CAST IRON

- TECHNICAL AND PHYSICAL PROPERTIES
- DIMENSIONAL TABLES AND WEIGHTS

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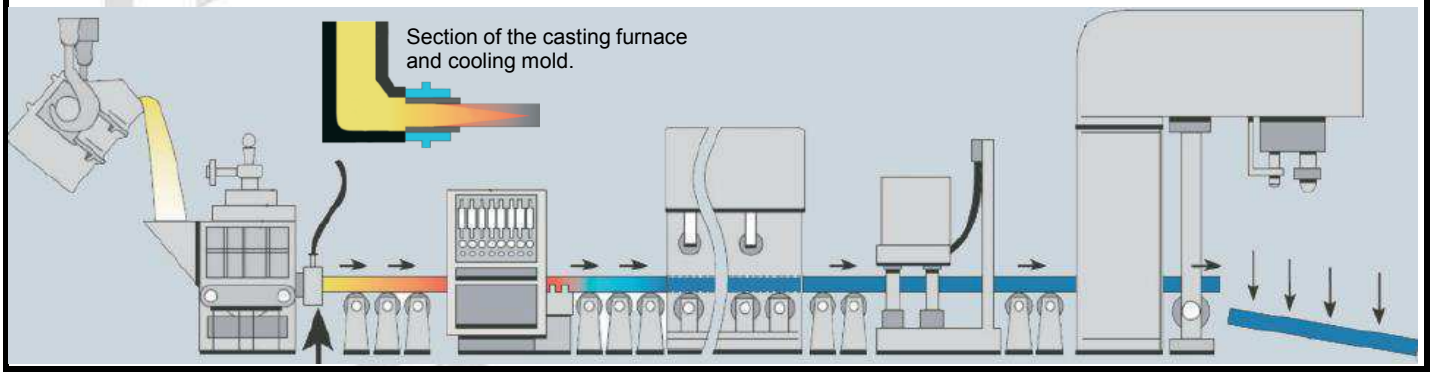
OPERATING PRINCIPLE OF THE PLANT FOR THE PRODUCTION OF CONTINUOUS CAST IRON



TECHNICAL PECULIARITIES OF THE CONTINUOUS CAST IRON

The production of the continuous casting is made by melting the metal in a melting furnace, with subsequent pouring of the liquid metal into the casting furnace (*see sketch above*). In the casting furnace, the exit point of the bars is situated horizontally and in the lowest part of the furnace, therefore during the production the bar receives a continuous supply of liquid metal, able to compensate the shrinkage caused by the cooling of the cast iron in an optimal way (*continuous feed*). Any other potential cause of defects, such as the presence of refractory material from the furnace or gas bubbles, are naturally pushed upwards and eliminated as slags due to their lower specific weight, avoiding the risk of inclusions or blowholes as it may happen in the castings produced by sand molding. Should gas or slags pass accidentally through the casting point, they would be in any case pushed upwards (*for the same above explained reasons*) and remain trapped in the external skin of the bar (see the machining allowance recommended) leaving the internal part perfectly intact and compact.
The cooling of the bar takes place in a forced manner, through a graphite mold which determines the section of the bar (see the section of the casting furnace and the cooling mold, above mentioned). Inside, this mold is in direct contact with the metal while outside it is inserted in a cavity with forced passage of coolant to facilitate the heat dissipation; this confers to the continuous cast iron bars a better compactness of the structure compared to the castings produced by sand molding, in fact, thanks to the forced cooling, the graphite in solution does not have " the time " required to form cores of large sizes. This " forced cooling " confers to the bar another of the typical characteristics of the continuous casting that is the " Double Structure ". Looking at the section of a bar in continuous casting, a thin outer ring (approximately between 5 and 20 mm., in proportion to the sizes of the bar) and an inner area with a different color will be clearly noticed; this difference is given by the external mainly ferritic structure and the internal mainly pearlitic structure which is formed as a result of the quick cooling of the outside and the " annealing " effect that the inside metal, still liquid, exerts on the outside already solidified metal.

Advantages of the continuous casting compared to the castings in sand molding

1 - Absence of irregular shrinkages due to poor feed.
2 - Absence of gas porosities or inclusions of sand or slag.
3 - Concentration of any eventual defect of blowholes or inclusions on the external area of the bar, normally removed during the machining.
4 - Better compactness of the structure due to the forced colling and the strong ferrostatic pressure of the liquid metal inside the furnace.
5 - Very short delivery times, as the material is normally ready in stock in standard sizes and grades.

