

GRIMET

Cold drawn Bars



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Three generations in steel

Mr. Franco Grigoli began working in a steel mill in 1951 as a simple worker.

In 1969, He opened his first rolling mill, producing reinforced steel bars. In 1977, he started to produce special steel for construction and forging.

His passion for steel was passed down to his son, Mr. Roberto Grigoli, who in 1991 created the company SPS – Sider Plating Scaligera S.p.A. which produced chrome steel plated bars and tubes. In a short period of time, SPS – Sider Plating Scaligera S.p.A. became one of the most important companies in the steel chroming industry, famous for its high quality and ability to obtain the approval of the world's leading cylinder manufacturers.

In the last few years the Grigoli Family has founded steel mills and large forging furnaces to produce coils, flats and forge steel. For some years now, the son of Roberto, Mr. Andrea Grigoli, has been working in steel world with the same passion and power.

In 2016 the Grigoli Family decided to go back to producing chrome plated steel bars and tubes and has taken over the company Aisa s.r.l. – now “Grimet Chromed Bars” – bringing more than thirty years of experience and expertise in the chroming process to ensure its customers excellent quality.

The project **GRIMET** goes on and in 2019 the acquisition of a 16,000 sq meters facility located in Verona-North Italy has been finalized. The production portfolio is now enlarged to include **Chomed Bars, Chromed Tubes, Peeled Bars, Ground Bars, Ground Tubes, Cold Drawn Bars.**

Thanks to the vision and the constant efforts of Grigoli Family and with the support of the most experienced professionals available in this sector, **GRIMET** is rapidly and successfully growing across the global market, thus becoming **your new partner in chroming.**



PRODUCTS

Grimet production includes Cold Drawn, Peeled, Ground, Quenched & Tempered products in the following categories:

- **STRUCTURAL STEELS:** S235JR, S355J2, E335+S
- **QUENCHED AND TEMPERED STEELS:** C45, 42CrMo4, 39NiCrMo3, 39NiCrMo3+Piombo
- **FREE CUTTING STEELS:** 11SMnPb30/37, 11SMn30/37, 36SMnPb14, 46S20
- **CEMENTED STEELS:** 16MnCr5, 20MnCr5, 18NiCrMo5, 16CrNi4

MACHINERY RANGE

- Quenching and Tempering
- Induction Hardening
- Peeling Machines
- Grinding Machines
- Combined Drawing Machines
- Drawbenches
- Chamfering Machines
- Production Lengths: from 3 to 12 meters
- US and Eddy Current controls according to EN 10277



CONTROL QUALITY LABORATORY

Our Control Quality Laboratory is equipped to perform:

- Impact Test with Charpy Machine
- Uniaxial Tensile Test
- Ultrasound Controls to identify internal defects
- Eddy Current Controls to identify surface defects
- Spectrometric Analysis
- Metallographic Analysis



STRUCTURAL STEELS

QUALITY S235JR (FE 360 B)

Norm

EN 10025: 1995

W. 1.0037

Chemical composition

C%	Si%	Mn%	P%	S%	N%	Mo%	Ni%
max		max	max	max	max		
0,17*	--	1,40	0,045	0,045	0,009***	--	--
0,21**	--	1,50	0,055	0,055	0,011***	--	--

Heat Analysis

Product Analysis

* maximum 0,20 for thickness from 16 to 40 mm / ** maximum 0,25 for thickness from 16 to 40 mm

QUALITY S355J2 (Fe 510 D)

Norm

EN 10025: 1995

W. 1.0570

Chemical composition

C%	Si%	Mn%	P%	S%	N%	Mo%	Ni%
max	max	max	max	max			
0,20*	0,55	1,60	0,035	0,035	--	--	--
0,23**	0,60	1,70	0,045	0,045	--	--	--

Heat Analysis

Product Analysis

Cold Drawn EN 10277-2: 2000

Diameter Longitudinal Tensile Test at 20° C

Diameter		R*	Rp 0.2*	A%	HB
mm		N/mm ²	N/mm ² min	min	
from	up to				
5**	10	650-950	520	6	200-286
10	16	600-880	450	7	175-263
16	40	550-850	350	8	159-253
40	63	520-770	335	9	155-231
63	100	490-740	315	9	149-224

Hot Rolled-Peeled-Rolled EN 10277-2: 2000

Longitudinal Tensile Test at 20° C

R	Rp 0.2	A%	HB
N/mm ²	N/mm ² min	min	
--	--	--	--
--	--	--	--
490-630	--	--	146-187
490-630	--	--	146-187
490-630	--	--	146-187

