

SCHÄFER

METALLURGIE GmbH

BOUND TO THE FOUNDRYMAN
BY TRADITION

Catalogue Light Metal



Application of products for the treatment of:

- aluminium casting alloys
- aluminium wrought alloys
- copper, bronze, brass
- magnesium alloys
- zinc alloys

Application Range:

Pressure die-, gravity die-, sand-, fine-and
continuous casting

profile

The company **SCHÄFER Metallurgie GmbH** was founded in 1919 and produces foundry auxiliary agents for the light and heavy metal sector.

Our products are used in non-ferrous-foundries all over the world. They optimize the metallurgy of the metal melts, enable the production of high quality casting parts by improving the metal treatment process as well as maintain the functionality and lifespan of furnaces.

We intend to facilitate the work of foundry men together with our world-wide representations by superior products and top service.

Our Commitment to Quality

Quality has a long tradition at the company **SCHÄFER Metallurgie GmbH**. For more than 90 years our customers have relied on the consistently high quality of **SCHÄFER** products for the treatment of metal melts.

To meet the growing product requirements, quality assurance is considered along the entire value chain. The careful selection of suppliers as well as the responsible purchase of raw and starting materials is the basis of our quality products. During the production process we rely on qualified and trained employees, structured workflows and state-of-the-art facilities.

Since 2000 our quality management is successfully certified in accordance with ISO 9001 and it reflects the norm's principle of a continual improvement. We develop our products further so that we are able to adapt and to react quickly to sudden changes of market requirements. Product innovations are also one of our core competencies.



Our Strengths:

- experience of more than 90 years in the foundry market
- customized, unique service
- research and development: product innovations and constant improvement of the existing product range
- development of special products to solve customer-specific problems
- certification in accordance with ISO 9001 and 14001



We are specialized in:

- removal of metallurgical impurities
- reduction of the share of metal in the dross
- modification with sodium and strontium
- grain refinement
- refining of aluminium
- coatings for the gravity die casting
- special products according to your company's requirements

Customer orientation

Our services focus on the needs, interests and individual requirements of every single customer. This serves as a basis for all business relationships of the company SCHÄFER Metallurgie GmbH. Customers of our company are representations, resellers as well as companies which use our products for the treatment of metal melts in their foundries.

We exactly investigate the needs and requirements of our customers in every single case (order) to avoid queries and complaints due to insufficient information.

Our customers require:

- reliability (correct and on time delivery)
- flexibility (meeting the customers' special needs and requirements)
- consultant (competent product information)
- quality (products of high quality)

Furthermore, the customers of our company expect that we steadily watch the market and keep up with the technological progress, besides meeting their needs and requirements. Thus, we are able to forward the gained knowledge to them by integrating it in our consulting services.

Our Quality principles are:

- reliability towards our customers
- marketing security (products of high quality)
- market influence
- flexibility, the ability to adapt and to react quickly to sudden changes of market requirements (proximity to the market)
- intensive support of our customers and continuous communication with them

Sustainability

The company SCHÄFER Metallurgie GmbH is obligated to protect the environment and the employees to a great extent due to its handling with chemicals. This also has economic reasons, as ecology is not contrary to economy at our company. The executive management focuses on a continuous improvement of the environment protection and industrial safety while increasing the quality of our products and services.

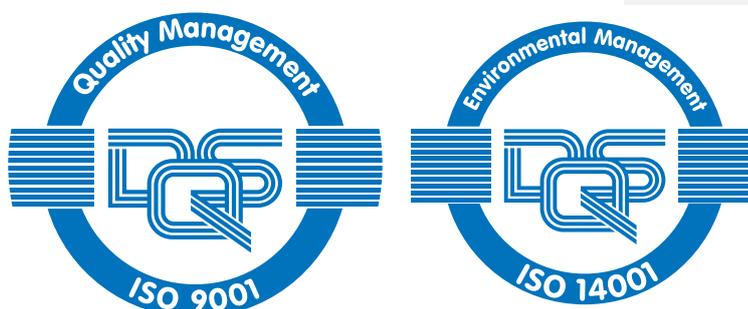
We systematically integrate environment protection into our organisational and operational processes and since 2007 we are successfully certified in accordance with ISO 14001. All of our products and services are produced respectively performed subject to all valid laws, standards, regulations and governmental permissions.

Beyond that, we aim to develop and offer products that support foundries in keeping the environmental impact of their production as low as possible. In the course of these considerations we also discover potentials how environmental impacts of our company can be reduced continuously.

Our production facilities are built and operated state-of-the-art. This includes the maintenance of special safety standards regarding technical and organisational needs, because safety of facilities implies environment as well as employee protection.

Important aspects to ensure our standards:

- continuous control of machines and facilities
- training of employees
- optimising our workflows
- safe handling and appropriate storage of chemical substances





The pressure die casting is the most economic casting method for the production of very high quantities due to the fact that the same mould is used again and again and the casting goes very quickly.

The metallurgical influence on the alloy is only very slightly owing to this high solidification speed. Thus, in general the grain refining and modification of the melt is not necessary.

However, the possibility of heat treatment to increase the mechanical values and the weldability is expected. Due to the high solidification speed hydrogen can be deposited in a supersaturated state, which accumulates at the oxides and forms pores after the heat treatment.

As a consequence of this a thorough cleaning is imperative. This applies above all to parts which are anodised, chromium-plated, welded or heat treated. If hypereutectic alloys are used a refinement of the silicon can contribute to an increase in strength.

A thorough treatment of the dross to reduce the proportion of metal is imperative due to the high quantity of non-metallic impurities the returns in the pressure die casting contain.

The melt treatment of the alloys used in the pressure die casting is carried out for:

Cleaning of non-metallic impurities and inclusions

Treatment of the dross to reduce the proportion of metal in the dross and to avoid the formation of build-ups on furnace walls.

Refining of the silicon in hypereutectic alloys in order to increase the mechanical values.

Treatments and Products:

hypoeutectic AlSi alloys:
G-**AlSi8Cu3**, G-**AlSi10Mg**, G-**AlSi7Mg** G-**AlSi12** und G-**AlZn10Si8**

cleaning and treatment of the dross

- ARSAL 2120
- ARSAL 2125
- PROBAT - FLUSS AL 224

hypereutectic AlSi alloys:
G-**AlSi12**, G-**AlSi18CuNiMg**, G-**AlSi17CuNiMg**

cleaning

- PROBAT - FLUSS 2126
- PROBAT - FLUSS 3125

grain refining of primary silicon

- PROBAT - FLUSS VLP 200



Billets, roll blocks and continuous casting pigs are produced in the vertical or horizontal continuous casting process. In general they have a low level of alloying elements; they are sensitive to non-metallic impurities and subversive elements and tend to hot tears from time to time. For this purpose scrap metal is often used which has non-metallic adhesions. As a consequence of this a treatment of the dross after the melting is imperative. As a result oxides are bound and the proportion of metal in the dross is reduced.

Cleaning of non-metallic impurities and inclusions.

Treatment of the dross to bind oxides to reduce the proportion of metal in the dross and avoid the formation of build-ups on furnace walls.

Grain refining to improve the feeding behaviour, prevent the formation of pores and shrinkage cavities and increase the mechanical values and the anodising behaviour.

Release agents are also increasingly used in the continuous casting process as they guarantee a secure treatment of gravity ingot moulds and gate stones without producing much smoke.

Treatments and Products:

Al-, AlMg, AlMgSi, AlCuMg, AlZnMg:

cleaning and treatment of the dross

- ARSAL 2120
- ARSAL 2125

sodium free dross treatment

- PROBAT - FLUSS 2126
- PROBAT - FLUSS AL 3125

grain refining of aluminium alloys

- MIKROSAL AL-T 100
- MIKROSAL AL-T 200

release agent

- CILLOLIN AL 225



SAND CASTING

Sand casting offers founders – compared with other casting procedures – the greatest range of structuring options. This also requires high demands on the metallurgy due to the slow solidification rate.

The treatment of the alloys used in the sand casting is carried out for:

Cleaning of non-metallic impurities and inclusions as well as to reduce the proportion of metal in the dross.

Modification to achieve higher strength and extension values in the casting part.

Grain refining to improve the feeding behaviour and prevent the formation of pores, shrinkage cavities, sinks and gas permeability.

Treatments and Products:

hypoeutectic AlSi alloys:
G-ALSi8Cu3, G-ALSi10Mg, G-ALSi7Mg G-AL-Si12 und G-ALZn10Si8

cleaning and skimming purposes

- ARSAL 2120
- ARSAL 2125
- PROBAT - FLUSS AL 224

modification

- EUTEKTAL T-201
- PROBAT - FLUSS MONOTAB NS
- EUTEKTAL 375

grain refining

- MIKROSAL AL-T 100
- MIKROSAL AL 350

improvement of the feeding behaviour

- PROBAT - FLUSS BEGASER T-200
- PROBAT - FLUSS LUNKERPULVER 200
- PROBAT - FLUSS MIKRO 100

near- and hypereutectic AlSi alloys:
G-ALSi12, G-ALSi18CuNiMg, G-ALSi17CuNiMg

cleaning and skimming purposes

- PROBAT - FLUSS 2126
- PROBAT - FLUSS 3125

grain refining of primary silicon

- PROBAT - FLUSS VLP 200

improvement of the feeding behaviour

- PROBAT - FLUSS BEGASER T 200
- PROBAT - FLUSS LUNKERPULVER 200
- PROBAT - FLUSS MIKRO 100

low Si alloys;

G-ALMg3, G-ALMg3Si, G-ALCu4Ti

cleaning and skimming purposes

- PROBAT - FLUSS AL 2126
- PROBAT - FLUSS AL 3125

grain refining

- MIKROSAL AL-T 100
- MIKROSAL AL-T 200

improvement of the feeding behaviour

- PROBAT- FLUSS LUNKERPULVER 200



Gravity die casting is particularly economic in respect of the casting of high quantities. This casting method enables an adjustment of the mechanical values by the metallurgy. The higher solidification speed – compared with the speed of sand casting – normally leads to a denser structure and to a high level of dimensional stability.

