ALUPHOENIX®

High Quality Aluminium Alloys

HISTORY

Aluphoenix Srl is an Aluminium Refinery specialized in the production of primary, high grade and structural alloys in ingots for foundry.

The Company was established in 2009 thanks to the entrepreneurial spirit of the owners, who have been active in the sector for 50 years.

Company public Youtube introduction video:

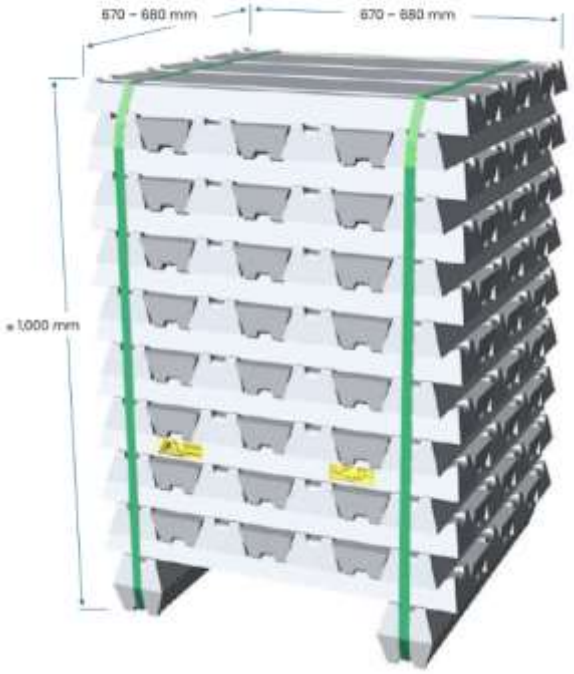
https://www.youtube.com/watch?v=xCf7CTWwZQo

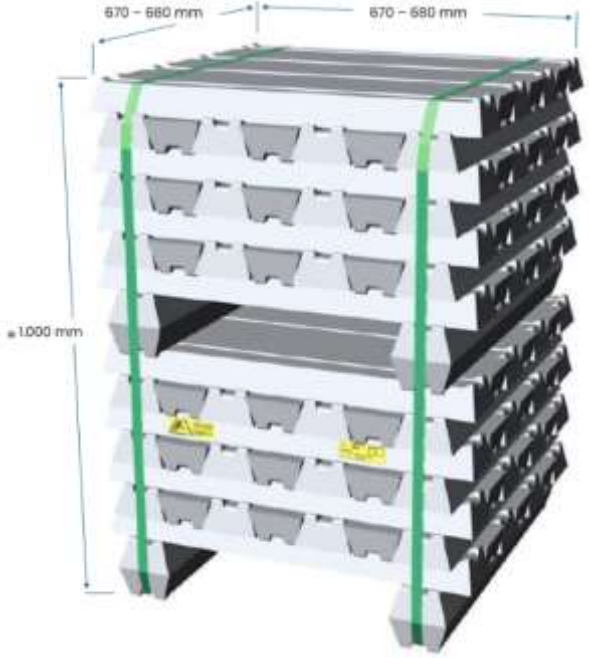
INGOT AND STACKS

Aluphoenix ingot is the result of an accurate benchmark between the needs of European customers and the offer of alloys for foundry.

The weight, the size, the shape are optimal for the use of the ingot both manually and through the use of forklifts.

The ergonomics of the ingot allow to keep the stacks intact and to preserve the integrity of the personnel assigned to handling.