CONTINUOUS CAST IRON BARS - (page 02)

Classification and General Technical Features of the Cast Iron.

The reference Standard which defines the grades and technical features of the Continuous Cast Iron is UNI EN 16482:2014

CAST IRON with LAMELLAR GRAPHITE and CAST IRON with SPHEROIDAL GRAPHITE

The cast iron is an iron-carbon alloy with a carbon content over 2,1%.

The carbon, in solution in a liquid state, solidifies in the form of graphite. According to the shape of the solidified graphite the cast iron is divided into two main groups: **Lamellar Cast Iron and Spheroidal Cast Iron**. These two main groups are then further divided into two subgroups, according to the shape in which the iron matrix solidifies (ferrite or pearlite), therefore there will be **Ferritic Cast Iron** or **Pearlitic Cast Iron** both Lamellar and Spheroidal.

Ferritic Cast Iron and Pearlitic Cast Iron

The **ferritic cast iron** is characterized by poor wear resistance by rubbing, lower hardness, higher dimensional stability in contact with the heat, more malleability (spheroidal cast iron) and better heat dissipation. The totally ferritic cast iron is obtained by heat treatment of solution of the pearlite (treatment of complete ferritization).

The **pearlitic cast iron** has better wear resistance, higher hardness, better rigidity and higher mechanical properties compared to the ferritic cast iron.

Cast Iron with Lamellar Graphite - GJL -

The primary characteristic of this material is given by the shape of the graphite which solidifies in the form of lamellae, generating a discontinuity of the ferrous part of the alloy. This provides an improvement of the "self-lubricating" effect of the graphite (the "seizure" effect is extremely reduced), the crushing into small chips during the machining (no need to "deburr" the machined parts) and the lack of deformability (fragility, lack of elongation before the breaking) of this material.

Cast Iron with Spheroidal Graphite - GJS -

The primary characteristic of this material is given by the shape of the graphite which solidifies in the form of spheroids, maintaining continuity in the ferrous part of the alloy. This provides a higher tensile strength compared to the lamellar cast iron, a significant elongation before the breaking but it remarkably limits the "self-lubricating" effect of the graphite and there is the formation of small chips during the machining, however there is no need to "deburr" the machined parts as in the case of steel.

Nomenclature of the cast iron according to UNI EN 16482: 2014

Lamellar Cast Iron: EN-GJL-XXXC	Ghise Sferoidali: EN-GJS-XXX-YYC
EN = European Norm	**EN** = European Norm
GJL = Cast Iron with Lamellar Graphite	**GJS** = Cast Iron with Spheroidal Graphite
XXX = Value of tensile strength Rm (*expressed in Mpa*)	**XXX** = Value of tensile strength Rm (*expressed in Mpa*)
C = Produced in Continuous Casting	**YY** = Percent Elongation
	C = Produced in Continuous Casting

Standard length of the bars

The standard length of the bars is normally 3.000 mm. with tolerance of -0 / + 150 mm.

The cutting of the bars is done by breaking therefore the surface of the cutting section on the raw bars will always be irregular. Over Ø 400 mm. and over 250 x 250 mm. the lengths may change and be 1'000, 1'880 and 3'000 mm., therefore it is recommended to check the effective length when placing the order. Special lengths can be produced on demand.

CONTINUOUS CAST IRON BARS - (page 03)

Machining Allowance, Dimensional Tolerance and Areas of Sample-Taking for test pieces

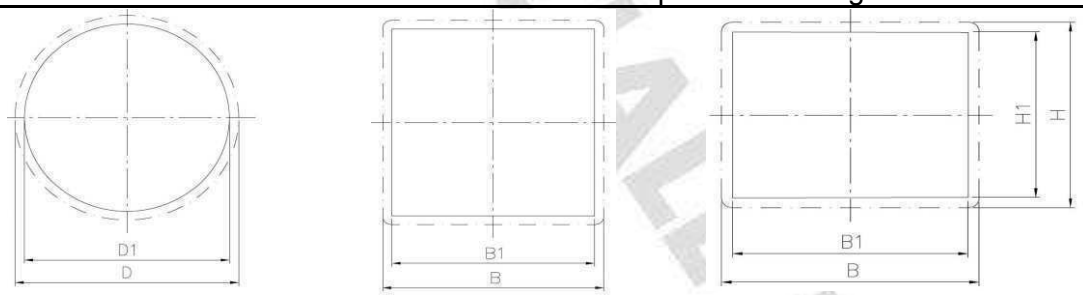
Minimum machining allowance

The machining allowance is the superficial layer which has to be removed from the bar produced in continuous casting, in order to eliminate eventual surface defects such as: the outer ring with different structure, exfoliations, eventual surface imperfections typical of the production in continuous casting like ovalizations or growths.

