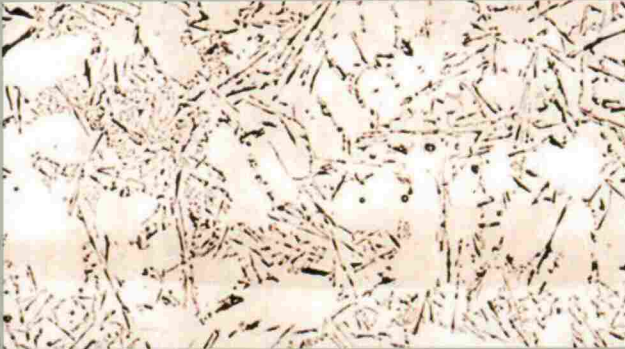


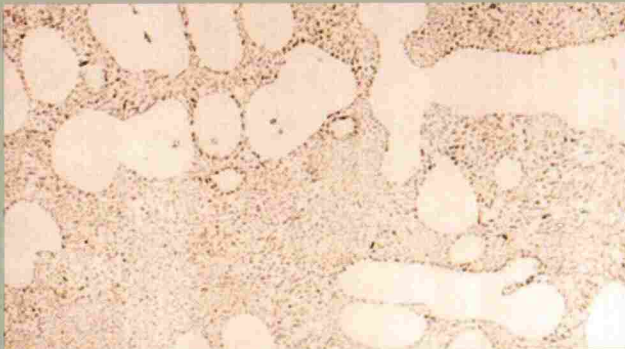
ALUMINUM STRONTIUM MASTER ALLOYS



Modification of eutectic and hypoeutectic AlSi allows a transformation of coarse and acicular eutectic Silicon to a fine fibrous structure, redistributing the porosity (turning the macroporosity into microporosity) thus improving the mechanical properties of the alloy.



AlSi 12% (x200)
Non modified structure



AlSi 12% (x200)
Modified structure

Aluminum Strontium Master Alloys are the most extensively modifier used, due:

Higher performance of the Strontium from the addition in form of Master Alloy

Strontium is less reactive than Sodium, so its addition to the melt is safer and easier, and furnace lining erosion is reduced

Modification using strontium will have minimal impact on fading as it is retained after several remelts

PRODUCT RANGE ALLOY

AlSr3.5

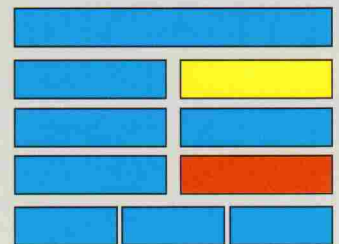
AlSr5

AlSr10

AlSr10 Ti1 B0.2

AlSr15

COLOUR CODE



Format Available: Waffle Plate and Conti-Bar
All of our alloys are produced from 99.7% Purity Aluminum

Chemical and Metallographic Analysis for each heat

ADDITION

The Sr addition level to be used will depend upon the Silicon content of the alloy. Modification of eutectic alloys is more difficult than hypoeutectic ones, requiring higher addition rates, up to 0.03% Sr for the AlSi12 alloy. Sand casting requires higher addition rates than permanent mold and die-casting ones. Addition levels between 0.01% and 0.02% should be sufficient for permanent mold. When premium castings are produced, we recommend the use of both a modifier and a grain refiner.

ALEASTUR OF AMERICA, LLC

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ALUMINIUM GRAIN REFINERS



The control of grain refinement is an essential process in the aluminium casting industry. The initial procedure for obtaining grain refinement for aluminium is based on the introduction of Ti metal or salts (KBF_4 , K_2TiF_6) which is subsequently introduced to molten aluminium. Nowadays, these practices have been replaced by the addition of AlTiB alloys.



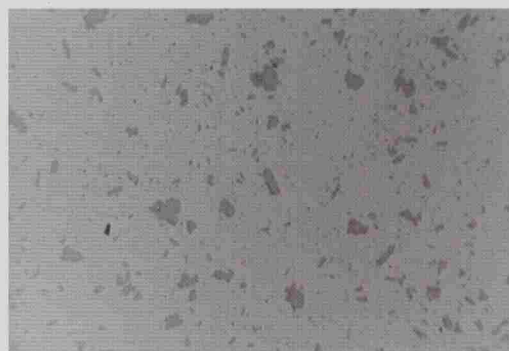
Because the rod is typically innoculated in the launder, cleanliness of the refiner is critical in maximizing the quality of the final product. Therefore the efficiency of the rod is equally as important as the metallographic structure.