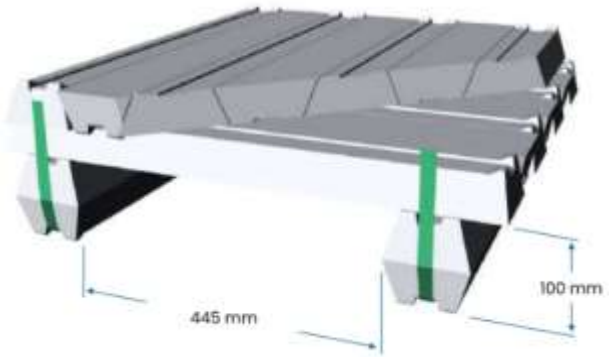


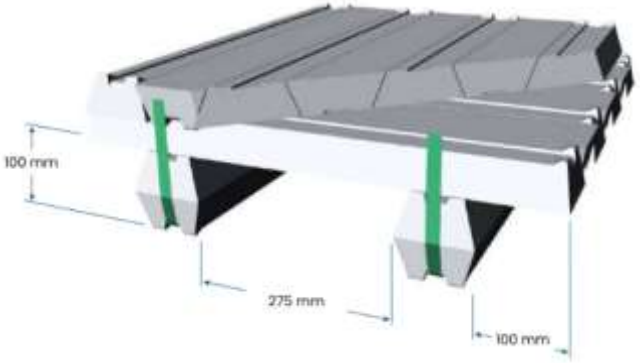


INGOT AND STACKS

The stack forming line has been conceived and developed according to lean manufacturing logic, and allows the various types of the most wanted stack type on the market, to be created in automated movement; single of different heights, double and with external or internal ingot pallet.

The line is fully integrated at an IT level with the company's ERP software and allows the stacks to be identified and packaged according to the specifications of each customer.





THE TECHNOLOGY

The implemented Technology used in Aluphoenix production plant, allows the company to produce alloys at the highest level concerning the metallurgical quality.

The special dosing mode of aluminium in the form of ingots, combined with the inline degassing and the filtering process, allow to obtain fine and gas-free ingots, both without oxidation –intra-crystalline and slag on the free surface, which is an indicator of metallurgical purity.

The production plant in Riese Pio X (TV) is at the forefront of technology to minimize the impact on the business environment, as well as for general use of computer EDV Data management tools.

