Nalco technologies for mining industry
As the global leader in Process & Water Treatment, Nalco Company provides essential expertise to the Mining & Mineral Processing industry with technically, economically and environmentally sustainable solutions from mine-to-mill.

Nalco’s on-site, trained engineers help our customers achieve their goals by selecting and implementing optimal water and process technologies to increase recoveries and improve finished product quality, while providing the lowest overall total cost of operation. Some of the primary industries we serve include the following:

- Bauxite & Alumina
- Coal
- Construction Minerals - sand, gravel, crushed stone & cement
- Iron Ore
- Oil Sands
- Pigment & Clay fillers – Kaolin & Titanium
- Phosphate - phosphoric acid & phosphate fertilizer
- Potash
- Precious Metals - Gold, Silver and Platinum
- Base Metals - Copper
- Other Industrial Minerals
Mining & Mineral Processing Applications

Nalco Company provides essential expertise to the Mining and Mineral Processing industry with technically, economically and environmentally sustainable solutions from mine-to-mill.

Our real-time, 365 days a year monitoring and control of Boiler & Cooling Water systems such as 3D TRASAR® Technology can reduce your energy and water usage, while protecting your assets and optimizing manpower.

Additionally, Nalco’s on-site, trained engineers help our customers achieve their goals by selecting and implementing optimal process-side technologies to increase recoveries and improve finished product quality, while providing the lowest overall total cost of operation. Nalco also has a number of innovative process solutions that can effectively help you:

- Increase flotation recovery and grade
- Clarify water and process streams, including automation
- Dewater process and waste solids
- Reduce dusting from haulage roads and stockpiles
- Improve handling properties of raw and finished materials (freeze protection, agglomeration aids, anticaking, process and residual dust control, flow enhancers)
- Improve crystal properties (strength, color)
- Control process scaling and foam
- Help facilitate environmental quality and compliance
Alumina

Nalco has been intimately engaged in the alumina industry for over 40 years – having developed, implemented, and sustained technology significant to the alumina industry.

As a global leader, Nalco applies our knowledge about how chemical programs work under unique refinery conditions to help you prevent and solve operating problems, improve productivity, efficiency and product quality, and ultimately your refinery profitability. In addition to world class alumina consultants and cutting edge chemical programs, Nalco works with you to identify and design the most effective chemical application systems. We provide complete design, construction and installation packages – or alternately assist your chosen in-house or out-sourced engineering contractor. Either way you can be assured that your chemical application will deliver the expected result.

Areas of Expertise

- Bauxite Handling & Dust Control
- Thickening & Clarification
- Liquor Filtration
- Trihydrate Sizing Control
- Trihydrate Classification
- Oxalate Control
- Humate Removal
- Foam Control
- Boiler & Cooling Water Programs
- Total Water Management
- Chemical Management Services
- Waste Management
- Environmental Compliance
Alumina processing
Coal Industry

Nalco Company is a leading provider of integrated chemical solutions for the coal industry since the early 1970s. We offer programs that impact productivity, safety and profitability as well as prolonging the usefulness of a mine by such steps as stretching impoundment life.

In the coal preparation plant, we audit plant processes looking for steps that can help you to debottleneck plant flows and boost productivity. Enhanced flotation recovery and selectivity, clean coal/refuse filtration and improved handling all help to optimize fine coal recovery as they extend impoundment life. And coal quality and handle-ability are improved via filtration and moisture reduction aids, a host of creative approaches to control fine coal dust control from handling and crushing equipment as well as freeze conditioning and car top binding to improve transport and unloading at your customers’ sites.

Around the pit or underground mine, we help control dust from above and underground haulage ways and roads, we improve your environmental compliance as we treat and recycle or discharge water through flocculation, coagulation, metals removal, scale and corrosion inhibition as well as control pH and break stubborn lubricant emulsions.

And Nalco has pioneered customized automated process control for many of these applications. Additionally, our NALFLOTE® Coal Collector technology is a diesel fuel replacement alternative that is commonly used to increase fine coal recovery.
Programs for Coal Mining, Processing and Transportation
Copper and Base Metals

As a global leader serving the mining and mineral processing industries, Nalco understands your business and your process. This understanding helps to ensure that our state of the art chemical programs are matched up to your unique operating parameters and ore types. Nalco’s on-site sales engineers are backed up by a vast network of researchers and technical support specialists to ensure that we have the right program applied at the right place at the optimum dosage to deliver unparalleled performance. We work very closely with our customers to understand their needs and objectives, as well as their constraints, resulting in improved efficiency and performance and reduced downtime and operating costs. In addition to our cutting-edge chemical programs, we also provide complete engineering design, construction, and installation of chemical feed and water treatment systems.

Nalco’s ultimate goal is to help our customers maximize productivity and profitability.

