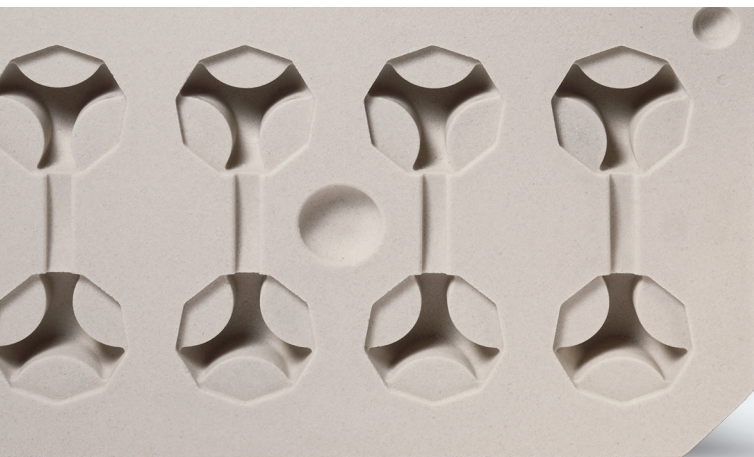




# Auxiliaries

Product Line Overview



**ASK**CHEMICALS



# Innovative Auxiliaries for Today's Demands

ASK Chemicals is a premier global provider of auxiliary products for the metal casting industry. Within our wide breadth of offerings we deliver industry leading auxiliaries: release agents, metal cleaners, adhesives, core putty fillers, cope seals and core box vents. When used and implemented properly auxiliaries can seamlessly integrate into your production process providing you maximum value. Yet, the converse is also true. Un-optimized inferior solutions can wreak financial havoc: increased core/mold scrap, additional cleaning time (i.e. fettling costs) and reduced overall production output.

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 faces: reduced 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 is 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. In this way, for example, our design services can be systematically deployed to optimize the process as a whole – from conceptual development to actualized series production – thereby offering important savings and process improvement for our customers.

- Global auxiliary provider
- “One-stop-shop” for auxiliaries
- Optimized solutions via technical services
- Expert recommendations
- Value adding services

# Basic Information

## Auxiliary types

### ➤ Release agents

Applied to tooling designs to improve core removal

### ➤ Metal cleaners

Applied to ensure clean tooling

### ➤ Adhesives

Applied to cores for bonding together

### ➤ Core putty fillers

Applied to chipped/damaged cores as repair measure

### ➤ Cope seals

Applied to cope to prevent against leakage

### ➤ Core box vents

Applied to molds to encourage improved ventilation

## Custom solutions

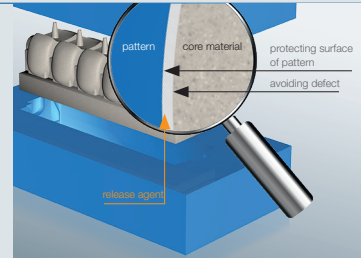
Apart from the system solutions mentioned in this brochure, ASK Chemicals also offers you custom solutions to fit your individual process. Please contact us to discuss your specific needs.

## General auxiliary benefits

### Release agents

ASK Chemicals highly engineered release agents come in a variety of formulations to accommodate various applications.

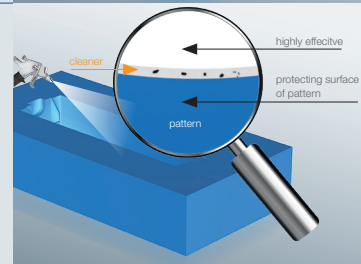
- ZIP SLIP – Premium release agent for shell-sand, Cold Box, No-Bake and green sand



### Metal cleaners

Reduce time and money spent on cleaning with one of ASK Chemicals superior ZIP CLEAN cleaning solutions.

