

# CMC Zawiercie S.A.

## PRODUCT PORTFOLIO



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### Billets

(for forging) with rounded corners Rmax-7mm

Dimension [mm]	Mass of 1m [kg]
40	12,3
42	13,5
45	15,6
50	19,3

### Manufacturing Specifications

#### Length

- 6m with possible lengths up to 18m

#### Certification

- PN-75/H-93021
- PN-75/H93022

#### Billets are manufactured in accordance with standards

- PN-81/H-93020,03
- PN-75/H-93021
- PN-75/H-93022

#### Dimensions and tolerances according to the following standards

- PN-81/H-93020,03

### Grades of Steel

PN-EN 10025-2	S235JR, S355JO, S235JO, S355JR
PN-EN 10083-1	C22E, C35E, C45E
PN-EN 10083-2	C22, C35, C45
PN-EN 10084	16MnCr5, 20NiCrMo2-2
PN-89/H-84030/02	20HNM

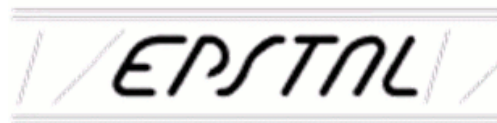


### EPSTAL Rebars



**EPSTAL is a quality mark for high ductility steel products designed for concrete reinforcement. Reinforcing steel with quality mark EPSTAL ensures that the product:**

- ❑ Was introduced for sales and use in the construction industry in compliance with valid regulations, and has properties consistent with the following standards:
  - ❑ PN-H 93220:2006
  - ❑ PN EN 10080:2005(U)
  - ❑ PN-B 03264:2002
  - ❑ PN EN 1992-1-1:2005(U) – Eurokod - 2
- ❑ Has all obligatory certifications and technical approvals from ITB and IBDiM
- ❑ Its producer underwent the process of voluntary certification and agreed to the publication of statistical results from research of its products
- ❑ Has been designed in the manner to be able to transfer dynamic loads, repeatedly variable and cyclic, proven by studies on modern electro resonance machines
- ❑ Its user is covered by extended insurance policy
- ❑ Has mechanical properties guaranteed for the whole operating range until reaching tensile strength (within the scope of analytical curves developed by CPJS)
- ❑ Has easily identifiable letter signs on a bar



**The objective of EPSTAL certification is to develop customers' confidence in steel products manufactured domestically.**



### Equal-Leg Angles

Dimensions		Bundle Weight [kg]	Steel Grades	Yield Point Remin [Mpa]	Standards		
width x thickness [mm]	Lengths available [mm] (typical length)				Basic	Of Steel Grade	Dimensions
25 x 25 x 3 30 x 30 x 3 35 x 35 x 3 40 x 40 x 3	3000 – 12000 (9000)	App. 3000	S235JRG2	235	PNEN 10163-3	PNEN 10025	PNEN 10056
25 x 25 x 4 30 x 30 x 4 35 x 35 x 4 40 x 40 x 4 45 x 45 x 4 50 x 50 x 4	3000 – 12000 (9000)	App. 3000	S235JRG2	235	PNEN 10163-3	PNEN 10025	PNEN 10056
40 x 40 x 5 45 x 45 x 5 50 x 50 x 5	3000 – 12000 (9000)	App. 3000	S235JRG2	235	PNEN 10163-3	PNEN 10025	PNEN 10056



### Flat Bars

Widths [mm]	Thickness [mm]												
	5	6	8	9	10	11	12	13	14	15	16	18	20
	Mass of 1m [kg]												
25	1	1,18	1,57		2		2,36						
30	1,2	1,41	1,88		2,4		2,83		3,3	3,53	3,77	4,2	4,71
35	1,4	1,65	2,2										
40	1,6	1,88	2,51		3,1		3,77			4,71	5,02		6,28
45	1,8	2,12	2,83		3,5								
50	2	2,36	3,14		3,9		4,71		5,5	5,89	6,28		7,85
55	2,2	2,59			4,3								
60	2,4	2,83	3,77		4,7		5,65			7,07	7,54		9,42
65				4,6	5,1								
70	2,8	3,3	4,4		5,5		6,59		7,69	8,24	8,79		11
80	3,1	3,77	5,02		6,3		7,53		8,79	9,42	10		
90			5,65		7,1		8,48		9,89		11,3		
100			6,28		7,9		9,42		11	11,8			
110					8,6	9,5	10,4	11,3	12,3	13,2	14,1		
120					9,4	10,4	11,3	12,3	13,2	14,1			
130		6,12	8,16		10		12,2			15,3			20,4
140		6,59	8,79		11		13,2			16,5			22
150		7,07	9,42		12		14,1			17,7			23,6
160		7,54	10		13		15,1			18,8			25,1

Density 7,85 kg/dm<sup>3</sup>



### Flat Bars (cont.)

Widths [mm]	Thickness [mm]												
	5	6	8	9	10	11	12	13	14	15	16	18	20
Mass of 1m [kg]													
170		8,16	10,9		14		16,3			20,4			27,2
180		8,48	11,3		14		17			21,2			28,3
190		8,95	12		15		17,9			22,4			29,9
200		9,42	12,6		16		18,8			23,6			31,4

Density 7,85 kg/dm<sup>3</sup>

Dimensions not included in the table can be manufactured after prior arrangements with CMC Zawiercie S.A.

