MINERALS TECHNOLOGIES

CETCO®

INDUSTRIAL WASTEWATER PRODUCTS

OUR STANDARDS. YOUR PEACE OF MIND.

MINERALS TECHNOLOGIES CETCO®

Through **CETCO's** proprietary flocculant technologies, engineered filtration medias, high absorption solidification offerings, and extensive laboratory capabilities unsurpassed treatment programs have been developed for clients for over 35 years. Our Industrial Wastewater Treatment Products Division continues to be a pioneer and innovator delivering treatment solutions to the industrial, municipal, and oilfield wastewater markets.

Our one-step treatment products are adaptable to most manufacturer's equipment. This allows our clients to treat wastewater containing a wide variety of contaminants including emulsified oils, heavy metals, and suspended solids. Our solidification products turn unstable sludge's into a solid that can be disposed into landfill. **CETCO's** in-house laboratory services allow us to conduct treatability studies and design optimal treatment programs to fit the wide array of our clients' treatment requirements.

- **Reduce or eliminate** your monthly sewer use surcharges for METALS, FOG, TSS
- **Generate non-leaching sludge** that passes TCLP in wastewater treatment using RM-10® products
- **Pass slump, paint filter, and TCLP** tests by using LIQUISORB® solidification productss

We are a wholly owned subsidiary of Minerals Technologies Inc (NYSE: MTX), a New York-based resource and technology growth company. MTI develops, produces and markets worldwide a broad range of specialty mineral, mineral-based, and synthetic mineral products and services. MTI serves the paper, foundry, steel, environmental, oil & gas services sector, polymer and consumer products industries.

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CETCO INDUSTRIAL WASTEWATER APPLICATIONS

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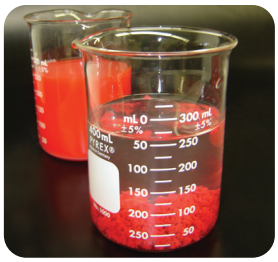
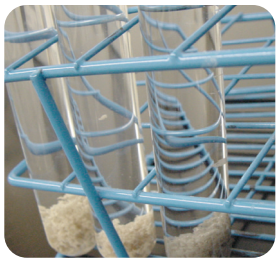
INDUSTRIAL WASTEWATER TREATMENT PRODUCTS

CETCO cutting-edge flocculant technology and quality service has led the wastewater treatment market for over 35 years. Our Industrial Wastewater Treatment Products Division continues to be the pioneer and innovator in the industrial, municipal and oilfield wastewater markets in delivering solutions to meet our clients' treatment needs. In addition to our comprehensive line of world-renowned RM-10® clay-based flocculants, CETCO offers liquid coagulants, filtration media and solidification and stabilization agents for treatment of wastewater containing emulsified oils, heavy metals and suspended solids using simple equipment and an easy one-step treatment process that works in almost any manufacturer's equipment. This enables CETCO to design an optimal treatment program to fit the wide array of our clients' treatment requirements.





CLAY-BASED FLOCCULANTS

For decades, our clay-based, dry, chemical flocculants have cleaned wastewater in one simple step. Our cost-effective waste treatment process uses single reactant chemicals and is safe, simple and easy to use for the removal of emulsified oil, heavy metals and suspended solids from wastewater.

BENEFITS OF RM-10® FLOCCULANTS

DRY CHEMICAL	DECREASED PROCESS TIME	VERSATILE TECHNOLOGY	COST-EFFECTIVE	CONSISTENT RESULTS
• Packaged in 50# bags or bulk bags for easy storage and movement • Semi-granular and granular blends minimize dusting • Can be easily introduced to a waste stream with a dry feeder	• RM-10 flocculants combine multiple functions of traditional treatment simultaneously into one simple step • Base clays used in RM-10 flocculant blends allow faster precipitation and setting of contaminants • Typical treatment time required for full reaction is less than two minutes	• Effective treatment of waste streams with a pH from 2-12 • Can be utilized in batch or continuous flow treatment schemes and in most cases with existing equipment • Removes heavy metals, Total Suspended Solids (TSS), oils, and other organic/inorganic matter	• Requires very little operator input • Only one product to add and maintain • Generates a solid waste that is easily dewatered and is typically spacin classified as non-hazardous	• RM-10 flocculants are more forgiving if overdosing occurs • High affinity for metals, organics, and other contaminants • Proven technology for over 35 years

CE-200GA UNIT IN ACTION TREATING ALL PLANT WASTEWATER

RM-10 flocculants were the primary treatment to remove gross contamination. The PM-100 media was used as a pre-treatment to remove any trace oils after RM-10 flocculants and before carbon. The activated carbon was used as a final polish.