The dense feeding, the fluidity and imaging process, i. e. whether every edge of the casting part is casted, in the gravity die can be influenced by thorough melt treatment and targeted coating with CILLOLIN.

Cleaning of non-metallic impurities and inclusions as well as to reduce the proportion of metal in the dross.

Modification to achieve higher strength and extension values in the casting part.

Grain refining to improve the feeding behaviour and prevent the formation of pores, shrinkage cavities, sinks and gas permeability.

Treatments and Products:

hypoeutectic AlSi alloys:
G-ALSi8Cu3, G-ALSi10Mg, G-ALSi7Mg G-AL-Si12 und G-ALZn10Si8

cleaning and skimming purposes

- ARSAL 2120
- ARSAL 2125
- PROBAT - FLUSS AL 224

modification

- EUTEKTAL T-201
- PROBAT - FLUSS MONOTAB NS
- EUTEKTAL 375

grain refining

- MIKROSAL AL-T 100
- MIKROSAL AL 350

improvement of the feeding behaviour

- PROBAT - FLUSS BEGASER T-200
- PROBAT - FLUSS LUNKERPULVER 200
- PROBAT - FLUSS MIKRO 100

hypereutectic AlSi alloys:
G-ALSi12, G-ALSi18CuNiMg, G-ALSi17CuNiMg

cleaning and skimming purposes

- PROBAT - FLUSS 2126
- PROBAT - FLUSS 3125

grain refining of primary silicon

- PROBAT - FLUSS VLP 200

improvement of the feeding behaviour

- PROBAT - FLUSS BEGASER T 200
- PROBAT - FLUSS LUNKERPULVER 200
- PROBAT - FLUSS MIKRO 100

low Si alloys:

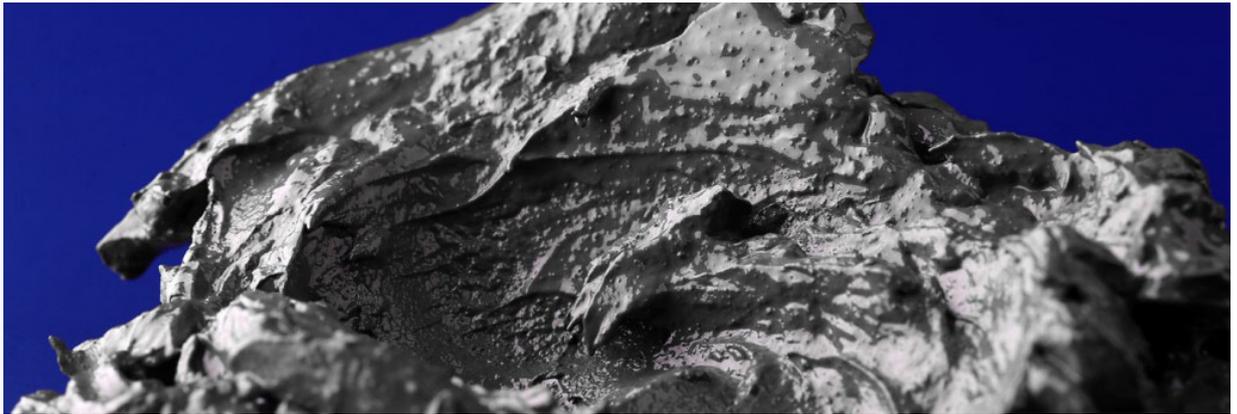
G-ALMg3, G-ALMg3Si, G-ALCu4Ti

cleaning and skimming purposes

- PROBAT - FLUSS AL 2126
- PROBAT - FLUSS AL 3125

improvement of the feeding behaviour

- PROBAT - FLUSS LUNKERPULVER 200
- PROBAT - FLUSS MIKRO 100



Coatings for the gravity die casting separate the liquid metal from the mould. Thus, they avoid that the metal adheres to the mould. In addition to that they regulate the heat transfer and influence the fluidity during the filling of the gravity die in a positive manner. Furthermore, coatings must have a sliding property or a special smooth casting surface.

As a consequence of this every coating has its special properties dependent on the individual requirements. These might be to keep or release heat, to form smooth surfaces or to create a good fluidity. Special coatings are used to protect standpipes or thermocouples or for instance to create clean and smooth surfaces in magnesium casting.

Different properties have to be achieved, dependent on the target:

Thermal conductivity

CILLOLIN coatings with black (high thermal conductivity) or white-grey (low thermal conductivity).

Adhesive properties

with strong adhesive strength (glass structure) or week adhesive strength with good sliding properties.

Fluidity

to avoid draws and achieve an optimal casting of the mould.

Treatments and Products:

smooth surface, styling surfaces

low thermal conductivity

- CILLOLIN AL 285

medium thermal conductivity

- CILLOLIN AL 2812

high thermal conductivity

- CILLOLIN AL 223

rough surface, outline surfaces

low thermal conductivity

- CILLOLIN AL 285G

medium thermal conductivity

- CILLOLIN AL 2812G

high thermal conductivity

- CILLOLIN AL 223G

very rough surface, demanding casting geometry, very good fluidity

low thermal conductivity

- CILLOLIN AL 285 GN

medium thermal conductivity

- CILLOLIN AL 3500 G

high thermal conductivity

- CILLOLIN AL 223 GD

very smooth surface, low thermal conductivity

- CILLOLIN AL 288

standpipes, tools, protection tube, channels

- PYRONOL

gravity die and gate stones in the vertical continuous casting

- CILLOLIN AL 225

sliding properties (pinholes)

- CILLOLIN AL 160

ceramic launders (alcohol-based)

- CILLOLIN AL 500

sand moulds for the magnesium casting

- CILLOLIN MG



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ARSAL 2125

Highly compacted cleansing and skimming granules for all hypoeutectic and eutectic aluminium, wrought and casting alloys such as e. g.: G- AlSi10Mg , G- AlSi7Mg , G- AlSi8Cu3 , G- AlSi12 and G- AlZn10Si8

Notes on Technology:

Aluminium and aluminium, wrought and casting alloys have the tendency to form oxides and to absorb hydrogen in the liquid state and, in addition, to an undesired dross and aluminium oxide foam formation which has an extremely high portion of metal.

The granules ARSAL 2125 bind the oxides and transport them to the surface by a flotation process. By means of the low surface tension they separate the metal from the oxide, whereby a low-metal dross is obtained. In addition the oxides are bound on the melt surface during the treatment with an impeller.

ARSAL 2125 is a highly compacted agent. Therefore, nearly no dust is released and it can also be used in the lower temperature range of the aluminium melt. The high degree of compaction permits an intensive reaction with the oxides which can easily be controlled thanks to the compactness of the granules (discoloration and dissolution).

Types of compaction:

ARSAL 2125 is produced as granules or flakes.

- The granules consist of small cylinders of approximately 0.3 g / grain. They enable an important control of the operating staff as they remain their shape and colour if they are not thoroughly stirred in the melt and therefore did not reach the reaction time.
- Flakes look like small crushed stones, weight approximately 0.05 g / grain and have a large distribution area. The reaction time is comparable with that of the granules. They reach the temperature of the metal faster and lose their colour before reacting. Thus, an effective control is very difficult.

Application Range:

ARSAL 2125 stands out by good storage stability and is applicable within a wide reaction range, e.g. it can also be used in the lower temperature range ($> 700^\circ$) of the aluminium melt. It is applicable for all aluminium, wrought and casting alloys which may contain small quantities of sodium (< 15 ppm).

Quality Characteristics:

- removes oxides from the melt by flotation and reduces the hydrogen content
- forms mixing phases with the oxides and adheres to the oxide by energetically low surface tension
- prevents the formation of corundum and its adherences
- produces a fine, powdery and low-metal dross
- works in all types of furnaces and crucibles
- permits the easy removal of adherences
- is of very low smoke and odour emission

Addition Rate:

Depending on the level of impurities 0.05 – 0.25 % by weight or lower (rule of thumb: half the quantity compared with the powder addition).

Product Application:

ARSAL 2125 works in melting, holding and pouring furnaces as well as in crucibles. When using as a cleansing agent, submerge the required addition into the melt (during the impeller treatment or when decanting). Gently stir with a well pre-heated and coated tool until a fully reacted dross forms and then skim it off.

For the dross treatment, distribute ARSAL 2125 on the surface and stir the agent in the dross with a tool. Skim it off after a reaction time of three minutes. When it is used regularly (one to two times per shift) it impedes the formation of built-ups on the furnace walls and crucibles.

During the impeller treatment oxides are bound and the share of metal in the dross is reduced essentially. Thus, more metal is available for the casting process (metal saving potential). The addition of the agent in the pouring stream while decanting increases this effect.

Typical Properties:

Appearance: blue granules / flakes

Odour: odourless

Reaction temperature: from approximately 700°C (higher temperatures accelerate the reaction)

Packaging:

25 kg bags, 3-fold with plastics lining, special packaging available.