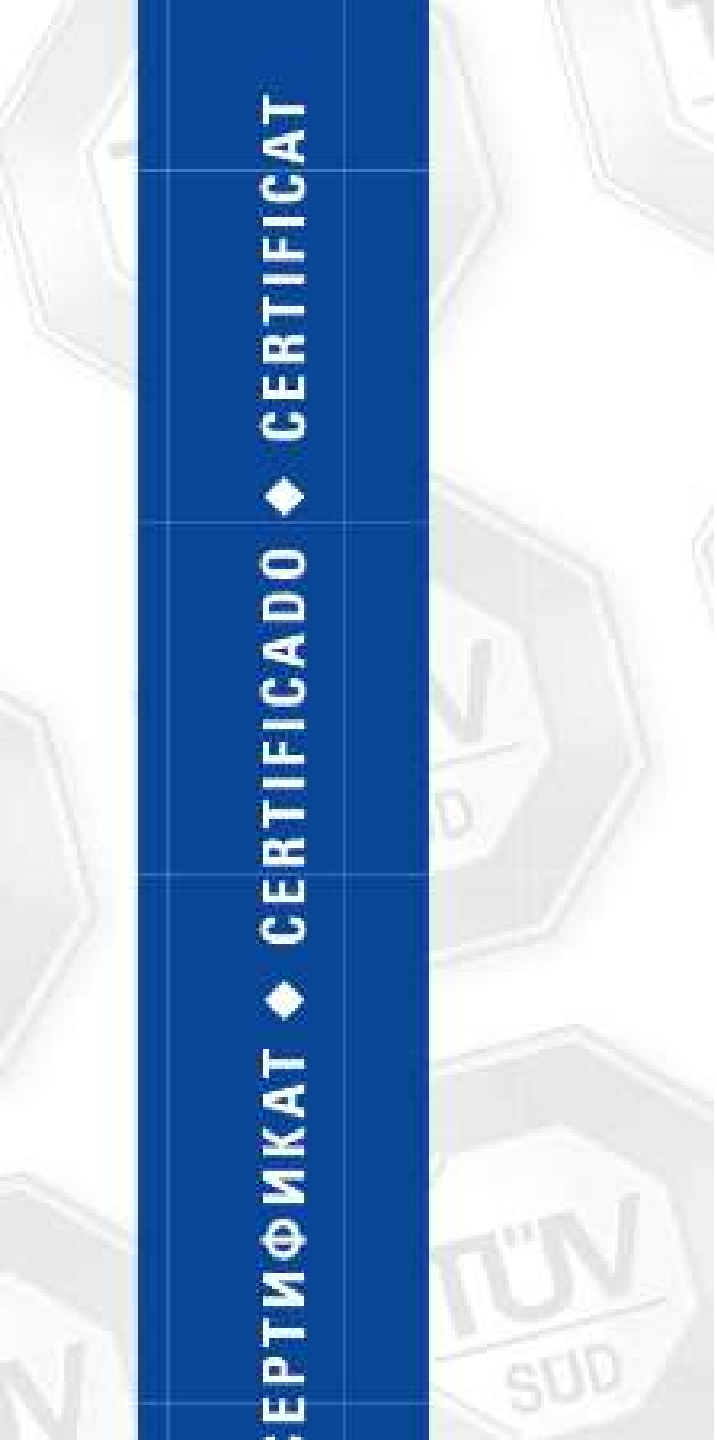
THE TECHNOLOGY

The melting furnaces of Aluphoenix are equipped with filtration system to reduce the emissions into the atmosphere, which the BAT 2016 of the industry foresees just for rotary melting furnaces.

The parts of the system that influence the parameters of the process and product quality are connected to the ERP through an EDP system, which enables automatic and timely regulation in accordance with “Industry 4.0”.

Traceability of cold and hot work is ensured by a computerized loading and unloading system that connects the weighing terminals to portable equipment available to departmental operators.

Process parameter data is collected in real time, enabling daily cost accounting reporting. The timeliness of performance information is considered essential by management to respond to market trends, quickly or in advance.



CERTIFICATIONS

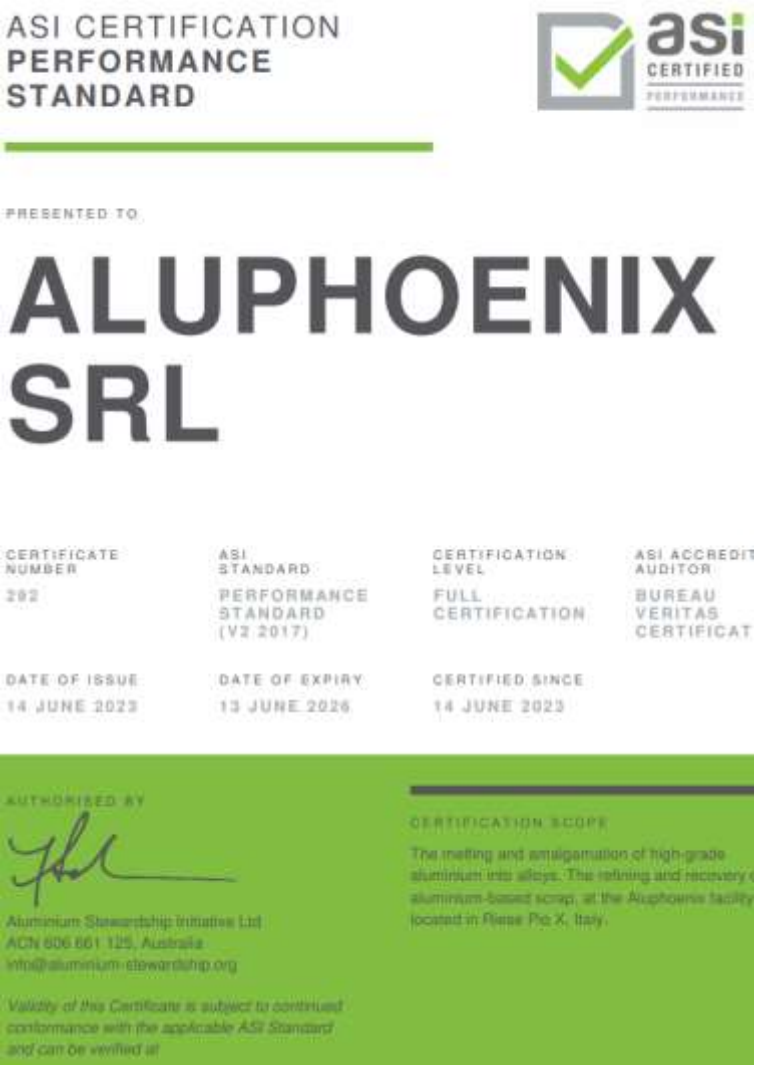
Aluphoenix Srl has developed and certified a fully integrated quality and environmental management system in accordance with IATF 16949:2016 (Automotive Quality Standard) ISO 9001:2015 and ISO 14001:2015.

