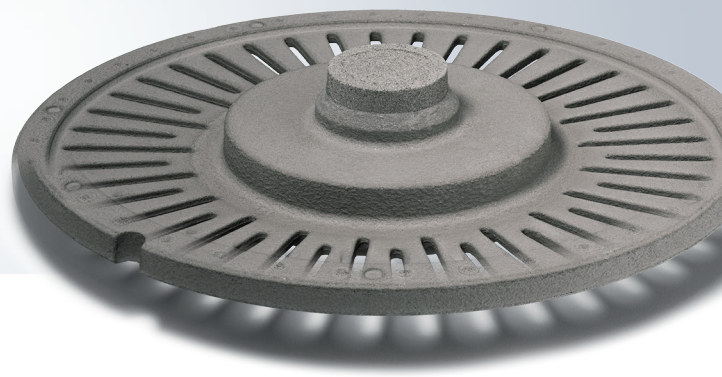
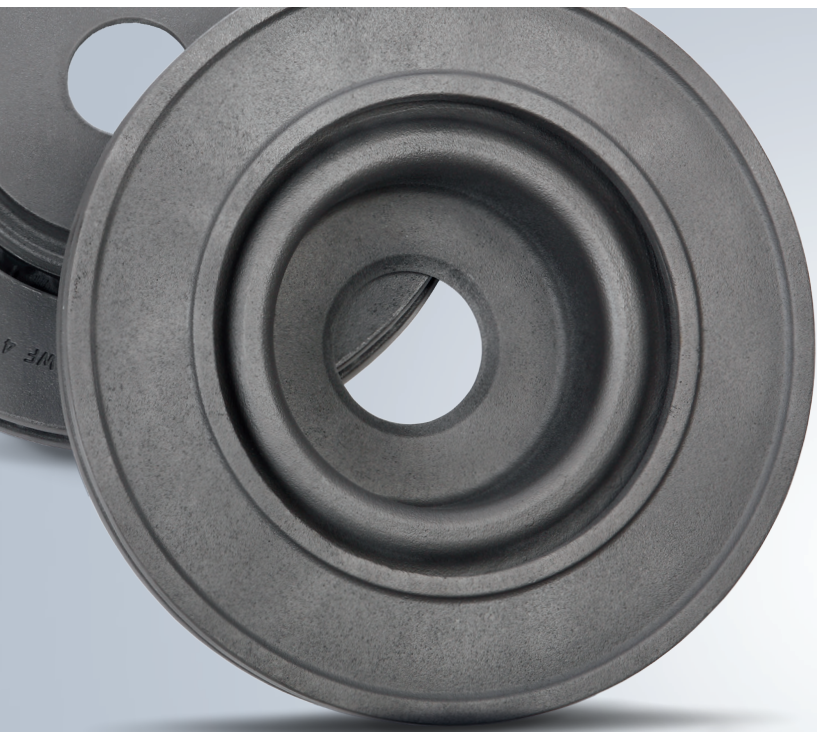




Coatings

Product Line Overview



Industry Leading Coatings for the Ideal Casting

Coatings from ASK Chemicals are much more than a simple barrier between sand and molten metal. They are high-tech systems that are crucial in the surface quality of the casting and systematically eliminating casting defects. While all our coating systems are primarily characterized by the fact that they make for excellent casting results, minor fettling work and increased productivity and efficiency in the pouring process, the use of water-based coatings provides other unbeatable advantages. No solvents are used for the dilution, which is why water-based coatings are emission-free, do not pose a risk to employees and reduce the cost of dilution. Foundries can therefore dispense with installing additional equipment and need not adopt any extra fire safety measures. Finally, storage volumes are unlimited with water-based coatings. Our water-based coatings produce significantly more convincing casting results than conventional coatings.

At ASK Chemicals, we provide innovation-driven research through our product development approach. We focus specifically on market trends and customer demands because of the increasingly complex requirements our industry is facing: re-

duced emissions, casting defect prevention, cost-efficiency, as well as overall casting quality. Such requirements necessitate more than just strong partnerships and outstanding technologies; rather, we believe that first-class research and development that focuses on efficiency, environmentally friendly solutions and key performance parameters are essential.

In addition, we offer our customers a holistic approach that goes well beyond merely offering products. Our application technology and technical sales specialists in particular always assess the entire production process as a whole. Only this approach allows for customer-specific solutions that are precisely tailored to meet customer requirements.