Storage and Shelf Life:

Store in a cool place (below $32^\circ\text{C}/90^\circ\text{F}$); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

PROBAT - FLUSS AL 3125

Sodium-free, highly compacted cleansing and skimming agent potassium based, for all low-silicon and hypereutectic aluminium alloys such as e. g.: G-ALMg3, G-ALCu4Ti, G-ALSi17Cu4Ti and G-ALSi18CuNiMg

Notes on Technology:

Alloys with a small melting range, such as all AlMg- and AlCu-alloys, should not contain any sodium. Sodium can accumulate on the grain boundaries. Thus, it supports the formation of hot tears after the solidification.

Such alloys can only be treated with agents which do not release any sodium. PROBAT - FLUSS 3125 binds oxides and transports them into the dross by a flotation process whereby a low metal-dross is obtained by the reduction of the surface tension.

On top of that this product is a highly complex agent which is very effective due to its high degree of compaction. During the treatment all ingredients simultaneously reach temperature. As a consequence of this they are quicker effective.

Application Range:

PROBAT - FLUSS AL 3125 is applicable for all casting processes, however, preferably for alloys which are free from sodium. It stands out by good storage stability and a wide reaction range (between 580°C and 900°C, low temperatures need a longer reaction time).

Quality Characteristics:

- removes oxides from the melt by flotation and reduces the hydrogen content
- forms mixing phases with the oxides and adheres to the oxide by energetically low surface tension
- prevents the formation of corundum and its adherences
- produces a fine, powdery and low-metal dross
- works in all types of furnaces and crucibles
- permits the easy removal of adherences
- is of very low smoke and odour emission

Addition Rate:

Depending on the level of impurities 0.05 – 0.25 % by weight or lower (rule of thumb: half the quantity compared with the powder addition)

Product Application:

PROBAT - FLUSS AL 3125 works in melting, holding and pouring furnaces as well as in crucibles. When using as a cleansing agent, submerge the required addition into the melt (during the impeller treatment or when decanting). Gently stir with a well pre-heated and coated tool until a fully reacted dross forms and then skim it off.

For the dross treatment, distribute PROBAT - FLUSS AL 3125 on the surface and stir the agent in the dross with a tool. Skim it off after a reaction time of three minutes. When it is used regularly (one to two times per shift) it impedes the formation of built-ups on the furnace walls and crucibles.

During the impeller treatment oxides are bound and the share of metal in the dross is reduced essentially. Thus, more metal is available for the casting process (metal saving potential). The addition of the agent in the pouring stream while decanting increases this effect.

Typical Properties:

Appearance: white flakes

Odour: odourless

Reaction temperature: from approximately 580°C (higher temperatures accelerate the reaction)

Packaging:

25 kg bags, 3-fold with plastics lining, special packaging available.

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

ARSAL 2120

Cleansing and skimming agent for all hypoeutectic and eutectic aluminium alloys such as e. g.: G-ALSi10Mg, G-ALSi7Mg, G-ALSi8Cu3, G-ALSi12 and G-ALZn10Si8

Notes on Technology:

During the melting of returns and ingots oxides are formed. These oxides adhere to the crucible and furnace walls, convert into corundum and destroy the walls.

ARSAL 2120 reacts with the oxides in such a way that they can be easily removed from the walls. Simultaneously it reduces the surface tension so that the aluminium can flow out of the dross. As a consequence of this more aluminium is available for the casting process.

ARSAL 2120 shows its cleaning effect by adhering to the oxides and transporting them to the surface.

Application Range:

ARSAL 2120 is applicable for all casting processes. It stands out by good storage stability and a wide reaction range (between 700°C and 900°C, higher temperatures accelerate the reaction).

Quality Characteristics:

- removes oxides from the melt by flotation and reduces the hydrogen content
- produces a fine, powdery and low-metal dross
- works in all types of furnaces and crucibles
- permits the easy removal of adherences
- is of very low smoke and odour emission

Addition Rate:

Depending on the level of impurities 0.1 – 0.5 % by weight or lower.

Product Application:

ARSAL 2120 works in melting, holding and pouring furnaces as well as in crucibles. When using as a cleansing agent, submerge the required addition slowly and carefully into the melt by using a bell. Gently stir the rising flotation products until a fully reacted dross forms and then skim it off.

For the dross treatment, distribute ARSAL 2120 on the surface and stir the agent in the dross with a tool. Skim it off after a reaction time of three minutes. When it is used regularly (one to two times per shift) ARSAL 2120 impedes the formation of built-ups on the furnace walls and crucibles.

During the impeller treatment oxides are bound and the metal proportion is reduced essentially. Thus, more metal is available for the casting process (metal saving potential). The addition of the agent in the pouring stream while decanting increases this effect.

Typical Properties:

Appearance: blue powder mix

Odour: odourless

Reaction temperature: from approximately 700°C (higher temperatures accelerate the reaction)

Packaging:

25 kg bags, 3-fold with plastics lining, special packaging available.

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

ARSAL 2120i

Cleansing and skimming agent for all hypoeutectic and eutectic aluminium alloys such as e. g.: G-AlSi10Mg, G-Al-Si7Mg, G-AlSi8Cu3, G-AlSi12 and G-AlZn10Si8 special agent for the application with a spraying device (flux injector)

Notes on Technology:

The injection of ARSAL 2120i under the melting surface is a highly effective method to remove non-metallic impurities. By doing this an intensive contact with the melt is achieved which leads to a quick reaction.

ARSAL 2120i is a highly efficient agent that can be also used in the lower temperature range of the aluminium melt. This product is ideal for the use in a spraying device thanks to its fine ingredients.

Application Range:

ARSAL 2120 is applicable for all casting processes. It stands out by good storage stability and a wide reaction range (between 700°C and 900°C, higher temperatures accelerate the reaction).

Quality Characteristics:

- can be sprayed into the melt or dross with a spraying device (flux injector)
- removes oxides from the melt by flotation and reduces the hydrogen content
- produces a fine, powdery and low-metal dross
- works in all types of furnaces and crucibles
- permits the easy removal of adherences
- is of very low smoke and odour emission

Addition Rate:

Depending on the level of impurities 0.1 – 0.5 % by weight or lower.

Product Application:

ARSAL 2120i works in melting, holding and pouring furnaces. When using as cleansing agent, inject the required addition carefully into the melt with nitrogen or argon. Skim off the rising flotation products and the fully reacted dross with a well pre-heated and coated tool.

For the dross treatment, inject ARSAL 2120i under the surface with nitrogen or argon. Skim the dross off after a short reaction time.

When it is used regularly (one to two times per shift) ARSAL 2120i impedes the formation of built-ups on the furnace walls and crucibles. Oxides are bound and the metal proportion in the dross is reduced essentially. Thus, more metal is available for the casting process (metal saving potential)

Typical Properties:

Appearance: blue, fine powder mix

Odour: odourless

Reaction temperature: from approximately 700°C (higher temperatures accelerate the reaction)

Packaging:

25 kg bags, 3-fold with plastics lining, special packaging available.

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

PROBAT - FLUSS AL 2126

Sodium-free cleansing and skimming agent potassium based, for all low-silicon and hypereutectic aluminium alloys such as e. g.: G-ALMg3, G-ALCu4Ti, G-ALSi17Cu4Ti and G-ALSi18CuNiMg as well as aluminium wrought alloys

Notes on Technology:

Alloys with a small melting range, such as low alloyed aluminium, hypereutectic AlSi-alloys and all AlMg- and AlCu-alloys, should not contain any sodium. Sodium can accumulate on the grain boundaries. Thus, it supports the formation of hot tears after the solidification.

Such alloys can only be treated with agents which do not release any sodium. PROBAT - FLUSS 2126 binds oxides and transports them into the dross by a flotation process whereby a low metal-dross is obtained by the reduction of the surface tension.

Application Range:

PROBAT - FLUSS AL 2126 is applicable for all casting processes, however, preferably for alloys which are free from sodium. It stands out by good storage stability and a wide reaction range (between 700°C and 800°C, higher temperatures reduce the reaction time).

Quality Characteristics:

- removes oxides from the melt by flotation and reduces the hydrogen content
- produces a fine, powdery and low-metal dross
- works in all types of furnaces and crucibles as it is free from any sodium
- permits the easy removal of adherences
- is of very low smoke and odour emission
- suitable for the automatic dosing with an impeller system

Addition Rate:

Depending on the level of impurities 0.1 – 0.5 % by weight or lower.

Product Application:

PROBAT - FLUSS AL 2126 works in melting, holding and pouring furnaces as well as in crucibles. When using as a cleansing agent, submerge the required addition into the melt (during the impeller treatment or when decanting). Gently stir with a well pre-heated and coated tool until a fully reacted dross forms and then skim it off.

For the dross treatment, distribute PROBAT - FLUSS AL 2126 on the surface and stir the agent in the dross with a tool. Skim it off after a reaction time of three minutes. When it is used regularly (one to two times per shift) it impedes the formation of built-ups on the furnace walls and crucibles.

During the impeller treatment oxides are bound and the metal proportion in the dross is reduced essentially. Thus, more metal is available for the casting process (metal saving potential). The addition of the agent in the pouring stream while decanting increases this effect.

Typical Properties:

Appearance: white powder mix

Odour: odourless

Reaction temperature: from approximately 700°C (higher temperatures accelerate the reaction)

Packaging:

25 kg bags, 3-fold with plastics lining, special packaging available.

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

PROBAT - FLUSS AL 224

Intense cleansing and skimming agent with a pre-modifying effect for all hypoeutectic and eutectic aluminium alloys such as e. g.: G-ALSi10Mg, G-ALSi7Mg, G-ALSi8Cu3, G-ALSi12 and G-ALZn10Si8

Notes on Technology:

Mainly sand casting parts must be thoroughly cleaned from oxides as they support the formation of pores. Furthermore, a pre-modification prevents a pasty solidification of the eutectic. Thus, it impedes the formation of shrinkage cavities and simplifies the modification.