Aluphoenix management system continues to be successfully tested year after year by various players of the automotive industry supply chain.

Aluphoenix is always ranked as an A-class supplier.

The valid certificates can be freely downloaded form the Corporate website

ISO 9001 and IATF 16949: http://www.aluphoenix.com/en/quality/
ISO 14001: http://www.Aluphoenix.com/en/sustainability/



ASI Certification

According to the company vision, Aluphoenix Srl has certified its management system accordingly to the **ASI Performance Standard V2:2017** https://aluminium-stewardship.org/asi-certifies-aluphoenix-srl-against-performance-standard

The Performance Standard supports responsible supply chains by:

- Providing a common standard for the aluminium value chain on environmental, social and governance performance
- Establishing requirements that can be independently audited to provide objective evidence for the granting of ASI Certification
- Reinforcing and promoting consumer and stakeholder confidence in the aluminium sector and its products
- Serving as a broader reference for the establishment and improvement of responsible production, sourcing and material stewardship initiatives in metals and minerals supply chains.

Limitation of legal liability of the company

Another important step along the sustainability of the company, is the development and adoption of an Organizational Model developed according to the Italian D.Lgs 231:2001, in which Aluphoenix:

- Analyzed and mapped the risks of specific criminal cases in which the organization may incur,
- Identified appropriate internal and external forms of monitoring and control of these risks,
- Implemented specific procedures, able to manage risks, preventing the commission of illegal conduct in areas where the risk of crime is highest,
- Considered the Corporate Code of Ethics, as an integral part of the Organizational Model, and the violation of its provisions as a disciplinary offence to be sanctioned.

Limitation of legal liability of the company

- Identified and appointed by resolution of the Board of Directors, a Supervisory Body (O. d. V) with the task of supervising the functioning, observance and updating of the Organizational Model.

The D.Lgs states in art 6 and 7, that the company is not responsible for such crimes, in terms in which it has effectively implemented "models of organization, management and control, suitable to prevent the realization of the crimes considered"

The company «Ethics Code» and «Reporting Form» of the Organizational Model can be freely downloaded from the Corporate website

http://www.aluphoenix.com/en/sustainability/

SUSTAINABILITY

Aluphoenix has always been focused on the sustainability, which considers for present and future generations, the key to future competition in an increasingly global market, on the one hand, and polarized into geopolitical blocks, on the other.

The concept of "sustainability" embraces various interconnected and equally necessary and relevant areas. Areas that are expressed by the image of this seciton of the company introduction, and that expresses the Aluphoenix creed for sustainability, which aims to be:

- Environmental: Company as steward of nature
- Social: Company as steward of interests and needs of collaborators, suppliers, customers and the local community

SUSTAINABILITY

- Governance: Company as a promoter of the leadership of individual collaborators within the organization and therefore, of self-determination, and as a promoter of the sharing of corporate culture and vision
- Economic: Ability to adapt quickly to changing market conditions and generate profits

The focus on the future generation, and into the world they could inherit from the actual world industrial system, comes directly from the company vision, which places the human being at the center, and is excellently expressed by the following statement by Adriano Olivetti: "*The factory cannot look only at the profit index. It must distribute wealth, culture, services, democracy. I think the factory for man, not man for the factory*"

SUSTAINABILITY

The promoters of Aluphoenix read this thought, from the dawn of industrialization in Italy, in the sense that the organization must look at the man tout court, both current (internal and external collaborators, and their personal development) and future.