QUALITY

E335+S (FE 590 +S) ST 60 - 2 + S

A60 - 2 +S

Norm

EN 10025-2: (Hot Rolled) + SH

EN 10277-2 (Cold Drawn) + C

Chemical composition

C%	Si%	Mn%	P%	S%	N%	Mo%	Ni%
0,37 ÷ 0,45	0,50	1,40	0,045	0,080 ÷ 0,120	0,011		

Diameter

Rolled + Peeled and Rolled (+SH)

Cold Drawn (+C)

mm	Rolled + Peeled and Rolled (+SH)		Cold Drawn (+C)		
	Hardness HB	R ₃ (MPa)	Rp _{0,2} (MPa) min	R ₃ (MPa)	A ₃ (%) min
≥ 5 ≤ 10	-	-	540	700 ÷ 1050	5
> 10 ≤ 16	-	-	480	680 ÷ 970	6
> 16 ≤ 40	169 ÷ 211	570 ÷ 710	390	640 ÷ 930	7
> 40 ≤ 63	169 ÷ 211	570 ÷ 710	340	620 ÷ 870	8
> 63 ≤ 100	169 ÷ 211	570 ÷ 710	295	570 ÷ 810	8

FREE CUTTING STEELS

QUALITY

11SMn30 (CF 9 SMn 28)

Norm

W. 1.0715

Chemical composition

C%	Si%	Mn%	P%	S%	Pb%	Mo%	Ni%	
max	max		max					Allowed
0.14	0,05	0.90-1.30	0.11	0.27-0.33	--	--	--	variations in
± 0.02	+ 0.01	± 0.04	+ 0.02	± 0.03	--	--	--	product analysis

* maximum 0,20 for thickness from 16 to 40 mm / ** maximum 0,25 for thickness from 16 to 40 mm

Cold Drawn EN 10277-3 : 2000

Valid also for **GROUND**

Diameter		Longitudinal Tensile Test at 20° C			
mm		R	Rp 0.2	A%	HB
from	up to	N/mm ²	N/mm ² min	min	
5**	10	510-810	440	6	154-243
10	16	490-760	410	7	149-226
16	40	460-710	375	8	139-218
40	63	400-650	305	9	119-200
63	100	360-630	245	9	104-192

Hot Rolled-Peeled-Rolled EN 10277-3

Valid also for **GROUND**

Longitudinal Tensile Test at 20° C			
R	Rp 0.2	A%	HB
N/mm ²	N/mm ² min	min	
--	--	--	--
--	--	--	--
380-570	--	--	112-169
370-570	--	--	108-169
360-520	--	--	107-154

QUALITY

11SMn37

Norm

EN 10087: 2000

W. 1.0736

Chemical composition

C%	Si%	Mn%	P%	S%	Pb%	Mo%	Ni%	
max	max		max					Allowed
0.14	0.05	1.00-1.50	0.11	0.34-0.40	--	--	--	variations in
± 0.02	+ 0.01	± 0.06	+ 0.02	± 0.04	--	--	--	product analysis

Cold Drawn EN 10277-3 : 2000

Valid also for **GROUND**

Diameter		Longitudinal Tensile Test at 20° C			
mm		R*	Rp 0.2*	A%	HB
oltre	fino a	N/mm ²	N/mm ² min	min	
5**	10	510-810	440	6	154-243
10	16	490-760	410	7	149-226
16	40	460-710	375	8	139-218
40	63	400-650	305	9	119-200
63	100	360-630	245	9	104-192

Hot Rolled-Peeled-Rolled EN 10277-3

Valid also for **GROUND**

Longitudinal Tensile Test at 20° C			
R	Rp 0.2	A%	HB
N/mm ²	N/mm ² min	min	
--	--	--	--
--	--	--	--
380-570	--	--	112-169
370-570	--	--	108-169
360-520	--	--	107-154



QUALITY

11 SMnPb30 (Cf 9 SMnPb 28)

Norm

W. 1.0718

Chemical composition

C%	Si%	Mn%	P%	S%	Pb%	Mo%	Ni%	
max	max		max					Allowed variations in product analysis
0.14	0.05	0.90-1.30	0.11	0.27-0.33	0,20-0,35	--	--	
± 0.02	+ 0.01	± 0.04	+ 0.02	± 0.03	+0.03-0.02	--	--	