PROBAT - FLUSS AL 224 binds oxides and transports them to the surface by a flotation process. By means of the low surface tension they separate the metal from the oxide, whereby a low-metal dross is obtained.

On top of that this product is a highly efficient agent for heavily polluted melts and can also be used in the lower temperature range of the aluminium melt. The treatment also pre-modifies the melt.

Application Range:

PROBAT - FLUSS AL 224 is applicable for all casting processes. It is preferably used in such cases where no supporting effect, e. g. by an impeller treatment, is possible.

PROBAT - FLUSS AL 224 stands out by good storage stability and a wide reaction range (between 680°C und 900°C).

Quality Characteristics:

- removes oxides from the melt by flotation and reduces the hydrogen contents
- produces a fine, powdery and low-metal dross
- works in all types of furnaces and crucibles
- permits the easy removal of adherences
- is of very low smoke and odour emission
- forms a pre-modified structure by low emissions of sodium

Addition Rate:

Depending on the level of impurities 0.2 – 0.5 % by weight or lower.

Product Application:

PROBAT - FLUSS AL 224 works in melting, holding and pouring furnaces as well as in crucibles. When using as cleansing agent, submerge the required addition slowly and carefully into the melt. Gently stir the rising flotation products with a well pre-heated and coated tool until a fully reacted dross forms and then skim it off.

For the dross treatment, distribute PROBAT - FLUSS AL 224 on the surface and stir the agent in the dross with a tool. Skim it off after a reaction time of three minutes. When used regularly (one to two times a shift), PROBAT - FLUSS AL 224 impedes the formation of built-ups on furnace walls and crucibles.

Oxides are bound and the metal proportion in the dross is reduced essentially. Thus, more metal is available for the casting process (metal saving potential). The addition of PROBAT - FLUSS AL 224 in the pouring stream while decanting increases this effect.

Typical Properties:

Appearance: blue powder mix

Odour: odourless

Reaction temperature: from approximately 680°C (higher temperatures accelerate the reaction)

Packaging:

25 kg bags, 3-fold with plastics lining, special packaging available.

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

PROBAT - FLUSS AL MGEX

Highly efficient cleansing agent for the removal of alkaline and alkaline earths, such as e. g.: magnesium, calcium, sodium, lithium and other subversive elements

Notes on Technology:

Accompanying elements, such as lithium, calcium and maybe sodium, strontium and magnesium often have undesired effects on the casting result. The elimination respectively the reduction of these elements in the melt, as well as of other alkaline and earth alkaline, can be carried out by the formation of compounds similar to cryolite without using any chlorine.

Application Range:

PROBAT - FLUSS AL MGEX is applicable for all wrought and casting alloys. It reacts quickly and can be easily worked under the metal melt.

Quality Characteristics:

- reduces elements, such as sodium, lithium, calcium and magnesium
- removes oxides from the melt
- works in all types of furnaces and crucibles
- is free from chlorine
- is of very low smoke and odour emission

Addition Rate:

The effectiveness of the treatment with PROBAT - FLUSS AL MGEX highly depends on the local conditions. Thus, the temperature, the ratio bath surface / bath volume, the level of impurity and the possibility of an intensive and thorough mixing play a significant role for the effectiveness of the treatment.

The addition of 1 kg / t PROBAT - FLUSS AL MGEX reduces the magnesium content by 0.01 up to 0.02 % on average (5 - 10 kg flux binds 1 kg Mg). In case of extremely low magnesium content, the additional quantity must be increased. Much less material is required for the removal of calcium, sodium or lithium.

Product Application:

The metal surface should be skimmed off roughly before the treatment. Stir in carefully PROBAT - FLUSS AL MGEX. This can be done by means of an immersion bell or by injecting the powder with the aid of an injector. After that the melt should be given a quiet period of at least 5 up to 10 minutes before skimming it off. This application can be repeated as often as wanted.

Typical Properties:

Appearance: white powder mix

Odour: odourless

Reaction temperature: from approximately 680°C (higher temperatures accelerate the reaction)

Packaging:

25 kg bags, 3-fold with plastics lining, special packaging available.

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

PROBAT - FLUSS OFENREINIGER 200

Removal of corundum built-ups from furnace walls for brick lined or rammed furnace walls

Notes on Technology:

Non-metallic impurities agglomerate and deposit on furnace walls. In the course of time, they change to corundum which adheres fixedly to the furnace wall. These built-ups attack the furnace walls and reduce the capacity of the furnace. If they are not removed, they infiltrate small surface irregularities and cracks and destroy the walls due to which the isolation effect is reduced. PROBAT - FLUSS OFENREINIGER 200 softens the corundum built-ups on the wall. After the treatment these built-ups can be pushed off by means of a tool.

Application Range:

PROBAT - FLUSS OFENREINIGER 200 is suitable for all ramming mixtures and brick linings. It can be used in shaft, holding and dosing furnaces as well as in launders.

Quality Characteristics:

- diffuses between adherences and walls and weakens the bond of the corundum with the wall
- permits the removal of built-ups in the molten metal area as well as in the boundary areas
- does not chemically attack the furnace walls
- can be sprayed on easily with corresponding spraying devices

Addition Rate:

An addition rate of 1 - 4 kg/m² in dependence on the thickness of the non-metallic impurities is recommended for the cleaning of the inner surfaces of the furnace.

Product Application:

PROBAT - FLUSS OFENREINIGER 200 should be used in a warm furnace which is almost empty. The furnace temperature should be set as high as possible (800-900°C). The heating aggregates should be switched off during the treatment. A spraying device (injector) is highly suitable for the even application of the product. If such a device is not available the material can also be thrown in the furnace by using a shovel. The reaction time should be at least 20 minutes or better 2 hours while the furnace door is closed.

The built-ups often fall off automatically when the furnace cools down. More stubborn built-ups are softened enough so that they can be easily removed with a suitable scrapping tool. These scrapping works can be carried out after the furnace had cooled down.

An additional cleaning may be required for particularly hard and large non-metallic built-ups

Typical Properties:

Appearance: fine light grey powder mix

Odour: odourless

Reaction temperature: from approximately 750°C (higher temperatures accelerate the reaction and should be used preferably)

Packaging:

25 kg bags, 3-fold with plastics lining, special packaging available.

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored. Thickenings can be softened by slight knocking on the bag.

PROBAT - FLUSS IMPRÄGNIERER 200

Agent for the application onto furnace walls to prevent the formation of built-ups and reaction products on the rammed lining

Notes on Technology:

Non-metallic impurities agglomerate and deposit on furnace walls. In the course of time, they change to corundum which adheres fixedly to the furnace wall. These built-ups attack the furnace walls and reduce the capacity of the furnace.

PROBAT - FLUSS IMPRÄGNIERER 200 produces a protective film and impedes in this way the formation of built-ups on furnace walls.

Application Range:

PROBAT - FLUSS IMPRÄGNIERER 200 is suitable for all ramming mixtures and brick linings. It can be applied without any problems on the hot furnace wall by means of a spraying device (injector).

Quality Characteristics:

- protects the furnace walls
- is highly effective also at low addition rate
- does not chemically attack the furnace walls
- can be sprayed on easily with corresponding spraying devices

Addition Rate:

1 - 3 kg/m² inner surfaces of the furnace.

Product Application:

PROBAT - FLUSS IMPRÄGNIERER 200 should be evenly applied on the warm furnace walls after the cleaning.

This can be carried out by a shovel or a spraying device (injector). The furnace should not be overheated. The reaction time should be at least 10 up to 20 minutes. After the impregnation the furnace can be filled and used as usual.

Typical Properties:

Appearance: fine light grey powder mix

Odour: odourless

Reaction temperature: from approximately 700°C (higher temperatures accelerate the reaction and should be used preferably)

Packaging:

25 kg bags, 3-fold with plastics lining, special packaging available.

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored. Thickenings can be softened by slight knocking on the bag.

DEGASAL T-200

**Nitrogen based degassing tablets for aluminium and aluminium alloys
such as e. g.: all AlSi alloys, AlMg and AlCu alloys as well as all wrought alloys**

Notes on Technology:

DEGASAL T 200 are tablets which clean and degas the melt by releasing nitrogen.

Modification-effective elements, such as sodium, strontium and antimony, are hardly influenced by the cleaning with these tablets. The unpleasant smoke and odour emissions, which usually occur when using fluxes which release chlorine, are completely avoided as this agent releases nitrogen. Thus, these tablets can also be used in furnaces with top heating on the condition that no aluminium splashes can reach the top heating. Therefore it is preferably used in foundries which do not have any exhausting device and have to work particularly environmentally-friendly (residential areas).

As a general rule DEGASAL T 200 is used when after the usual melt treatment an additional cleaning is necessary for safety reasons. Particularly in bale-out furnaces, where ingots are added to the melt, the agent is responsible for an intensive homogenization of the melt

Application Range:

DEGASAL T 200 is applicable for all casting processes and for all aluminium alloys. It is mainly used where no supportive effect is possible, e. g. by an impeller treatment.

This agent stands out by good storage stability and a wide reaction range (between 680 – 900°C).

Quality Characteristics:

- removes hydrogen and oxides from the melt
- improves the casting quality essentially
- works in all types of furnaces and crucibles
- prevents unpleasant smoke and odour emissions
- does not influence the modification-effective elements
- ensures a good mixing of the melt

Addition Rate:

Depending on the level of impurities 1 tablet per 100 kg melt or less (< 0.2 %).

