



**FUNESPA**

FUNDICIONES  
ESPECIALES S.A.

# **SPECIAL CASTINGS FOR THE MINING AND CEMENT INDUSTRIES**





WHO WE ARE

# FUNESPA

FUNDICIONES ESPECIALES S.A.



FUNDICIONES ESPECIALES S.A.

*We are a Peruvian foundry, established in 1964, specialized in the manufacturing of steel, iron and bronze parts and components. We focus on meeting the needs of the mining, cement and other industrial sectors.*

*We offer timely, flexible, and customized solutions to our clients. Our approach follows a strict quality policy while meeting all agreed-upon specifications. We ensure our processes remain adaptable and provide continuous support through technical assistance. Above all, we dedicate our efforts to continuous improvement.*

*Our services range from pattern fabrication based on our customer's drawings to casting, heat treatment and machining. This allows us to maintain complete control over all processes and guarantee the full quality of our products.*

FUNESPA

# OUR MISSION

Our company's mission is based on the following principles and values:



**FUNESPA**

- **HONESTY, TRUST AND MUTUAL RESPECT**
- **EFFICIENCY AND RESPONSIBILITY**
- **DYNAMISM, PROFESSIONALISM AND IMPROVEMENT**
- **COMMITMENT, IDENTITY AND SENSE OF BELONGING**

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FUNESPA

# PRODUCTION LINE

- CARBON STEEL
- LOW AND MEDIUM ALLOY STEEL
- AUSTENITIC/MARTENSITIC STAINLESS STEEL
- ANTI-THERMAL - REFRACTORY STEEL
- MANGANESE STEEL
- GRAY CAST IRON
- DUCTIL IRON
- HIGH CHROMIUM ALLOYED IRONS
- BRONZE





OUR

# INFRASTRUCTURE

Our 2.96-acre foundry is located in the city of Lima, near the Callao port and major warehouse centers.

FOUNDRY SHOP





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# MACHINE SHOP

The machine shop is equipped with cutting-edge machinery, including machining centers, CNC lathes, large-capacity boring machines, parallel lathes, vertical lathes, milling machines, a radial drill, and various other precision tools.





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# MELTING & QC

- 2 INDUCTOTHERM™ INDUCTION FURNACES. POWER TRACK 0.40 TONS
- 2 INDUCTOTHERM™ INDUCTION FURNACES. POWER TRACK 1.20 TONS
- 2 INDUCTOTHERM™ INDUCTION FURNACES. VIP POWER DUAL TRACK 3.0 TONS
- 3 HEAT TREATMENT FURNACES.
- 1 CENTRIFUGAL CASTING MACHINE FOR BUSHING MANUFACTURING.
- NO-BAKE MOLDING AND SAND RECLAMATION SYSTEM.
- SPECTROMAXx™ SPECTROMETRY LABORATORY.
- FOUNDRY AMSCOPE™ MICROSCOPE.
- PORTABLE AND KING™ BENCH DUROMETERS.
- 3D SCANNER FOR REVERSE DESIGN, AMONG OTHER EQUIPMENT.



Upon request, we provide metallographic analysis, ultrasound testing, penetrating dye inspections, mechanical testing, chemical composition certificates, and certifications from leading quality assurance organizations.