RM-10® FLOCCULANTS

Our trusted RM-10 flocculants are a non-hazardous blend of naturally occurring bentonite, pH adjusting agents, polymers and other proprietary components. RM-10 flocculants offer you a safe, simple and cost-effective means of treatment and disposal for your various wastewater streams. CETCO currently has over 40 products in granular, semi-granular and powdered varieties formulated to treat a vast array of industrial/municipal wastewater. The RM-10 flocculant formulas usually allow one-step removal of emulsified oil, heavy metals and suspended solids from various wastewater streams. Our system also ensures that the treated effluent will meet POTW (Publicly Owned Treatment Works) discharge limits established by federal, state and local authorities.

COAGULANT AIDS

Coagulant Aids are inorganic-based liquids designed to adjust pH and initiate precipitation. They are low cost and highly efficient.

FILTER MEDIA

CETCO offers a wide variety of filter media in nominal micron ranges from 3 – 300. Our media can be composed of various fibers including Rayon, Polyester and Polypropylene providing different levels of cake generation, micron clarity and strength depending on the application. These products work excellent on most gravity, vacuum and pressure filters.

CLAY-BASED FLOCCULANT AIDS

AccoFloc® Flocculant Aid

AccoFloc flocculant aids are high-swelling sodium bentonite clays selected for their unique ion exchange capability found only in the Black Hills region of the western United States. This capability allows AccoFloc flocculant aids to increase clarity and remove trace metals from wastewater.

- High-activity sodium bentonite clay is used to reduce turbidity and TOC and remove trace metals from water or wastewater
- Designed to meet the increasingly stringent water quality and discharge regulations required by municipalities

Offered in two forms:

- AccoFloc 350 flocculant aid is a high-activity powdered sodium bentonite chosen especially for its flocculation characteristics.
- AccoFloc SDG flocculant aid is a high-activity granular sodium bentonite. It is manufactured as an agglomerated (uniform granular particles) product which allows it to immediately disperse when mixed with water. Since this product does not clump when added to water, it does not require specialized mixing equipment to create a slurry.

Accofloc 350 and SDG are certified to NSF/ANSI, Drinking Water Standards

STABILIZATION AND SOLIDIFICATION AGENTS

CETCO revolutionizes the wastewater treatment market with its broad range of innovative stabilization and solidification products. These products ensure compliance with federal, state and local disposal standards while offering a more cost-effective and safer approach than lime, fly ash, diatomaceous earth or other traditional absorbents. There are many benefits to using our stabilization and solidification agents including:

- Economical disposal solution
- Proven results – ensures compliance
- Converts liquid to solid in minutes
- Operates on a wide range of pH
- Treats solids to pass all the following tests:
  - Paint Filter Liquids Test (EPA 9095)
  - Slump Test – CSA Test Method A23.25C
  - Liquid Release Test (LRT) Procedure (EPA 9096)
  - Toxicity Characteristic Leaching Procedure (EPA 1311)
  - Leachable BTEX (benzene, toluene, ethyl benzene and zxylenes)
  - Solids meet Class II Landfill Criteria

LiquiSorb® Absorbing Agent

CETCO's LiquiSorb products absorbing agents are highly efficient products that contain organic and inorganic components in both granular and powder forms. They rapidly absorb and retain large volumes of aqueous matter. It is ideally suited for the absorption and solidification of general industrial wastewaters.