Product Application:

The treatment temperature generally is between 680°C and 750°C. Submerge the tablets by means of a clean, pre-heated and well coated immersion bell into the melt. Previously the dross on the melt should be removed. After the very intensive reaction the melt should be given a quiet period for some minutes before the impurities are thoroughly skimmed off again.

Typical Properties:

Appearance: white-grey tablets of 200g

Odour: odourless

Reaction temperature: from approximately 680°C (higher temperatures accelerate the reaction)

Packaging:

162 tablets of 200g packed in cardboard box.

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

EUTEKTAL T-201

Modification tablets of high sodium release for hypoeutectic and eutectic AlSi alloys such as e. g.: G-AlSi7Mg, G-AlSi10Mg, G-AlSi12, G-AlSi8Cu4 (226)

Notes on Technology:

The modification with sodium by using EUTEKTAL T 201 leads to a spheroidization of the silicon which has been eutectically solidified. The structure changes from a lamellar or granular structure to a microfine precipitation of the structure that has been modified. In this way all technological properties such as solidification and elongation are influenced in a positive manner.

The sodium modification with these tablets leads to a spheroidization of the eutectic silicon that is predominantly independent of the cooling speed without leading to an increase of the gas level of the melt. Thus, it can be used in the sand as well as in the gravity die casting.

The solidification of the eutectic is also transformed by EUTEKTAL T 201 from the spongy to the smooth walled type of solidification. A highly reduced trend towards shrinkage cavity formation and a dense structure for gases results from this.

Application Range:

EUTEKTAL T 201 can be used in all casting processes and is mainly used for the sand and gravity die casting. The usage makes sense in all casting alloys with a silicon content of 7% up to 12%.

Quality Characteristics:

- effects a safe modification of the melt
- does not gas the melt
- modifies the melt within 30 seconds
- leads to the modification effect immediately after the treatment
- ensures a homogeneous distribution of the sodium

Addition Rate:

Gravity die casting 0.02 up to 0.12 % of the weight and sand casting 0.10 up to 0.20 % of the weight (approximately 1 tablet per 100 kg melt).

Product Application:

Place EUTEKTAL T 201 on the surface of the melt after the cleaning and degassing of the melt and immerse the tablets down to the bottom with a clean, well pre-heated and coated immersion bell immediately following the ignition. After 30 seconds the turbulences subside and the tablet has fully reacted. Remove the immersion bell, beat out the rest of the tablet and skim off the surface.

The melt can be treated with PROBAT - FLUSS MONOTAB NS covering tablets to compensate the sodium melting losses in the pouring- or holding furnace.

Typical Properties:

Appearance: grey tablets of 200g

Odour: odourless

Reaction temperature: from approximately 720°C (higher temperatures accelerate the reaction)

Packaging:

180 tablets of 200g packed in cardboard box.

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

EUTEKTAL 375

Modification and cleaning agent for all AlSi-alloys with a Si-content of less than 12%

Usage with an impeller device

Notes on Technology:

Impeller devices are mainly used for the cleaning of metal melts. The addition of cleaning and modification agents can be automated with the help of an impeller device if the impeller wets the melting agents before the process begins.

EUTEKTAL 375 reaches together with the usage of the impeller device a sufficient sodium modification and binds oxides within the dross. This results in a refining of the eutectic solidified silicon (increase of the mechanical values and the dense feeding), the removal of oxides and inclusions due to flotation as well as a minimization of the hydrogen content (cleaning and reduction of the density index).

Application Range:

EUTEKTAL 375 is mainly used in crucible furnaces or transport ladles in which the melt can be treated with an impeller device. The usage is recommended for all AlSi-alloys with a Si-content of less than 12%.

Quality Characteristics:

- sodium modification during the impeller treatment
- cleaning of the melt from oxides
- formation of a low-metal dross
- direct effect after the impeller treatment
- spheroidization of the eutectic solidified silicon by sodium

Addition Rate:

Dependent on the application range between 0.1% and 0.2% or more. In the near-eutectic area (10-12% Si) and in the sand casting a slightly larger quantity is necessary than in the area with a Si-content of less than 10% or in the gravity die casting.

Product Application:

Before the impeller treatment EUTEKTAL 375 must be put onto the metal surface so that the rotor can stir the material under the surface. Alternatively it can be directly given into the vortex of the rotor. This can happen by a spoon or by the automated dosage of the impeller.

Typical Properties:

Appearance: blue powder

Odour: odourless

Reaction temperature: from approximately 700°C (higher temperatures accelerate the reaction)

Packaging:

25 kg bags, 3-fold with plastics lining, special packaging available.

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

PROBAT - FLUSS MONOTAB NS

Tablet for maintaining the sodium modification of hypoeutectic and eutectic AlSi alloys such as e. g.: G-AlSi7Mg, G-AlSi10Mg, G-AlSi12, G-AlSi8Cu4 (226)

Notes on Technology:

PROBAT - FLUSS MONOTAB NS is a tablet which is placed on the surface of the melt to compensate the modification loss. Sodium burns out rapidly, because it is practically not soluble in aluminium. A high temperature and a large surface increase the burn-out speed.

PROBAT - FLUSS MONOTAB NS releases sodium evenly and over a long period of time. The released quantity corresponds to the burn-out in the aluminium melt. Thus, it is ensured that the modification effect is kept constant.

Application Range:

PROBAT - FLUSS MONOTAB NS is applicable for all casting processes and mainly used for the sand and gravity die casting.

The tablets are put on the melt surface and slowly release sodium into the melt. They are also used for the low pressure casting. It makes sense to use them for all casting alloys with a silicon content of more than 7%.

Quality Characteristics:

- maintains the set sodium content
- maintains the modification level
- leads to a fine precipitation of the eutectic silicon
- covers the melt evenly
- also supports the strontium modification

Addition Rate:

Depending on the bath size, tablets of 0.2 up to 0.6% per weight should be placed on the bath surface.

Product Application:

The treatment temperature should be between 680° and 750°C. The tablets are put on the bath surface where they can be effective over several hours. After that they can be removed with the dross.

Typical Properties:

Appearance: whitish tablets of 200g

Odour: odourless

Reaction temperature: between 690°C and 780°C

Packaging:

162 tablets of 200g packed in cardboard box

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

MIKROSAL AL-T 100

**Titanium-boron based grain refining agent for α -aluminium
for all aluminium alloys e. g.: AlMg and AlCu alloys, all AlSi and wrought alloys**

Notes on Technology:

A highly effective grain refining of the aluminium is obtained by MIKROSAL AL T 100.

The effect of this agent is obtained by the formation of finest TiB₂ crystals in the melt. These crystals act as crystallizer for the solidifying aluminium and they are highly effective because they are formed in the melt. Simultaneously a degassing and purifying effect is obtained by additional components.

Application Range:

A grain refining of the melt by means of MIKROSAL AL T 100 is imperative for all alloys with a low Si content in order to avoid hot tears and anodizing mistakes.

Quality Characteristics:

- ensures a completely dense and micro-shrinkage-free casting
- improves the casting quality essentially
- increases the technological values
- ensures a clean and irreproachable surface of the casting part
- permits an essentially better flow of the melt
- has an additional cleansing effect

Addition Rate:

0.1 to 0.2 % by weight (e. g. 1 tablet for 100 kg melt).

Product Application:

Care is to be taken that the recommended addition of MIKROSAL AL T 100 is put into the lower third of the melt. A uniform effect within the entire melt is obtained by the constant stirring of the immersion belt. If there is no more reaction, the dross can be skimmed off.

Typical Properties:

Appearance: white-grey tablets of 200 g

Odour: odourless

Reaction temperature: ex approximately 720°C (higher temperature accelerate the reaction)

Packaging:

162 tablets of 200g packed in cardboard box

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

MIKROSAL AL 350

Titanium-boron based grain refining agent for the grain refining of α -aluminium for all aluminium alloys and usage with an impeller device e. g.: AlMg- and AlCu-alloys, all AlSi-alloys and wrought alloys

Notes on Technology:

A highly effective grain refining of the aluminium is obtained by MIKROSAL AL 350.

The effect of this agent is obtained by the formation of finest TiB₂ crystals in the melt. These crystals act as crystallizer for the solidifying aluminium and they are highly effective because they are formed in the melt. Simultaneously a degassing and purifying effect is obtained by additional components. Used with an impeller device MIKROSAL AL 350 also produces a low-metal dross.

Application Range:

A grain refining of the melt by means of MIKROSAL AL 350 is imperative for all alloys with a low Si content in order to avoid hot tears and anodizing mistakes.

Quality Characteristics:

- ensures a dense and shrinkage-free casting
- highly improves the casting quality
- increases the technological values
- ensures a clean and irreproachable surface of the casting part
- permits an essentially better stream of the melt
- has an additional cleansing effect
- produces a low-metal dross
- can be dosed very well if it is used with an impeller system

Addition Rate:

0.1 up to 0.2% of the melt weight (e.g. 200g flakes for 100 kg melt). A higher addition rate increases the degree of grain refinement (e.g. for critical alloys).

Product Application:

Care is to be taken that the recommended addition of MIKROSAL AL 350 is given into the vortex of the impeller system at the beginning.

Typical Properties:

Appearance: blue-whitish flakes (compacted preparation)

Odour: odourless

Reaction temperature: ex approximately 720°C (higher temperatures accelerate the reaction)

Packaging:

25 kg bags, 3-fold with plastics lining, special packaging available.

Storage and Shelf Life:

Keep container dry, tightly closed and cool (32°C/90°F or colder). If it is properly stored it can be used three months at the minimum.