## HEAT TREATMENT FURNACES

- 3 heat treatment furnaces: 1TN, 3TN & 5TN



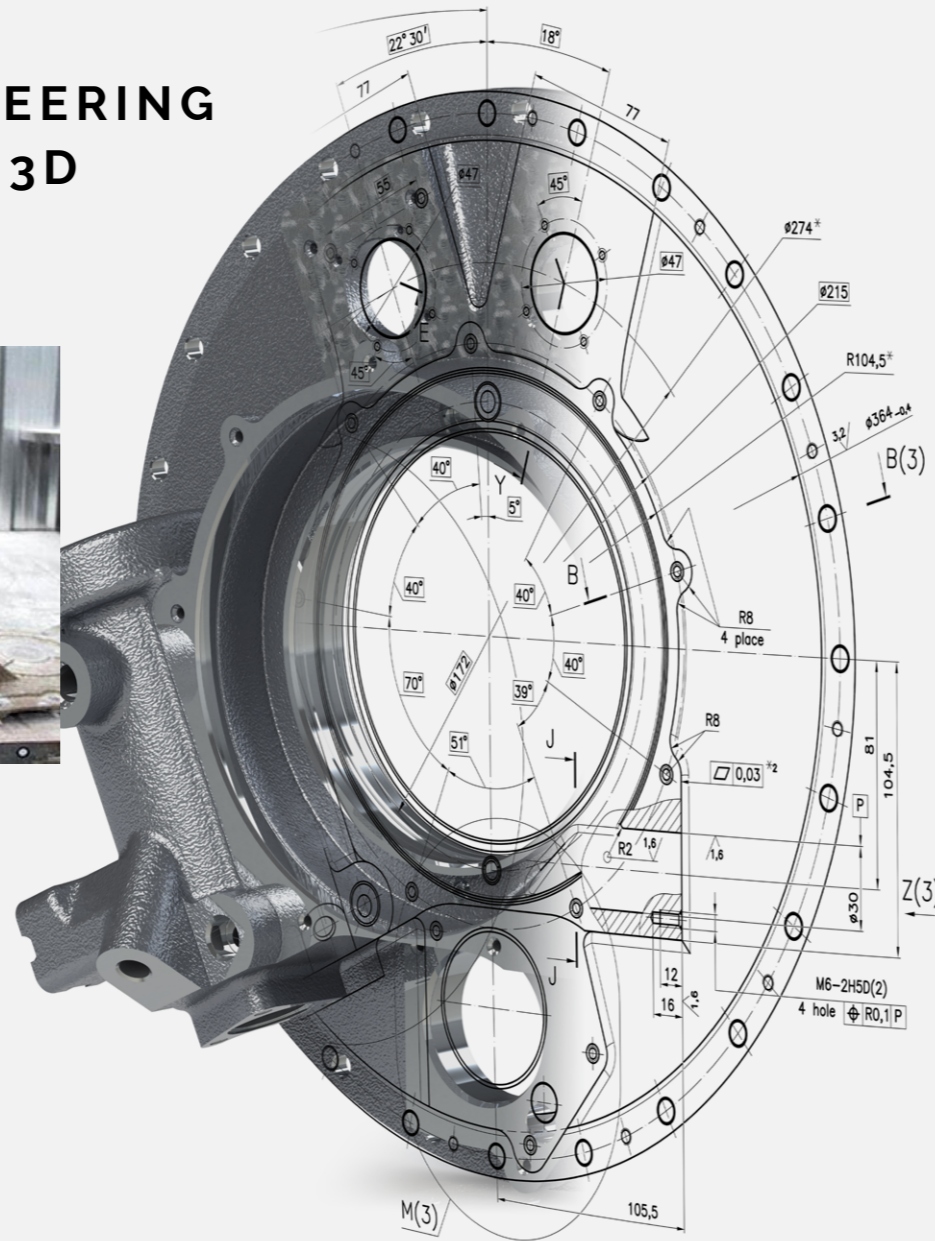
## LABORATORY





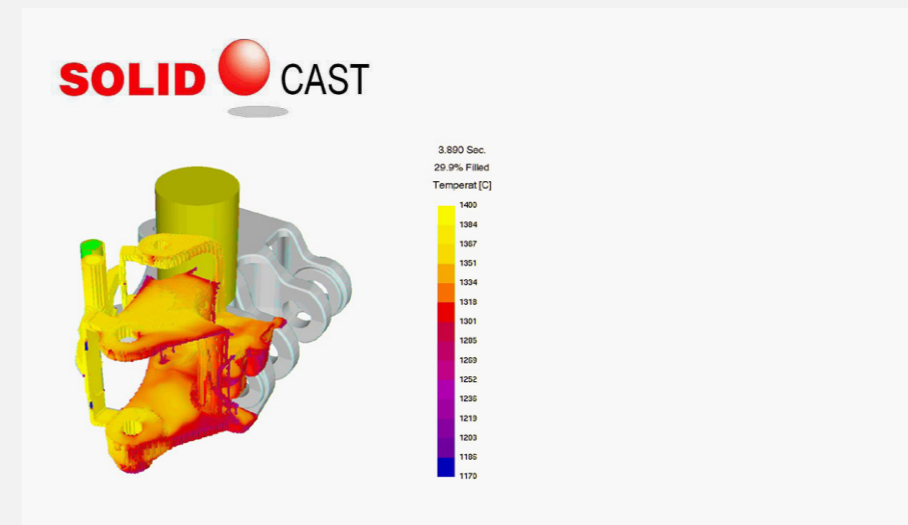


## REVERSE ENGINEERING WITH SCANNER 3D



## SOLIDIFICATION SOFTWARE

SOLID CAST program for casting  
solidification simulation





FUNESPA

# OUR PROCESS

- OUR FLEXIBLE PROCESS ENABLES US TO PRODUCE BOTH SMALL AND LARGE BATCHES WITH NO MINIMUM QUANTITY REQUIREMENTS
- THE ALLOYS ARE MANUFACTURED ACCORDING TO INTERNATIONAL STANDARDS.
- WE PRODUCE A DIVERSE RANGE OF CAST PARTS TO SERVE INDUSTRIES SUCH AS MINING, CEMENT, AGRO-INDUSTRIAL, CHEMICAL, PETROLEUM REFINING, FOOD, AMONG OTHERS.





**FUNESPA**

FUNDICIONES  
ESPECIALES S.A.

# **STEEL HIGH CHROMIUM IRON BRONZE**



## STEEL

- **LOW, MEDIUM AND HIGH CARBON STEEL**
- **STAINLESS STEEL**
- **MANGANESE STEEL**
- **CHROME-MOLYBDENUM**
- **HIGH CRNI REFRACTORY**

Specialized in the manufacture of machine spare parts, crusher elements, mill linings, furnace components, as well as wear and chemical corrosion resistant elements, among others.

