
FERESPE
+ WE CAST STRONG CONNECTIONS +

INDEX

Company

FERESPE, founded in 1981, focuses on the production of technical parts for high performance applications, using the following alloys:

– Duplex, super duplex and super austenitic stainless steel
– Medium and low alloyed steel
– High alloyed cast iron

Exports about 90% of its production to several different industrial sectors and positions itself in a small and medium series niche market.

Key Success Factors

Social Responsibility
Employees, Customers and Environment

*8 - 9 weeks after order

FERESPE
AT A GLANCE

Certificates & Qualifications

- **DNV GL**
(ISO 9001:2015)
- **DB**
(Railway Industry)
- **TUV NORD**
(EN 15085-2)
- **DNV GL**
(Steel Castings)
- **TUV NORD**
(PED 2014/68/EU and AD-MERKBLATT W0 / TRD 100)
- **NORSOK Code M-650 Rev. 4**
(Duplex and Super Dupex SS)
- **Areva**
(KTA 1401 and ASME NCA 3800)
- **Bureau Veritas**
(Marine & Offshore Division)
- **Lloyds Register**
(Austenitic SS)
- **ABS**
(Marine)

Technical Parts
High performance applications

Materials

Super Duplex Stainless Steel
Duplex Stainless Steel
Austenitic and Super Austenitic Stainless Steel
Martensitic Stainless Steel
Heat Resistant Steel
Wear Resistant Steel
Wear Resistant Cast Iron

Production Range

Max. Dimensions Mechanical Moulding
1.300 x 1.000 x 800 mm
Max. Dimensions Hand Moulding
1.300 x 1.075 x 1.100 mm
650 KG Maximum Capacity /Piece
SURFACE TREATMENT
MACHINING

WE CAST STRONG CONNECTIONS

Producing components for Pumps and Valves with application in:

- Energy, Oil & Gas
- Refining & Petrochemicals
- Chemical
- Pulp & Paper
- Marine
- Mining
- LNG & Cryogenics
- Water & Wastewater
- Nuclear Power

And producing as well components for:

- Railways such as Bogies, Couplers and Car Bodies
- Equipment to the Petrochemical Industry
- Agricultural Machinery
- Food Processing Equipment
- Earth Movement Machinery
- Dredger Vessels
- Concrete and Cement Industries

FERESPE positioned itself in a niche market that is characterized by small and medium series, where delivery times required are short, the quality standards are extremely high, and respect for the environment is a constant focus.

FERESPE strategically chose to place its products in the foreign market (exports 90%) through commercial business relations with Netherlands, France, Austria, Belgium, Germany, UK, Denmark, Sweden, Switzerland, Italy, Norway, Spain and USA.

FERESPE produces Stainless Steel and Steel Casted components for Pump Casings and Valves for over 20 years.

FERESPE Markets

Energy,
Oil & Gas

LNG &
Cryogenics

Water &
Wastewater

Refining &
Petrochemicals

Chemical

Nuclear
Power

Railway

Marine &
Shipyard

Pulp &
Paper

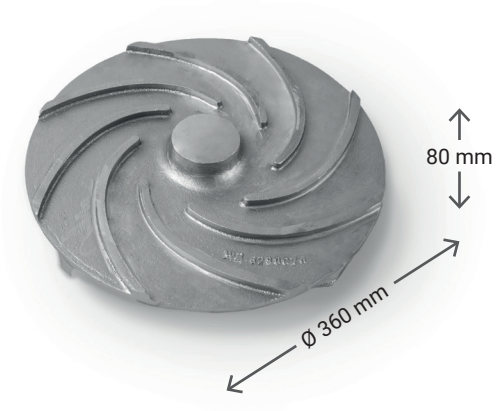
Mining

FERESPE Parts

Some examples:

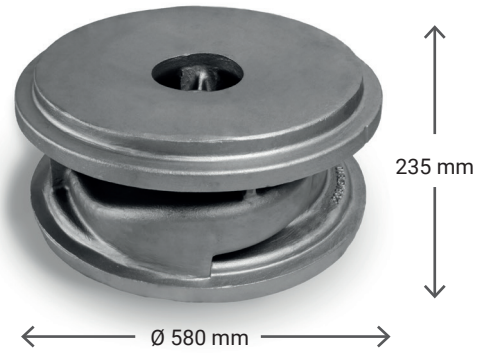
Open Rotor

Material: *Duplex Stainless Steel*
Supply Finish: *Casted*
Weight: *10,2kg*



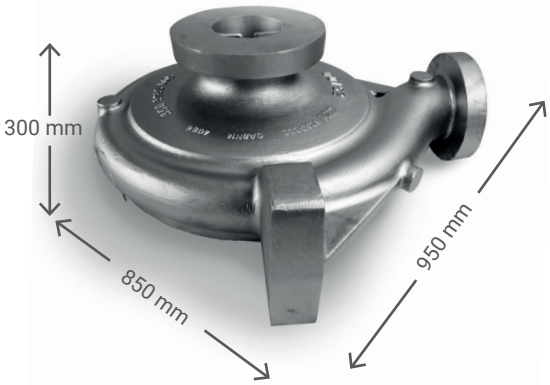
Stage Casing

Material: *Medium Alloyed Steel*
Supply Finish: *Casted*
Weight: *160kg*



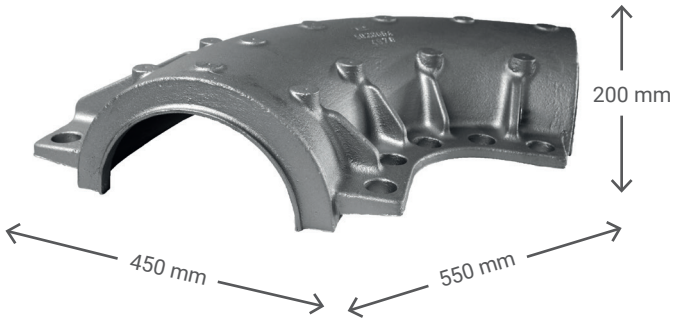
Pumpcasing Double Channel

Material: *Martensitic Stainless Steel*
Supply Finish: *Casted*
Weight: *350kg*



Elbow 8"

Material: *Low Temperature Alloyed Steel*
Supply Finish: *Casted*
Weight: *47kg*

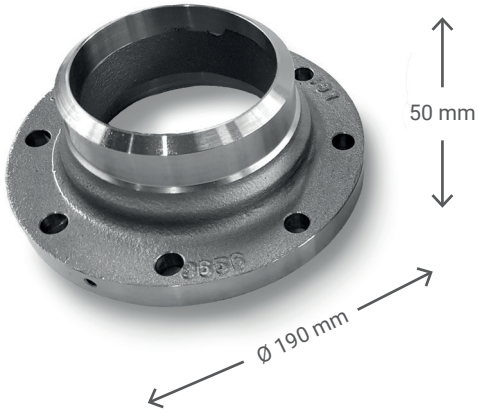


Lagerschale-Halfte

Material: *Medium Alloyed Steel*
Supply Finish: *Casted*
Weight: *166kg*

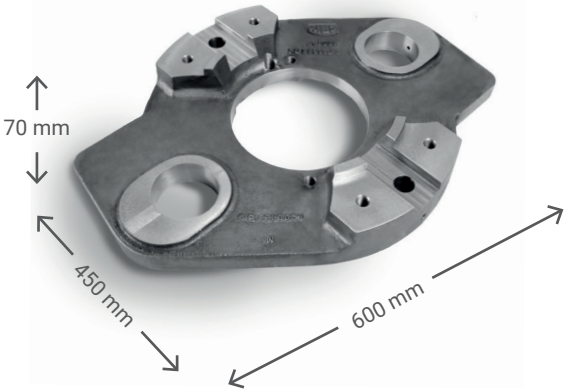
Flange 4”