PROBAT - FLUSS BEGASER T 200

Tablets for the effective gassing of aluminium melts
suitable for all casting alloys in the sand casting, gravity die casting and low-pressure casting

Notes on Technology:

To complement the high demand for quality in the production of castings, a uniform and homogenous structure is required. In case of casting parts, which are difficult to cast, draws and shrinkage holes connected with one another often occur due to the volumetric decrease. These draws and shrinkage holes result in leakiness, insufficient mechanical values and, hence, in the failure of the component.

By the controlled increase of the hydrogen portion in the melt, hydrogen pores will form during the solidification. These pores are closed and are normally not connected with each other. They counteract the volumetric decrease due to their gas pressure and avoid in this way the formation of draws.

Application Range:

PROBAT - FLUSS BEGASER T 200 reacts in the melt by the release of hydrogen which collects in fine pores. Because of this, the hydrogen content and the density index are increased. Thus, casting parts tending to shrinkage holes can be produced.

Quality Characteristics:

- prevents the formation of shrinkage holes
- avoids the formation of draws
- reduces the rejects
- increases the share of hydrogen in the melt
- increases the density index

Addition Rate:

½ to 2 tablets per 100 kg of aluminium, depending on the requirements.

Product Application:

At normal casting temperature PROBAT - FLUSS BEGASER T 200 should be placed on the melt surface and then submerged to the bottom of the melt by means of an immersion bell. The tablets maintain in the melt until the reaction is completed. After that the tablet rest can be disposed of together with the dross.

Typical Properties:

Appearance: whitish tablets

Odour: odourless

Reaction temperature: ex approximately 720°C (higher temperature accelerate the reaction)

Packaging:

144 tablets of 200g packed in cardboard box.

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

PROBAT - FLUSS LUNKERPULVER 200

Agent for the application on the feeder of the aluminium casting part to increase the feeding effect
Applicable for all casting alloys in the sand casting

Notes on Technology:

Thick-walled casting parts are often difficult to feed. Therefore, the feeder must be so designed that it can hold sufficient mass in order to keep the metal in liquid state over a sufficient period of time so that thick-walled parts can still be fed safely. If the feeder is not sufficiently designed, then shrinkage holes will be the result and the casting part must be disposed of as scrap. A relatively simple remedy is to keep the feeder in the liquid state over an extended period of time.

To achieve this, PROBAT - FLUSS LUNKERPULVER 200 is scattered onto the surface of the feeder and the heat of the liquid metal ignites the powder. An exothermic reaction is started, which produces sufficient heat, keeping the feeder in the liquid state over an extended period of time so that its function as re-feeding is kept until the casting has completely solidified.

Application Range:

PROBAT - FLUSS LUNKERPULVER 200 is suited for all casting alloys used in the sand casting and should be scattered after the pouring of the metal.

Quality Characteristics:

- is an exothermically reacting powder
- develops much heat keeping the metal liquid over an extended period of time
- impedes the cooling down of the feeder on the surface
- impedes the shrinkage hole formation
- can be easily removed after the reaction
- is of very low smoke emission

Addition Rate:

Depending on the diameter of the riser respectively feeder the powder layer should be several centimetres.

Product Application:

PROBAT - FLUSS LUNKERPULVER 200 ignites after having scattered it, immediately after the pouring into the mould, on the feeder or riser. The completely reacted powder remains on the aluminium until the complete solidification of the casting has been obtained and then can be removed easily.

Typical Properties:

Appearance: dark red powder

Odour: odourless

Reaction temperature: ex approximately 600°C (higher temperature accelerate the reaction)

Packaging:

25 kg paper bags, 3-fold with plastic lining

Storage and Shelf Life:

Store in a cool place (below 32°C/90°F); keep container dry and tightly closed. The shelf life is at least 6 months if properly stored.

PROBAT - FLUSS MIKRO 100

Agent to prevent shrinkage holes and the formation of homogeneously distributed micro pores applicable for all casting alloys in the sand casting, gravity die casting and low-pressure casting

Notes on Technology:

Not all casting parts can be fed so good that the formation of shrinkage holes can be avoided. However, shrinkage holes lead to leaky casting parts and decrease the strength values. Micro pores compensate the shrinkage during the solidification to a great extent and impede leakiness and the decrease of the strength values.

PROBAT - FLUSS MIKRO 100 compensates the formation of shrinkage holes and creates the condition for the development of the micro pores.

This agent is a metallic master alloy adding nuclei to the metal on which the hydrogen can precipitate in micro pores. The size of the formed pores depends on the solidification speed of the metal in the casting part.

Application Range:

PROBAT - FLUSS MIKRO 100 can be added to the crucible, the launder or the runner already at a temperature from 700°C after the cleaning of the melt. The rod dissolves immediately without any residues. A thorough mixing of the melt after the last cleaning process has proved to be very effective.

Quality Characteristics:

- is a metallic master alloy in form of rods
- does not require long reaction times
- impedes the shrinkage hole formation in the gravity die and sand casting
- leads to fine micro pores
- increases the density index without contribution to impurities
- dissolves immediately in the melt without any residues

Addition Rate:

1 – 3 kg/t of the metal mass, depending on the alloy. As a general rule 1 kg/t has proved to be very effective.

Product Application:

PROBAT - FLUSS MIKRO 100 can be used in the pouring furnace, in the crucible or in the ladle.

After the last cleaning process it must be added to the melt and foam, which can partially form, must be thoroughly stirred into the melt by means of a ladle otherwise the effectivity is reduced. The effect lasts over several hours and is also remarkable after a remelting process. After an intensive cleaning, the melt is in its original condition again.

Typical Properties:

Appearance: aluminium rod in form of an eight

Odour: odourless

Reaction temperature: ex approximately 700°C (higher temperature accelerate the reaction)

Packaging:

Rods of 1m of length (approximately 300 g)

loose rods, bundled

Storage and Shelf Life:

No special requirements

PROBAT - FLUSS VLP 200

Agent for the grain refining of primarily solidified silicon in eutectic and hypereutectic aluminium casting alloys applicable for all casting alloys, e. g. AlSi12, AlSi17Cu4Mg, AlSi18CuNiMg

Notes on Technology:

Eutectic and hypereutectic casting alloys must be treated with phosphorous in order to get a granular structure and to obtain a refining as well as an even distribution of the primarily solidified silicon. The refining itself is obtained by aluminium phosphide.

When adding conventional master alloys, then the aluminium phosphide must first of all form in the melt, whereas PROBAT - FLUSS VLP 200 already contains these crystallizers and thereby is effective very rapidly, also at low temperature.

Application Range:

PROBAT - FLUSS VLP 200 can be added to the crucible or to the launder already beginning from a temperature of 700°C. The addition into the launder or during the cleaning of the melt with an impeller has proved to be very effective.

Quality Characteristics:

- is a metallic master alloy in form of rods
- does not require long reaction times
- can be used even at low temperature
- provides a granular structure
- refines the primary silicon
- provides a homogenous, even distribution of the silicon
- dissolves immediately in the melt, without leaving any residues

Addition Rate:

0.5 – 2.5 kg/t of the metal weight. An effect is already obtained at 0.5 kg/t (0.1Gew.-%) The iron content increases function-conditionally due to the addition. However, this content is normally below the tolerance limit and does not influence the alloy.

Product Application:

PROBAT - FLUSS VLP 200 can be added like grain refining wires. Usual wire advancing machines can be used. The charge by hand is easy as well by adding rod sections to the melt during the melt treatment or cleaning with an impeller.

Typical Properties:

Appearance: aluminium rods

Odour: odourless

Reaction temperature: ex approximately 700°C (higher temperature accelerate the reaction)

Packaging:

Rods of 1m of length (approximately 300 g)

loose rods, bundled

Storage and Shelf Life:

No special requirements

CILLOLIN AL 223 + 223G + 223 GD

**Heat conducting gravity die coating
with low sedimentation characteristics**

Notes on Technology:

The choice of the coating for the mobile and rigid parts of a gravity die has an essential influence on the quality of the casting. The structure of the used coating directly influences the fluidity and thus the mould filling of the melt which flows into the gravity die. The coating affects the formed casting surface and regulates the solidification by its thermal conductivity. Requirements for the coating are a good processability, a uniform consistency and a good adhesive strength.

Application Range:

CILLOLIN AL 223 (223 G, 223 GD) is suitable for use on steel and grey cast iron dies in the Al gravity die casting.

Quality Characteristics:

- very good thermal conductivity
- ensures excellent adhesion, especially regarding movable parts of the die
- produces a uniform surface structure on the casting part and prevents cold laps
- reduces the downtime caused by cleaning and recoating
- ensures the highest level of dimensional accuracy
- prevents sedimentation from occurring too rapidly by means of a thixotropic agent
- facilitates the removal of completed casting parts from the die
- in that order AL 223 – AL 223 G – AL 223 GD improved fluidity of the melt by increasing depth of roughness of the casting surface

Addition Rate:

Dilute with softened water at a ratio of 1 : 3 up to 1 : 5

Product Application:

Before application, blast the gravity die thoroughly, heat up to a temperature of at least 150°C or better 230°C, and apply the ready-to-use coating thinly and uniformly.

CILLOLIN AL 223 (223 G, 223 GD) can be sprayed onto another insulating basic coating.

Typical Properties:

Appearance: grey black, pasty

Odour: odourless

Reaction temperature: at least 150°C up to 300°C

Packaging:

Concentrate – homogenized in cans of 40, 15, 8 and 1 kg

Storage and Shelf Life:

Protect from temperatures below 5°C. The shelf life is at least 6 months if properly stored.