Areas of Expertise

- Novel flotation collectors and frothers
- Process water scale control
- Dust control (haul roads and crushers)
- Solids-liquid separation and water recovery
- Concentrate filtration
- Boiler and cooling water treatment
- Antifoams and defoamers
- Thickening and clarification
- Mine water and effluent treatment
- Agglomeration aids
- SX crud control
- Total water management
Copper processing
Gold, Silver and Platinum Mining and Processing

Process design for recovery of gold and silver varies substantially today depending upon the combination of metals present in the ore, the form or chemical composition of the metals, and the grade of ore being processed. To meet these diverse demands, Nalco provides a wide portfolio of process and water treatment additives and services to enable us to customize a total program approach around your specific mechanical, operational, and chemical needs.

Our portfolio of programs for gold and silver recovery operations includes chemicals and services targeted for improvement of:
- Grinding – to maximize throughput and energy efficiency
- Flotation – to maximize recovery and grade
- Thickening – to maximize clarification, underflow density, and recovery
- Filtration – to maximize throughput and reduce moisture
- Process Scale Control – to protect equipment, maximize throughput, and minimize carbon fouling for clear process solutions, slurries, and strip circuits and carbonate, sulfate, and silica scales
- Foam control – to maximize throughput and reduce solids carryover
- Emissions control – to meet environmental, health, and safety demands (ex. Hg)
- Mine and mill discharge water treatment
- Dust control – to meet environmental, health, and safety demands in the mine, on haul roads, and during ore handling and transport
- Boilers – to protect against scaling & corrosion and maximize efficiency
- Cooling water – to protect against fouling and corrosion and maximize efficiency.
Industrial Minerals

Industrial Minerals (ball clay, barite, bentonite, borates, calcium carbonate, diatomite, feldspar, industrial sand, magnesia, mica, soda ash, talc, and wollastonite) - are used in abrasives, absorbents, agricultural additives, ceramics, chemicals, drilling mud, electronics, filtration media, flame retardants, glass, paint, paper, metal castings, pigments and synthetic fibers, to name just a few.

Trained, on-site Nalco Engineers define & implement programs that help maximize production rates and minimize total costs in these highly competitive industries.

Specific Areas of Nalco Expertise:
- Boiler & Cooling Water Treatment
- Flocculants & Coagulants - for Clarification, Thickening, Belt Presses, Centrifuges, Mud Stacking, Effluent Treatment & Automation for Monitoring & Control
- Fugitive Dust Control - for Crushers & Transfer Points, Haul Roads & Office Parking, Berms & Stockpiles
- Antifoams & Defoamers
- Filtration & Dewatering Aids
- Scale, Corrosion & Microbiological Control
- Viscosity Modifiers
- FDA & GRAS Requirements
- Environmental Compliance
As a global leader serving the mining and mineral processing industries, Nalco understands your business and your process. This understanding helps to ensure that our state-of-the-art chemical programs are matched up to your unique operating parameters and ore types. Nalco’s on-site sales engineers are backed up by a vast network of researchers and technical support specialists to ensure that we have the right program applied at the right place at the optimum dosage to deliver unparalleled performance. We work very closely with our customers to understand their needs and objectives, as well as their constraints, resulting in improved efficiency and performance and reduced downtime and operating costs. In addition to our cutting-edge chemical programs, we also provide complete engineering design, construction, and installation of chemical feed and water treatment systems.

Areas of Expertise
- Dust control (haul roads, crushers, pellet handling)
- Solids-liquid separation and water recovery
- Concentrate filtration
- Boiler and cooling water treatment
- Antifoams and defoamers
- Thickening and clarification
- Novel flotation frothers
- Process water scale control
- Mine water and effluent treatment
- Pellet binders
As the global demand for energy grows, oil sands production grows with it. While Canada’s vast reserves promise significant oil production, they also require a substantial input of energy and water to extract and upgrade the bitumen. Additionally, environmental concerns are forcing oil sands producers to find sustainable solutions that minimize the impact on their surroundings.

Each phase of the oil sands production and upgrading process has specific challenges. Nalco offers a comprehensive approach built on knowledge and experience in all phases. We understand the challenges faced by the producer from extraction to refining. Our innovative technologies for emulsion breaking, slop oil reduction, maximizing heat exchanger performance, and using automation to ensure reliability are driven by the issues faced in SAGD and Mining operations. We’re focused on cost-effective and environmentally sustainable solutions that can be applied to optimize the entire system.

We utilize Nalco’s Total System Analysis™ (TSA) to do a complete evaluation of your entire operation to identify areas for improvement. The TSA involves a thorough review of equipment, operating history, software modeling, laboratory analysis, and chemical treatment program. The outcome is an optimized operation and chemical treatment plan for your heavy oil and oil sands operation.
Trained, on-site Nalco Engineers define & implement programs that help maximize production rates and minimize total costs in these highly competitive industries.

Specific Areas of Nalco Expertise include:

- Boiler & Cooling Water Treatment
- Evaporator Scale Control
- FDA & GRAS approved programs for the control of Granular Fertilizer Dust & Pileset/Caking
- POL-E-Z Flocculants for Gypsum Filtration & Acid Clarification
- Flocculants & Coagulants - for Clarification, Thickening, Belt Presses, Centrifuges, Mud Stacking, Effluent Treatment
- Fugitive Dust Control - for Crushers & Transfer Points, Haul Roads & Office Parking, Berms & Stockpiles
- Antifoams & Defoamers
- Environmental Compliance
Trained, on-site Nalco Engineers help you be both competitive AND a good neighbor through effective dust control & responsible water & waste fine management.