Finally, our specialists' expertise is complemented by a broad range of services that offers our customers real added value. For example, our design services can be systematically deployed to optimize the process as a whole – from conceptual development to actual series production – thereby offering important savings and process improvement to our customers.

- Decades of coatings expertise
- Comprehensive application portfolio
- Progressive eco-friendly options
- Tailor-made coating solutions
- Holistic value added services

Basic Information

Coating formulation types

➤ Water-based

- Environmentally friendly
- No HAZMAT issues
- No major transportation or handling constraints

➤ Alcohol-based

- Very fast drying and flammable
- More resistant to freezing
- All around coating

➤ Lost foam & full mold

- Control of mold filling process
- Controlled absorption of decomposition products
- Versatile for use on complex parts

ASK Chemicals coating types

➤ MIRATEC

- Water-based
- Automotive
- Primarily for Dipping

➤ SOLITEC

- Water-based
- Non-automotive & specialty
- Brushing, spraying, flowcoating

➤ VELVACOAT

- Alcohol-based
- Non-automotive
- Usable for most application methods

➤ CERAMCOTE

- Lost Foam & Full Mold
- Automotive & non-automotive
- Specific to metal type

General benefits of coatings

- Improved casting surface quality
- Security against many casting defects
- Reduce fettling and rework time
- Prevent unwanted chemical and /or thermal reactions
- Control of metallurgical effects

Coating application families



Automotive

- Brake disc
- Cylinder head
- Motor block
- Turbo charger
- Axle housing



Non-automotive

- Heavy iron
- Medium iron
- Light iron
- Steel
- Wind power



Specialty

- Melting shop
- Centrifugal casting
- Hydraulic casting
- Aluminum die-cast

Custom solutions

Apart from the system solutions mentioned in this brochure, ASK Chemicals also offers you custom solutions to fit your individual process. Please contact us to discuss your specific needs.

CERAMCOTE




The versatile high-performing water-based coating

CERAMCOTE coatings were specifically designed for the Lost Foam and Full Mold technologies. A staple within the industry, CERAMCOTE provides superior performance and consistency to the automotive and non-automotive markets. Utilizing a special proprietary formulation, ASK Chemicals has optimized the rheological properties of CERAMCOTE (i.e. viscosity and layer thickness). Stable viscosity determines the evenness of the coating layer to prevent casting defects such as metal penetration, burn-on defects, cracks and scabs. CERAMCOTE offers superior bond strength and ductility. The dried coating can withstand even the most severe mechanical stress during sand compaction. This coating line is available for a variety of application methods, predominately dipping.

Benefits


- Tailored permeability and insulating characteristics
- Improved strength, ductility (dry) and rigidity

Automotive CERAMCOTE coatings

Product	Color	Application				Binder				Metals				Application	Properties									
		Dipping	Flowcoating	Spraying	Brushing	Epoxy-502	Cold Box	Hot Box / Draining	Silicate / Resin-602	No-Bake	Steel	Manganese Steel	Heavy Iron		Light/Medium Iron	Copper	Aluminum	Typical Application	Solvent	Veining suppression	Metallization protection	High gas permeability	High layer forming possible	Matting time
 CERAMCOTE EP9 AL 530FF	Tan	■													■	Lost foam coating	W	■					• Designed for aluminum castings	11.0
CERAMCOTE EP9 AL MERC	Blue	■													■	Lost foam coating	W	■					• Designed for aluminum castings	11.5

I = isopropyl, W = water, ■ = suitable, ■ = particularly suitable, • = slow, ○ = medium

Non-Auto CERAMCOTE coatings

Product	Color	Application				Binder				Metals				Application	Properties									
		Dipping	Flowcoating	Spraying	Brushing	Epoxy-502	Cold Box	Hot Box / Draining	Silicate / Resin-602	No-Bake	Steel	Manganese Steel	Heavy Iron		Light/Medium Iron	Copper	Aluminum	Typical Application	Solvent	Veining suppression	Metallization protection	High gas permeability	High layer forming possible	Matting time
 CERAMCOTE FS 701	Beige	■							■							Lost Foam coating	W	■	■				• Designed for iron and non-ferrous castings	13.0
CERAMCOTE FS 501	Beige	■							■							Lost Foam coating	W	■	■				• Designed for iron and non-ferrous castings	13.9
CERAMCOTE FS 201	Beige	■							■							Lost Foam coating	W	■	■				• Lower cost for iron and non-ferrous castings	13.0