Cold Drawn EN 10277-3 : 2000

Valid also for **GROUND**

Diameter		Longitudinal Tensile Test at 20° C			
mm		R*	Rp 0.2*	A%	HB
from	up to	N/mm ²	N/mm ² min	min	
5**	10	510-810	440	6	154-243
10	16	490-760	410	7	149-226
16	40	460-710	375	8	139-218
40	63	400-650	305	9	119-200
63	100	360-630	245	9	104-192

Hot Rolled-Pealed-Rolled EN 10277-3

Valid also for **GROUND**

Longitudinal Tensile Test at 20° C			
R	Rp 0.2	A%	HB
N/mm ²	N/mm ² min	min	
--	--	--	--
--	--	--	--
380-570	--	--	112-169
370-570	--	--	108-169
360-520	--	--	107-154

QUALITY

11 SMnPb37 (Cf 9 SMnPb 36)

Norm

W. 1.0737

Chemical composition

C%	Si%	Mn%	P%	S%	Pb%	Mo%	Ni%	
max	max		max					Allowed variations in product analysis
0.14	0.05	1.00-1.50	0.11	0.34-0.40	0.20-0.35	--	--	
± 0.02	+ 0.01	± 0.06	+ 0.02	± 0.04	+0.03-0.02	--	--	

Cold Drawn EN 10277-3 : 2000

Valid also for **GROUND**

Diameter		Longitudinal Tensile Test at 20° C			
mm		R*	Rp 0.2*	A%	HB
from	up to	N/mm ²	N/mm ² min	min	
5**	10	510-810	440	6	154-243
10	16	490-760	410	7	149-226
16	40	460-710	375	8	139-218
40	63	400-650	305	9	119-200
63	100	360-630	245	9	104-192

Hot Rolled-Pealed-Rolled EN 10277-3

Valid also for **GROUND**

Longitudinal Tensile Test at 20° C			
R	Rp 0.2	A%	HB
N/mm ²	N/mm ² min	min	
--	--	--	--
--	--	--	--
380-570	--	--	112-169
370-570	--	--	108-169
360-520	--	--	107-154



QUALITY

36 SMnPb14 (35 SMnPb 10)

Norm

W. 1.0765

Chemical composition

C%	Si%	Mn%	P%	S%	Pb%	Mo%	Ni%	
max		max						Allowed
0.32-0.39	0.40	1.30-1.70	0.06	0.10-0.18	0,15-0,35	--	--	variations in product analysis
± 0.03	+ 0.03	± 0.06	+ 0.008	± 0.03	+0.03-0.02	--	--	

Cold Drawn EN 10277-3 : 2000

Valid also for **GROUND**

Diameter		Longitudinal Tensile Test at 20° C			
mm		R*	Rp 0.2*	A%	HB
from	up to	N/mm ²	N/mm ² min	min	
5**	10	660-960	500	6	202-290
10	16	620-900	440	6	190-271
16	40	600-840	390	7	178-250
40	63	580-780	360	8	172-232
63	100	560-760	340	9	162-226

Hot Rolled-Pealed-Rolled EN 10277-3

Valid also for **GROUND**

Diameter		Longitudinal Tensile Test at 20° C			
mm		R	Rp 0.2	A%	HB
from	up to	N/mm ²	N/mm ² min	min	
		--	--	--	--
		--	--	--	--
		560-750	--	--	166-222
		560-740	--	--	166-219
		550-740	--	--	163-219

QUALITY

46S20

Norm

W. 1.0727

Chemical composition

C%	Si%	Mn%	P%	S%	Pb%	Mo%	Ni%	
max		max						Allowed
0.42-0.50	0.40	0.70-1.10	0.06	0.15-0.25	--	--	--	variations in product analysis
± 0.03	+ 0.03	± 0.04	+ 0.008	± 0.03	--	--	--	

Cold Drawn EN 10277-3 : 2000

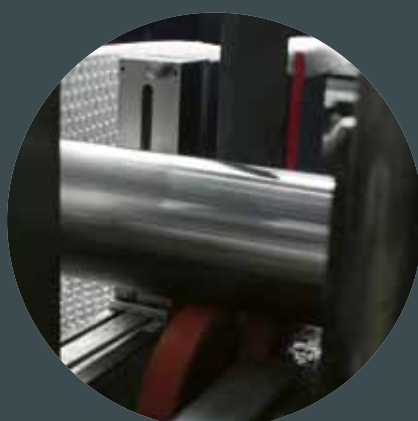
Valid also for **GROUND**

Diameter		Longitudinal Tensile Test at 20° C			
mm		R*	Rp 0.2*	A%	HB
from	up to	N/mm ²	N/mm ² min	min	
5**	10	740-980	570	5	224-295
10	16	690-930	470	6	210-278
16	40	640-880	400	7	198-263
40	63	610-850	380	8	183-253
63	100	580-770	340	8	172-231