Material: *Low Temperature Alloyed Steel*
Supply Finish: *Casted and Fully Machined*
Weight: *6kg*



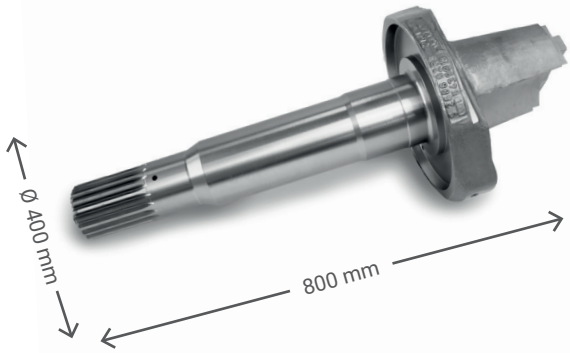
Front Roller Support

Material: *Martensitic Stainless Steel*
Supply Finish: *Casted and Fully Machined*
Weight: *60kg*



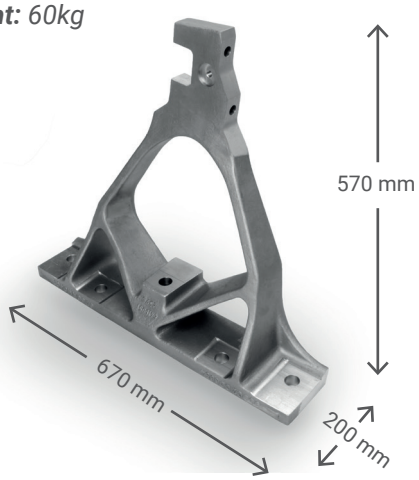
Mainshaft

Material: *Medium Alloyed Steel*
Supply Finish: *Casted, Hardened and Fully Machined*
Weight: *105kg*



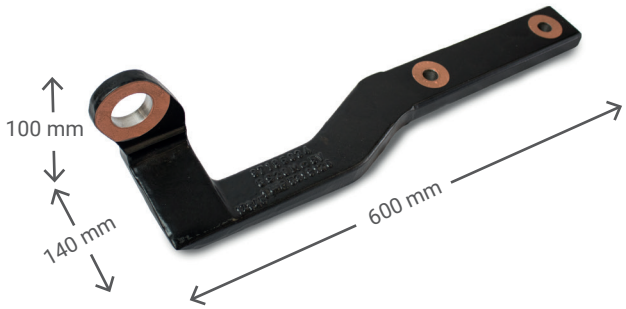
Yaw Damper Bracket

Material: *Medium Alloyed Steel*
Supply Finish: *Casted and Fully Machined*
Weight: *60kg*



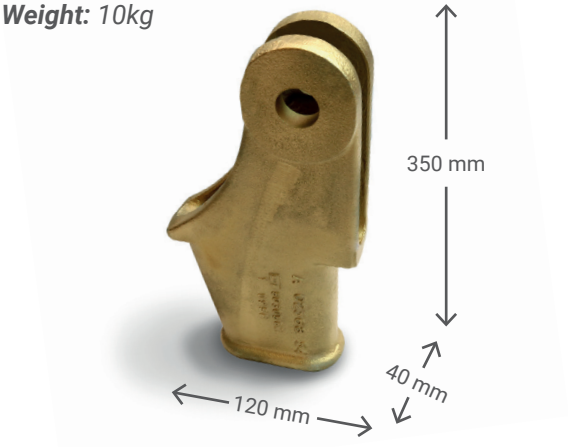
Holder for Track Brake

Material: *Medium Alloyed Steel*
Supply Finish: *Casted, Machined and Painted*
Weight: *8kg*



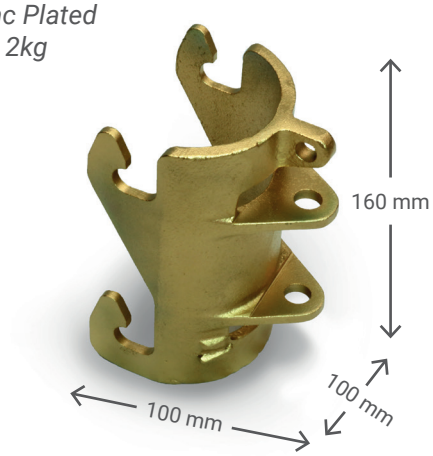
Boite a Coin

Material: *Medium Alloyed Steel*
Supply Finish: *Casted, Machined and Zinc Plated*
Weight: *10kg*



Clevis Hook

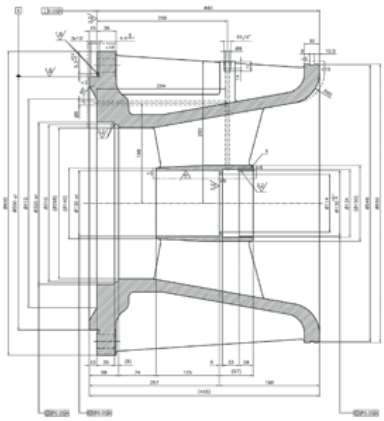
Material: *Medium Alloyed Steel*
Supply Finish: *Casted, Machined and Zinc Plated*
Weight: *2kg*



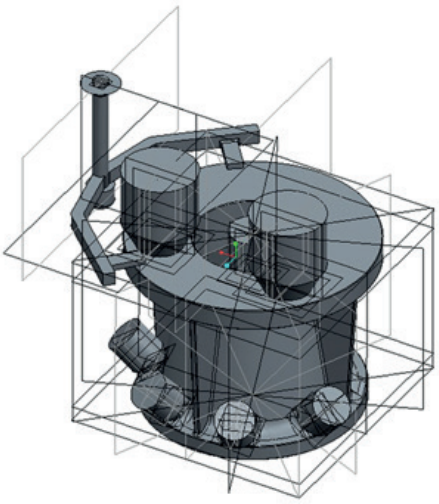
ALWAYS AHEAD

Product Engineering and Quality Control

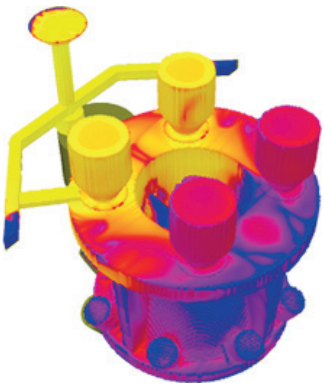
To fulfil **Quality** requirements, FERESPE is constantly seeking improvements of material properties and manufacturing procedures. And to support this pro-active attitude, FERESPE has built solid relationships with Universities and Technological Centres.
FERESPE continuously invest in state-of-the-art equipment ensuring at every stage of the production process a cutting-edge positioning.