CILLOLIN AL 285 + 285 G + 285 GN

**Heat conducting gravity die coating
with improved sedimentation characteristics**

Notes on Technology:

The choice of the coating for the mobile and rigid parts of a gravity die has an essential influence on the quality of the casting. The structure of the used coating directly influences the fluidity and thus the mould filling of the melt which flows into the gravity die. The coating affects the formed casting surface and regulates the solidification by its thermal conductivity. Requirements for the coating are a good processability, a uniform consistency and a good adhesive strength.

Application Range:

CILLOLIN AL 285 (285 G, 285 GN) is suitable for use on steel and grey cast iron dies in the low pressure Al gravity die casting and in the gravity casting.

Quality Characteristics:

- low thermal conductivity
- reduces the downtime caused by cleaning and recoating
- increases the productivity
- produces a uniform surface structure on the casting part and prevents cold laps
- prevents sedimentation from occurring too rapidly by means of a thixotropic agent
- ensures excellent adhesion, especially regarding movable parts of the die
- ensures the highest level of dimensional accuracy
- facilitates the removal of completed casting parts from the die
- in that order AL 285 – AL 285 G – AL 285 GN improved fluidity of the melt by increasing depth of roughness of the casting surface

Addition Rate:

Dilute with softened water at a ratio of 1 : 3

Product Application:

Before application, blast the gravity die thoroughly, heat up to a temperature of at least 150°C or better 230°C, and apply the ready-to-use coating thinly and uniformly.

To increase the level of isolation, additional layers can be applied. Before pouring, the gravity die must be heat up sufficiently.

Typical Properties:

Appearance: white, pasty

Odour: odourless

Reaction temperature: at least 150°C up to 300°C

Packaging:

Concentrate – homogenized in cans of 40, 15, 8 and 1 kg

Storage and Shelf Life:

Protect from temperatures below 5°C. The shelf life is at least 6 months if properly stored.

CILLOLIN AL 2812 + 2812 G + 3500 G

**Semi-insulating gravity die coating
with improved sedimentation characteristics**

Notes on Technology:

The choice of the coating for the mobile and rigid parts of a gravity die has an essential influence on the quality of the casting. The structure of the used coating directly influences the fluidity and thus the mould filling of the melt which flows into the gravity die. The coating affects the formed casting surface and regulates the solidification by its thermal conductivity. Requirements for the coating are a good processability, a uniform consistency and a good adhesive strength.

Application Range:

CILLOLIN AL 2812 (2812 G, 3500 G) is suitable for use on steel and grey cast iron dies in the low pressure Al gravity die casting and in the gravity casting.

Quality Characteristics:

- middle heat conductivity (semi-insulating)
- reduces the downtime caused by cleaning and recoating
- increases the productivity
- produces a uniform surface structure on the casting part and prevents cold laps
- prevents sedimentation from occurring too rapidly by means of a thixotropic agent
- ensures excellent adhesion, especially regarding movable parts of the die
- ensures the highest level of dimensional accuracy
- facilitates the removal of completed casting parts from the die
- in that order AL 2812 – AL 2812 G – AL 3500 G improved fluidity of the melt by increasing depth of roughness of the casting surface

Addition Rate:

Dilute with softened water at a ratio of 1 : 3

Product Application:

Before application, blast the gravity die thoroughly, heat up to a temperature of at least 150°C or better 230°C, and apply the ready-to-use coating thinly and uniformly.

To increase the level of isolation, additional layers can be applied. Before pouring, the gravity die must be heat up sufficiently.

Typical Properties:

Appearance: reddish, pasty

Odour: odourless

Reaction temperature: at least 150°C up to 300°C

Packaging:

Concentrate – homogenized in cans of 40, 15, 8 and 1 kg.

Storage and Shelf Life:

Protect from temperatures below 5°C. The shelf life is at least 6 months if properly stored.

CILLOLIN AL 288

**Insulating gravity die coating
with improved sedimentation characteristics**

Notes on Technology:

The choice of the coating for the mobile and rigid parts of a gravity die has an essential influence on the quality of the casting. The structure of the used coating directly influences the fluidity and thus the mould filling of the melt which flows into the gravity die. The coating affects the formed casting surface and regulates the solidification by its thermal conductivity. Requirements for the coating are a good processability, a uniform consistency and a good adhesive strength.

Application Range:

CILLOLIN AL 288 is suitable for use on steel and grey cast iron dies in the low pressure Al gravity die casting and in the gravity casting, particularly for styling surfaces.

Quality Characteristics:

- excellent thermal insulation
- reduces the downtime caused by cleaning and recoating
- increases the productivity
- produces a uniform surface structure on the casting part and prevents cold laps
- prevents sedimentation from occurring too rapidly by means of a thixotropic agent
- ensures excellent adhesion, especially regarding movable parts of the die
- ensures the highest level of dimensional accuracy
- facilitates the removal of completed casting parts from the die
- particularly for smooth surfaces

Addition Rate:

Dilute with softened water at a ratio of 1 : 3

Product Application:

Before application, blast the gravity die thoroughly, heat up to a temperature of at least 150°C or better 230°C, and apply the ready-to-use coating thinly and uniformly.

To increase the level of isolation, additional layers can be applied. Before pouring, the gravity die must be heat up sufficiently.

Typical Properties:

Appearance: white, pasty

Odour: odourless

Reaction temperature: at least 150°C up to 300°C

Packaging:

Concentrate – homogenized in cans of 40, 15, 8 and 1 kg

Storage and Shelf Life:

Protect from temperatures below 5°C. The shelf life is at least 6 months if properly stored.

CILLOLIN AL 160

**Heat conducting, fully colloidal gravity die coating
with improved sedimentation characteristics**

Notes on Technology:

The choice of the coating for the mobile and rigid parts of a gravity die has an essential influence on the quality of the casting. The structure of the used coating directly influences the fluidity and thus the mould filling of the melt which flows into the gravity die. The coating affects the formed casting surface and regulates the solidification by its thermal conductivity. Requirements for the coating are a good processability, a uniform consistency and a good adhesive strength.

Application Range:

CILLOLIN AL 160 is suitable for use on steel and grey cast iron dies in the Al gravity die casting.

Quality Characteristics:

- particularly suitable for mobile parts of a gravity die, e. g. core-pulls
- reduces the downtime caused by cleaning and recoating
- increases the productivity
- produces a uniform surface structure on the casting part and prevents cold laps
- prevents sedimentation from occurring too rapidly by means of a thixotropic agent
- ensures excellent adhesion, especially regarding movable parts of the die
- ensures the highest level of dimensional accuracy
- facilitates the removal of completed casting parts from the die

Addition Rate:

Dilute with softened water at a ratio of 1 : 3 up to 1 : 10

Product Application:

Before application, blast the gravity die thoroughly. The coating can be applied on the cold or hot gravity die; thereby the ready-to-use coating must be applied thinly and uniformly.

Typical Properties:

Appearance: black, pasty

Odour: odourless

Reaction temperature: cold or warm, at least 300°C

Packaging:

Concentrate – homogenized in cans of 25, 10, 5 and 1 kg

Storage and Shelf Life:

Protect from temperatures below 5°C. The shelf life is at least 6 months if properly stored.

CILLOLIN AL 500

**Insulating coating for launders
alcohol-based**

Notes on Technology:

Coatings should prevent the melt from adhering to the tool or thermocouples so that these tools are protected and have a long life span. Such protective layers should be free from any moisture, because in contact with the melt they are enriched by oxides and hydrogen.

An alcohol-based, anhydrous coating is the best guarantor to prevent the absorption of hydrogen as an extremely dry coating remains on the material due to the rapid evaporation of the alcohol. Simultaneously the melt should flow off the material without leaving any residues as the adhering oxides influence the melt in a negative way when getting again into contact with the metal.

The launder systems also should be completely free from water-containing coverings, because there is the danger of hydrogen absorption due to their relatively large surface. Alcohol-based coatings are the best guarantor for an absolutely dry coating. Simultaneously fine cracks in the brickwork are tightly closed which extends the life span of the launders.

Application Range:

CILLOLIN AL 500 is preferably applied on tools (approximately 30 – 50°C) or on launder and pouring systems rammed-up with refractory material.

Quality Characteristics:

- closes effectively small cracks
- produces a completely dry launder surface
- can be applied easily
- can be stirred-up easily

Addition Rate:

No dilution necessary.

Product Application:

CILLOLIN AL 500 is applied undiluted with a brush on the surface which should be treated.

Smaller tools can be immersed. If the coating has become too concentrated due to evaporation, it can be diluted with Isopropanol.

Typical Properties:

Appearance: light-grey, viscous

Odour: like alcohol

Reaction temperature: at least 30°C up to 50°C

Packaging:

Cans of 50 and 1 kg.

Storage and Shelf Life:

Store away from ignition sources. The coating should be stirred-up from time to time to prevent depositing of the solid ingredients. The shelf life is at least 6 months if properly stored.

PYRONOL

Special coating for feed tubes, pyrometer protective tubes, crucibles, pouring tools, risers and gating systems subjected to high thermal stresses

Notes on Technology:

The feed tubes used in the low pressure die casting are exposed to high thermal, mechanical and chemical burdens. The coatings used for the protection of these highly exposed parts should have a high ability to withstand stress and a high abrasion resistance.

Application Range:

PYRONOL products are special ready-to-use coatings for the effective isolation of feed tubes for the low pressure die casting, pyrometer protective tubes as well as steel and pouring crucibles, ladles and other casting tools.