Diameter "D" or **Thickness "B"** [a] in mm.	**Minimum Machining Allowance to be removed, in mm.** [b]			
	Lamellar Cast Iron - GJL -		**Spheroidal - GJS -**	
	Round Bars	Rectangular Bars	Round Bars	Rectangular Bars
20 < (D o B) ≤ 50	2,0 mm.	2,5 mm.	3,0 mm.	3,5 mm.
50 < (D o B) ≤ 100	3,0 mm.	3,5 mm.	4,0 mm.	4,5 mm.
100 < (D o B) ≤ 200	4,0 mm.	4,5 mm.	5,0 mm.	5,5 mm.
200 < (D o B) ≤ 300	6,0 mm.	6,5 mm.	7,0 mm.	7,5 mm.
300 < (D o B) ≤ 400	7,0 mm.	7,5 mm.	8,0 mm.	8,5 mm.
400 < (D o B) ≤ 500	9,0 mm.	9,5 mm.	10,0 mm.	10,5 mm.
500 < (D o B) ≤ 650	11,0 mm.	11,5 mm.	12,0 mm.	12,5 mm.

[a] In the rectangular bars, the longest size "B" shall be considered as the thickness.

[b] The machining allowance has to be considered on the radius (1/2 of "D") for the round bars and on half of the thickness "B" for the square or rectangular bars.



Dimensional Tolerance

Dimension	Tolerance
(D)-(H)-(B)	mm.
≤ 100	+/-1
>100 ≤150	+/-1,5
>150 ≤300	+/-2,0
>300	+/-3,0

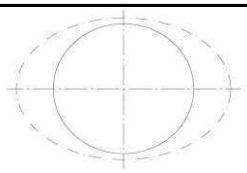
The tolerance change from the beginning to the end of the casting.

Maximum Ovalization on Round bars and maximum Growth on Rectangular bars

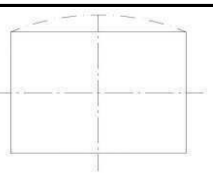
Diameter "D" mm. **Thickness "B"** mm.	**Bars with Round section**		**Bars with Rectangular section**	
	Lamellar Cast Iron	Spheroidal Cast Iron	Lamellar Cast Iron	Spheroidal Cast Iron
20 < (D o B) ≤ 50	*To be agreed before the order*		5,0 mm.	5,0 mm.
50 < (D o B) ≤ 100	1,0 mm.	2,0 mm.	7,0 mm.	7,0 mm.
100 < (D o B) ≤ 200	2,0 mm.	3,0 mm.	10,0 mm.	10,0 mm.
200 < (D o B) ≤ 300	4,0 mm.	4,0 mm.	12,0 mm.	12,0 mm.
300 < (D o B) ≤ 400	5,0 mm.	5,0 mm.	15,0 mm.	15,0 mm.
(D o B) > 400	*To be agreed before the order*		*To be agreed before the order*	

All dimensions mentioned in this table are expressed in millimeters.

The **ovalization** is defined as the maximum measurable diameter on the round section.

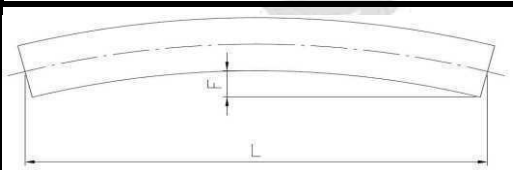


The **Growth** is defined as the maximum measurable thickness/width on the rectangular section.