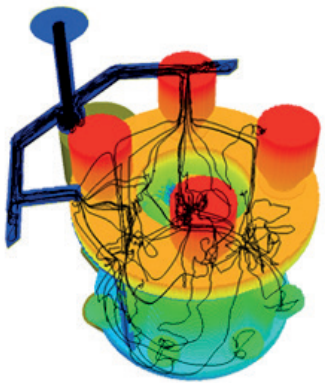
CAD



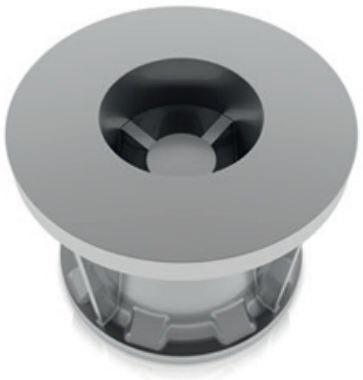
3D MODELING



SIMULATION OF MOULD FILLING



FLUID SIMULATION



VISUALIZATION

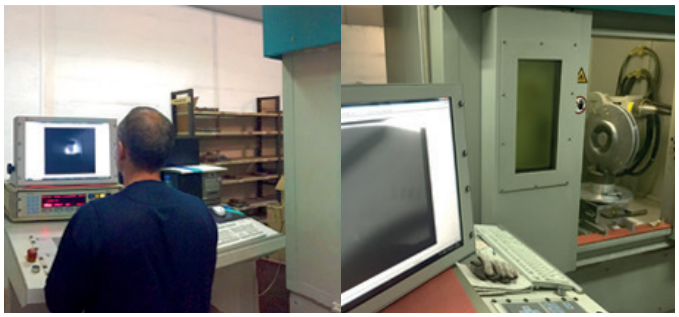
FERESPE is able to perform **Non-destructive Testing** (PT, MT, UT and Radioscopy) **in-house**, with **qualified inspectors** according SNT-TC-1A, and subcontract activities for PT, MT, UT and RT also with qualified inspectors, in this case according EN ISO 9712:2012.

The **Destructive Testing** we are able to perform **in-house** are tensile test, impact test, hardness test and micrographic examination. If required, the destructive tests can be subcontracted to **Accredited Laboratories** according EN ISO/IEC 17025:2005, with whom we have a long relationship.

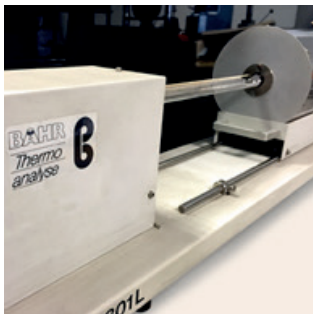
Our experience is supported by statistical data for the key parameters e.g. tensile strength, impact toughness, corrosion resistance (e.g. ASTM G48 Method A; ASTM A923 Method C; A262 Pratice E) and micrographic examination (e.g. ASTM E562/ASTM E1245, ASTM E112).

For the **repairs by welding operations** FERESPE has qualified welders according EN ISO 9606-1 and ASME IX and also qualified welding procedures for the relevant materials according EN11970, EN ISO 15614-1 and ASME IX.

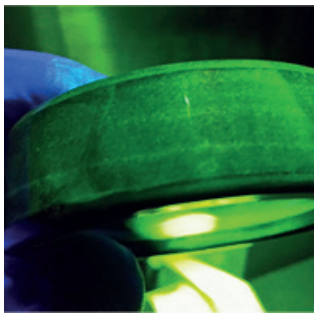
PHOTOMETRIC 3D SCANNING
DIMENSIONAL CONTROL AND REVERSE ENGINEERING



DIGITAL X-RAY INSPECTION



DILATOMETRY



MAGNETIC PARTICLE INSPECTION

LIQUID PENETRANT INSPECTION

CHEMICAL ANALYSIS

FERESPE has an additional capability recognised as high added value: about 40% of all parts are sold **machined**.

Certificates and Qualifications

As a result of the long experience of suppling **sand castings**, FERESPE has the knowledge on **several standards and codes** (e.g. NORSOK Code M-650 Rev. 4, NACE MR0175/ISO 15156, MR0103, API 610, ASME B16.34 and ASME Boiler and Pressure Vessel).

By achieving **Norsok M-650 Qualification**, FERESPE has proved competence on the relevant material grades, technical knowledge and necessary equipment to perform according good practices for these materials.

FERESPE know-how will support your company within metallurgical subjects, developing solutions from scratch to cast. In full partnership.

We guarantee your company distinctive and qualified solutions.

They assure our **Customers**

- A true commitment with Quality
- Global consolidated solutions

They assure **FERESPE**

- Further enhance reliability within each market
- Increasing competitiveness: Quality differentiation
- Improving Customer satisfaction

DNV-GL	Quality Management System ISO 9001:2015 **Cert. nr. 180474-2015-AQ-IBE-ENAC Rev.1**
DB	Manufacturer-Related product qualification **Cert. nr. 1462016**
TUV NORD	Quality Assurance System for Pressure Equipment - Directive 2014/68/EU **Cert. nr. 07/202/1326/WZ/1689/16**
DNV-GL	Approved manufacturer for steel castings, classification PT2.ch.2. **Cert. nr. AMM-6458**
TUV NORD	Manufacturer of components for pressure vessels AD-MERKBLATT W0/TRD 100 **Cert. nr. 07-203-1326-WP-1689/15**
NORSOK (AKER SOLUTIONS)	NORSOK Code M-650 Rev. 4 - Qualification of manufacturers of special materials for sand castings in duplex and super duplex stainless steels – ASTM A995 Grade 4A, 5A and 6A **Cert. nr. QTR Nr. 01-WF 640;** **Cert. nr. QTR Nr. 02-WF 641;** **Cert. nr. QTR Nr. 03-WF 643.**
AREVA	Quality Management System according to Standard KTA 1401 and ASME NCA 3800 for manufacturing of castings for valves and pumps components **Cert. nr. IBOI-G/2016/EN/0093**
BV (Marine & Offshore Division)	Recognition for BV Mode II Scheme **Cert. nr. SMS.W.11.10187/A.0**
Lloyd's Register	Approved manufacturer for Castings in Austenitic Stainless Steel. **Cert. nr. MD00/4221/0002/2**
ABS	Approved manufacturer for marine applications of iron and stainless steel castings **Cert. nr. 14-MMPS-F&PAC-548**

MATERIALS

Super Duplex Stainless Steel

Introduction

The term “Super Duplex” was introduced to denote highly alloyed, high-performance Duplex Steel with a pitting resistance equivalent greater than 40 (based on PRE = %Cr + 3.3x%Mo+ 16x%N). With its high content of Cr, these materials provide outstanding resistance to acids, acid chlorides, caustic solutions and other environments in several industries.
The chemical composition based on high contents of chromium, nickel and molybdenum improves inter granular and pitting corrosion resistance. Additions of nitrogen promote structural hardening by interstitial solid solution mechanism, which raises the yield strength and ultimate strength values without impairing toughness. Moreover, the two-phase microstructure guarantees higher resistance to pitting and stress corrosion cracking in comparison with conventional stainless steel.

Main Super Duplex Stainless Steel grades

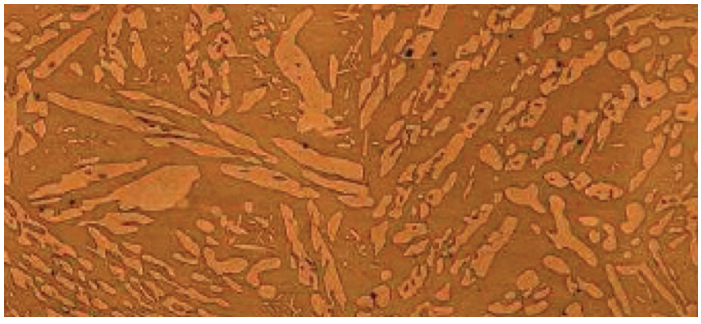
From the long list of materials we produce, we give below some examples of the Supe Duplex Stainless Steel grades for which we have a long work experience.

