330 S5400	(A35-501) A33 A34-2 E24/2-3-4	(1449) 40/A-B-C-D-E	1006 1008	A283/A A283/C A58/573	(7070) Fe320 Fe330 Fe360 B-C-D	(10025) Fe310 S235JR S235JRG2 S235JO	(3694) Hot Rolled 235 2 and 3

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





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Hot Rolled Products

Table: 3

Standard / Application	DIN	JIS	AFNOR	BS	SAE/AISI	A S T M	UNI	EURO NORM	ISIRI
Pipes and Profiles	St44 2-3	(G3106) SM400/A-B-C	E28/2-3-4	(4360) 43A A2 -B-C	1010 1015-1016 1018-1019	A 283/D A36 A284/C-D A 572/42 A753/65	Fe 410/B-C-D	S275JR D275JR G7 S275 JO	Hot Rolled 275 2 and 3
	St 52-3	SM 490/AB SM520/B/C	E36/3-4	50/A-B-C-D-D1	1010 1015-1016 1018-1019 1017-1020	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 55/422 A 414/C A515/55/65 A516/55/65	(28) Fe E 255- 1 Fe E 235	(28) Fe 225-1 Fe E235	

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Hot Rolled Products

Table: 4

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 515/60-70	Fe E 265	Fe E 265	
	17 Mn4		A 42 AP	360-164		A 442-60	Fe E 295	Fe E 295	
			A48 CP	400-164		A 515/60-70 A229-90 A 515-70 A 414/F-G A 516-70 A 537-1			
			A48 AP						
Ship building								LLOYD'S-81 GRA RIINA-83 GRA	

Table Of Comparison Of Flat Products
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Table: 5

Standard	DIN	JIS	AFNOR	BS	SAE/AISI	A STM	UNI	API5-L
Application	(17172) STE- 290 STE- 320 STE- 360	(G3132) SPHT 1 SPHT2 SPHT3					(7070) Fe 360 Fe 360 Fe 410 Fe 430 Fe 510	GR.8 X 42 X46 X52 X56
E R W Pipes	STE- 335	SPHT4						
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 ⁽³⁾				Mechanical Properties								Impact test 10<t <16	
	C max 1<16	P max	S max	N ² max	R ¹ (min) N/mm ² t<16	R ¹ N/m ² m ²		A(%) MIN ¹						
						t<3	3<t <100	A ₈₀		A ₅		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	510 680	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.

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Table: 8

JIS G 3101-95 Hot Rolled Products For General Structures										
Steel Grade	Chemical Composition				Mechanical Properties					
	C	Mn	P max	S max	Rm N/mm ²	Re (Min) N/mm ²			Bendability	
						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	
			max				D)		m	Minimum Elongation %					
			C %	Mn %	p %	S %	1.5 < e < 2	< <		L0 = 80mm		Lo = 5.65 NSo			
										1.5 < e < 2	2 < e < 3				3 < e < 8
StW22	DD11	1.0332	At The Description Of Manufacturer	0.12		0.045	0.045	170-360	170-340	440	23	24	28	1e	1 Month
RRSTW23	DD12	1.0398	Fully Killed	0.1		0.035	0.035	170-340	170-320	420	25	26	30	0	6 Month
Stw24	DD13	1.0335	Fully Killed	0.08		0.03	0.03	170-330	170-310	400	23	29	33	0	6 Month
.....	DD14	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

**FERRO
GILAN COMPLEX**
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	6.00	1320	1300 *
9.01	12.00	800	1350	1320
12.01	25.00	1000	1420	1400

* Only For 6 mm Thickness