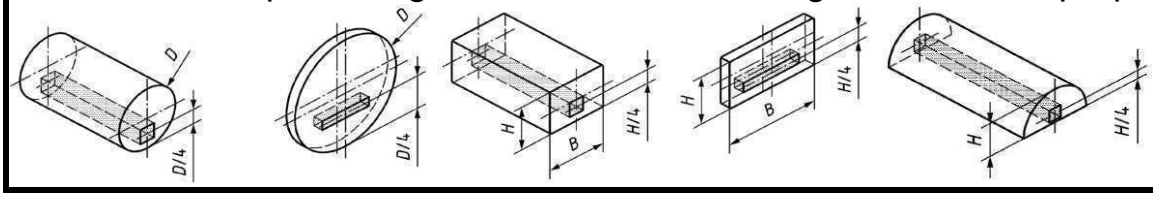


Tolerance on the straightness of the bars "F"

Length "L" (mm)	Unannealed	Annealed/ferritized
1'000	2 mm.	3 mm.
2'000	4 mm.	6 mm.
3'000	6 mm.	9 mm.



Sample-taking from the bar, for testing the technical properties



D = Diameter

B = Side

H = Height

CONTINUOUS CAST IRON BARS - (page 04)

Technical Properties of the Lamellar Cast Iron produced in continuous casting

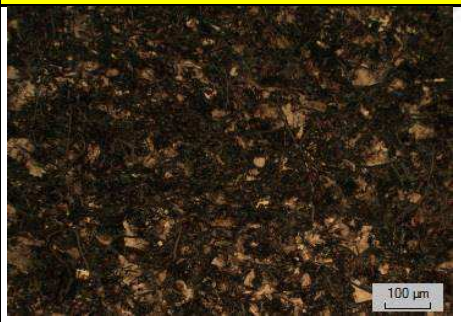
Material Coding		Diameter of the Bar *D* in mm.	Min. Tensile Strength *Rm* in Mpa	Structure of the matrix (for information only)	*Hardness Brinell *HB*	
Designation	Number				min.	max.
EN-GJL-150C	5.1102	20< *D* ≤ 50	110	Ferritic. Obtained by annealing heat treatment of EN-GJL-250C	110	180
		50< *D* ≤100	100		Denomination according to HB: EN-GJL-HB150	
Material produced by annealing of EN-GJL-250C		100< *D* ≤200	90			
		200< *D* ≤400	80			
EN-GJL-200C	5.1202	20< *D* ≤ 50	155	Ferritic Pearlitic	140	210
		50< *D* ≤100	140		Denomination according to HB: EN-GJL-HB175	
Material produced only on specific demand.		100< *D* ≤200	125			
		200< *D* ≤400	115			
EN-GJL-250C	5.1203	20< *D* ≤ 50	195	Pearlitic Ferritic	170	240
		50< *D* ≤100	180		Denomination according to HB: EN-GJL-HB200	
Identification color		100< *D* ≤200	165			
		200< *D* ≤400	155			
EN-GJL-300C	5.1308	20< *D* ≤ 50	220	Pearlitic prevalence	200	290
		50< *D* ≤100	205		Denomination according to HB: EN-GJL-HB250	
Identification color		100< *D* ≤200	195			
		200< *D* ≤400	185			
Glass Mold Iron **GMI**		All sizes	170	Ferritic, obtained by annealing heat treatment	130	210
Identification color		Special cast iron for the construction of molds for contact with melted glass.				

* The hardness of the cast iron decreases with the increase of the diameter or thickness of the bar. In the lamellar cast iron, if the HB hardness has prevalent importance compared to the tensile strength, when placing the order the cast iron shall be required according to the specific classification for the hardness **EN-GJL-HBxxx.**

Microstructure of the Lamellar cast iron

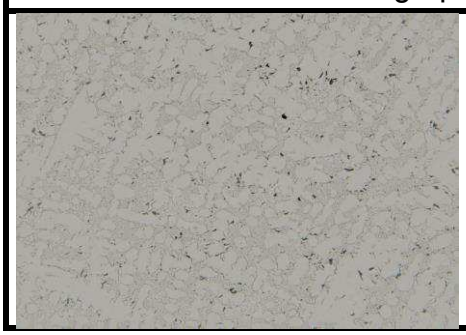
EN-GJL-150C

EN-GJL-250C



EN-GJL-300C

In the surface zone of the bar the graphite structure is Type "I", Configuration "D" (max.15% E & A).
In the centre of the bar the graphite structure is Type "I", Configuration "A" (max.20% B,D & E).