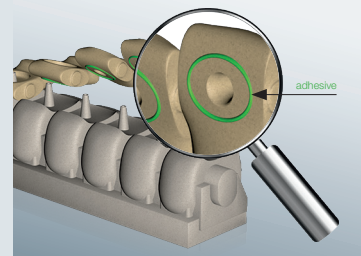
- Ensures compatibility with substrat
- Low odor
- Metal cleaners free of NMP available



### Adhesives

ASK Chemicals adhesive solutions – suitable for automatic metering devices – encourage high production profitability, reducing your handling and cycle time.

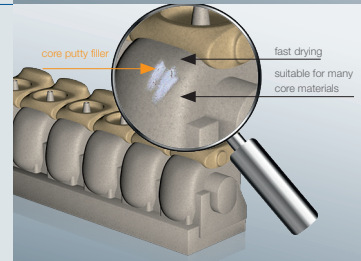
- Water-based
- Hot melt glues
- Quick setting
- 2 Component glues



### Core putty fillers

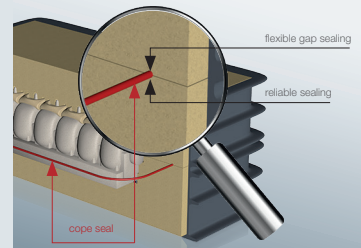
With ASK Chemicals' ASKOPASTE core putty fillers you can reduce your scrapped cores by simply repairing them.

- Ideal for minor core defects
- Optimized packaging for efficient transporting



### Cope seals

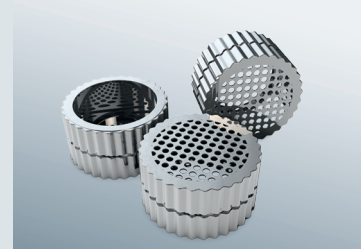
ASK Chemicals' ASKOROPE cope seals are ideal for when you need to prevent leakage from the mold through the mold joint, particularly in the in-gate area.



### Core box vents

Utilize ASK Chemicals' ISOVENTS – high quality 3-piece core box vents with high pen areas.

- Available in multiple sizes



# Release Agents & Cleaners

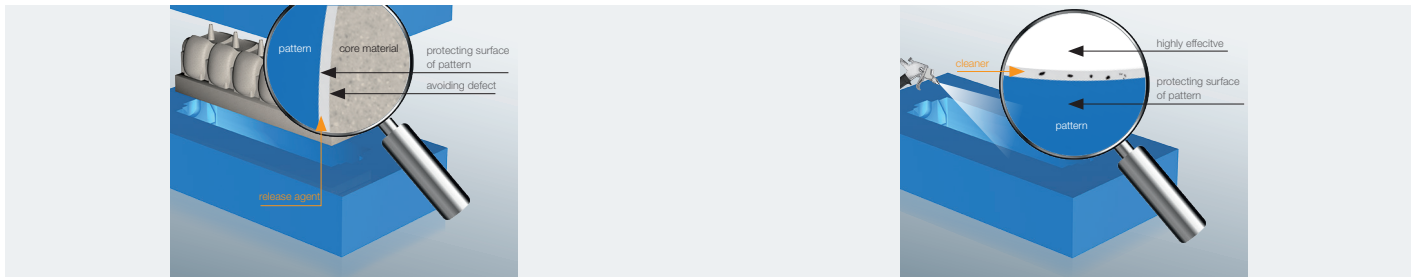
An essential component for optimal core & mold quality

## Release agents

Much more than a simple barrier layer between the core, mold and pattern release agents from ASK Chemicals have the potential to improve your productivity, save you time & money and contribute to your overall workplace environment.

## Cleaners

ASK Chemicals cleaners are specially designed to remove resin, sand dust and release agent debris to help ensure clean tooling patterns without damaging them. Save time and money using our low odor high performance cleaners.



