Alumina Specialty Chemicals
Your Full Service Partner Of Choice
For 100 Years Solvay Has Been Providing An Integrated Approach For The Mining Chemicals Industry

Solvay helps our partners to improve productivity and reduce operating costs while meeting complex economic, environmental and metallurgical challenges. We provide the following support to our customers around the world:

- Formulation expertise
- Application knowledge
- Modeling capabilities
- On-site technical collaboration

Our products have optimized mining operations worldwide in such industries as copper, alumina, gold, nickel/cobalt, polymetallic ores and many other metals and minerals.

Solvay is focused on delivering the best technical solutions, global expertise and supply capabilities to every major mining region of the world.

- Expertise in operational design for alumina refinery projects and brownfield expansions
- Major investments in our production facilities to ensure capacity to grow with the mining industry
- Global manufacturing footprint, regional research centers, and highly reliable global supply chain
Solvay Alumina strives to be the specialty chemical partner of choice by combining our full suite of specialty chemicals with industry professionals diligently working with customers solving problems, helping optimize production and identifying cost savings opportunities.
Solvay Alumina has gone from problem to solution with the introduction of premiere products such as HXPAMS for red mud settling and MAX HT® for sodalite scale inhibition, which have created significant value for the industry. Today Solvay stands as the innovation leader in the industry and has a full product line of red mud flocculants, scale inhibitors, crystal growth modifiers, defoamers, dewatering aids, bauxite handling aids, auto precipitation reduction aids, humate removal aid, liquor filtration aids, bauxite grinding aids, iron removal reagent, hydrate flocculants, dust control agents and other Bayer Process reagents to address the needs of the industry.

Our relentless pursuit of industry needs is fueled by close collaboration and working relationships with our customers. Ultimately it is through these collaborations and our tenacity to solve problems that allows us to meet and exceed our customers’ expectations.
Our Products

Following is an overview of the main product groups that Solvay offers for alumina processing. Your local Solvay representative is ready to work with you to address your unique situation and help you achieve your operational and financial goals. Contact Solvay to select the optimum combination of individual products for your needs.

- Bauxite Handling Aids
- Bauxite Grinding Aids
- Humate Removal Aids
- Red Mud Flocculants
- Iron Removal Aids
- Filtration Aids
- Crystal Growth Modifiers
- Defoamers
- Hydrate Flocculants
- Scale Inhibitors
- Dewatering Aids
- Dust Control Agents
Solvay Service Focuses on Customer Satisfaction

Proven Track Record
In Technical Integrity,
Trustworthy Advice & Value Delivery

Global Application Technology Group comprised of experienced industry professionals

Equipment designer & provider

Intense focus on reliability and quality

40% of resources in technical organization

Security of supply with multi-product manufacturing facilities

Fundamental new molecule development

International logistics expertise

Global focus to solving multilevel customer problems

Dedicated sales and service group focused solely on alumina industry
**Bayer Diagram**

**RED SIDE**
DIGESTION & SEPARATION

1. BX Handling Aid
2. BX Grinding Aid
3. Sodalite Scale Inhibitor
4. Humate Removal
5. Iron removal
6. Settler flocs
7. Washer flocs
8. Filter Aids
9. Dust Control

**WHITE SIDE**
PRECIPITATION & CALCINATION

9. Defoamers
10. Crystal Growth Modifier (CGM)
11. Hydrate Flocculants
12. Dewatering Aids
The Customer Experience

DEFOAMER CUSTOMER EXPERIENCE

Solvay’s CYBREAK® 631 defoamer enabled cost savings, yield improvements and AUD 4.4 increased profits in an Australian Bayer Process plant. The plant wanted to reduce its consumption of defoamer and lower the amount of foam in its secondary seed thickeners.

Solvay met both the objectives by replacing the customers’ defoamer with its CYBREAK® 631 defoamer. Solvay’s high performance CYBREAK® defoamers generally require lower dosages and last longer than competing products. CYBREAK® 631 defoamer required only 50% of the previous defoamer’s dosage. The customer gained a number of operational and financial benefits from Solvay’s solution including:

- Defoamer costs declined due to reduced usage
- Surface foam on the secondary thickeners was reduced
- Hydrate capture rose by 1 gram per liter of liquor, and stabilized at this level
- The higher yield of hydrate increased profits by AUD 4.4 million per annum

Solvay CYBREAK® 631 defoamer is one of a full range of CYBREAK® defoamer/antifoam products including: CYBREAK® 625, 628, 629, 631, 632, 633, 646. Each defoamer is carefully chosen by a Solvay technical expert depending on the specific customer goals, process parameters and liquor chemistry.