G.M.I. Cast Iron (Glass Mold Iron)

On the whole section of the bar the graphite structure is Type "I", Configuration "D" and Dimension "6-8", in order to ensure high compactness. This Cast Iron, purposely developed for the construction of molds for the glass industry, has an extremely fine graphite, which allows the achievement of an excellent surface finishing (mirror), very good workability, good thermal conductivity and improves the metal-spray coating.

CONTINUOUS CAST IRON BARS - (page 05) [Rev.01-09-'17]

Technical Properties of the Spheroidal Cast Iron produced in continuous casting

Material Coding		Diameter of the Bar	Yield point	Tensile Strength	A %	Structure of the	*Hardness Brinell *HB*	
Designation	Number	*D* in mm.	$R_{p0,2}$ - Mpa	R_m in Mpa	min	matrix	min.	max.
EN-GJS-350-22C-LT	5.3120	20< *D* ≤ 60	220	350	22	Ferritic Heat treatment	-	170
		60< *D* ≤120	210	330	18			
# produced only on demand #		120< *D* ≤400	200	320	15			
EN-GJS-350-22C-RT	5.3121	20< *D* ≤ 60	220	350	22	Ferritic Heat treatment	-	170
		60< *D* ≤120	220	330	18			
# produced only on demand #		120< *D* ≤400	210	320	15			
EN-GJS-350-22C	5.3122	20< *D* ≤ 60	220	350	22	Ferritic Heat treatment	-	170
		60< *D* ≤120	220	330	18			
# produced only on demand #		120< *D* ≤400	210	320	15			
EN-GJS-400-18C-LT	5.3123	20< *D* ≤ 60	240	400	18	Ferritic Heat treatment	120	180
		60< *D* ≤120	230	380	15			
# produced only on demand #		120< *D* ≤400	220	360	12			
EN-GJS-400-18C-RT	5.3124	20< *D* ≤ 60	250	400	18	Ferritic Heat treatment	120	180
		60< *D* ≤120	250	390	15			
# produced only on demand #		120< *D* ≤400	240	370	12			
EN-GJS-400-18C	5.3125	20< *D* ≤ 60	250	400	18	Ferritic Heat treatment	120	180
# produced on demand #		60< *D* ≤120	250	390	15			
Identification	**color**	120< *D* ≤400	240	370	12			
EN-GJS-400-15C	5.3126	20< *D* ≤ 60	250	400	15	Ferritic Heat treatment	120	180
#produced on demand #		60< *D* ≤120	250	390	14			
Identification	**color**	120< *D* ≤400	240	370	11			
EN-GJS-400-7C	5.3202	20< *D* ≤ 60	250	400	7	Ferritic/ Pearlitic	140	210
# produced on demand #		60< *D* ≤120	250	390	7			
Identification color		120< *D* ≤400	240	370	11			
EN-GJS-500-14C	5.3129	20< *D* ≤ 60	400	500	14	Ferritic	180	220
# produced on demand #		60< *D* ≤120	390	480	12			
Identification	**color**	120< *D* ≤400	360	470	10			
EN-GJS-500-7C	5.3203	20< *D* ≤ 60	320	500	7	Ferritic/ Pearlitic	150	240
•normally in stock		60< *D* ≤120	300	450	7			
Identification color		120< *D* ≤400	290	420	5			
EN-GJS-600-3C	5.3204	20< *D* ≤ 60	370	600	3	Pearlitic/ Ferritic	200	290
•normally in stock		60< *D* ≤120	360	600	2			
Identification color		120< *D* ≤400	340	550	1			
EN-GJS-700-2C	5.3303	20< *D* ≤ 60	420	700	2	Mainly Pearlitic	210	310
# produced on demand #		60< *D* ≤120	400	700	2			
Identification	**color**	120< *D* ≤400	380	650	1			

Austempered Ductile Iron - A.D.I. | *# produced only on demand #* | **Identification color**

Designation	Yield Point Rp0,2 - Mpa*	Tensile S. *Rm* -Mpa*	A %	Hardness HB min*	Hardness HB max*
Grade 1	550	860	10	269	321
Grade 2	700	1'050	7	302	363
Grade 3	860	1'200	4	341	444
Grade 4	1'070	1'400	1	388	477

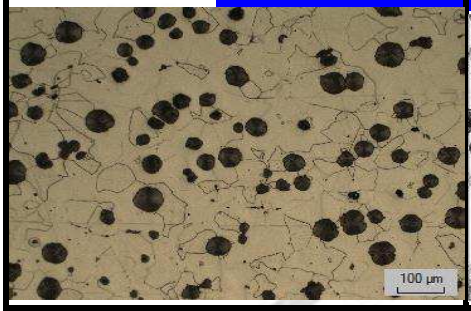
The referenced values have been obtained after the austempering process.