### Manufacturing Specifications

#### Length

- ❑ 6m with possible lengths up to 12m
- ❑ Other lengths according to PN-EN
- ❑ 10058 standard

#### Flat bars are manufactured in accordance with standards

- ❑ PN-EN 10058
- ❑ PN-84/H-93000
- ❑ PN-EN 10021
- ❑ DIN 1017 cz. 1

#### Certification

- ❑ PN-84/H-93000 (normal quality)
- ❑ PN-85/H-93001 (higher quality)
- ❑ PN-EN 10092-1 (for springs)
- ❑ PN-90/H-93219 (for springs)

#### Packing

- ❑ Bars are delivered in mass bundles about 2 Mt
- ❑ Approximately 1.5 Mg – 2,5 Mg

#### Flat bars are manufactured in accordance with standards

- ❑ PN-EN 10058
- ❑ PN-72/H93202
- ❑ DIN 1017 cz. 1

#### Status of Product

- ❑ As rolled



### Grades of Steel

1. Non-alloy structural steel	PN-EN 10025-2	S235JR, S275JR, S355JR, E295, E335, E360
1.1 Non-alloy structural steel	PN-88/H-84020	St3SY, St3S, St3SCuY, St4S, St4V, St3W, MSt5, St5, St6, MSt7, St7
2. Steel for springs for toughening	PN-EN 10089 PN-74/H-84032 DIN 17221	38Si7, 46Si7, 54SiCr6, 55Cr3, 56Si7, 51CrV4, 61SiCr7, 40S2, 50S2, 55S2, 60S2, 60S2A, 50HG, 50HF, 65G, 38Si7, 54SiCr6, 60SiCr7, 55Cr3, 50CrV4
3. Quenched and tempered unalloyed steel	PN-EN 10083 -1 PN-EN 10083 -2	C22E, C25E, C35E, C45E, C55E, C60E C22, C25, C30, C35, C40, C45, C50, C55, C60
3.1 Quenched and tempered unalloyed steel	PN-93/H-84019	25, 30, 35, 40, 45, 45G, 50, 50G, 55, 60G
4. Alloy constructional steel for toughening	PN-EN 10083-1	25CrMo4, 34Cr4, 34CrMo4, 37Cr4, 38Cr2, 41Cr4, 42CrMo4, 46Cr2, 51CrV4
4.1 Alloy steel for toughening and surface hardening	PN-89/H-84030/04	30H, 40H, 30HMA, 40HM
5. Case hardening steel	PN-EN 10084	C10E, C15E, 16MnCr5, 20MnCr4, 20MnCr5, 20MoCr3, 20MoCr4, 20NiCrMo2-2
5.1 Case hardening steel	DIN 17210 PN-89/H-84030/02 PN-93/H-84019	C10, C15 – carbon steel 17Cr3, 20Cr4, 16MnCr5, 20MnCr5, 20MoCr4 – alloy steel 16HG, 20HG, 20HNM, 22HNM 10, 15, 20, 15G, 20G
6. Steel for operation at elevated temperature service	PN-EN 10028-2 PN-75/H-84024	13CrMo4-5 15HM, 16M

**Specific chemical composition and properties to be agreed with customer, if required**  
**Manufacturing of non-standard quality depends on ordering min. 100 Mt**





### Plain Bar and Rebar from Straightened Wire Rod

Diameter	Parameters	Certifications	Dimensions and tolerances according to the following standards	Grades
Ø 6, 8, 10, 12mm, weight app. 1000 kg	Ø 6 weight app. 1000 kg, length 6m	According to the standards	PN-ISO-6935-2/Ak	B500SP, BST500WR, S235JR
Ø 6, 8, 10, 12mm, weight app. 1000 kg	Ø 8, 10, 12mm weight app. 2000 kg, length 12m	According to the standards	PN-ISO-6935-2/Ak	B500SP, BST500WR, S235JR