ASTM	EN	%C	%Mn	%Cr	%Ni	%Mo	%N
A890 Gr5A (CE3MN)	EN 10213-4 GX2CrNiMoN26-7-4	<= 0.03	<= 1.5	24.0-26.0	6.0-8.0	4.0-5.0	0.10-0.30
A995 Gr4A (CD3MN)	EN 10213-4 GX2CrNiMoN 22-5-3	<= 0.03	<= 1.5	21.0-23.5	4.5-6.5	2.5-3.5	0.10-0.30
A995 Gr6A (CD3MWCuN)	EN 10283 GX2CrNiMoN25-7-3	<= 0.03	<= 1	24.0-26.0	6.0-8.5	3.0-4.0	0.20-0.30

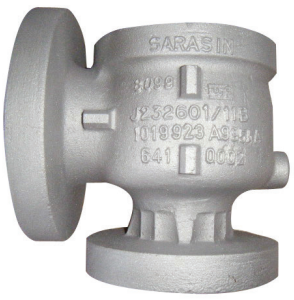
Table 1 – Nominal composition of some Super Duplex Stainless Steel grades FERESPE produces

---

Typical microstructure
Material: A995 Gr4A (CD3MN)
Condition: Solution annealed
Etch: NaOH Electrolytic etch at 3V for 20s
Microstructure: Austenite + Ferrite (aprox. 50% and 50%, respectively)



Examples of Applications
- Heat exchangers, impellers, pump bodies and valves and other components for gas and oil production and handling;
- Components for desalination units;
- Mechanical and structural components resistant to corrosion.



Duplex Stainless Steel

Introduction

This material is a combination of Austenitic and Ferritic material, having higher strength and superior resistance to corrosion. It is usually fine-grained which improves strength and toughness. Duplex Stainless Steel is about twice as strong as conventional austenitic stainless steel and has significantly better toughness and ductility than ferritic grades, not reaching, however, the excellent values of the austenitic grades. As with all stainless steel grades, corrosion resistance depends mostly on the composition of the stainless steel and best practices of heat treatment. For chloride pitting and crevice corrosion resistance, improvements are achieved by the addition of Chromium, Molybdenum and Nitrogen.

Main Duplex Stainless Steel grades

From the long list of materials we produce, we give below some examples of the Duplex Stainless Steel grades for which we have a long work experience.

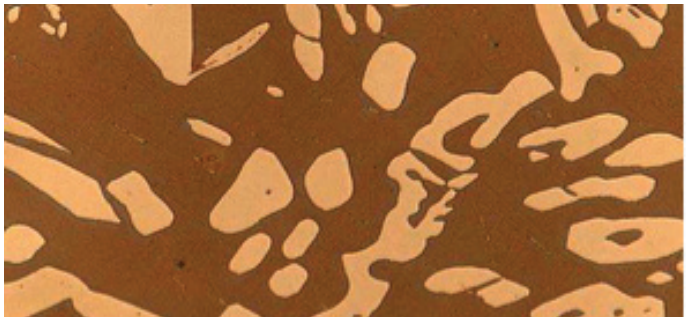
ASTM	EN	%C	%Mn	%Cr	%Ni	%Mo	%Cu	%N
-	EN 10213-4 G-X 2CrNiMoCuN25-6-3-3	<=0.03	<=1.5	24.5-26.5	5.0-7.0	2.5-3.5	2.75-3.50	0.12-0.22
A351 CD-4MCu	-	<=0.04	<=1	24.5-26.5	4.75-6.00	1.75-2.25	2.75-3.25	-
A743 CN7MS	-	<=0.06	<=1	24.0-27.0	4.0-6.0	1.75-2.50	-	0.15-0.25

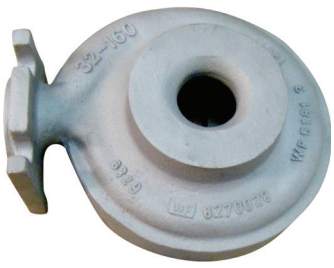
Table 2 – Nominal composition of some Duplex Stainless Steel grades FERESPE produces

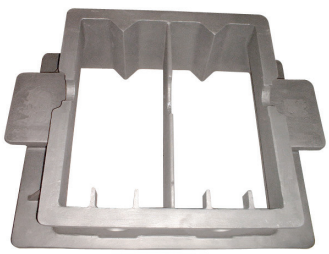
---

Typical microstructure
Material: EN 10213-4 G-X 2CrNiMoCuN 25-6-3-3
Condition: Solution annealed
Etch: NaOH Electrolytic etch at 3V for 20s
Microstructure: Austenite + Ferrite (aprox. 50% and 50%, respectively)

Examples of Applications
- Petrochemical and Naval industry;
- Rotors, fans, shafts and press rolls requiring combined strength and corrosion resistance;
- Biofuels industry.







Austenitic Stainless Steel

Introduction

The most commonly used stainless steels are the austenitic grades. They contain 16% or more of Chromium, a ferrite stabilizing element and sufficient austenite-stabilizing elements, such as Carbon, Nitrogen, Nickel and Manganese to render austenite stable at room temperature. By adding elements such as Molybdenum, Titanium or Copper, the properties of steel can be modified. The addition of Mo greatly enhances corrosion resistance and increases elevated temperature strength. Ni or N additions will generate an austenitic structure, even at 18%Cr, and N significantly reduces the amount of necessary Ni to assure austenite. Most steels become brittle at low temperatures but Nickel in austenitic stainless makes it suited to low temperature or cryogenic applications. The "L" grades, indicating low carbon content, are used to provide extra corrosion resistance.

Main Austenitic Stainless Steel grades

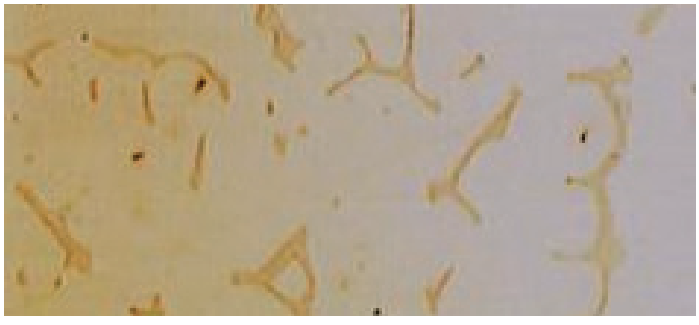
From the long list of material we produce, we give below some examples of the Austenitic Stainless Steel grades for which we have a long work experience.