- Capable of absorbing up to 250x its weight in water
- Waste volume does not increase after adding LiquiSorb
- Non-biodegradable
- Non-exothermic
- Helps treated solids pass Paint Filter Liquids Test (EPA 9095) and Liquid Release Test (EPA 9096)
- Some products require no mixing because of unique wicking action
- Some products set up in less than two minutes

Sorbond® Thickening/Solidifying Agents

A proprietary blend of clay and inorganic minerals that is highly effective in the stabilization and solidification of heavy metals and wastewater containing organic matter.

- Effective on a variety of wastewater streams with pH 2-12
- Non-biodegradable
- Safe to use
- Enhances de-watering of solids and passes Paint Filter Liquids Test (EPA 9095)
- Helps solids pass Toxicity Characteristic Leaching Procedure (TCLP) (EPA 1311)
- Offers high compressive strengths for solidified matter
- Low exothermic reaction during treatment
- Requires mixing

ABSORPTION RATIO CHART

PRODUCT	DESCRIPTION	FUNCTION	TYPICAL ABSORPTION RATIO BY WEIGHT (ABSORBENT: WATER)
LiquiSorb® 200	Super Absorbent Media	Solidification of aqueous matter, increases volume by less than 1%	1:250 DI water 1:75 Typical 1:40 2% Salts
LiquiSorb® 1000	Super Absorbent and Adsorbent Media	Solidification of aqueous solutions and semi solids containing organic matter	Dependent on organics present
LiquiSorb® 2000	Clay-Based Absorbent Media	Solidification of aqueous matter and drilling fluids with low to high solids	1:80 DI water 1:30 Typical 1:17 2% Salts
Sorbond® UP/UG	Clay-Based Absorbent Media	Solidification of general wastes ranging pH 2-12	Up to 1:9
Sorbond® LPCII	Clay-Based Absorbent Media	Solidification/Stabilization of wastes containing heavy metals	Up to 1:7
Sorbond® LOC	Clay-Based Absorbent Media	Solidification/Stabilization of wastes containing organics	Dependent on organics present

Latex flowing through LiquiSorb feeder mounted to dump cart

Tire cord latex solidified with LiquiSorb 200

ORGANOPHILIC CLAY MEDIA FEATURES AND BENEFITS

GRANULAR PRODUCT	FEATURES	BENEFITS
• PM-100 is a modified clay/anthracite media • PM-199 is 100% modified clay • Non-reactive, non-hazardous • Packaged in 50# boxes, bags, or bulk	• High affinity for low-soluble organic molecules • Can adsorb up to 50% of its weight in oil and other high-molecular weight organics • Unique sorption mechanism eliminates blinding and maintains flow rates • Can accommodate surges in organic concentration levels caused by plant upsets	• Extends the life and adsorbency of activated carbon by removal of larger molecular organics which tend to blind the pore structure of activated carbon • Allows water to pass and will not be depleted if organic material is not present • Removes dissolved, mechanically emulsified, and free oil from wastewater • Can be easily adapted in general filtration systems • Can be applied as a fixed-bed media or in removable cartridge filters

FILTRATION MEDIA

With an extremely high surface area, CETCO organophilic clays, PM-100™ and PM-199™, have the ability to absorb up to 50% of their weight in oil and grease, making them extremely cost-effective medias as opposed to activated carbon. These organically modified clays have a great affinity for oil and grease and other low-solubility and high-molecular weight organics. In addition to PM-100 and PM-199, CETCO offers GAC (Granular Activated Carbon) and other absorption medias for efficient removal of heavy metals, organic and inorganic matter.

PM-100™

PM-100 is a chemically modified clay/anthracite filtration media that reliably removes oil, grease, and other low solubility, high-molecular weight organics from wastewater. This mixed media is designed for flow-through systems. Low-solubility organics are absorbed into the product while clean water passes through.

Can be used in three different modes:

- As a stand-alone treatment for removal of low-solubility organics from water
- As a post-treatment to polish a wastewater stream
- As a pre-treatment to GAC to increase the overall efficiency by removing some of the larger molecules by oils, greases and other less water-soluble organics

PM-199™

PM-199 is a granular, 100% organophilic clay media. It is normally only used in our high efficiency cartridge systems. These cartridge systems have been designed for simplicity and can easily be changed out.

The PM-100 and PM-199 can extend the life of GAC by as much as 500% which results in higher carbon adsorption capacity and more effective and consistent removal of heavy metals and solvents.