And in this sense, to the world to come, to the next generations, and therefore to a healthy natural, social and political environment, welcoming and enhancing specificities and diversities”

Carbon footprint

The reduction of the Carbon Footprint (CFP), of each level of the aluminium supply chain will be the newest and most important target and added value that Aluphoenix has been bringing to the market from the 2024 on.

Several Nations have already legislated to impose severe restrictions to the use of fossil fuel in the vehicles (China Rep, US, EU), as well as in heating systems (EU).

The automotive industry f.i. has extremely speeded up the transition to electric vehicles, pushing the use of “green” materials, i.e. with low CFP.

In 2022, following the growing interest of the global community and the reference markets regarding the sustainability and particularly de-carbonization, the Company began a development process with the purpose to determinate, manage and communicate the carbon footprint of its products.

Carbon footprint

The process reached the first important milestone in November 2023 with the development of the most innovative Carbon Footprint Calculation Tool (CFP) in the worldwide Production Industry of aluminium alloys in ingots. A Tool validated by *SGS Italia Spa* as third independent body.

Aluphoenix CFP Tool, is fully integrated with the business information systems, and is based on the Life Cycle Assessment (LCA) methodology considering the principles contained in the technical reference standards ISO 14067, ISO 14040 and ISO 14044.

The independent third-party verification has attested that the CFP Tool correctly applies the algorithms described in the technical document of implementation and operation of the CFP Tool, for the calculation of the CFP indicator for the phase of raw materials extraction, supply chain and successive operations within the production plant, as well as for the distribution phase up to the customer.

Carbon footprint

The innovative Tool CFP of Aluphoenix Srl is applicable to all the produced alloys within the Riese Pio X (TV) plant, and provides results for each individual casting, allowing to issue specific CFP Summary Reports with the evidence of KgCO2e/Kg of each individual alloy. So it provides specific data, not average ones as all the other existing scheme do (GHG protocol, ISO 14067, …).

Reuters Events UK has ranked Aluphoenix CFP Tool overall 3rd position Worldwide and cross sector in the '2024 Circular Transition Award', and 1st ever Worldwide within the aluminium one.

The compliance declaration of SGS Italia Spa of Aluphoenix CFP integrated tool, as well as the declaration of Reuters events about the 2024 Circular Transition Award, can be freely downloaded from the Corporate website

http://www.aluphoenix.com/en/sustainability/

Renewable energies

The first objective of 2023 along the path to increase the use of renewable energy, was the installation and activation of 2,000.00 square meters of solar panels over the roof of a brand-new warehouse in the Riese Pio X plant.

This solar field is able to auto-generate 30% of the company's annual electricity demand, helping to reduce the company CFP as that of the single alloy produced.

ALLOYS FOR THE FUTURE

Thanks to the decades-long experience and the know how in refining Al-alloys with very narrow analytical ranges, and having accurate metallurgic structures, Aluphoenix Srl business strategy has always been focused in producing primary, special and structural Al-alloys according to all the international standards (ASTM, EN AB, DIN, BS, JIS, GOST …) and customized ones according to the customers' need.

The production line of Aluphoenix Srl has been developed to realize ingots which stand out among the purest in the market, even when using a ratio of recycling materials, boosting a refined and gas-free metallurgical structure, extremely low intra-crystalline oxidation as well as slag on the free surface of solidification.

Thanks to the peculiar raffination and metallurgical structure, the alloys of Aluphoenix are at AS CAST STATE, allowing the customer to avoid extra costs after casting.

ALLOYS FOR THE FUTURE

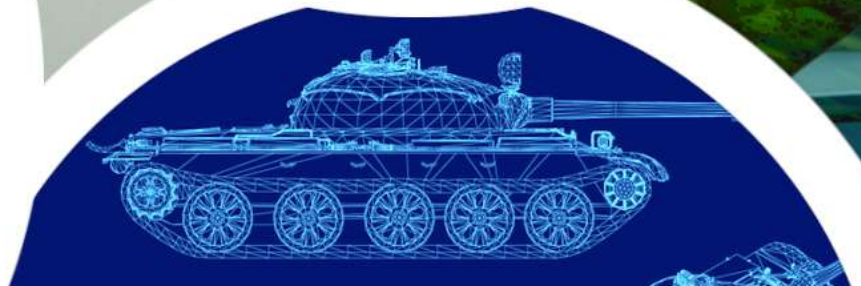
Considering:

1. the huge refining Know-How,
2. the peculiar fitting of the production line described,
3. and the last development of the worldwide cutting-edge Carbon-footprint management Tool,

Aluphoenix strategically addresses its offer of special and peculiar alloys, to highly demanding industries:

1. Wrought Products industry (Rolling mills, extruders),
2. Aerospace industry,
3. Navy industry,
4. Automotive industry,

AUTOMOTIVE



Alloys for Automotive Ind.

The automotive industry needs high performing aluminium alloys which, depending of the use, should give to the casting:

1. Huge elongation,
2. Light-weight and weldability,
3. Stable behavior in high temperature environment.

The alloys needed are of the families:

1. Al-Si
2. Al-SiMn
3. Al SiCu
4. Al-CuSn
5. Al-Mg
6. Al-CuNi
7. Al-SiMnMoZr
8. Al-E-use

Al-Si ALLOYS

Alloy designation	Chemical description	(%)	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other special	Other each
EN AB 42100	AlSi7Mg0,3	max.	7.3	0.04	0.02	0.05	0.35	0.03	0.07	0.15	P 7-15 ppm	0.03
ASTM C356.2	Fe 0.04	min.	6.7				0.30			0.1		
EN AB 42100	AlSi7Mg0,3	max.	7.5	0.06	0.03	0.03	0.35		0.03	0.15	-	0.03
ASTM B356.2	Fe 0.06	min.	6.5				0.25			0.1		
EN AB 42100	AlSi7Mg0,3	max.	7.5	0.07	0.03	0.10	0.45		0.07	0.18	Sr 150-250 ppm	0.03
ASTM E357.1	Fe 0.07	min.	6.5				0.30					

Areas of use / Mechanical features

Automotive / Aerospace / Marine / Automotive engineering / Chemical industry

Very good mechanical properties, good elongation, outstanding corrosion resistance, very good weldability

Cast samples

Car wheels

Pressure equalisation wheels suspension

This alloys bind together a high elongation at-cast-state, without needing to temper the casts. Elongation is highly important in environment subject to high differences in temperatures.

Al-Si ALLOYS

Alloy designation	Chemical description	(%)	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other special	Other each
ALX CSI-X21	AlSi9	max.	9	0.8	0.03	0.010	0.03	0.01	0.07	0.01	Sr 100-200 ppm	0.03
		min.	8	0.5								

Areas of use / Mechanical features	Cast samples
Automotive engineering / Mechanical engineering / Electronics / LED-lighting / Air conditioning HPDC alloy, having an excellent thermal and electrical conductivity. Flange and with a high corrosion resistance.	*Heatsink for electronic device* *Automotive heatsing*

This peculiar alloy is widely used in electric components of BEV (battery electric vehicles).

It gives the casting an excellent thermal and electrical conductivity as well as corrosion resistance.

Al-SiMn ALLOYS

Alloy designation	Chemical description	(%)	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other special	Other each
EN AB 43500	AlSi10MnMg	max.	11.2	0.15	0.03	0.78	0.45		0.07	0.10	Sr 250-350 ppm	0.05
		min.	10.2			0.55	0.25			0.04		

Areas of use / Mechanical features

Automotive / Automotive engineering / Aerospace / Lighting / Foodstuffs industry / Mechanical engineering / Ship-building / Defence engineering

Designed for HPDC, with excellent castability, very good elongation in as-cast state, but maximum elongation after heat treatment. Very good corrosion resistance, good polishability, very good weldability.