Specific parameters to be agreed with customer



**Ribbed Reinforcement Bars****Dimensions**

Nominal diameter d [mm]	Mass of 1m [kg]	Density
8	0,39	7,85 kg/dm <sup>3</sup>
10	0,62	7,85 kg/dm <sup>3</sup>
12	0,89	7,85 kg/dm <sup>3</sup>
14	1,21	7,85 kg/dm <sup>3</sup>
16	1,58	7,85 kg/dm <sup>3</sup>
18	2	7,85 kg/dm <sup>3</sup>
20	2,47	7,85 kg/dm <sup>3</sup>
22	2,98	7,85 kg/dm <sup>3</sup>
25	3,84	7,85 kg/dm <sup>3</sup>
28	4,83	7,85 kg/dm <sup>3</sup>
32	6,31	7,85 kg/dm <sup>3</sup>
40	9,86	7,85 kg/dm <sup>3</sup>
45	12,48	7,85 kg/dm <sup>3</sup>



### Manufacturing Specifications

#### Length

- 6m with possible lengths up to 12m
- Other lengths according to PN-EN
- 10058 standard

#### Packing

- Bars are delivered in approximate bundles 1,5Mg – 4,5Mg

#### Ribbed bars are manufactured in accordance with standards

- PN-H-93220: SS-ENV 10080
- PN-82/H-93215
- DIN 488
- BS 4449
- PN-ISO 6935-2
- PN-ISO 6935-2/Ak
- NEN 6008

#### Bars can be manufactured in accordance with other foreign standards

Grades of Steel	
PN-H-93220:2006	B500SP with EPSTAL mark
PN-ENV 10080	B500B
PN-82/H-93215	34GS, 18G2-b, St50B
PN-96/H-84023-6	34GS, 18G2-b, St50B
PN-ISO 6935-2	RB 500W, RB 400W-V, RB 500W-V
DIN 488	BSt500S; BSt500S-V
NEN 6008	FeB500 HWL
BS 4449	Grade 460
LNEC: E455-2002	A400NR5D
LNEC: E460-2002	A500NR5D

Specific chemical composition and properties to be agreed with customer, if required.

Manufacturing of non-standard quality depends on ordering min. 100 Mt



### Ribbed Wire Rod

Diameter	Coil Parameters	Grades
Ø 6 – 12 mm	Weight approximately 1000 kg Outside diameter approximately 1200 mm Inside diameter approximately 800 mm Height 770 – 940 mm (depending on wire rod size)	B500SP, RB500WR

Specific chemical composition and properties to be agreed with customer



### Round Plain Bars

Nominal Diameter d [mm]	Mass of 1m [kg]
12	0,88
13	1,04
14	1,21
15	1,39
16	1,58
18	2,00
20	2,47
22	2,98
24	3,55
25	3,85
26	4,17
27	4,49
28	4,83
30	5,55
32	6,31
33	6,71
34	7,13
35	7,55
36	7,99
37	8,44
38	8,9
40	9,9



### Round Plain Bars (cont.)

Nominal Diameter d [mm]	Mass of 1m [kg]
42	10,9
43	11,4
45	12,5
46	13
47	14
48	14
50	15
52	17
55	19
60	22
65	26
70	30,2
75	35
78	35
80	38
85	45

### Round Plain Bars (cont.)

#### Length

- 6m with possible lengths up to 18m

#### Bars are manufactured in accordance with standards

- PN-EN 10060
- PN-84/H-93000
- PN-85/H93001
- PN-EN 100221
- DIN 1013 cz. 1

#### Certification

- PN-84/H-93000 (normal quality)
- PN-85/H-93001 (higher quality)