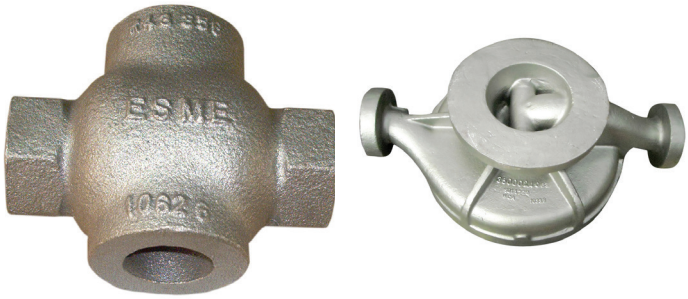
ASTM	EN	%C	%Si	%Mn	%Cr	%Ni	%Mo	%Nb
A351 CF-8	EN 10213-4 GX5CrNi19-10	<=0.08	<=2	<=1.5	18.0-21.0	8.0-11.0	-	-
A351 CF-3	EN 10213-4 GX2CrNi19-11	<=0.03	<=2	<=1.5	17.0-21.0	8.0-12.0	0.5	-
A351 CF-3M	EN 10213-4 GX2CrNiMo19-11-2	<=0.03	<=1.5	<=1.5	17.0-21.0	9.0-13.0	2.0-3.0	-
A351 CF-8C	EN 10213-4 GX5 CrNiNb 19-11	<=0.08	<=2	<=1.5	18.0-21.0	9.0-12.0	0.5	0.64-1.0
A743 CF-8M	EN10213-4 GX5CrNiMo19-11-2	<=0.08	<=2	<=1.5	18.0-21.0	9.0-12.0	2.0-3.0	-
-	EN10213-4 G-X5CrNiMoNb19-11-2	<=0.07	<=1.5	<=1.5	18.0-20.0	9.0-12.0	2.0-2.5	0.56-1.0

Table 3 – Nominal composition of some Austenitic Stainless Steel grades FERESPE produces

Typical microstructure
Material: A351 CF-3M
Condition: Solution annealed
Magnification: 200x
Etch: NaOH Electrolytic etch at 3V for 20s
Microstructure: Austenite + Ferrite (5-10%)

Examples of Applications
- Heat exchangers;
- Chemical processing;
- Pulp and paper industry.





Martensitic Stainless Steel

Introduction

Martensitic grades were developed in order to provide a group of stainless alloys that would be corrosion resistant and hardened by heat treating. They are magnetic and are mainly used where hardness, strength and wear resistance are required. They contain more than 10.5%Cr plus other austenite stabilizing elements such as carbon, nitrogen, nickel and manganese to expand the austenite phase field and improve welding. The composition must be carefully balanced to prevent delta-ferrite formation and attain best mechanical properties.

Main Martensitic Stainless Steel grades

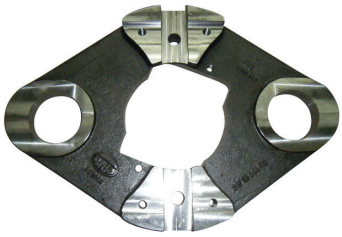
From the long list of material we produce, we give below some examples of the Martensitic Stainless Steel grades for which we have a long work experience.

ASTM	EN	%C	%Mn	%Cr	%Ni	%Mo
A743 CA-15	EN10283 GX12Cr12	<=0.15	<=1.00	11.5-14.00	<=1.0	-
A487 CA-6NM	EN10283 GX4CrNi13-4	<=0.06	<=1.00	11.5-14.00	3.5-4.5	0.4-1.0

Table 4 – Nominal composition of some Martensitic Stainless Steel grades FERESPE produces

Typical microstructure
Material: A487 CA-6NM
Condition: Heat Treated
Etch: Ralph's agent
Microstructure: Martensite

Examples of Applications
- Valves, pumps and impellers;
- Machine parts with strong resistance to wear and some to corrosion.



Heat Resistant Steel

Introduction

Castings are classified as Heat Resistant if they are capable of sustained operation while exposed, either continuously or intermittently, to operating temperatures that result in metal temperatures in excess of 650ºC. These materials are hard wearing and offer a resistance to large variations in temperature. Their main characteristics include corrosive resistance, creep resistance, oxidation resistance and hydrogen brittleness all under extremely high temperatures.

The three principal categories of this type of steels, based on composition are: Iron-chromium alloys; Iron-chromium-nickel alloys and Iron-nickel-chromium alloys. In terms of stainless steel structures may be austenitic, ferritic, martensitic or duplex.

Main Heat Resistant Steels grades

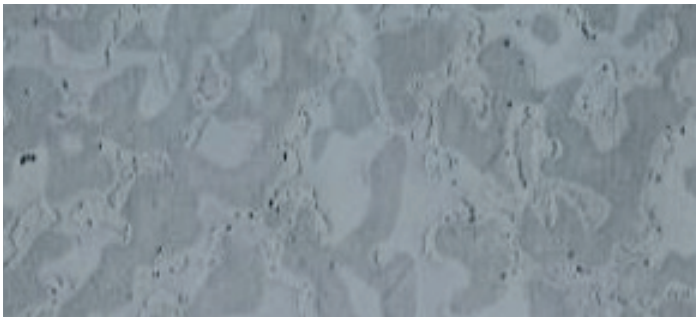
From the long list of material we produce, we give below some examples of the Heat Resistant Steels for which we have a long work experience.

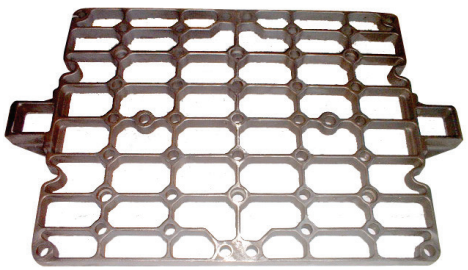
ASTM	EN	%C	%Si	%Mn	%Cr	%Ni	%Mo
A297 HH	17465 G-X 40CrNiSi 25 12	0.20-0.50	<=2.0	<=2.0	24.0-28.0	11.0-14.0	<=0.5
A 297 HK	17465 G-X 40CrNiSi 25 20	0.20-0.60	<=2.0	<=2.0	24.0-28.0	18.0-22.0	<=0.5
A 297 HE		0.20-0.50	<=2.0	<=2.0	26.0-30.0	8.0-11.0	<=0.5
A 297 HU	EN 10295 GX40NiCrSi38-19	0.35-0.75	<=2.5	<=2.0	17.0-21.0	37.0-41.0	<=0.5
A 297 HD	EN 10295 GX40CrNiSi27-4	0.20-0.50	<=2	<=1.5	26.0-30.0	4.0-7.0	<=0.5

Table 5 – Nominal composition of some Heat Resistant Steel grades FERESPE produces

Typical microstructure
Material: EN 10295 GX40CrNiSi27-4
Condition: As-Cast
Magnification: 100x
Etch: NaOH Electrolytic etch at 3V
Microstructure: Ferrite + Austenite with Cr Carbides

Examples of Applications
- Grates for Furnaces;
- Heat exchanges;
- Incinerators;
- Boilers for boiler pipes.





Wear Resistant Steel

Introduction

Steel casting parts are successfully used in many applications requiring resistance to wear while at the same time demanding adequate toughness so that the components will be dependable under severe service conditions. An important consideration many times overlooked in wear situations is the consideration of metal toughness and ultimately the consideration of resistance to breakage. Shock loading and stress concentration can be of paramount importance in selecting wear materials. In fact, this consideration that often dictates a wear-resistant steel being used preferentially over a wear-resistant cast iron. Lower carbon grades can be used in light-duty gears and for plow implements, but usually are surface hardened. Alloyed steels are of growing importance in wear resistant applications. Wear, mechanical and impact properties must be blended to optimize service.