Cast samples

Suspension -strut dome

Steering column

Motorbike rear swinging fork

Integral carrier

Al-SiMn ALLOYS

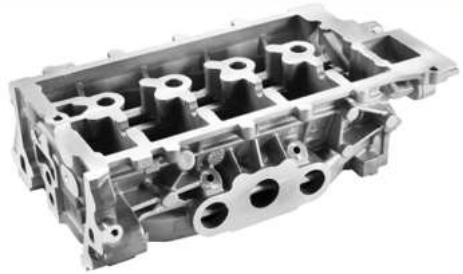
This alloy is the most common structural alloy for vehicles which, beyond the mechanical properties of the Al-Si alloys, gives the casting:

- Good castability in HPDC process thanks to the Mn range,
- Good corrosion resistance thanks the low Cu content.

Another variant of Al-SiMn alloys, which started to be highly requested from the European industry, has 7% Silicon instead of 10%.

Al-SiCu ALLOYS

Alloy designation	Chemical description	(%)	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other special	Other each
EN AB 45500	AlSi7Cu0,5Mg	max.	7.5	0.25	0.7	0.15	0.45		0.07	0.20		0.03
		min.	6.5		0.2		0.25					

Areas of use / Mechanical features	Cast samples
Automotive / Mechanical engineering / Engine parts HPDC alloy, having an excellent machinability and mechanical resistance.	 *Cylinder blocks*

This alloy, beyond the mechanical properties of the Al-Si alloys, gives the casting an excellent machinability and mechanical resistance thanks to the range of the Cu.

Al-CuSn ALLOYS

Alloy designation	Chemical description	(%)	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other special	Other each
ALX L91 ALCAN 91	AlCu4Sn3FeTi	max.	0.8	0.6	4	0.2	0.1		0.05	0.20	**Sn 3.1-3.4** Ni <0.1 Pb <0.05	0.03
		min.	0.5	0.4	3.75					0.15		

Areas of use / Mechanical features	Cast samples
Mechanical engineering / Engine parts HPDC alloy, having an excellent anti-friction function, thanks to the **self-lubricating properties** of the tin, and corrosion resistance	 *Engine gear pump bushing*

This peculiar alloy is very complicated to be produced as Cu and Sn cannot easily form a solid solution, thus the production process needs some peculiar devices or/and procedures.

This alloy is used to produce engine blocks / devices subject to high friction damages, thanks to the Sn which provides the casts huge self-lubricating property.

Al-Mg ALLOYS

Alloy designation	Chemical description	(%)	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other special	Other each
EN AB 51500	AlMg5Si2Mn	max.	2.6	0.2	0.05	0.8	6		0.07	0.2	Be 30-40 ppm	0.03
		min.	1.8			0.5	5					
EN AB 51500	AlMg5Si2Mn	max.	2.6	0.13	0.05	0.8	6		0.07	0.2	Be 30-40 ppm	0.03
		min.	1.8			0.5	5					

This version of the EN AB 51500, in addition to a purer analysis, is produced with a peculiar affination of the α-phase, and a finer eutectic structure to let the casts in HPDC to be able to reach huge mechanical features (A50%, Rm, Rp0,2)

Areas of use / Mechanical features	Cast samples
Aerospace / Cars / Automotive engineering / Mechanical engineering / Chemical industry HPDC alloy, having an excellent mechanical and dynamic properties with thin walls. Very good weldability, suited to stamp riveting. Very good corrosion resistance, excellent mechanical polishability and good machinability. Suited for adhesive bonding in body design.	 *Internal door part* *Frames*