#### Packing

- Bars are delivered in approximate bundles 1,5 Mg – 4,5 Mg

#### Dimensions and tolerances according to the following standards

- PN-EN 10060
- PN-75/H-9320-00
- PN-87/H-93200-02
- DIN 1013 cz. 1

#### Status of Product

- As rolled

Bars can be manufactured in accordance with other foreign standards

### Grades of Steel

1.0 Non-alloy structural steel	PN-EN 10025-2	S235JR, S275JR, S355JR, E295, E335, E360
1.1 Non-alloy structural steel	PN-88/H-84020	St3SY, St3S, St3SCuY, St4S, St4V, St3W, MSt5, St5, St6, MSt7, St7
2.0 Steel for concrete reinforcement	PN-89/H-84023/06	Stsx-b, St3S-b, St3SY-b, StOS-b
3.0 Quenched and tempered unalloyed steel	PN-EN 10083 -1 PN-EN 10083 -2	C22E, C25E, C35E, C45E, C55E, C60E C22, C25, C30, C35, C40, C45, C50, C55, C60
3.1 Quenched and tempered unalloyed steel	PN-93/H-84019	25, 30, 35, 40, 45, 45G, 50, 50G, 55, 60G
4.0 Steel for mining coil chains production	PN-92/H-93028	23GHNMA, 23G2NMHA
4.1 Steel for coil chains	PN-89/H-84023/08 DIN 17115	15Gj, 18G2AA, 23GHNMA, 25GHNMA, 23MnNiMoCr5-4, 27MnSi5
5.0 Alloy constructional steel for toughening	PN-EN 10083-1	25CrMo4, 34Cr4, 34CrMo4, 37Cr4, 38Cr2, 41Cr4, 42CrMo4, 46Cr2, 51CrV4
5.1 Alloy steel for toughening and surface hardening	PN-89/H-84030/04	30H, 40H, 30HMA, 40HM
6.0 Case hardening steels	PN-EN 10084	C10E, C15E, 16MnCr5, 20MnCr4, 20MnCr5, 20MoCr3, 20MoCr4, 20NiCrMo2-2
6.1 Case hardening steels	DIN 17210 PN-89/H-4030/02 PN-93/H-84019	C10, C15 – Carbon steel 17Cx3, 20Cr4, 16MnCr5, 20MoCr4 – alloy steel 16HG, 20HG, 20HNM, 22HNM 10, 15, 20, 15G, 20G
7.0 Steel for operation at elevated temperature service	PN-EN 10028-2 PN-75/H-84024	13CrMo4-5, 16Mo3 15HM, 16M

**Specific chemical composition and properties to be agreed with customer, if required**  
**Manufacturing of non-standard quality depends on ordering minimum 100 Mt**





### Round Plain Wire Rod

#### Manufacturing Specifications

Diameter	Certification	Coil Parameters	Dimensions and tolerances according to the following standards
<ul style="list-style-type: none"> <li>❑ <math>\varnothing</math> 5,5 – 25 mm</li> <li>❑ Above 11 mm for cold rolling</li> </ul>	<ul style="list-style-type: none"> <li>❑ PN-84/H93000 (normal quality)</li> <li>❑ PN-85/H93001 (higher quality)</li> <li>❑ PN-EN 10016-1 (wire rod for drawing)</li> <li>❑ PN-EN 10021</li> <li>❑ PN-EN 10221</li> </ul>	<ul style="list-style-type: none"> <li>❑ Weight app. 1000 kg</li> <li>❑ Outside diameter app. 1200 mm</li> <li>❑ Inside diameter, 800 mm</li> <li>❑ Height 770 – 940 mm (depending on wire rod size)</li> </ul>	<ul style="list-style-type: none"> <li>❑ PN-EN 10017</li> <li>❑ PN-75/H-93200/00</li> <li>❑ PN-87/H-93200/02</li> </ul>

Designation	Steel Quality	Standard	Notes
General Purpose Wire Rod	S235JR, S275JR, St3SY, St3S, St4S 18G2	PN-EN 10025-2 PN-88/H-84020 PN-86/H-84018	
Wire rod for building industry	S235Jr St0S-b, St3S-b	PN-EN 10025-2 PN-96/H-84023-6/A1	Wire rod for cold processing
Wire rod for welding electrode manufacturing	SpG1A	PN-88/M-69420	Si max 0,06%
Low-carbon drawing wire rod	C4D-C20D St1X 1006-1010	PN-EN 10016-2 PN-89/H-84023/04 ASTM A510M	With Si content max 0.1% for St1X Wire rod with boron content

Specific chemical composition and properties to be agreed with customer



### Quality Wire Rod

#### Destination:

- Non-alloy structural steel wire rod
- Non-alloy steel wire rod for drawing and/or cold rolling
- Wire rod for welding electrodes and wire
- Wire rod for cold heading and cold extrusion of steel without boron for quenching and tempering
- Wire rod for cold heading and cold extrusion of steel with boron for quenching and tempering
- Wire rod for cold heading and cold extrusion for steel not intended for heat treatment after cold working



### Square Bars

Bar dimension [mm]	Mas of 1m [kg]
10	0, 785
12	1, 13
14	1, 54

### Manufacturing Specifications

#### Length

- 6m with possible lengths up 18m

#### Status of Product

- As rolled

#### Bars are manufactured in accordance with standard

- PN-84/H-93000
- PN-85/H-93001
- PN-EN 10021
- PN-EN 10221

#### Packing

- Bars are delivered in approximate bundles 1,5Mg – 3,5Mg

#### Certification

- PN-75/H-93021
- PN-75/H-93022

#### Dimensions and tolerances according to the following standards

- PN-EN 10059

Bars can be manufactured in accordance with other foreign standards

### Grades of Steel

PN-EN 10025-2	S235JR, S355JO, S235JO, S355JR
PN-EN 10083-1	C22E, C35E, C45E
PN-EN 10083-2	C22, C35, C45