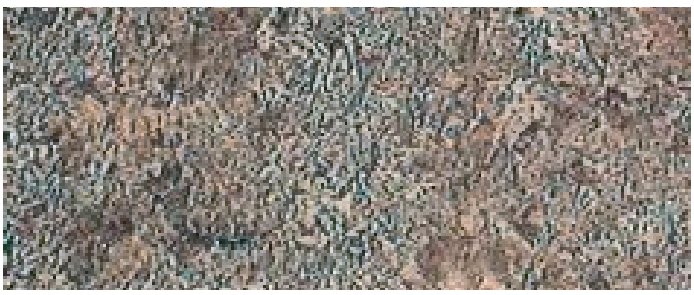
Main Wear Resistant Carbon Steels grades

	ASTM	DIN / EN	%C	%Si	%Mn	%Cr	%Ni	%Mo	Hardness (HRC)
Carbon Steels	A148 80-40	DIN 168 GS-60 / EN 10293 GE600							160-200 HB
	-	DIN 168 GS-70	0.3-0.4	0.4-0.6	0.2-0.5	-	-	-	180-230 HB
Medium Alloyed Steels	-	EN 10293 G25CrMo4 QT1 / QT2	0.22-0.29	<=0.6	0.5-0.8	0.8-1.2	-	0.15-0.3	160-220 HB
	-	EN 10293 G34CrMo4	0.3-0.37	<=0.6	0.5-0.8	0.8-1.2	-	0.15-0.3	200-300 HB
	-	EN 10293 G32NiCrMo 8-5-4	0.28-0.35	<=0.6	0.6-1	1-1.4	1.6-2.1	0.3-0.5	270-300 HB
	-	-	0.28-0.33	1.05-1.2	1.05-1.15	1.4-1.7	0.7.-11.00	0.25-0.5	47-49 HRC

Table 6 – Nominal composition of some Wear Resistant Steel grades FERESPE produces

---

Typical microstructure
Material: EN 10293 G34CrMo4
Condition: Normalized and Tempered
Magnification: 200x
Etch: Nital 4%
Microstructure: Ferrite + Perlite / Hardness: 240 HB



Examples of Applications
- Mining machinery;
- Grinding machinery;
- Railroad service;
- Conveying;
- Excavating equipment;
- Dredging Cutter Head Tooth Systems

Wear Resistant Cast Iron

Introduction

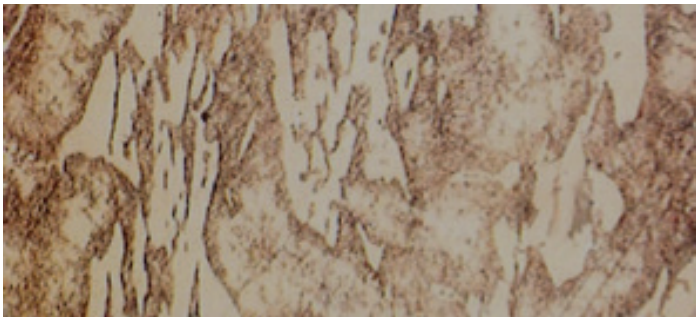
Abrasion resistant cast iron materials are white, carbide-solidified cast iron materials which contain a high level of hard particles in the form of iron or chromium carbides. The carbides are held by a hard matrix. Generally, the matrix is martensitic but there are also cases of an austenitic matrix as well, which only becomes more solid during the wear process associated with strain hardening. The hardness can be increased with the elements nickel, copper, molybdenum and manganese. Chromium provides improved resistance to corrosion, to such an extent that high chromium levels can achieve a performance to match that of the lower limits of stainless steels. In some grades the desired microstructure can be achieved in the as-cast condition. Others require additional heat treatment to remove unwanted microstructure portions and achieve the desired properties. Optimum service properties for these materials are not generally achieved in the as-cast condition. Nevertheless, they are certainly used for occasional applications in this condition, partly for reasons of cost but also to avoid the risk of cracking during heat treatment.

Main Wear Resistant White Cast Iron grades

ASTM	DIN / EN	%C	%Si	%Mn	%Cr	%Ni	%Mo	%Cu	Hardness (HRC)
A532 II B	EN 12513 EN-GJN-HV600 (xCr14) AC	2.0 - 3.3	<=1.5	<=2.0	14.0 - 18.0	<=2.5	<=3.0	<=1.2	**60-65**
A532 III A	-	2.0 - 3.3	<=1.5	<=2.0	23.0 - 30.0	<=2.5	<=3.0	<=1.2	**>50**
A532 II D	EN 12513 EN-GJN-HV600 (xCr18) MC	2.0 - 3.3	1.0 – 2.2	<=2.0	18.0 - 23.0	<=2.5	<=3.0	<=1.2	**60-65**
A532 IB NiCr LC	EN 12513 EN-GJN-HV520	2.4 - 3.0	<=0.80	<=2.0	1.4 - 4.0	3.0 - 5.5	<=3.0	-	**> 60**
A532 IA	DIN 1695 G-X 330 NiCr42	2.8 – 3.6	<=0.80	0.20-0.80	1.5 - 2.5	3.3 - 5.0	<=0.5	-	**>55**
A532 IID	-	2.5 – 3.6	<=2.0	<=2.0	7.0-11.0	4.5-7.0	<=1.5	-	**>55**

Table 7 – Nominal composition of some wear resistant white cast iron grades FERESPE produces

Typical microstructure
Material: EN 12513 EN-GJN-HV600 (xCr14) AC
Condition: As-Cast
Magnification: 1000x
Etch: Nital 4%
Microstructure: Martensite + Carbides



Examples of Applications
- Shot blasting machines (blades, plate protections, etc.);
- Reducing, mixing and conveying equipment and systems;
- Grinding tools;
- Pumps and Impellers.