A.D.I. is an alloyed ductile iron with the addition of Cu, Ni and Mo. The heat treatment consists of full austenitizing followed by quenching at a temperature of 230-450°C. to obtain an ausferritic or bainitic structure which assures a good combination of toughness, ultimate tensile strength and wear resistance (*see the properties in the table*).

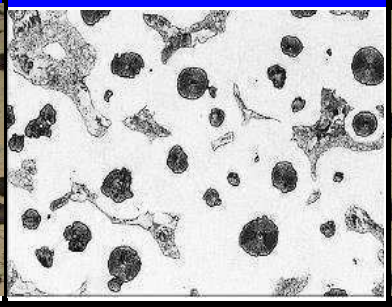
CONTINUOUS CAST IRON BARS - (page 06)

Microstructure of the Spheroidal Cast Iron produced in continuous casting

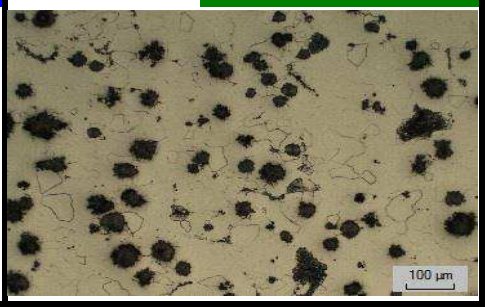
EN-GJS- 400-15C



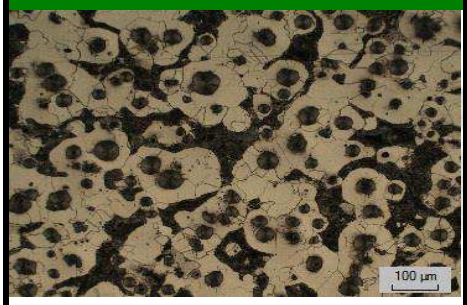
EN-GJS-400-7C



EN-GJS- 500-14C

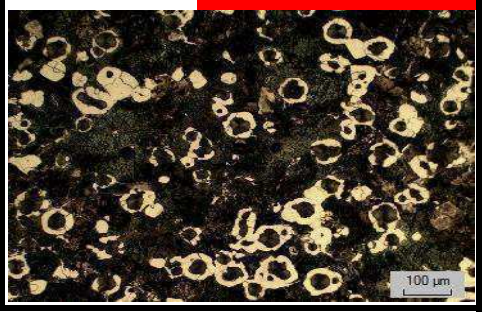


EN-GJS-500-7C



EN-GJS-600-3C

EN-GJS- 700-2C



Other Technical Properties of the Cast Iron with Spheroidal Graphite.

Properties	Unit of measure	Type of material			
		GJS-500-7C	GJS-600-3C	GJS-700-2C	GJS-500-14C
Cutting Resistance	Mpa	450	540	620	not referenced
Torsion Resistance	Mpa	450	540	620	not referenced
Modulus of Elasticity *E*	GN/m^2	169	174	176	170
Poisson Coefficient *v*	-	0,275	0,275	0,275	0,28 - 0,29
Fatigue Limit unnotched (Ø 10,6mm)	Mpa	224	248	280	225
Fatigue Limit notched (Ø 10,6mm)	Mpa	134	149	168	140
Compressive Strength	Mpa	800	870	1'000	not referenced
Heat Conductivity at 200°C.	W/ (K•m)	35,2	32,5	31,1	-
Specific Heat Capacity from 20° to 500°C.	J/ (Kg•K)	515	515	515	-
Coefficient of Linear Expansion from 20° to 400°C.	µm/ (m•K)	12,5	12,5	12,5	-
Resistivity	µΩ•m	0,51	0,53	0,54	not referenced

CAST IRON PRODUCED BY CHILL CASTING - (page 07)

Main characteristics and peculiarities:

To obtain a compactness in the structure of the cast iron even higher than the continuous casting, it is possible to realize bars cast in steel moulds (*shells*). With this method any type of cast iron can be produced.