## HIGH-CHROMIUM IRON

- **HIGH CHROMIUM IRON**
- **GRAY IRON**
- **DUCTILE IRON**

Regarding irons, we specialize in producing liners, pumps, and wear parts for the mining industry using high-chromium iron. This iron is particularly suited for applications requiring exceptional resistance to abrasion.

Moreover, we are also experts in manufacturing gray and ductile iron components for various applications, including pulleys, gear wheels, pump cases, and bearings.

## BRONZE

### ALLOYS:

- **LEAD BRONZE**
- **TIN BRONZE**
- **ALUMINIUM BRONZE**

Our expertise extends to producing lead bronze for diverse applications, such as shovel components, spare parts for conical crushers, wear plates, split bushings, bearings for sugar cane mills, and multiple components that endure significant friction and wear.

Additionally, we also have expertise in tin bronze producing transmission gears, mirrors for heat exchangers and other diverse components for the chemical industry. We also work with aluminum bronze, for applications such as impellers, pump components, and custom gears.



# CARBON STEEL



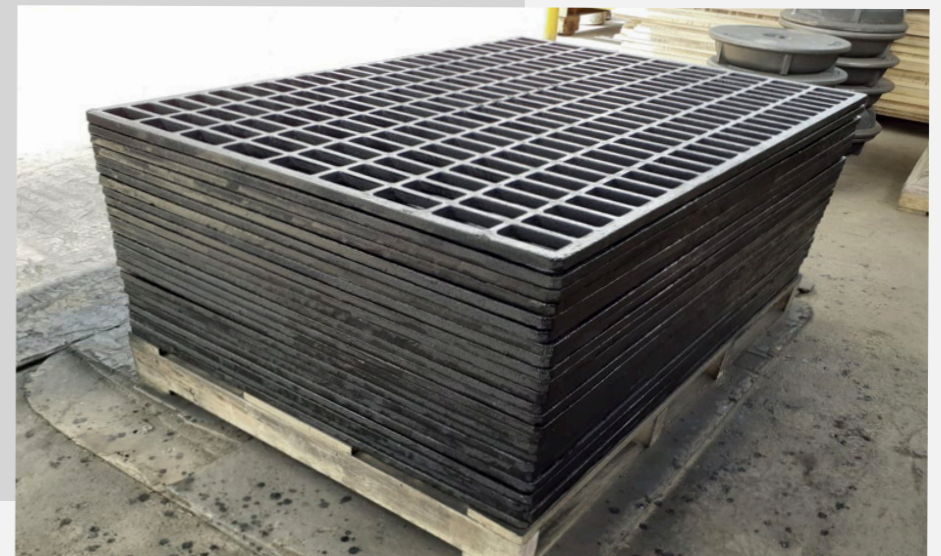
MINING CARS COUPLINGS



MINING CARS WHEELS



GEARS



GRATIN



# CARBON STEEL

MILL CLEANER PLATE



SUGAR MILL BLADE SUPPORT





# MANGANESE STEEL



BARS FOR GRINDING