Quality Characteristics:

- has an exceptional thermal stability and protects from the contact with aluminium
- impedes non-metallic adhesions
- easy application as PYRONOL can be applied cold on the surface which should be protected
- long life span: contains thixotropic agent and has low sedimentation characteristics
- can be removed easily in cold state to clean the tool

Addition Rate:

No dilution necessary.

Product Application:

PYRONOL is delivered ready-to-use. However, it should be stirred by a suitable tool before application. Thus, the coating is homogenized for approximately 1 day.

First of all the coating is thinly applied on the inner and outer side of the cold feed tube. To increase the elasticity, a suitable glass-fibre fabric can be applied and pressed air-tightly on the outer side of the feed tube. In case of high thermal burdens 2 up to 3 coatings can be applied smoothly. After the application of the last glass-fibre fabric the tube is to be dried at normal air temperature.

After the coating is dried, the surface can be re-coated with PYRONOL and the tube must dry again at normal temperature. Before using the tubes, they must be heated up slowly to a temperature of approximately 150-200°C over the furnace or by means of a gas flame.

Typical Properties:

Appearance: grey-brown, pasty

Odour: odourless

Reaction temperature: ex approximately 150 - 200°C (higher temperatures accelerate the reaction)

Packaging:

Cans of 40, 15, 8 and 1 kg

Storage and Shelf Life:

Protect from temperatures below 5°C. The shelf life is at least 6 months if properly stored.

CILLOLIN AL 286

**Insulating gravity die coating
with improved sedimentation characteristics**

Notes on Technology:

The choice of the coating for the mobile and rigid parts of a gravity die has an essential influence on the quality of the casting. The structure of the used coating directly influences the fluidity and thus the mould filling of the melt which flows into the gravity die. The coating affects the formed casting surface and regulates the solidification by its thermal conductivity. Requirements for the coating are a good processability, a uniform consistency and a good adhesive strength.

Application Range:

CILLOLIN AL 286 is suitable for use on steel and grey cast iron dies in the low pressure Al gravity die casting and in the gravity casting, particularly for styling surfaces.

Quality Characteristics:

- low heat conductivity
- reduces the downtime caused by cleaning and recoating
- increases the productivity
- produces a uniform surface structure on the casting part and prevents cold laps
- prevents sedimentation from occurring too rapidly by means of a thixotropic agent
- ensures excellent adhesion, especially regarding movable parts of the die
- ensures the highest level of dimensional accuracy
- facilitates the removal of completed casting parts from the die
- particularly for smooth surfaces

Addition Rate:

Dilute with softened water at a ratio of 1 : 3

Product Application:

Before application, blast the gravity die thoroughly, heat up to a temperature of at least 150°C or better 230°C, and apply the ready-to-use coating thinly and uniformly.

To increase the level of isolation, additional layers can be applied. Before pouring, the gravity die must be heat up sufficiently.

Typical Properties:

Appearance: white, pasty

Odour: odourless

Reaction temperature: at least 150°C up to 300°C

Packaging:

Concentrate – homogenized in cans of 40, 15, 8 and 1 kg

Storage and Shelf Life:

Protect from temperatures below 5°C. The shelf life is at least 6 months if properly stored.

CILLOLIN AL 225

Special coating
for gravity dies and gate stones in the vertical continuous casting

Notes on Technology:

The gravity dies and gate stones, which get into contact with the liquid aluminium in the vertical continuous casting, are exposed to high thermal, mechanical and chemical burdens. The coatings used for the protection of these highly exposed parts should have a high ability to withstand thermal stress, a high abrasion resistance and excellent sliding properties.

Application Range:

CILLOLIN AL 225 is a special ready-to-use coating for the effective coating of gravity dies and gate stones in the vertical continuous casting.

Quality Characteristics:

- has an excellent thermal stability and protects from the contact with aluminium
- good sliding properties
- easy application as CILLOLIN AL 225 can be applied cold on the surfaces which should be protected
- long life span: contains thixotropic agent and has low sedimentation characteristics
- low-emission
- has a good heat conductivity

Addition Rate:

No dilution necessary.

Product Application:

CILLOLIN AL 225 is delivered ready-to-use. However, it should be stirred by a suitable tool before application.

Typical Properties:

Appearance: brilliant black, pasty
Odour: odourless

Packaging:

Cans of 25 and 1 kg

Storage and Shelf Life:

Protect from temperatures below 5°C. The shelf life is at least 3 months if properly stored.

CILLOLIN MG 785 + 785 W

**Special Coating
for magnesium sand casting moulds**

Notes on Technology:

Undesired reactions between the sand mould and the magnesium melt often happen during the casting of magnesium. CILLOLIN MG must be applied on the sand mould surface and impedes a penetration of the magnesium into the mould surface. Thus, a smooth, metallic surface of the casting which was produced in the mould is achieved.

Application Range:

CILLOLIN MG 785 is a ready-to-use special coating for the effective coating of sand mould surfaces in the magnesium casting.

Quality Characteristics:

- is not moistened by magnesium melts and rejects them
- impedes the tarnishing of casting surfaces
- produces a smooth, metallic and shiny surface
- long life span: contains thixotropic agent and has low sedimentation characteristics
- low-emission
- deliverable as MG 785 alcohol-based and as 785 W water-based for the optimal adjustment on the drying conditions of moulds and cores which depend on the geometry

Addition Rate:

The coating is ready to use.

Product Application:

CILLOLIN MG is delivered ready-to-use. However, it should be stirred by a suitable tool before application. If required it can be diluted with alcohol or water.

Typical Properties:

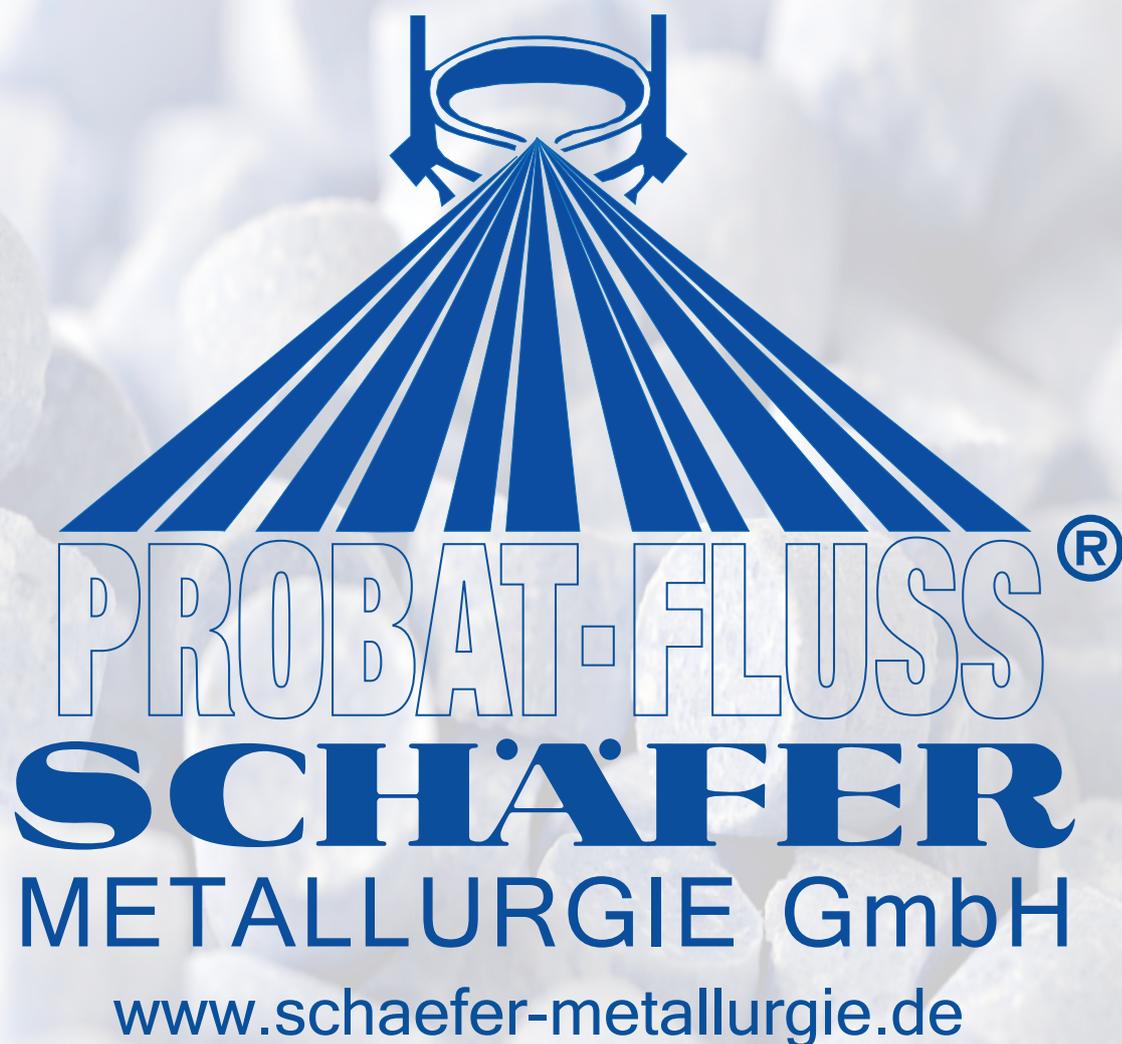
Appearance: grey
Odour: like alcohol or odourless

Packaging:

Concentrate – homogenized in cans of 40, 15, 8 and 1 kg

Storage and Shelf Life:

Protect from temperatures below 5°C. The shelf life is at least 3 months if properly stored.



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