Application	Product	Notes
Gas-curing	ZIP SLIP 130 S	Odorless mineral spirits based
	ZIP SLIP 174 H	No solvents
	ZIP SLIP 154 S	Heptane based
No-Bake	ZIP SLIP LP 78 1495	Heptane – aluminum based
	ZIP SLIP DP20	Powder
Hot-curing	ZIP SLIP 109 W	Low viscosity – water soluble
Green sand	ZIP SLIP LR 63 HP	Oil based
	ZIP SLIP 64 W	Non-flammable & low odor
Metal cleaner	ZIP CLEAN 500	NMP modified
	ZIP CLEAN 600	NMP

# Adhesives & Fillers

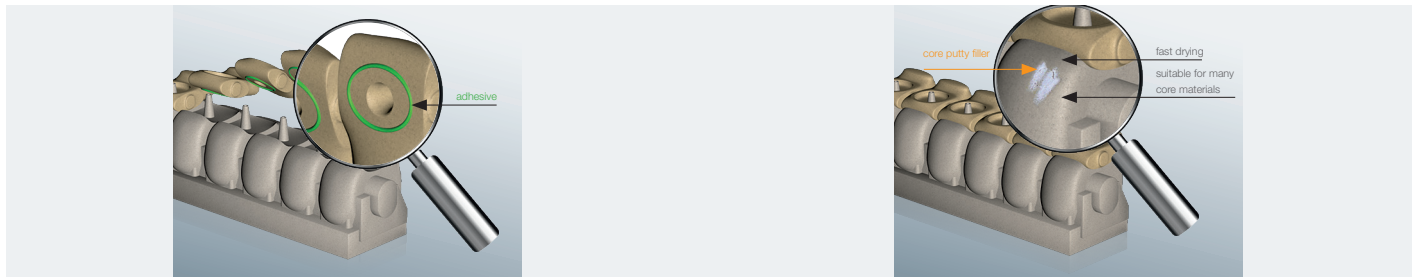
An essential component for optimal core & mold quality

## Adhesives

ASK Chemicals fast drying adhesive solutions – suitable for automatic metering devices – encourage high production profitability, reducing your handling and cycle time.

## Core putty fillers

Reduce your core and mold scrap rate by utilizing one of ASK Chemicals core putty fillers for minor defects. Easy to use and transport our core putty fillers are high quality and will not cause any gas bubbles during pouring.



Application	Product	Color	Viscosity (proces. temp)	Processing time	Type	Carrier	Benefits
Inorganic	LIQUIPASTE MV	Off-white	22,000–34,000 cps	30 minutes oven dried / 24 hours air dried	Cold glue	Water	Non-flammable Sodium silicate based
	MICROSET 332	Black	16,000–40,000 cps	30 minutes oven dried	Cold glue	Water	Designed for microwave drying Suitable for conventional oven Non sodium silicate based
Fast	ZIP STIK NC	Gray	22,000–24,000 cps	30 minutes air dried	Cold glue	Solvent	Air dried
	ZIP STIK LH20	Gray	20,000–40,000 cps	30 minutes air dried	Cold glue	Solvent	Air dried
Chemically cured	OMEGA SET	Green	15,000–20,000 cps	3–35 minutes	Cold glue	100 % active	2 part adhesive that cures at specifically designed rates Requires additional equipment, but provides maximum adhesive strength
Hot melt	ISOPASTE HOT GLUE	Off-white	20–400 (354 °F)	23 seconds	Hot glue	–	Polyamide Application temperature: 374–428 °F
	ZIP STIK HMV 2115	Off-white	1,500 (374 °F)	15 seconds	Hot glue	–	Polyamide Application temperature: 374 °F
Fillers	CORE MUD 131	Gray	Paste	3 hours air dried	Core putty filler	Water	Graphite based for iron and non-ferrous
	VELVAPLAST ZWP 980	Off-white	Paste	3 hours air dried	Core putty filler	Water	Zircon based for steel