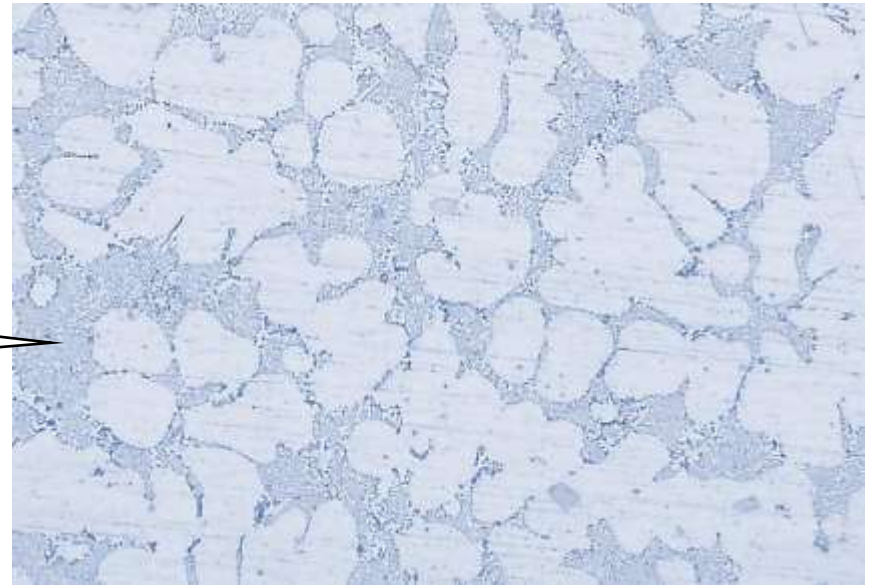
Al-Mg ALLOYS

This peculiar alloy, thanks to the fine eutectic structure Aluphoenix is able to provide to the ingots, allows the cast to reach elongation of 14-17% in wide pieces reaching 2,4 mm of wall thickness, in Diecasting process.

Alloy suitable for frame and structural parts where the weldability, stamp riveting and lightweight is important.

High corrosion resistance also under salty environment.

Fine eutectic structure



Al-CuNi ALLOYS

Alloy designation	Chemical description	(%)	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other special	Other each
ALX AF-X60 RR-350 Hiduminium-350	AlCu5NiCoSbZr	max.	0.2	0.3	5.2	0.3	0.1		0.1	0.30	Ni 1.3-1.7 Co 0.1-0.4 Zr, Sb 0.1-0.3	0.03
		min.			4.5	0.1				0.15		

Alloy called RR-350 (Rolls-Royce 350 / Hiduminium 350)

Areas of use / Mechanical features	Cast samples
Aerospace / Military / Automotive engineering Aluminium having a very high heat strength and high values of thermal alternating loads. Good creep resistance up to 200°C. Poor corrosion resistance due high Cu and Ni-content.	*Gearbox housing* *Cylinder head*

This peculiar alloy, thanks to the Ni allows the cast to remain dimensionally stable and, thanks to the combination with high Cu, have a good heat strength and creep resistance at high temperatures.

Al-SiMnMoZr ALLOYS

Alloy designation	Chemical description	(%)	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other special	Other each
ALX CSI-X37	AlSi9MnMoZr	max.	10.5	0.15	0.05	0.6	0.06		0.07		**Mo 0.1-0.3** **Zr 0.1-0.3**	0.03
		min.	8.5			0.35						

Areas of use / Mechanical features	Cast samples
Automotive / Aerospace / Military / Domestic appliances / Air conditioning / Automotive engineering / Mechanical engineering / Foodstuff industry / Shipbuilding / Defence engineering HPDC alloy, having an excellent castability with a high elongation in as-cast state. Further increase in ductility thanks to single-stage heat treatment. Very good corrosion resistance, no long-term ageing due to heat, good machinability. Ideal for riveting and adhesive bonding in automotive engineering.	*Longitudinal vehicle plug carrier* *Upper safety for connectors*

This peculiar alloy, thanks to the Mo and Zr increases the ductility and yield strength of the castings

Al-E-use ALLOYS

Alloy designation	Chemical description	(%)	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other special	Other each
EN AB 10700	ALP E 99,7	max.	0.12	0.25	0.01				0.04	0.02		0.03
		min.										
EN AB 10500	ALP E 99,5	max.	0.15	0.30	0.02	0.03	0.03	0.01	0.05	0.02		0.03
		min.										

Areas of use / Mechanical features	Cast samples
Automotive / Domestic appliances / Air conditioning / Automotive engineering / Mechanical engineering / HPDC alloy, having an excellent yield strength and elongation. Very good corrosion resistance, excellent machinability and electrical resistivity.	 *Rotors for asynchronous electric motors*

This peculiar alloys are widely used in electric components of BEV (battery electric vehicles).

Peculiar Fe/Si ratio in the alloy, provides the rotor reactivity to electrical impulse.

ALUPHOENIX®

High Quality Aluminium Alloys

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