HYDRATE FLOCCULANT CUSTOMER EXPERIENCE

CYFLOC® HF hydrate flocculant product line has recently incorporated a range of Dextran based flocculants that were developed to provide a step change in performance over existing solutions. The construction of these molecules and high molecular weights offer several advantages. One North American alumina refinery transitioned from a traditional Dextran to the CYFLOC® HF Dextran and experienced:

- Reduced tertiary overflow solids
- Improved rheology resulting in reduced rake torques for the same solids loading
- Increased throughput of the tertiaries
- Increased productivity / production with less hydrate recirculation
- A reduction in the number of tertiaries in service

The positive impact on settled hydrate rheology makes Solvay’s hydrate flocculant a valuable tool and helps to stabilize operations across the entire classification circuit. Solvay’s hydrate flocculants have been successfully applied to tertiaries, secondaries, and hydrate wash tanks.

In addition to the improved performance and added features over traditional Dextrans, the CYFLOC® Dextran products including CYFLOC® HF 2220, 1110, 222 are the most cost effective hydrate flocculants in the industry.

DUST CONTROL CUSTOMER EXPERIENCE

Solvay’s AEROSPRAY® 70 Series dust control product eliminated a red mud lake dust issue at a customer site. Dust can be a seasonal problem depending on weather conditions in many areas of the red mud and bauxite storage locations. AEROSPRAY® 70A was sprayed as a solution to a mud lake. The AEROSPRAY® bonded to the top layer of the red mud to form a hard crust that significantly reduced the amount of dust. The application was successful and results were confirmed under high wind conditions. These results were sustained over a significant time period further justifying the value proposition of this application.

Solvay offers a range of AEROSPRAY® products that can be applied depending on the specific conditions and needs at each location.
DEWATERING AIDS CUSTOMER EXPERIENCE

Dewatering aids are used for the reduction of moisture content in filter cakes from hydrate pan filters feeding the calciners. They are typically surfactant-based products and provide benefits by improving filter cake quality through moisture reduction. This feature allows for:

- Reduction of calciner operating costs through fuel savings
- Improved washing efficiency reducing soda in product
- Improved cake handling and release from the filter cloth thus increasing throughput of filter table
- Lower wash condensate requirements increasing condensate availability for other applications, for example, mud washing circuit
- Extended filter operation
- Improved filter performance and longevity of filter cloth through reduced caustic retention and with that cloth hardening
- Reduced application costs by 30-35% versus competitive products for the same performance

Solvay’s AERODRI® dewatering aids are surface active agents that have been specially formulated to maximize the contact angle as well as reduce the surface tension of the water. With more than 40 years of experience in a variety of plants, the Solvay solution includes a dedicated team that works with each customer ensuring the optimal solution is chosen. The AERODRI® series includes 100, 104, 105.

CRYSTAL GROWTH MODIFIER CUSTOMER EXPERIENCE

One refinery in the Americas significantly improved their operations using CYQUEST® 120 CGM compared to no CGM as well as a competitor’s CGM. The plant had experienced product size and overall classification circuit precipitation challenges especially during period of high Hydrate fines inventory. CYQUEST®120 was applied at the filling liquor pumps and was able to:

- Increase the seed charge from 90g/l to 120-150 g/l while achieving the desired amount of agglomeration
- Stabilize their liquor by minimizing the impact of oxalate in the precipitation circuit
- Achieve agglomeration results at the -45um size where the competitor CGM product showed no results

Solvay has decades of experience providing customers with a CYQUEST® CGM product line including CYQUEST® 100, 120, 170, 174, 178 that are superior in performance and cost effectiveness to all other options available in the market today.

HYDRATE FLOCCULANT CUSTOMER EXPERIENCE

An Americas Bayer Process plant was interested in improving the performance of their classification stage during high seed variability while lowering their overall treatment cost. Solvay implemented a hydrate flocculant solution including CYFLOC® TF-9000. Improvements when switching from a traditional Dextran based program included:

- Control of the overflow solids in secondary and tertiary classification stages including periods of high seed variability
- Consistent overflow solids and underflow density to stated goals
- Reduced consumption meeting the goals of a 20% cost reduction target.

CYFLOC® TF-9000 and HF Dextran Series hydrate flocculants offer customers the widest range of options to ensure an optimized program for each plant.
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