MATERIAL LIST

Super Duplex Stainless Steel, Duplex Stainless Steel and Others

(W.nr)	DIN / EM	AFNOR/ EN	SIS	ASTM	BS
1.4710	17465 G-X30CrSi6 / EN10295 GX30CrSi7	-	-	-	-
1.4011	EN 10213-2 GX 8CrNi12 / EN10283:2010-6 GX12Cr12	-	-	A743 / A217 CA-15	3100 410C21
-	17440 X6Cr17	-	-	-	-
-	17440 X17CrNi16 2	A35-574 Z15CN16 02	14 23 21	-	1554 431S29
-	17440 X17CrNi16 2	A35-574 Z15CN16 02	14 23 21	-	1554 431S29 / 3146 Part 2 ANC 2
1.4525	G-X 4 CrNiCuNb16 4 / EN 10283:2010-6 GX5 CrNiCu 16 4	A35-574 Z4 CN Nb 16 04 M	-	ASTM A747 CB7Cu-1	3146 : ANC 22 B
-	X110 CrMoV15	-	-	-	-
1.4027	17445 G-X20Cr14 / SEW 410 GX20Cr14	A54-401 Z-20 C13M	14 23 03	-	3100 420C24
1.4027	SEW 410 GX20Cr14 QT	-	-	-	-
-	10088-1;3 X105CrMo17	EN 10088-1 Z100CD17	-	-	-
-	-	-		A743 CB-30	-
1.4308	EN 10213:2007 GX5CrNi19-10 +AT / EN10283:2010-6 GX5CrNi 19-10	A54-401 Z6CN1810-M	14 23 33	A743/ A351 CF-8	1504 304C15
1.4309	EN 10213:2007 GX2CrNi 19-11 +AT/ EN10283:2010-6 GX2CrNi19-11	A32-056 Z2 CN18-10 M	-	A351 CF3	-
1.4409	EN 10213:2007 GX2CrNiMo19-11-2 / EN10283:2010-6 GX2CrNiMo19-11-2	A32-056 Z2 CND 18-12-M	-	A351 CF3M	3100 316C12
1.4552	EN 10213:2007 GX5CrNiNb 19-11	-	-	A 351 CF8C	-
1.4317	17445 G-X 5 CrNi134 / EN10283:2010-6 GX4CrNi13-4 / EN10213:2007 GX4CrNi13-4 +QT	-	-	A 487 CA6NM	3100 A425C11
1.4408	EN 10213:2007 GX5CrNiMo19-11-2 / EN10283:2010-6 GX5CrNiMo19-11-2	A32-056 Z6 CND 18 12-M	14 23 43	A351/A743 CF-8M	3100 316C16
-	-	Z8 CND 18 10 03-M	-	A743 CG-8M	3100 317C16
-	SEW400 X4CrNiMo27 5 2	A36-574 Z5CND2705AZ	14 23 24	-	-
-	17440 X6CrNiMoTi17 12 2	A35-574 Z6CND1712	-	-	-
-	X10CrNiMoNb1812	A32-056 Z6 CNDNb 1810	-	-	3100 318C17
-	SEW410 G-X 2 CrNiMoN18 10	A32-056 Z2 CND1812	14 23 53	A351 CF-3M	3100316 C12
1.4517	EN 10213:2007 GX2CrNiMoCuN 25-6-3-3 / EN10283:2010-6 GX2CrNiMoCuN25-6-3-3	-	-	-	-
1.4581	EN10213:2007 GX5CrNiMoNb19-11-2 / EN10283:2010-6 GX5CrNiMoNb 19-11-2	-	-	-	BS3100 318 C17
-	-	-	-	A351-00/A890-99 CD4MCu	-
1.4837	17465 G-X 40CrNiSi 25 12 / EN 10295 GX40CrNiSi 25 12	A32-057 Z40CN 25 12-M a)	-	A297 HH	3100 309C30
1.4848	17465 G-X 40CrNiSi 25 20 / EN 10295 GX40CrNiSi 25 20	-	14 23 61	A 297 HK	3100 310C40
-	-	-	-	A 297 HE	3100 309C40
1.4865	17465 GX40NiCrSi 38-18 / EN 10295 GX40NiCrSi38-19	A32-057 Z40CN3515-M	-	A 297 HU	3100-331C40
1.4823	17465 GX40CrNiSi27-4 / EN 10295 GX40CrNiSi27-4	A32-057 Z30CN2605-M	-	A 297 HD	3100 452C11
-	-	A32-057 Z6NCDU25-20-04-M	14 25 62	A743 CN7MS	-
-	SEW410 G-X 2 NiCrMoCuN 25 20	-	-	-	-
1.4777	G-X 130CrSi 29 / EN 10295 GX130CrSi29	-	-	-	-
1.4852	17565 GX40NiCrSiNb35-25	EN 10295 GX40 NiCrSiNb 35-26	-	A297 HP	-
1.4469	EN 10213:2007 GX2CrNiMoN26-7-4 / EN10283:2010-6 GX2CrNiMoN26-7-4	-	-	A890/A995 Gr5A (CE3MN)	-
1.4470	EN 10213:2007 GX2CrNiMoN 22-5-3 / EN10283:2010-6 GX2CrNiMoN 22-5-3	-	-	A890-99/ A995 Gr4A (CD3MN)	-
1.4584	EN 10283:2010-6 GX2NiCrMoCuN25-20-5	-	-	-	-
1.4417	EN 10283:2010-6 GX2CrNiMoN25-7-3 / EN 10213:2007 GX2CrNiMoN25-7-3	-	-	A995-09/A890-10 Gr 6A (CD3MWCuN)	-
1.4557	EN 10283:2010-6 GX2CrNiMoCuN20-18-6	-	-	A351 CK3MCuN	-
1.4474	EN 10283 GX4CrNiMoN26-5-2	-	-	A890/A995 Gr 3A (CD6MN)	-
-	-	-	-	A351/A743 CN7M	-
-	EN 10295 GX130CrSi29 (Modif)	-	-	-	-

Medium / Low Alloyed Steel

(W.nr)	DIN / EM	AFNOR/ EN	SIS	ASTM	BS
1.0449	1681 GS-38	EN 10293 GS200	-	A352 LCA	3100 AM1
1.0420	1681 GS-45 / EN10293 GE200	A32-054 GE 230	14 15 05	A216WCA	3100A1
1.0619	1681 GS-52/EN 10213:2007 GP240GH +N	A32-054 GE280/ EN10293 GS240	14 15 05	A216WCB / A27 Gr 70-36	3100A2
1.0619	EN 10213:2007 GP240GH +N	EN10293 GS240	-	A216 WCB	-
1.0619	EN 10213:2007 GP240GH +QT	-	-	A216 WCC	-
1.0625	EN10213-2 / EN 10213:2007 GP280GH +N / QT	EN 10213 GP240 GH +QT	-	A216 WCC / A216 WCB	-
1.0558	1681 GS-60 / EN10293 GE300	A32-054 GE 320	-	A148 80-40	3100A3
-	1681 GS-70	A32-054 GE370	14 16 06	-	3100 AW2
1.0619	EN 10213:2007 GP240GH +N	EN10293 GS240	-	A216 WCB	-
-	17210 GS-20MnCr5	-	-	-	-
-	17210 GS-20Cr4	-	-	-	-
1.7131	17210 GS-16MnCr5	-	-	-	-
1.1165	17205 GS- 30Mn5/ EN10293 G28Mn6	A32-054 G30Mn6	-	A148 GR 90-60	-
1.1165	17205 GS- 30Mn5 LVI / LVII / EN10293 G28Mn6 QT1/QT2	A32-054 G30Mn6 TR1 / TR2	-	A148 Gr90-60	-
1.6220	17182 GS20Mn5 / EN 10213:2007 G20Mn5 N	A32-054 G20 Mn6 N/ EN 10293:2015 G20Mn5 N	-	A216-14 WCC	-
1.6220	DIN 17182 GS20Mn5N / EN 10213:2007 G20Mn5 N	EN10293 G20Mn5 N	-	A216 WCC	-
1.6220	17182 GS20Mn5V / EN 10213:2007 G20Mn5 QT	A32-054 G20 Mn6 T / EN 10293 G20Mn5 QT	-	A352 LCB/LCC	-
-	-	-	14 21 20	-	-
-	GS20 Mn5 + 0,5%Ni	-	-	-	-
-	-	A32-054 G20 Mn6 T (Modif)	-	-	-
1.1118	EN 10293 G24Mn6 / SEW 520 G24Mn6	-	-	-	-
1.7357	EN10213-2 / EN10293 G17CrMo5-5	A35-055 15CD5-05M	14 22 23	A217 WC6	3100 B2
1.7221	17205 GS-25CrMo4 / EN10293 G26CrMo4 QT1	A32-054 G25CrMo4	14 22 25	-	970 Part 1 708 A 25
1.7221	EN10293 G26CrMo4 QT2	-	-	-	-
1.7221	EN10293 G26CrMo4 QT2	-	-	-	-
1.7221	17205 GS25CrMo4 V / EN10293 G26CrMo4 QT2 / SEW 685 G26CrMo4	A32-054 G25CrMo4 TR	-	-	-
-	-	A35-557 30CD4	14 22 23	A732 7Q	-
1.7230	17205 GS-34CrMo4	A32 054 G35CrMo4	14 22 34	A148 GR 105-85	970 PART1: 708A37
1.7230	17205 GS-34CrMo4 / EN 10293 G34CrMo4	A32-054 G35CrMo4	-	A148 Gr115-95	
1.7231	17205 GS-42CrMo4	A32 054 G42CrMo4	14 22 44	-	-
1.7231	17205 GS-42CrMo4 / EN 10293 G42CrMo4	A 32 054 G42CrMo4 TR	-	-	-
-	SEW550 32CrMo12	A35-552 30 CD 12	-	-	-
1.7725	17205 GS-30CrMoV6 4	-	-	-	-
1.7725	EN 10293 G30CrMoV 6 4	-	-	-	-
1.7379	EN10213:2007 G17CrMo9-10 / EN 10293 G17CrMo9-10	A32-055 15CD9.10-M	14 22 24	A217WC9	3100 B3
1.7379	EN10213:2007 G17CrMo9-10 / EN 10293 G17CrMo9-10	-	-	A217 WC9	-
1.7379	EN10213:2007 G17CrMo9-10 / EN 10293 G17CrMo9-10	A32-055 15CD9.10-M	-	-	-
1.7357	EN10213-2 / EN10293 G17CrMo5-5	-	-	A217 WC6	-
-	-	-	-	A217WC4	-
-	-	-	-	A148 GR135-125	-
1.6759	(SEW 520) G18NiMoCr 3-6	-	-	ASTM A958-14 Grade SC8620 Class 115/95	-
1.6759	(SEW 520) G18NiMoCr 3-6	EN 10340 G18NiMoCr 3-6	-	ASTM A958-14 Grade SC8620 Class 115/95	-
-	GS-X30NiCrMo4	-	-	-	-
1.6582	17205 GS34CrNiMo6	A32-054 G35NiCrMo6	-	-	-
1.6582	17205 GS34CrNiMo6 V	A32-054 G35NiCrMo6 TR	-	-	-
1.6570	EN 10293 G32NiCrMo8-5-4	-	-	-	-
1.6760	(SEW 520) G22 NiMoCr5-6	(*) not acc SEW 520	-	-	-
-	17210 GS-17NiCrMo6	-	-	-	-
-	-	A35-551-18NCD6	-	-	-
-	17205 GS34CrNiMo6 V (Modif)	-	-	-	-
-	(SEW 520) G18NiMoCr 3-6 (Modif)	-	-	-	-
-	61CrSiV5	-	-	-	-
1.5419	EN 10293 G20Mo5 / EN 10213:2007 G20Mo5	A32-053 FC1-M	-	A 352M LC1	3100 BL1
-	-	A32-053 FB-M	-	-	-
-	14NiCr14	A37-502 12NC15	-	-	970 part 1 : 655 H 13