HAMMERS



IMPACT BARS MILL



MANTLE LINER



# MANGANESE STEEL



PLATE APRON FEEDER



PLATE APRON FEEDER





# CHROME MOLY STEEL



JAW CRUSHER



HAMMERS



ROTATING AIRPORT PULVERIZER



SHELL LINING

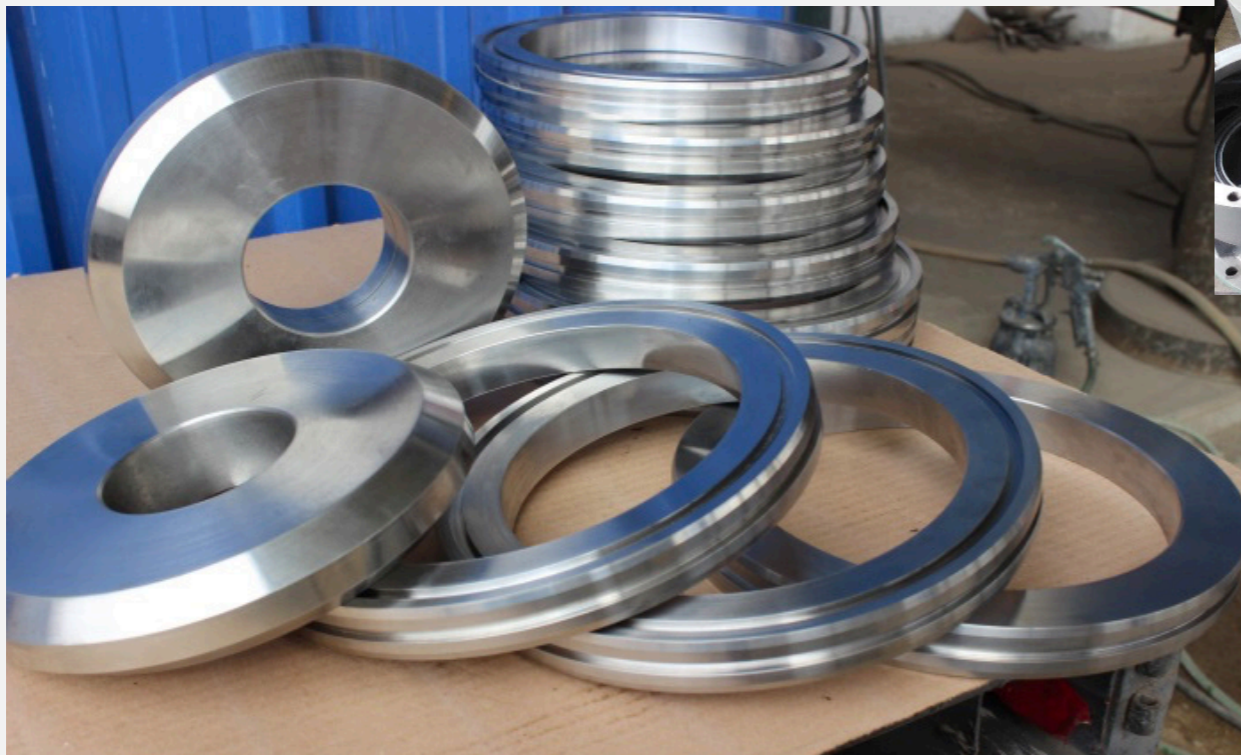


SHELL LINING



# STAINLESS STEEL

SHOOTCRETE PUMP VALVE SEAT



SUBMERSIBLE PUMP CASING



IMPELLER



# HIGH CrNi ALLOYS



IMMERSION DUCT PLATE, PREHEATER



IMPELLER





# HIGH CrNi ALLOYS

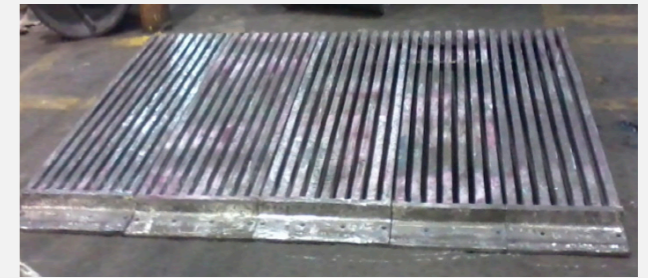


CONVERTER LIP



# HIGH CrNi ALLOYS

GRIZZLY



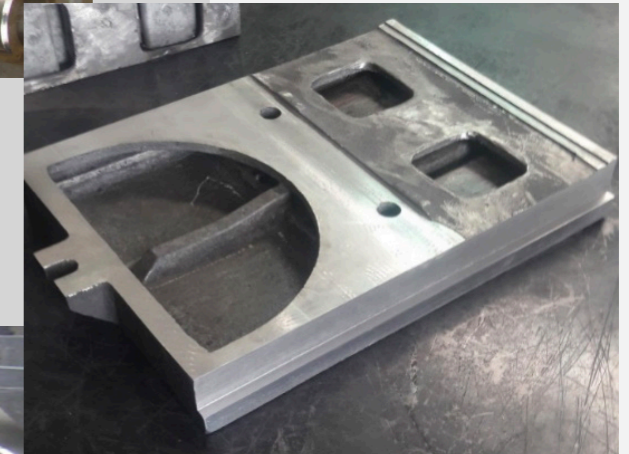
RABBLE ARM



KILN INLET RING SEGMENT



CLINKER COOLER PLATE