I = isopropyl, W = water, ■ = suitable, ■ = particularly suitable, • = slow, ○ = medium




The multifunctional high performing water-based coating

ASK Chemicals water-based SOLITEC coatings come in two application varieties specially engineered for non-automotive & specialty castings. Designed for safety and performance, SOLITEC assures exceptional quality alongside a safe workplace environment. Application specialists utilizing the brushing method (i.e. a method requiring close proximity) will enjoy the low-VOC advantage of SOLITEC. Additionally high-performance formulations (e.g. zircon free) vastly improve surface finish leading to reduced cleaning costs. SOLITEC is also offered in several innovative color-changing formulations that visually represent when the coating is dry. This unique characteristic ensures the integrity of your coating within your production process. Multiple applications are acceptable with SOLITEC coatings: brushing, spraying and flow coating.

Benefits

- Excellent release properties
- Smooth application properties
- Short air drying time & enhanced refractoriness
- Environmentally friendly
- Casting defect prevention

Non-automotive SOLITEC coatings

Product	Color	Application								Binder				Metals				Application	Properties												
		Dipping	Flowcoating	Spraying	Brushing	Epoxy-SO ₂	Cold Box	Hot Box /Croning	Silicate /Resol-CO ₂	No-Bake	Steel	Manganese steel	Heavy iron	Light and medium iron	Copper	Aluminum	Solvent		Veiling suppression	Metallization protection	High gas permeability	High layerforming possible	Matting time	Special effects	Density (undiluted) g/ml						
 SOLITEC HI 602	Grey	■	■	■	■	■	■					■	■	■	■								Excellent for heavy section iron	W	■		■	■		Minimizes graphite degradation	11.3
SOLITEC ST 701	Blue	■	■	■	■	■	■	■	■														Heavy iron and steel castings (railway, pump housings)	W	■		■	■	○	Color change blue to yellow for visual indication of complete drying	16.0
SOLITEC ST 903	Blue	■	■	■	■	■	■	■	■									■					All purpose zircon coating	W		■		■		Color change blue to yellow for visual indication of complete drying, excellent blister resistance when torched	20.0
TP COAT W20-4	Off-White	■	■	■	■	■	■	■	■														Heavy iron and steel castings	W	■	■		■	○	Excellent flow coating	19.3
VELVAPLAST TGW 053	Dark Grey	■	■	■	■	■	■	■	■														Universal automotive coating and heavier section iron castings	W	■	■		■		High graphite for excellent peel	11.5
VELVAPLAST ZW SF 081	Blue	■	■	■	■	■	■	■	■														Heavy iron and steel castings	W	■	■		■	○	Color change blue to yellow for visual indication of complete drying	19.0
CENTRIFICOTE ASG 600	White	■	■									■	■	■	■	■							Ready for use centrifugal coating	W	■	■		■	■	High insulating coating	14.6
CENTRIFICOTE ASG1 POWDER	White	■	■									■	■	■	■	■							Centrifugal coating	W	■	■		■	■	Powder coating	15.3
CENTRIFICOTE SPG8	Beige	■	■	■								■	■	■	■	■							Centrifugal coating	W	■	■		■	■	Excellent for heavy section rolls	14.6

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MIRATEC



Innovative coatings for serial casting production

MIRATEC water-based coatings are the highest performing in their class. When applied using the dipping method, MIRATEC is ideal for automotive applications, as it has the shortest cycle times. MIRATEC coatings provide an even coating layer especially with complex core packages or challenging core geometries. Thanks to its engineered formulation and tailored characteristics (e.g. gas permeability), the innovative coating technology reduces casting defects and provides an excellent surface finish.