Granular Activated Carbon (GAC)

GAC is a porous material manufactured from carbonaceous raw materials. The activation process develops pores of molecular dimensions within the carbon particle. Vast numbers of these pores in each particle give the GAC extremely high internal porosity and surface area. Typically, GAC contains surface areas in the range of 500-2000 m2/g.

EC-510

CETCO offers PM-199 and GAC in cartridges that are highly effective for removing oils, greases and other low-solubility organics from water-based waste streams. These products are capable of absorbing up to 60% (by weight) in organic matter through a distinctive platelet structure which makes them less prone to blinding.

FILTRATION VESSELS

CETCO also offers the necessary equipment to utilize our filtration medias. Our LV and MV series vessels match your wastewater flow. They can operate at pressures as high as 75 psi, temperatures up to 130°F and hold from 500 to 4,000 pounds of GAC or PM-100™ media or 18 to 74 ft^3.

RESEARCH AND TESTING LABORATORY

The CETCO commitment to research and development has helped make us a leader in water treatment.

Our extensively equipped laboratory and team of scientists provide innovative products and wastewater treatment programs for industrial, municipal, pipeline and oil production wastewater. Based on our evaluation of each customer's wastewater, we provide efficient and cost-effective treatment options using our specialized line of products while providing unsurpassed customer support. These services are available to our customers free of charge.

CETCO Research and Testing Laboratory performs a wide range of instrumental and wet-chemical analyses using state-of-the-art analytical equipment. Some of the laboratory's capabilities include:

- Total Suspended Solids (TSS) - Water is pulled through a pre-weighed glass filter by a vacuum pump. The filter is dried and the final weight is recorded. Results are recorded in parts per million (ppm) and 100 mls of water are required for the test.
- Fat, Oil and Grease (FOG) - Hexane extraction infrared analysis is based on EPA method 1664. Results are recorded in parts per million (ppm) and 100 mls of water are needed for the test.
- ICP Metals Analysis - Water is digested with acid in a microwave, filtered and then analyzed with an ICP (Inductively Coupled Plasma) Spectrometer which is capable of determining the presence and concentration of most metals.
- Total Organic Carbon (TOC) - Measures level of total organic carbon in water. (TOC is a more direct and convenient expression of total organic content than the BOD or COD but does not provide the same information and does not replace these tests.)
- Chemical Oxygen Demand (COD) - A spectrophotometer is used to measure the chemical oxygen demand in water. Results are recorded in parts per million (ppm) and 20 mls are required for the test.
- Toxicity Characteristic Leaching Procedure (TCLP) - Determines the ability of elements to leach from a sludge. Sludge, acid and DI (Deionized) water are mixed overnight and the resulting solution is filtered.
- The filtered water is then analyzed for contaminants of concern.
- Atomic Absorption (AA) - Used to measure the level of exchangeable or leachable elements in a sample. A solid, generally a clay, is digested, filtered, and analyzed on a flame spectrometer.
- X-Ray Diffraction (XRD) - Used to identify mineral components of a solid (i.e. bentonite, limestone, diatomaceous earth, etc). Two grams of material are required, but the test is non-destructive so the material can be returned or reused.
- X-Ray Florescence (XRF) - Used to identify the percentage of an element present in a solid. Results are recorded as a percentage, and two grams of the sold are required for the test.
- Thermo-Gravimetric Analysis (TGA) - Used to measure and identify the organic components in a solid. A small amount of material is slowly heated, and its weight loss is measured. Results are recorded as a percentage, and less than one gram is required for testing.

We constantly seek new, innovative technologies and efficient business processes to remain a market leader. We strive for success by focusing on continuous improvement in all facets of the business—processes, systems, products, services and people.

As a group we are present in 35 countries with 159 locations and 12 own R&D centres.

Thousands of delivered projects allowed us to build expertise, trust and our strong position as global market leader.

We place the health and safety of people ahead of all else. The safety of our workforce, visitors, customers and neighbors is the primary concern of CETCO. Responsibility for health and safety is shared by all employees.

Strategically located people, manufacturing and research facilities give us the ability to serve the toughest project demands around the world.

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