KILN INLET RING





# HIGH CHROMIUM IRONS



POLY -MET INSERT FOR LIFTER BARS



LINERS FOR PREHEATER



X-LOCK LINERS



# HIGH CHROMIUM IRONS



VALVE, SEAT FOR PUMP



SLURRY IMPELLER



# HIGH CHROMIUM IRONS

PUMP SHELL



PUMP PARTS

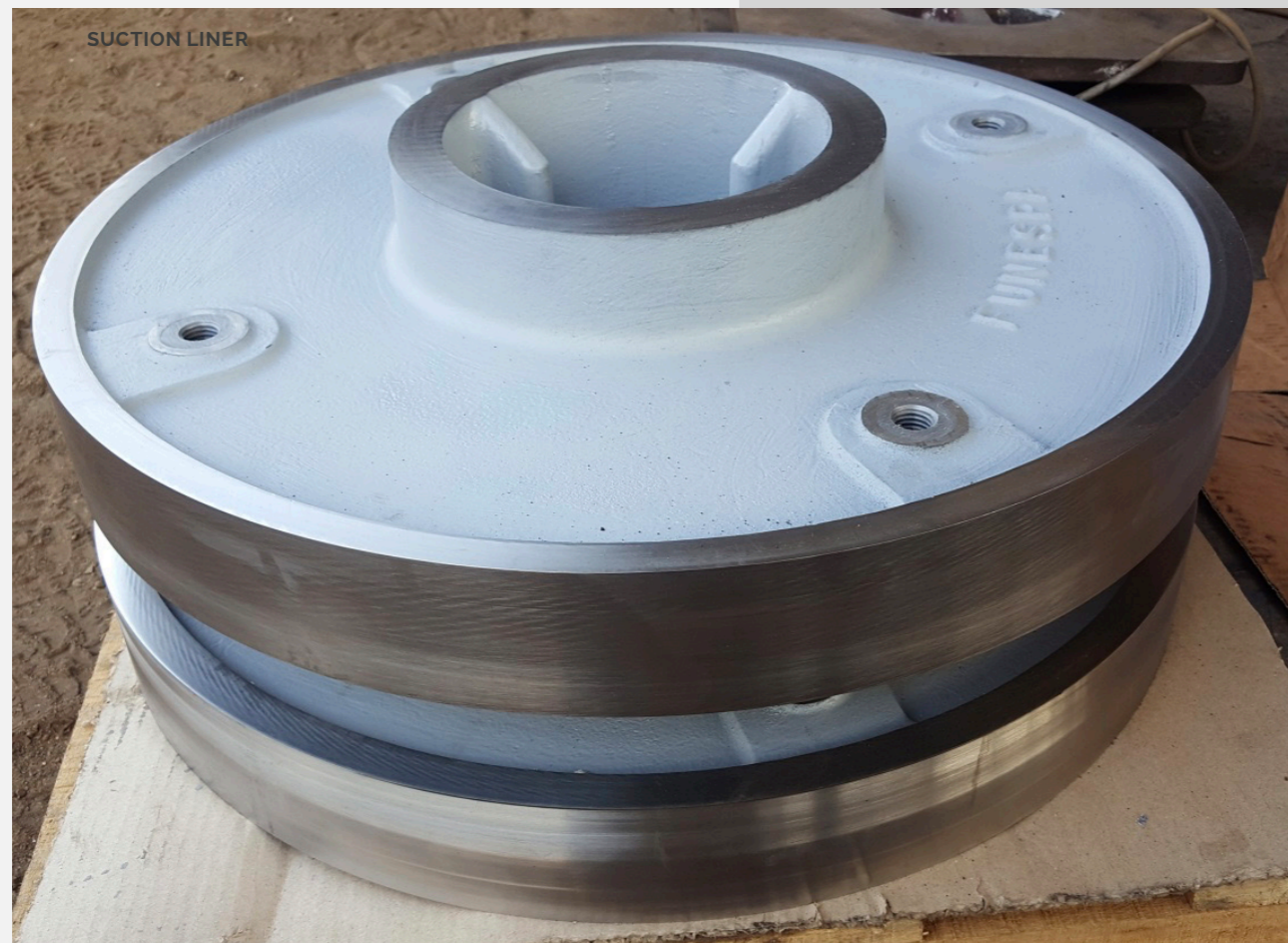


PUMP SHELL





# HIGH CHROMIUM IRONS





# DUCTIL IRON

SLURRY PUMP



COVER



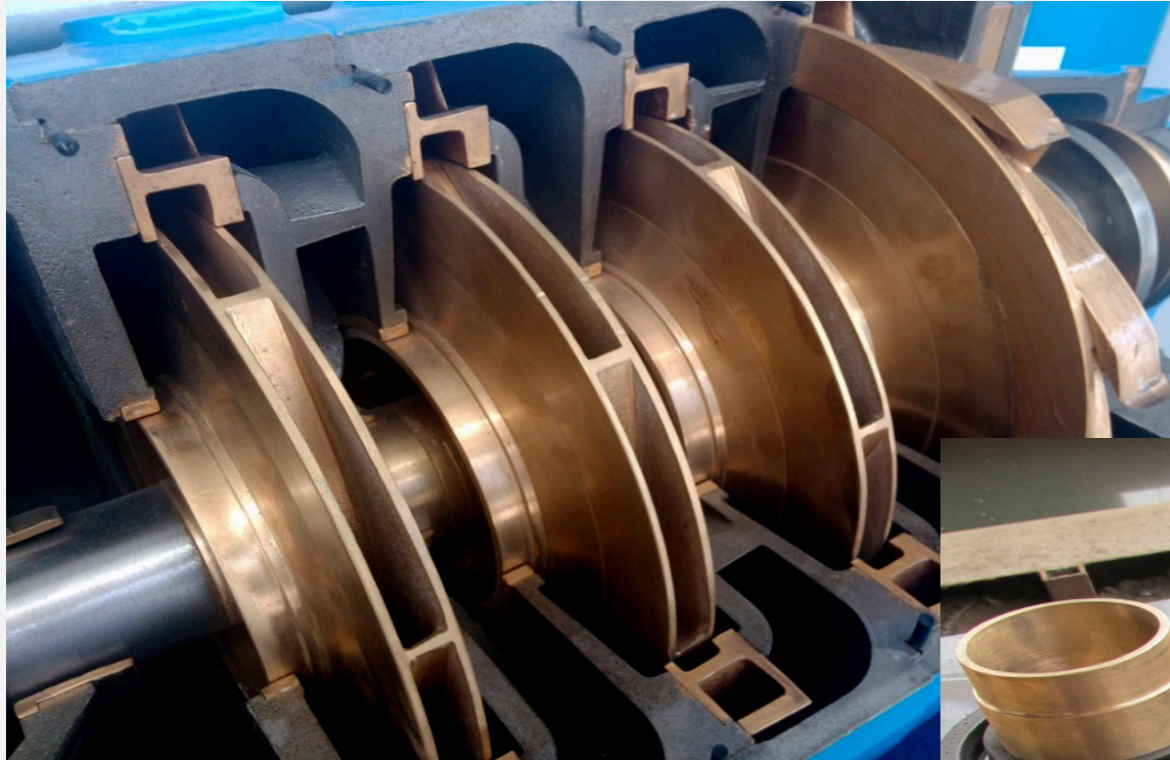
2T MOLD FOR ZINC INGOT



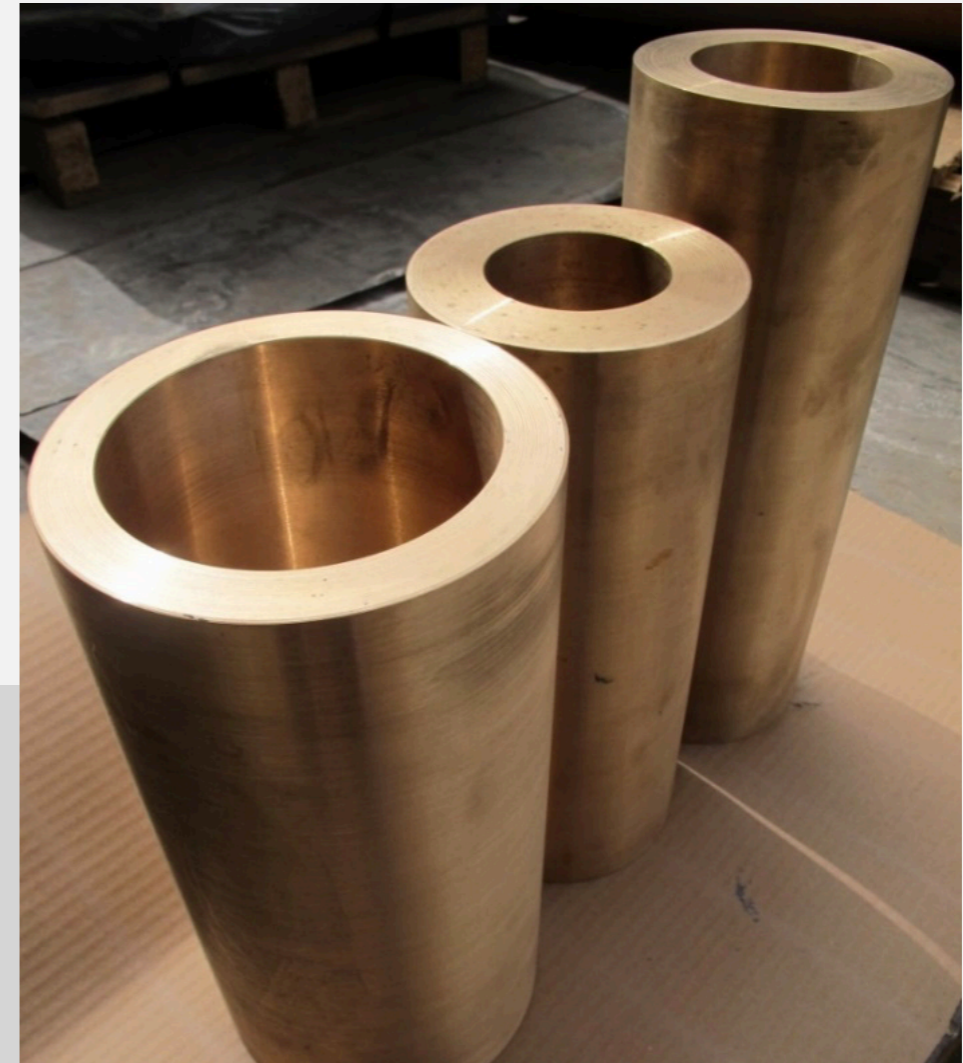


# BRONZE

CLOSED IMPELLERS



BUSHINGS



CHECK VALVE



# OUR CUSTOMERS





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# TECHNICAL SPECIFICATIONS

FUNDICIONES ESPECIALES S.A.