The classification is the same as the cast iron produced in continuous casting, with the replacement of the letter " C " (continuous casting) with the letter " K " (chill casting) (i.e.: GJL-250K or GJS-500-7K). Normally this production method is used to manufacture blocks with big sizes, in order to take advantage of the distinctive features of this production system; with this casting technology, in fact, the cooling of the metal happens more quickly than the normal sand casting and in a more uniform way than the production in continuous casting, by giving a very homogeneous and compact structure to the cast iron, which allows to obtain even on large castings the following peculiarities:

- General improvement of the mechanical and technological properties, due to the better compactness of the structure.
- Improvement of the workability, thanks to the higher homogeneity of the casting.
- Particular predisposition towards surface treatments such as hardening and coatings (chrome plating, nickel plating, polishing etc ...) with achievement of the best possible performance in cast iron.
- Better compactness and homogeneity, which make these castings particularly suitable for applications in the hydraulic field, even for high pressures.

Indicatively, the feasible sizes are the following:

Round: from Ø 130 to Ø 660 mm. in length of 1'020 mm.
from Ø 680 to Ø 1'200 mm. in length of 550 mm. (*unless otherwise agreed*)

Tubes: max. outside Ø 1'170 mm. and min. internal Ø 250 mm. with max. length of 900 mm. and min. wall thickness of 40 mm.

Square: up to 500 x 500 x 1'020 mm.

Rectangles: up to 340 x 610 x 1'020 mm.

Blocks or Plates: up to 1'400 x 1'120 x 200 mm.

On demand it is also possible to manufacture different sizes than the above mentioned ones, therefore we recommend to consult our sales department to check the feasibility of the required dimensions.

Usually all bars or blocks are supplied pre-machined or milled on 4 sides, with a tolerance of +1 / +3 mm., and cut on the length (*on specific demand it is possible to have also the length as milled or turned*). In case of bushings, the tolerance on the inside Ø will be of -1 / -3 mm.

Delivery time and production:

Due to the wide range of sizes feasible with this method of production, normally only some sizes of round, square and rectangle are kept in stock, therefore we recommend to check the availability at every demand. In case the material is not ready in stock, the delivery times will be defined in the offer, as they can change according to the workload of the production facilities.

CAST IRON: DIMENSIONAL TABLES AND THEORETICAL WEIGHTS PER METER - (page 08)

Round Cast Iron

Ø mm.	Kg/m.	Ø mm.	Kg/m.
20	2,3	410	959
30	5	420	1007
35	7	430	1056
40	9	450	1156
45	12	500	1428
50	14	530	1604
55	17	550	1727
60	21	600	2056
65	24	650	2412
70	28		
75	32		
80	37		
85	41		
90	46		
95	52		
100	57		
105	63		
110	69		
115	76		
120	82		
125	89		
130	97		
135	104		
140	112		
145	120		
150	129		
160	146		
170	165		
180	185		
190	206		
200	228		
210	252		
220	276		
230	302		
240	329		
250	357		
260	401		
270	416		
280	448		
290	480		
300	514		
310	549		
320	585		
330	622		
340	660		
350	700		
360	740		
370	782		
380	825		
390	869		
400	914		

Square Cast Iron

≠ mm.	Kg/m.
30 x 30	7
40 x 40	12
45 x 45	15
50 x 50	18
55 x 55	22
60 x 60	26
65 x 65	31
70 x 70	36
75 x 75	41
80 x 80	47
85 x 85	53
90 x 90	60
95 x 95	66
100 x 100	73
110 x 110	88
120 x 120	105
130 x 130	123
140 x 140	143
150 x 150	164
160 x 160	186
170 x 170	210
180 x 180	236
190 x 190	262
200 x 200	291
210 x 210	321
220 x 220	352
230 x 230	385
240 x 240	419
250 x 250	454
260 x 260	492
280 x 280	570
300 x 300	654
330 x 330	792
360 x 360	942
470 x 470	1606
500 x 500	2199