Benefits

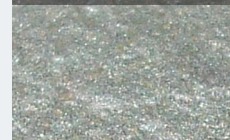
- Enhanced refractoriness
- Short drying times
- Short manipulation time
- Fewer casting defects and excellent casting surfaces

Special features

MIRATEC MB – The special coating for clean motor block casting

- Easy to peel coating in castings difficult to shot-blast
- Reduced cleaning efforts
- Significantly less retained material
- Environmentally friendly


Perfect casting
with
MIRATEC MB



Casting with
residue



Automotive MIRATEC coatings

Product	Colour	Application	Binder							Metals					Application	Properties									
			Dipping	Flowcoating	Spraying	Brushing	Epoxy-SO ₂	Cold Box	Hot Box / Croning	Silicate / Resol-CO ₂	No-Bake	Steel	Manganese steel	Heavy iron		Light and medium iron	Copper	Aluminium	Typical application	Solvent	Veining suppression	Metallization protection	High gas permeability	High Layerforming possible	Matting time
 ISOCOTE CAW 111 V2.5		■	■	■	■	■	■	■	■	■			■	■	■	■	Universal coating, including V-process and lost foam	W	■					Zircon alternative with pink color change	15.4
ISOCOTE CGW 085		■	■	■	■	■	■	■	■				■	■	■	■	Universal coating (e.g. gearbox housings) in warm box	W	■	■	■	○		Excellent properties for hot cores	11.5
ISOCOTE BPG-TM		■	■	■	■	■	■	■	■				■	■	■	■	Universal automotive coating primarily for dipping	W	■	■	■	■		Significant reduction of flake graphite in compacted graphite iron (CGI)	10.9
MIRATEC HC 801		■	■	■	■	■	■	■	■				■	■	■	■	High purity alumina with graphite - heavy iron castings	W		■	■	■		Fast drying coating	13.3
MIRATEC MB 508		■				■	■	■	■				■	■	■	■	Universal automotive coating primarily for dipping	W	■	■	■	■	■	High film thickness possible	10.6
MIRATEC BD 300		■	■	■	■	■	■	■	■				■	■	■	■	Universal coating (e.g. gearbox housings) rotors	W	■	■	■	■	■	Short matting time	11.7

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Specialty coating

ASK Chemicals has available several specialty-coating formulations designed for a specific purpose, whether it be the need for a metal chilling effect, gas scavenging in light metals, or eliminating severe metal penetration defects via the use of a premium primer coating. Below is a list of these unique coatings made available to solve the most difficult of casting defects.

ASK Chemicals has also developed an innovative zircon-free refractory combination for heavy and thick-walled iron, as well as most steel castings. In such extreme applications, it provides the same or even better casting results as achieved with coatings containing zirconium. Two key advantages of zircon-free coatings include low density and material handling.

Note: Please contact your ASK representative for details regarding our zircon-free coatings (not listed below).

Specialty coatings

Product	Color	Application			Binder			Metals					Application	Properties										
		Dipping	Flowcoating	Spraying	Brushing	Epoxy-SO ₂	Cold Box	Hot Box /Croning	Silicate /Resol-CO ₂	No-Bake	Steel	Manganese steel		Heavy iron	Light and medium iron	Copper	Aluminum	Typical application	Solvent	Veining suppression	Metallization protection	High gas permeability	High layerforming possible	Matting time
 VELVAPLAST TE 25	Grey	■	■	■	■	■	■	■	■		■	■	■	■		Iron chill coating	W	■	■	■	○		Tellurium containing chill coating	11.5
VELVACOAT CBG 9014	Grey			■	■	■	■	■	■		■	■	■	■		Iron chill coating	I	■	■	■		○	Bismuth containing chill coating	10.3
VELVALITE CA 954	Brown	■	■	■	■	■	■	■	■		■	■	■	■		Heavy iron and steel castings	I	■	■			○	High thermal conductivity chromite coating	15.5
VELVALITE ZAK 955	Off-white	■	■	■	■	■	■	■	■					■		Aluminum castings for surface porosity or magnesium castings	I		■	■	■		Contains potassium fluoroborate	18.0
VELVACOAT AL 7036	Silver	■	■	■	■	■	■	■	■					■		Aluminum castings	I		■	■	■		Aluminum metal containing chill coating	7.0
TP COAT A 66	Pink				■	■	■	■	■	■	■	■	■			Heavy Iron & Steel Casting	I	■	■	■	■		Zircon penetrating coating	14.4
SOLITEC IM 901	Blue				■	■	■	■	■	■	■	■	■			Heavy Iron & Steel Casting	W	■	■	■	■		Zircon penetrating coating	16.9

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Added Value for our Customers

Application technology and technical sales – for complete process transparency

Application technology and technical sales at ASK Chemicals offer our customers comprehensive expertise in all areas of foundry technology and metallurgy. We offer a comprehensive service that focuses on the production process as a whole and helps customers not only to cut costs but also to enhance their processes. ASK Chemicals also conducts casting defect analysis and offers tailored training sessions on the customer's own premises.