TECHNICAL SPECIFICATIONS - FUNDICIONES ESPECIALES																			
ALLOY	FUNESPA	DATA SHEET	STANDARD ASTM	CHEMICAL COMPOSITION									MECHANICAL PROPERTIES				APLICATIONS		
				% C	% Si	% Mn	% Cu	% Cr	% Ni	% Mo	% S	% P	Al	TS: KPSI(Mpa)	YP: kps(Mpa)	ELONG		HARDNESS HBN	
Gray Iron	FF20	4820	A 48 class 20	3.4 3.7	2.4 2.6	0.2 0.6						0.12 max	0.2 max		20(138)	---	---	100-170	Pulleys, housings, benches, brake drums, shoes, etc.
	FF40	4840	A 48 class 40	3.1 3.3	1.8 2.0	0.7 0.9	0.8 1.0	0.4 max	---	---		0.12 max	0.2 max		40(276)	---	---	210-280	
	FF50	4850	A 48 class 50	2.9 3.1	1.8 2.0	0.7 0.9	1.2 1.5	0.5 max	---	0.5 max		0.12 max	0.2 max		50(345)	----	---	280-320	
Ductile Iron	FN60	4660	A 536(60-40-18)	3.5 3.8	2.9 3.2	0.4 max	---	0.1 max	---	---		0.03 max	0.03 max		60(413.4)	40(275.6)	18	170MAX	Ingot molds, pipes, mailbox covers, boxes, impellers, impeller cores, etc.
	FN65	4665	A 536(65-45-12)	3.4 3.7	2.5 2.9	0.6 max	---	0.1 max	---	---		0.03 max	0.03 max		65(448)	45(310)	12	197-229	
	FN100	46100	A 536(100-70-03)	3.6 3.7	2.6 2.8	0.7 max	1.4 1.6	0.1 max	---	---		0.03 max	0.03 max		100(689)	70(482.3)	3	285-341	
Nickel White Cast Iron	FK11	4111	A 532(IA)	3.0 3.6	0.8 max	1.5 max	---	1.4 4.0	3.3 3.6	1.0 max		0.1 max	0.1 max		---	---	---	550-600	Impellers, carrier worms, casings, mill balls, etc.
	FK12	4212	A 532(IB)	2.4 3.0	0.8 max	1.5 max	---	1.4 4.0	3.3 3.6	1.0 max		0.1 max	0.1 max		---	---	---	550-600	
Chrome White Cast Iron	FK22	4222	A 532(IIIB)	2.5 3.3	1.5 max	1.5 max	1.5 max	14 16	2.5 max	3 max		0.1 max	0.1 max		---	---	---	600-680	Wear liners, impellers, housings, valves, wear rings, etc.
	FK31	4231	A 532(IIIA)	2.5 3.3	1.5 max	1.5 max	1.5 max	23 25	2.5 max	3 max		0.1 max	0.1 max		---	---	---	650-700	
	FK24	4224	A 532(IID)	2.5 3.1	1.0 2.2	1.3 max	1.5 max	18 23	2.5 max	3 max		0.1 max	0.1 max		---	---	---		
Carbon Steel	AC 20	1020	A 915 (SC1020)	0.18 0.23	0.3 0.6	0.4 0.6	0.3 max	0.4 max	0.3 max	0.2 max		0.04 max	0.04 max	0.08 max	60(413.4)	30(206.7)	22	140-187	Jaws, hooked tubes, rail car accessories, pinions, support boxes, blades, etc.
	AC 45	1045	A 915 (SC1045)	0.43 0.50	0.3 0.6	0.5 0.7	0.3 max	0.4 max	0.3 max	0.2 max		0.04 max	0.04 max	0.08 max	80(551.2)	50(344.5)	18	175-225	
	AC 23	1023	A 216 GRWCB	0.25 0.30	0.5 max	1.1 1.2	0.3 max	0.4 max	0.3 max	0.2 max		0.04 max	0.04 max	0.08 max	70-95(482.3-624.6)	36(248)	22		
			UNI X37 CrmOv5	0.33 0.41	0.8 1.2	0.2 0.5	---	4.8 5.5	---	1.1 1.5		0.04 max	0.04 max	0.08 max					
			AISI H10	0.28 0.35	0.3 0.5	0.3 0.4	---	2.7 3.2	---	2.5 3.0		0.04 max	0.04 max	0.08 max					
Low Alloy Steel	AC 32	1032	A 148 ( 80-50 )	0.25 0.35	0.3 0.6	1.2 1.6	0.15 max	0.4 max	0.1 max	0.1 max		0.04 max	0.04 max	0.08 max	80(551.2)	50(344.5)	15	179-217	Support elements.
			SAE 3215	0.15 max	0.3 0.6	0.4 0.6	0.15 max	1.4 1.6	1.4 1.6	0.1 max		0.04 max	0.04 max	0.08 max	105(723.4)	75(516.8)	8	180-230	
	ACL 14	1414	A 915 (SC4140)	0.38 0.43	0.3 0.6	0.6 0.9	---	0.7 0.9	1.6 1.8	0.2 0.3		0.04 max	0.04 max	0.08 max	112(771.7)	85(585.7)	8	280 - 320	
			A 915 (SC8620)	0.18 0.23	0.3 0.6	0.6 0.9	---	0.4 0.6	0.4 0.7	0.2 0.3		0.04 max	0.04 max	0.08 max					