Hot Rolled-Pealed-Rolled EN 10277-3

Valid also for **GROUND**

Diameter		Longitudinal Tensile Test at 20° C			
mm		R	Rp 0.2	A%	HB
from	up to	N/mm ²	N/mm ² min	min	
		--	--	--	--
		--	--	--	--
		590-760	--	--	175-225
		580-730	--	--	172-216
		560-710	--	--	166-211



QUENCHED AND TEMPERED STEELS

QUALITY

C45E

Norm

EN 10083

W. 1.1191

Chemical composition

C%	Si%	Mn%	P%	S%	Pb%	Mo%	Ni%	
	max		max	max	max	max	max	Allowed
0.42-0.50	0.40	1.50-0.80	0.025	0.035	0,40	0.10	0.40	variations in
± 0.02	+ 0.03	± 0.04	+ 0.005	+ 0.005	--	--	--	product analysis

Cold Drawn EN 10277-2 : 2000

Valid also for **GROUND**

Diameter		Longitudinal Tensile Test at 20° C			
mm		R*	Rp 0.2*	A%	HB
from	up to	N/mm ²	N/mm ² min	min	
5**	10	750-1050	565	5	225-319
10	16	710-1030	500	6	218-311
16	40	650-1000	410	7	200-298
40	63	630-900	360	8	192-271
63	100	580-850	310	8	172-253

Hot Rolled-Peleed-Rolled EN 10277-2: 2000

Valid also for **GROUND**

Diameter		Longitudinal Tensile Test at 20° C			
mm		R	Rp 0.2	A%	HB
from	up to	N/mm ²	N/mm ² min	min	
--	--	--	--	--	--
--	--	--	--	--	--
580-820	--	--	--	--	172-242
580-820	--	--	--	--	172-242
580-820	--	--	--	--	172-242

QUALITY

42CrMo4

Norm

EN 10083

W. 1.7225

Chemical composition

C%	Si%	Mn%	P%	S%	Pb%	Mo%	Ni%	
	max		max	max				Allowed
0.38-0.45	0.40	0.60-0.90	0.025	0.035	0.90-1.20	0.15-0.30	--	variations in
± 0.02	+ 0.03	± 0.04	+ 0.005	+ 0.005	± 0.05	± 0.03	--	product analysis

Cold Drawn EN 10277-5 : 2000

Diameter		Longitudinal Tensile Test at 20° C			
mm		R*	Rp 0.2*	A%	HB
from	up to	N/mm ²	N/mm ² min	min	
5**	10	--	--	--	--
10	16	--	--	--	--
16	40	1000-1200	750	11	298-359
40	63	900-1100	650	12	271-331
63	100	900-1100	650	12	271-331

Quenched and Tempered (+QT)

Diameter mm	Rp _{0.2} (MPa) min	R _m (MPa)	A ₁ (%) min	Z (%) min	KV (J) min
≤ 16	900	1000 ÷ 1300	10	40	-
> 16 ≤ 40	750	1000 ÷ 1200	11	45	35
> 40 ≤ 100	650	900 ÷ 1100	12	50	35
> 100 ≤ 160	550	800 ÷ 950	13	50	35
> 160 ≤ 250	500	750 ÷ 900	14	55	35

QUALITY

39NiCrMo3

Norm

EN 10083

Chemical composition

C%	Si%	Mn%	P%	S%	Cr%	Mo%	Ni%	
	max		max	max	max	max	max	Allowed
0.35-0.43	0.40	0.50-0.80	0.025	0.035	0.60-1.00	0.15-0.25	0.70-1.00	variations in
± 0.02	+ 0.03	± 0.04	+ 0.005	+ 0.005	± 0.05	± 0.03	± 0.05	product analysis

Physical and Mechanical Properties

Hot Rolled, mechanical properties at Quenched and Tempered condition EN 10083-3: 2006