Rectangular Cast Iron

≠ mm.	Kg/m.	≠ mm.	Kg/m.
40 x 20	6	150 x 90	98
40 x 25	7	150 x 100	109
50 x 30	11	160 x 60	70
50 x 40	15	160 x 80	93
60 x 30	13	160 x 100	116
60 x 40	19	170 x 140	173
70 x 30	15	180 x 60	79
70 x 40	20	180 x 90	118
70 x 50	26	180 x 100	131
70 x 60	31	200 x 100	145
80 x 30	18	205 x 60	89
80 x 40	23	205 x 85	127
80 x 50	29	210 x 50	76
80 x 60	35	210 x 130	199
90 x 30	20	210 x 160	244
90 x 40	26	220 x 170	272
90 x 50	33	230 x 30	50
90 x 60	39	245 x 165	294
90 x 70	46	250 x 190	345
100 x 30	22	300 x 150	327
100 x 40	29	320 x 50	116
100 x 50	36	320 x 60	140
100 x 60	44	320 x 100	233
100 x 70	51	387 x 311	875
100 x 80	58	400 x 50	145
110 x 40	32	420 x 80	244
110 x 50	40	420 x 100	305
110 x 60	48	420 x 120	366
110 x 70	56	457 x 317	207
110 x 90	72	520 x 100	378
120 x 40	35	520 x 120	453
120 x 50	44	520 x 480	1815
120 x 60	52	551 x 501	2007
120 x 70	61	558 x 355	1440
120 x 80	70	558 x 406	1647
120 x 90	79	560 x 515	2097
130 x 50	47	570 x 530	2196
130 x 60	57	609 x 260	1151
130 x 70	66	610 x 410	1818
130 x 80	76	730 x 95	504
130 x 100	95	780 x 180	1021
140 x 50	51		
140 x 60	61		
140 x 70	71		
140 x 100	102		
140 x 110	112		
150 x 30	33		

Cast Iron 1/2 Round

D. x ≠. mm.	Kg/m.
90 x 48	25
94 x 52,5	29
108 x 58	36
115 x 63	42

The above mentioned sections are the most common; it is of course understood that other sections may be available in stock. For more detailed information, please contact our sales department. Bigger sizes can be realized by chill casting.

Special cast irons, produced only on request, with minimum production batches.

Spheroidal Perlitic Cast Iron "WRI-100"

The spheroidal cast iron WRI-100 is an "out of standard", specifically studied and realized for the contruction of core boxes, plates and models to use on high production green molding machineries. It can also be used for the realization of stamps in general.
The WRI-100 is essentially a spheroidal cast iron of the type GJS.700-2C conveniently modified, in a way to make it interchangeable with the steel 40CrMnMo7 (AISI P20), for determined applications

Medium Chemical Analysis

C%		Si%		Mn%	P%	S%	Cu%	Ni%	Mo%	Mg%	
3,3	3,8	2,5	3,1	0,3 max	0,08 max	0,02 max	0,1 max	0,10 max	0,1 max	0,03	0,05

Microstructure: mostly perlitic matrix

The core presents a matrix with over 80% of perlite and some ferrite.
the carbides are less than 5% and well dispersed.
Graphite of Form I and II (>80%) with dimension 5 - 8.

General Mechanical Properties

Thickness: Kg./dm^3 7,2
Brinell Hardness: HB. 230 - 300
Shear Strenght: Mpa 620
Traction Strenght: Mpa 700min.
Torsional strenght: Mpa 620
Allungamento percentuale: da 2% a 5%
Compression Strenght: Mpa 1'000

Example of application.

Thermal Conductivity at 200°C: W/(K*m) 31,1
Linear Expansion Coefficient (da 20°C a 400°C.): µm/(m*K) 12,5
Modulus of elasticity *E* (traction and compression): GN/m^2 176
Rotating Fatigue Limit Unnotched (Ø 10,6mm.): Mpa 280
Rotating Fatigue Limit Notched (Ø 10,6mm.): Mpa 168

Main Technical Features of WRI-100:

Good firmness of the machine dsurface, thanks to the spheroidal graphite and the perlite.
Good wear resistance (superior to the P.20), thanks to the spheroidal cast iron features.
Good corrosion and thermal fatigue resistance, thanks to the GJS properties.
Great utensile machinability (if compared to P.20 steel), therefore lesser production costs.
No faults inside the material guarantee, since it is produced in continuous cast.
Opportunity of thermal quenching treatment with reaching hardnesses up to 55 - 60 HRC

Availble sections on request:

380 x 260 x 2'300mm.	500 x 100 x 2'000mm.	650 x 100 x 2'250mm.	650 x 200 x 2'250mm.
575 x 90 x 2'000mm.	610 x 410 x 2'250mm.	650 x 140 x 2'250mm.	Other sections to be defined

The informations reported on this table are to be considered of general nature.