**Specific Areas of Nalco Expertise include:**

- **DUST CONTROL** for Crushers & Transfer Points, Haul Roads & Office Parking, Berms & Stockpiles
- **FLOCCULANTS & COAGULANTS** for Clarification, Thickening, Belt Presses, Mud Stacking, Effluent Treatment
- **AUTOMATION** for Monitoring & Control

Helping the industry:

- Meet or exceed environmental & safety regulations
- Conserve water
- Minimize operating costs
- Maximize production
Mining & Mineral Processing Applications

As the global leader in Process & Water Treatment, Nalco Company provides essential expertise to the Mining and Mineral Processing industry with technically, economically and environmentally sustainable solutions from mine-to-mill.

Nalco has a number of innovative process solutions like:

Anticake Additives

Nalco offers many programs to best meet and address your anticaking needs. Solutions such as our PERFLOW Coating Technology can help prevent excessive caking, improving your operating efficiency and also reduces your returns and re-work.

Mineral Processing Biocontrol

Nalco’s biocontrol programs are tailored for use in the Industrial Minerals and Phosphate and Potash industries. We will take a broad view of your systems and challenges, and develop a comprehensive program solution that work in tandem with your existing operations to effectively meet your biocontrol needs.

Coke Oven Additives

Nalco coke oven additive products can be effectively used to prevent fouling and corrosion problems in coke oven gas systems that typically can incur significant additional costs in steel plants for increased cleaning and maintenance costs on valves, lines, burners and gas compressors.
Mining & Mineral Processing Applications

Corrosion Inhibitors for Mining and Mineral

Our corrosion inhibitor programs offer innovative solutions for use in the Alumina, Industrial Minerals and Phosphate and Potash industries to effectively meet all of your operational and environmental needs.

Crystal Growth

Nalco’s crystal growth modifiers are used in the Alumina industry. We can work with you to determine the best crystal growth modifier program to meet your operational needs and help you achieve environmental and financial savings.

Dust Control

We offer a full line of dust suppression additives including foams, surface tension reducers, binders, tackifiers and humectants, as well as optimal combinations of these approaches to effectively help prevent or solve dust control problems.

Filter Aids for Mineral Processing

Our products can help you improve the filter production rate with minimal impact on filter cake percent solids, leading to increased production and operational efficiency.

Floatation Aids

Our Pinnacle® Sulfide Floatation Collectors are based on innovative and proprietary technology that delivers enhanced floatation characteristics to metal sulfide minerals, resulting in increased selectivity and separation from host minerals.

Foam Control
Freeze Conditioning Programs

Nalco freeze conditioning programs are frequently used in the Coal and Iron Ore industry segments. We will work with you to ensure the appropriate program is implemented that best suits your operational needs.

Humate Removal Programs

Nalco humate removal programs can help improve hydrate brightness, as well as improve precipitation rates and yield of alumina trihydrate and reduce defoamer usage. Other benefits can include reduced liquor viscosity, promoting improved red mud settling, trihydrate classification, and hydrate filtration performance.

Mine Water & Wastewater Treatment

Our mine and waste water treatment programs offer innovative solutions for all of the primary mining and mineral processing industries, including Alumina, Coal, Copper and Base Metals, Gold, Silver and Platinum, Phosphate and Potash, Iron Ore, Industrial Minerals and Aggregate (Sand and Gravel).

Scale Inhibition

Nalco offers many different types of scale inhibitor programs to meet your needs. The specific program will depend on your operational need (gold vs. copper) as well as the specific ore and fluid composition. In addition, our products are designed for specific applications within your operation – for example, heap leach vs. mill vs. strip circuit in gold processing.
Solid-Liquid Separations

Coagulants can enhance the efficiency of flocculants used for solids removal in wastewater clarification. Coagulants neutralize surface charges, thus increasing the performance of the flocculant.

Nalco flocculants can aid sedimentation in water clarification. These polymers could be used with a coagulant for charge neutralization.

**IMPROVE THE PERFORMANCE OF YOUR DEWATERING EQUIPMENT** - Stronger floc means improved water release which translates into dryer filter cake. That means less sludge volume for disposal. Nalco offers polymers of different ionic charges and molecular weight.

Tailings Management

Viscosity Modifiers for Mineral Processing

Our viscosity modifier programs can be tailored to meet your specific operational needs to help you meet and exceed your financial, operational and environmental goals. We will work with you to ensure the proper program is implemented that best suits your facility’s needs.
Contact us. We can help you improve your productivity, increase your output, meet your regulatory requirements, protect the environment, improve your employees’ working conditions and enhance your community relations.

Nalco Mobotec Polska Sp. z o.o.
Przemysłowa 55, Tychy 43-110
Poland
Phone 48 32 326 27 50
Fax 48 32 329 13 11

Mail: office@nalco.pl