Diameter/thickness		Longitudinal Tensile Test and Charpy Test at 20° C					
mm		R	Rp 0.2	A%	C%	Kv	HB
from	up to	N/mm ²	N/mm ² min.	min.	min.	J min.	for information
	16	980-1180	785	11	40	--	295-354
16	40	930-1130	735	11	40	35	278-339
40	100	880-1080	685	12	45	40	263-327
100	160	830-980	635	12	50	40	249-295
160	250	740-880	540	13	50	40	224-263

CEMENTED STEELS

QUALITY 16MnCr5

Norm

W. 1.7131

Chemical composition

C%	Si%	Mn%	P%	S%	Cr%	Mo%	Ni%	
	max		max	max				Allowed variations in product analysis
0.14-0.19	0.40	1.00-1.30	0.035	0.035	0.80-1.10	--	--	
± 0.02	+ 0.03	± 0.05	+ 0.005	+ 0.005	± 0.05	--	--	

EN 10277-4 : 2000

Soft Annealing +
Peeled Rolled Ground

Soft Annealing +
Cold Drawn

Treated for pearlitic ferritic Structure +
Peeled Rolled Ground

Treated for pearlitic ferritic Structure +
Cold Drawn

Diameter mm		HB max	HB max	HB	HB
from	up to				
5*	10	--	260	--	--
10	16	--	250	--	--
16	40	207	245	140-187	140-240
40	63	207	240	140-187	140-235
63	100	207	240	140-187	140-235

QUALITY 20MnCr5

Norm

EN 2000

W. 1.7147

Chemical composition

C%	Si%	Mn%	P%	S%	Cr%	Mo%	Ni%	
	max		max	max				Allowed variations in product analysis
0.17-0.22	0.40	1.00-1.40	0.035	0.035	1.00-1.30	--	--	
± 0.02	+ 0.03	± 0.05	+ 0.005	+ 0.005	± 0.05	--	--	

Soft Annealing +
Peeled Rolled Ground

Soft Annealing +
Cold Drawn

Treated for pearlitic ferritic Structure +
Peeled Rolled Ground

Treated for pearlitic ferritic Structure +
Cold Drawn

Diameter mm		HB max	HB max	HB	HB
from	up to				
5*	10	--	260	--	--
10	16	--	250	--	--
16	40	207	245	140-187	140-240
40	63	207	240	140-187	140-235
63	100	207	240	140-187	140-235



QUALITY

18NiCrMo5

Norm

UNI 7846: 1978

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Chemical composition

C%	Si%	Mn%	P%	S%	Cr%	Mo%	Ni%	Allowed variations in product analysis
			max	max				
0.15-0.21	0.15-0.40	0.60-0.90	0.035	0.035	0.70-1.00	0.15-0.25	1.20-1.50	
± 0.02	+ 0.03	± 0.04	+ 0.005	+ 0.005	± 0.05	± 0.03	± 0.05	

Physical and Mechanical Properties

Hot rolled, reference properties on bar with core hardening UNI 7846 : 1978. Only as reference

Longitudinal Tensile Test at 20° C

Section mm	R	Rp 0.2	A%	C%	Kcu	HB
	N/mm ²	N/mm ² min.	min.	min.	J min.	
11	1230-1520	980	8	--	30	363-432
30	980-1270	735	9	--	32.5	295-373
63	830-1130	685	10	--	35	249-339

QUALITY

16NiCr4 (16CrNi4)

Norm

W. 1.5714

Chemical composition

C%	Si%	Mn%	P%	S%	Cr%	Mo%	Ni%	Allowed variations in product analysis
	max		max	max		max		
0.13-0.19	0.40	0.70-1.00	0.035	0.035	0.60-1.00	--	0,80-1,10	
± 0.02	+ 0.03	± 0.04	+ 0.005	+ 0.005	± 0.05	--	± 0.05	

Physical and Mechanical Properties

EN 10277-4 : 2000
16NiCr4

Soft Annealing +
Peeled Rolled Ground

Soft Annealing +
Cold Drawn

Treated for pearlitic
ferritic Structure +
Peeled Rolled Ground

Treated for pearlitic
ferritic Structure +
Cold Drawn

Diameter mm		HB max	HB max	HB	HB
from	up to				
5*	10	--	270	--	--
10	16	--	260	--	--
16	40	217	255	156-207	156-245
40	63	217	255	156-207	156-240
63	100	217	255	156-207	156-240





GRIMET

GRIMET S.r.l.



Legal Seat & Production Site

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