

# Mining Solutions

Innovative Solutions  
for Solid Liquid Separation



 **BASF**  
We create chemistry







## Boosting mining efficiency

BASF's Mining Solutions business offers a diverse range of mineral processing chemicals and technologies to improve process efficiencies and aid the economic extraction of scarce resources.

We provide advice and technical expertise to the mineral processing industry worldwide. Our global team is driven by a common goal to provide the best solution to meet our customers' processing needs. With technical representation in over 100 countries, BASF provides expertise on a local basis.

Our offer includes reagents, equipment, process technologies and expertise, focusing on applications such as solid liquid separation, solvent extraction, tailings management, flotation, grinding and materials handling.

BASF's solid liquid separation range includes flocculants, coagulants and dewatering aids that are employed across a diverse range of applications, including thickening, clarifying, filtration and centrifugation. BASF's expertise in polymer chemistry has resulted in a long history of innovation with market-leading brands such as Magnafloc®, Alclar® and Rheomax® DR.

Our aim is to provide innovative, sustainable solutions to ensure our customers' operations run more efficiently by delivering operational, economic and environment benefits.



# Rheomax<sup>®</sup> DR

## density and rheology

The mining industry faces many challenges and issues relating to the use of water and the impact of exploration, extraction and residue management, on the environment.

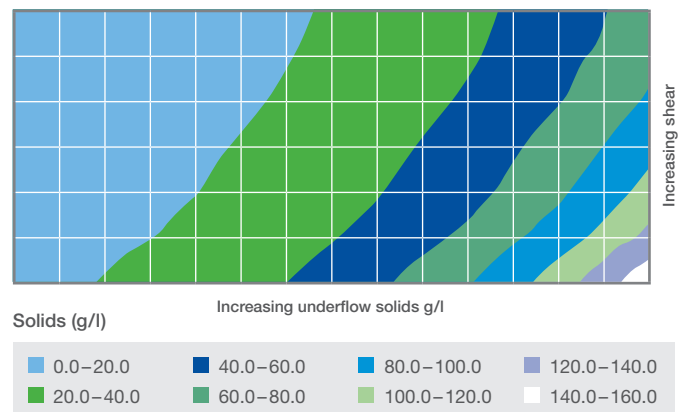
These include minimizing reagent consumption and maximizing mineral recovery by improving the rate and degree to which solid liquid separation takes place in thickening applications.

The Rheomax<sup>®</sup> DR range of flocculants create a high density and more robust aggregate compared to conventional products, which are effective on a wide variety of mineral ore types.

This change in aggregate shape allows for faster consolidation, high underflow densities and low underflow yield stress.

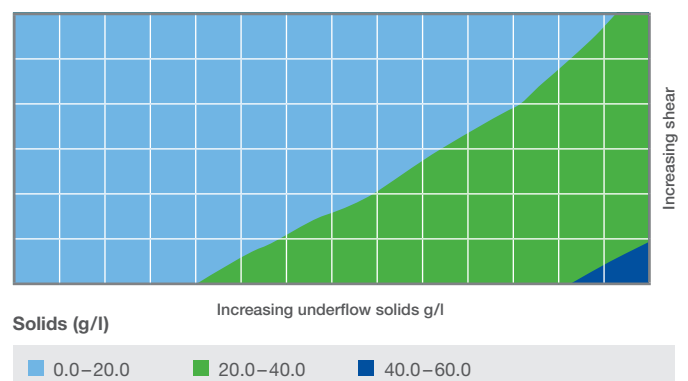
### Effect on yield stress (Pa) with increasing solids and shear

#### Conventional flocculants



Conventional flocculants are sensitive to fluctuations in solids content and applied shear, which can limit their associated process performance. The graph shows the effect on yield stress as plant conditions vary.

#### Rheomax<sup>®</sup> products



The Rheomax<sup>®</sup> DR range of products produce an underflow with a lower yield stress, which is more tolerant to fluctuations in solids content and applied shear, resulting in a more consistent thickener performance over a wide range of operating parameters.





Rheomax® DR advanced flocculants have demonstrated the following benefits to solid liquid separation processes by enabling improvements to be made to thickener throughput, underflow density and yield stress.

**BENEFITS DELIVERED  
BY INCREASED THROUGHPUT**

<b>ECONOMIC</b>	Reduced capital expenditure Operate at higher feedwell solids
<b>OPERATIONAL</b>	Tolerate greater feedwell fluctuations Underflow solids compact faster

**BENEFITS DELIVERED  
BY INCREASED UNDERFLOW DENSITY**

<b>ECONOMIC</b>	Improved recovery of leached metal Improved recovery of concentrate
<b>OPERATIONAL</b>	Increased CCD washing efficiency
<b>ENVIRONMENTAL</b>	Improved recovery of water Reduced volume of tails to residue Reduced residue footprint Reduced residue rehabilitation time

**BENEFITS DELIVERED  
BY REDUCED UNDERFLOW YIELD STRESS**

<b>ECONOMIC</b>	Run at higher underflow densities Improved leaching kinetics Reduced energy consumption
<b>OPERATIONAL</b>	Reduced rake torque Improved thickener efficiency







## MAGNAFLOC®

BASF's Magnafloc® range of flocculants and coagulants are used extensively whenever the extraction process uses water or lixiviants to aid mineral and metal recovery. In thickeners and clarifiers, the products are designed to enhance settling rates, improve clarities and reduce underflow volumes. When used in filtration processes, Magnafloc® reagents increase filtration rates and yields, as well as reducing cake moisture contents.