The use of AlTiB alloys as grain refiners will provide the following advantages to Aluminium alloy:

- High fluidity allowing faster casting speeds
- Better homogeneity of the alloy and uniformity of the structure
- Reduction of the crack tendency during solidification
- Improvement of surface quality
- Enhancement of mechanical properties

MICROSTRUCTURE

AlTiB alloys contain the particles $TiAl_3$ and TiB_2 uniformly dispersed in an aluminium matrix. The combination of TiB_2 as nucleation particles with the Ti from the $TiAl_3$ in the aluminium melt is the origin of refinement. The TiB_2 phase is sized between 0.5 and 2 microns. Under an electron microscope examination, it can be observed that these particles are actually formed by smaller crystals with an average size range between 0.1 and 0.2 microns. The TiB_2 particles are insoluble and are quickly and uniformly distributed in the melt after addition. The average size of the $TiAl_3$ phase is 30 microns but dispersed crystals may be found at 90 microns maximum. These particles will be dissolved very fast in the aluminium melt, disappearing as phase in the solidified alloy.



AlTi5B1 Structure

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PRODUCT RANGE

ALLOY

AlTi3B0.2

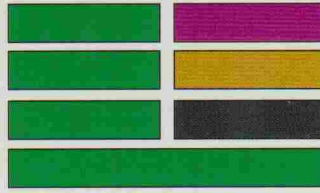
AlTi3B1

AlTi5B0.2

AlTi5B1

Format Available: Rod, Conti-Bar and Waffle Plate
All of our alloys are produced from 99.7% Purity Aluminium

COLOUR CODE



Other Ti:B ratios are also available

QUALITY

INFORMATION PROVIDED

Following inspections are carried out for every batch:

- Grain Refining Test
- Physical Test
- Chemical Analysis
- Metallographic Examinations:
 - Phase Size (TiB₂, TiAl₃)
 - Phase Distribution (TiB₂, TiAl₃)
 - Agglomerations | Clusters
 - Oxides | Inclusions
 - Banding
 - Streaking

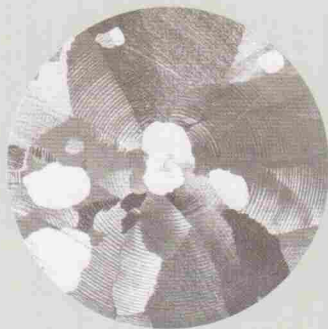
SPC related to above data are available for our customers on request.

ALEASTUR

AlTiB ALLOYS PERFORMANCE

Chosen ratio and addition rate will depend on many factors, such as the alloy to be treated, percentage of recycled aluminium, required grain size, production process, etc.

The minimum contact time to get good refinement of the aluminium is 15 seconds, providing highest efficiency 60 seconds after addition.



Primary Aluminium
(Grain Size 2000µ)



Primary Aluminium
refined with AlTi5B1 (*)
(Grain Size 100µ)

(*) Grain Refining Test TP1 AA, 0.2% AlTiB with 2 minute contact time

PRODUCT FORMS



Rod Coils



Rod Sticks



Conti-Bars



Waffle Plates

All presentations are marked according to CEN Standard colour code

The material is stacked on wooden pallets, banded and polyethilene wrapped

Besides our standard dimensions and presentations, each form may be adjusted to suit our customers' special requirements

ROD COILS DIMENSIONS

Weight	Inner Diameter	Outer Diameter	Width	Rod Diameter
180Kg	360mm	720mm	300mm	9.5mm
270Kg	360mm	830mm	300mm	9.5mm
450Kg	360mm	1050mm	300mm	9.5mm

STANDARD PACKAGING

ALEASTUR standard bulk units consist of 3 coils per pallet.

PRODUCT TRACEABILITY

For full traceability, the following information is printed on each meter of the rod:

- ALEASTUR
- Alloy Name (i.e. AlTi5B1)
- Number of the Heat
- Number of the Coil in the Heat
- Remaining Length of Rod in the Coil

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ALEASTUR ALTI5B1 A33597/3 M214

ROD STICKS DIMENSIONS

Length	Weight	Rod Diameter
0.1m	20g	9.5mm
0.5m	100g	9.5mm
1m	200g	9.5mm



STANDARD PACKAGING

Standard Packaging consists of 1MT cardboard boxes on pallet

CONTI-BAR WEIGHTS & SIZES

Size	Weight
C-0	200g
C-1	500g
C-2	1Kg
C-3	2.5Kg



STANDARD PACKAGING

ALEASTUR conti-bar may be packaged on:

- Standard 1MT Big Bags on pallet
- 4 standard 250Kg fiber drums on pallet

WAFFLE PLATE WEIGHTS & SIZES

16 notched waffle plate

Size:	45x190x450mm
Approx. Weight:	7Kg



STANDARD PACKAGING

Standard presentation consists of 800-1000Kg pallet-stacked waffle plate