High Alloyed Cast Iron

(W.nr)	DIN / EM	AFNOR/ EN	SIS	ASTM	BS
-	1695 G-X300CrMo15 2 1	A32-401 FBCr15MoNi	-	A532 IIC	4844 Gr 3B
-	G-X300CrMo15-3 / EN 12513 EN-GJN-HV600 (XCr14) AC	A32-401 FB Cr15MoNi	-	A532 IIB	4844 Gr 3B
-	EN 12513 EN-GJN-HV600 (XCr14) MC	-	-	-	-
-	-	-	14 04 66	A532 IIIA	4844 GR3E
-	-	-	-	-	-
-	G-X300CrMoNi2611 / EN 12513 EN-GJN-HV600 (XCr23)MC/AC	A32-401FBCr26MoNi	-	A532 IIIA	4844 GR3E
-	EN 12513 EN-GJN-HV600 (XCr18) MC	A32-401 FB Cr20MoNi	-	A532 IID	4844 Part 3 Gr 3C
-	EN 12513 EN-GJN-HV600 BC	-	-	-	
-	EN 12513 EN-GJN-HV520	A32-401 FBNi4Cr2 BC	-	A532 IB NiCr-LC	4844 GR2A
-	1695 G-X 330 NiCr42	A32-401 FBNi4Cr2 HC	14 05 13	A532 IA	4844 GR2B
-	-	A32-401 FB Cr9Ni5	-	A532 class-I type-D	4844 Gr 2D
-	1694 GGL NiCuCr 15 6 2	A32-301 L-NUC 15 6 2	-	A436-TYPE I	-
-	1694 GGLNiCr 20 3	A32-301 L-NC 20 3	-	A436-TYPE 2B	-

Synthesis

FERESPE positioned itself in a niche market that is characterized by small and medium series, where delivery times required are short, the quality standards are extremely high, and respect for the environment is a constant focus.

FERESPE's **customer high satisfaction levels**, in which we would like to include your company, represent our main goal.

FERESPE know-how will support your company within metallurgical subjects, developing **solutions from scratch to cast. In full partnership.**

We guarantee your company distinctive and qualified solutions.

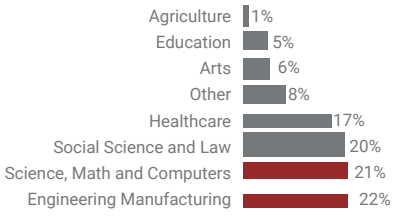
Just try our expertise. We offer broader solutions to meet your goals.

Portugal at a glance

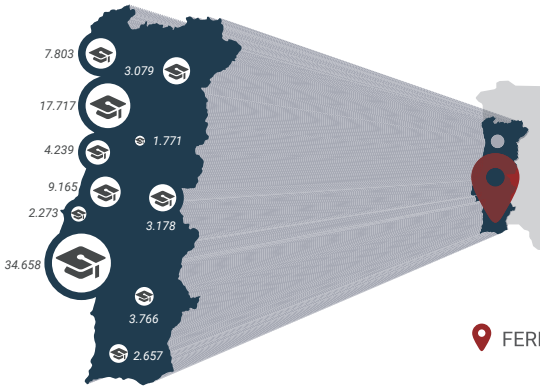
Better Talent

Portugal has a strong flexible, committed and productive workforce with a high level of education in business oriented areas.

Students unrolled in higher education institutions by field of study



Math's, Science and Tech areas represent almost 43%



FERESPE Markets in Europe

Portugal is not only a good country to invest in but also a great place to live and enjoy. Safe, sunny, with unique nature, rich leisure and cultural amenities, and with high quality healthcare facilities.

This is our team

This is FERESPE family.

We relentlessly pursue excellence in everything we do, every day, working together, across boundaries, to meet our customer needs.

Come and visit us

Looking forward to your visit

FERESPE — Fundição de Ferro e Aço Lda.
Rua Brasiela, 60
4760-485 Fradelos
V. N. Famalicão – Portugal
N 41°20’ 53.0484” | W 8°35’ 8.8182”

WWW.FERESPE.PT

FERESPE

+ WE CAST STRONG CONNECTIONS +

FERESPE – Fundição de Ferro e Aço, Lda.
Rua Brasiela, 60 - 4760-485 Fradelos
V. N. Famalicão - Portugal
N 41º20’ 53.0484” | W 8º35’ 8.8182”

Tel: +351 252 490 470
Fax: +351 252 490 479
Email: ferespe@ferespe.pt

Mod. 0133 - Rev.1