cps = Centipoise

# Cope Seals & Vents

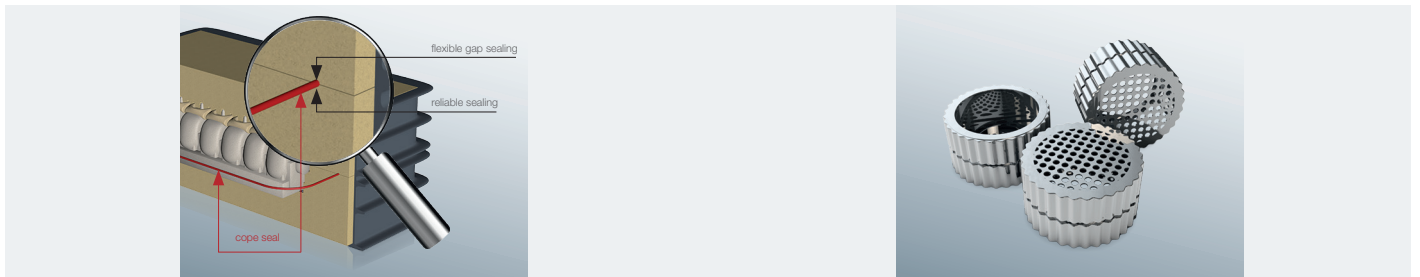
An essential component for optimal core & mold quality

## Cope seals

Avoid leakage of liquid metal by using one of ASK Chemicals ASKOROPE cope seals – available in several sizes. Easy & safe to use our cope seals are especially suitable within steel, gray iron and heavy metal casting.

## Core box vents

ASK Chemicals offers a high quality 3-piece core box vent called ISOVENTS with high open areas. Designed to prohibit passing sand grains our ISOVENTS require minimal cleaning and come in several sizes.



Application	Product	Benefits
Cope seals	ASKOROPE	Withstands high metal temperature
Core box vents	ISOVENTS	Specially designed for easy installation

## Cope seal sizing & packaging chart

Size		Carton content		Weight / Carton	
Ø in mm	Ø in inch	m	ft	kg	lb
3	1.17	672	2,204.16	13	28.6
4	1.56	604	1,981.12	14	30.8
4.5	1.755	499	1,636.72	13	28.6
5	1.95	414	1,357.92	15	33
6	2.34	307	1,006.96	16	35.2
7	2.73	394	1,292.32	27.5	60.5
8	3.12	312	1,023.36	26	57.2
9	3.51	249	816.72	28	61.6
10	3.9	211	692.08	28	61.6
12	4.68	158	518.24	29	63.8
14	5.46	108	354.24	30	66
16	6.24	83	272.24	29	63.8
18	7.02	67	219.76	30	66
20	7.8	53	173.84	29	63.8
24	9.36	36	118.08	27	59.4



# 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
- Cost in-use reporting (i.e. savings)
- Reliable recommendations
- Casting defect analyses
- Quick response
- On-site training sessions
- Customized solution development

### 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

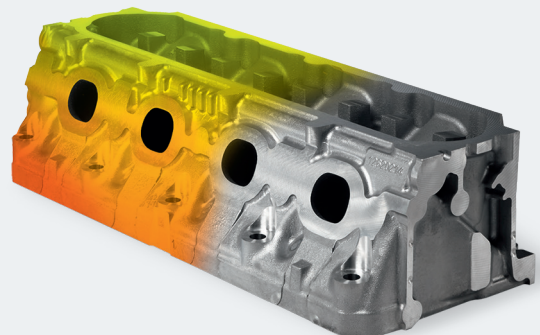
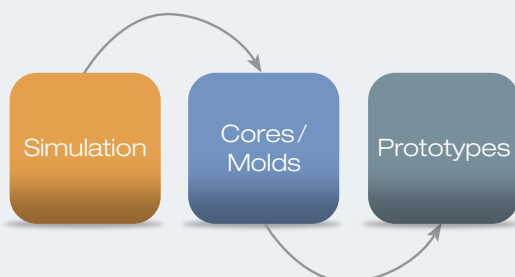
- Higher productivity and optimized catalyst consumption
- Manufacturing process design, including inorganic technology
- Calculation of optimal feed
- Optimized design and manufacture of model plates, core boxes and molds
- Less scrap
- Shorter product launch times
- Quicker time-to-market

### 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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