FUNESPA

# TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS - FUNDICIONES ESPECIALES																		
ALLOY	FUNESPA	DATA SHEET	STANDARD ASTM	CHEMICAL COMPOSITION										MECHANICAL PROPERTIES				APLICACIONES
				% C	% Si	% Mn	% Cu	% Cr	% Ni	% Mo	% S	% P	Al	TS: KPSI(Mpa)	YP: kps(Mpa)	ELONG	HARDNESS HBN	
Chrome Moly Steel	ACL 13	1413	A487 8Q	0.25 0.30	1.4 1.8	0.5 0.9	0.20 max	1.8 2.2	0.80 max	0.50 max	0.04 max	0.04 max	0.08 max	170(1171.3)	120(826.8)	---	450-555	High mechanical resistance steels, are used to make hammers, chute liners, intermediate diaphragm, impact resistance elements, harrows, excavator tips, etc.
	ACL 21	1481	A 148(105-85)	0.6 1.0	0.4 0.6	0.7 1.0	---	0.5 1.0	---	0.50 max	0.04 max	0.04 max	0.08 max	105(723.5)	85(585.7)	17	280-320	
	ACL 24	1484	A 148 (140-120)	0.50 0.60	0.4 0.6	0.7 1.0	0.30 max	2.0 2.3	0.30 max	0.2 0.3	0.04 max	0.04 max	0.08 max	140(964.9)	120(826.8)		320-390	
	ACL 26	1486	A 148 (180-160)	0.80 0.90	0.4 0.6	0.7 1.0	0.30 max	2.3 2.6	0.30 max	0.2 0.4	0.04 max	0.04 max	0.08 max	180(1240.2)			390-470	
	ACH 1	1312	X155CrVMo12.1	1.5 2.0	0.4 0.6	0.7 1.0	0.30 max	11 12	0.50 max	0.2 0.8	0.04 max	0.04 max	0.08 max					
	ACL 23	1483	A -148(130-115)	0.20 0.25	0.4 0.6	0.7 1.0	0.15 0.25	0.4 0.6	0.4 0.6	0.4 0.5	0.04 max	0.04 max	0.08 max	130(895.7)	115(729.4)	11	250-300	
ACL 27	1487	A -148(115-95)	0.18 0.23	0.4 0.6	0.7 1.0	0.15 0.30	0.4 0.6	0.4 0.6	0.4 0.6	0.04 max	0.04 max	0.08 max						
High Temperature Resistant Steel	AIT 2	3512	A 297 (HC)	0.1 0.5	1.5 max	1.5 max	---	26 28	4 max	0.5 max	0.04 max	0.04 max		55(379.0)	---	---	180-229	Steels that maintain their mechanical properties at high temperatures, are used at cooling plates, ducts, nose ring segment, burners, etc.
	AIT 3	3513	A 297 (HD)	0.1 0.5	1.5 max	1.5 max	---	26 28	4 6	0.5 max	0.04 max	0.04 max		75(516.8)	35(241.2)	8	180-229	
	AIT 6	3516	A 297 (HH)	0.1 0.5	1.5 max	1.5 max	---	24 25	11.0 12.5	0.5 max	0.04 max	0.04 max		75(516.8)	35(241.2)	10	150-210	
	AIT 8	3520	A 297 (HK)	0.1 0.5	1.5 max	1.5 max	---	24 25	18 20	0.5 max	0.04 max	0.04 max		65(447.9)	35(241.2)	10	150-210	
Stainless Steel	AIC 1	3304	A-743-CF20	0.8 max	1.5 max	1.5 max	---	18 20	8 10	0.5 max	0.04 max	0.04 max		70(482.3)	30(206.7)	30	130-170	Impellers, casings, pipes, impellers, tips, needles, bushings, pumps, valves, etc.
	AIC 2	3316	A-743-CG-8M	0.8 max	1.5 max	1.5 max	---	18 20	8 11	2.0 2.5	0.04 max	0.04 max		75(516.8)	35(241.2)	25	130-180	
	AIA 10	3445	A-743-CA-6NM	0.8 max	1.5 max	0.4 0.8	---	11.5 13.5	3.5 4	0.6 0.8	0.04 max	0.04 max		409(751)	79(544.3)	15	230-300	
Manganese Steel	AM 10	1210	A 128(A)	1.10 1.25	0.4 0.7	11 12	---	1 max	---	---	0.04 max	0.04 max		105(712.5)		30	180-200	Impact resistant elements, bowl, mantle, jaws, hammers, screens, liners, etc.
	AM 30	1230	A 128(C)	1.10 1.25	0.4 0.7	11 14	---	1.5 2.0	---	---	0.04 max	0.04 max		115(729.4)		30	179-240	
	AM 51	1251	A 128(E-1)	0.8 1.3	0.4 0.7	11 14	---	1 max	---	0.9 1.2	0.04 max	0.04 max		101(695.9)		30	179-240	
Bronzes	CODE	DATA SHEET	STANDARD SAE	CU	SN	PB	ZN	NI	FE	AL			MECHANICAL PROPERTIES				APLICACIONES	
	BP 937	8937	SAE 64	80	10.00	10		0.7 MAX					25-35	12-18	8	55 - 70	Lubricant, pressures and high speed	
	BP 932	8932	SAE 66	85	5.00	9	1.00	0.5 MAX					25-32	12-16	8	55-65	Antifriction	
	BA 952	8952	SAE 68	88					3	9			65-80	25-27	20	110-140	Hard bronze	



**FUNESPA**

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