Magnafloc® flocculants and coagulants have a broad applicability throughout the industry and are available in a wide variety of product forms, including powder, bead, solution and liquid dispersion.

## MAGNASOL®

Magnasol® flocculants and coagulants can be supplied as liquids or in a solid block form and are ideally suited for remote locations where electricity is not available and hence can reduce or eliminate the use of flocculant and coagulant make-up equipment.

## DRIMAX®

Highly effective dewatering aids specifically designed to increase yield and reduce moisture content of filter cakes and centrifuge solids.

## ALCLAR®

The Alclar® range is specific to the alumina industry and, in particular, to the Bayer process and includes flocculants for use in thickeners, washers, super-thickeners, hydrate thickeners and green liquor filtration.

## CUSTOMER ENGINEERING SOLUTIONS

BASF's worldwide customer engineering function offers design, development, manufacturing, installation and maintenance services to meet our customers' on-site requirements. We offer equipment for storage, mixing, dosing and process control for a number of applications and, if desired, provide a complete turnkey operation to ensure process efficiencies are maximized.



---

## BASF's commitment to a sustainable mining industry

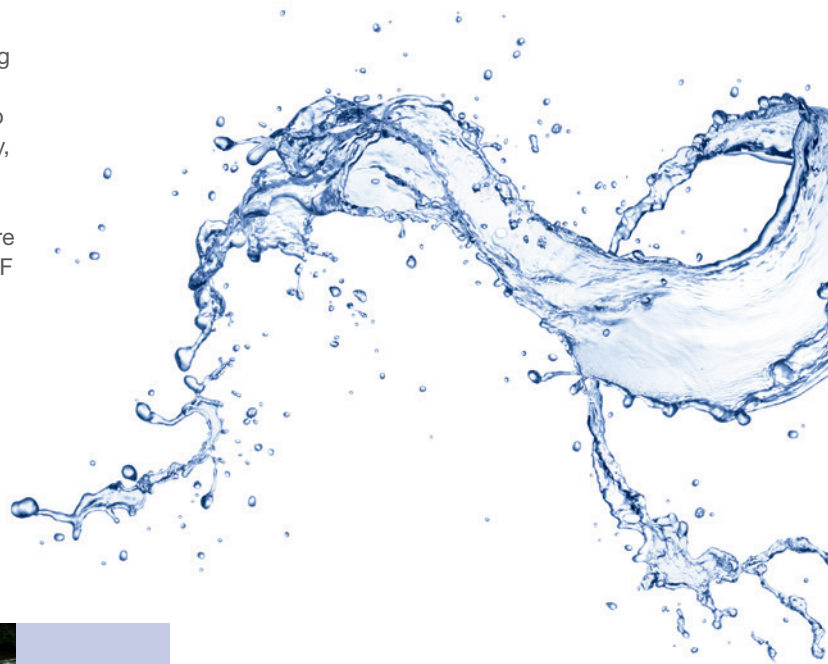
---

Innovation is at the heart of BASF's Mining Solutions business as our aim is to develop novel and innovative chemistries, product applications and processes to effectively meet the evolving challenges that the mining industry continues to face. BASF is committed to working in close collaboration with our customers, academia and global industry organizations.

BASF's extensive backward integration into many of the building blocks of mineral processing product chemistries enables us to effectively apply our knowledge and chemical experience to develop both conventional and novel chemistries for the industry, both today and in the future.

Our Product Development and Technical Support personnel are located around the globe and are complemented by three BASF Global Competence Centers based in Tucson (North America), Ludwigshafen (Europe) and Perth (Australia).

With our chemistry, equipment, process and application technologies, industry experience and customer commitment, BASF can uniquely package competencies and expert offerings to effectively support the diversity of mineral processing technological developments and process challenges.



## Europe

### **BASF plc**

Cleckheaton Road  
Low Moor, Bradford  
BD12 0JZ  
Great Britain  
Phone: +44 1274 417 000  
Fax: +44 1274 606 499

## North America

### **BASF Corporation**

2430 N. Huachuca Drive  
Tucson, Arizona 85745  
US  
Phone: +1 520 622 8891  
Fax: +1 520 624 0912

## South America

### **BASF CHILE S.A.**

Av. Carrascal N° 3851  
Quinta Normal  
Santiago  
Chile  
Phone: +56 2 2640 7000  
Fax: +56 2 775 3095

## Africa

### **BASF South Africa (Pty) Ltd.**

852 Sixteenth Road  
Midrand, P.O. Box 2801  
Halfway House 1685  
South Africa  
Phone: +27 11 203 2400  
Fax: +27 11 203 2431

## Australia

### **BASF Australia Ltd.**

Level 12, 28 Freshwater Place  
VIC 3006, Southbank  
Australia  
Phone: +613 8855 6600  
Fax: +613 8855 6511

For further information:

[miningsolutions@basf.com](mailto:miningsolutions@basf.com)  
[www.mining-solutions.basf.com](http://www.mining-solutions.basf.com)