Benefits

- Improved decision-making via greater transparency
- Reliable recommendations
- Quick response
- Customized solution development
- Cost in-use reporting (i.e. savings)
- Casting defect analyses
- On-site training sessions

The one-of-a-kind "mobile mini-laboratory"

The mobile mini-laboratory runs a self contained continuous mixer that can utilize several different resin systems. Alongside many additional benefits its premier advantage is its ability to conduct trials without ever interrupting production.

- Uninterrupted production
- Multi-functional mobile tool
- Fast results



Currently, available to NA customers only

Design Services – for perfect casting results

Our Design Services team monitors the entire casting development process from initial design to final production of actual cast parts (i.e. prototypes). Our highly experienced engineers enjoy a wide range of knowledge within all aspects of foundry technology and metallurgy. In addition, we use only the most advanced simulation software offered today: MAGMA, Novacast, FLOW-3D and Arena-Flow®. Beyond fully optimized designs and simulation expertise, the Design Services team cooperates with external companies and service providers to assure proper project alignment for unparalleled results and guaranteed customer satisfaction.

Benefits

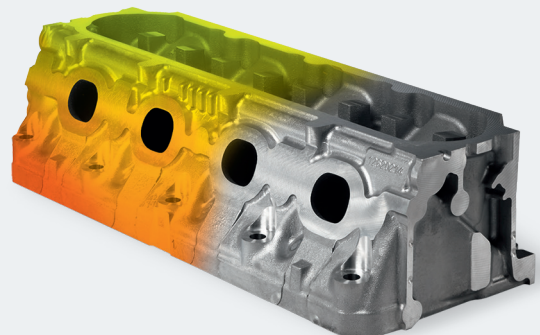
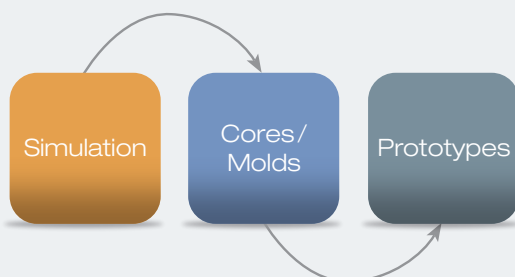
- Higher productivity and optimized catalyst consumption
- Manufacturing process design, including inorganic technology
- Calculation of optimal feed
- Optimized design and manufacture of model plates, core boxes and molds
- Less scrap
- Shorter product launch times
- Quicker time-to-market

Simulation services

The simulation of casting processes provides foundries with invaluable casting mold information. Specifically, this benefit allows for the optimization of gating & feeding systems, overflows, venting design and risers. Moreover, it provides critical insight into the influences and effects directly related to casting integrity such as, cooling & heating measurements and filling & solidification times.

From the idea to the prototype

ASK Chemicals supports your entire process from concept to prototype production. How you benefit: comprehensive expertise from a single source.



Research and development – for innovation near you

Our R&D department performs innovation driven groundwork as well as market and customer driven development. Interaction between these three areas is of fundamental importance in offering our customers technologically sophisticated products and efficiency enhancing solutions at all times. Through close cooperation and the constant exchange of ideas with our application technology and technical sales specialists, R&D at ASK Chemicals is always in tune with the market and also has a presence on the customer's own premises itself.

Benefits

- Highly experienced researchers
- Global presence and availability
- Comprehensive knowledge of the regional sand types and technological requirements
- Short response times for our customers
- First class equipment

Comprehensive research and development services

Pilot foundry

- Fully equipped research foundry
- Mold production, mold/core package assembly and casting
- "Real World" foundry process representation

Metallurgical investigations

- Comprehensive examination of the graphite structure and metallic matrix: Graphite size, Number of nodules, Degree of dispersion, Nodularity, Ferrite/pearlite ratio
- Preparation of metallurgical reports

Sand laboratory

- Examination of high temperature materials
- Testing of tensile strength, compression and transverse loading
- Sand characterization and analysis

Product development and technical support

- Casting defect analysis
- Full spectrum chemical & polymer analysis
- Product, process and test method development



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Please contact ASK for any questions concerning the usage of these marks.

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