



INDUSTRIAL WASTEWATER

# WASTEWATER



**CETCO**  
**OILFIELD**  
**SERVICES**

# INDUSTRIAL WASTEWATER TREATMENT PRODUCTS





## Applications

- Adhesives
- Ceramic Slurry Treatment
- Circuit Board Manufacturing
- Coolants
- Corrugated Container Industry
- Die-Casting
- Dye Penetrants
- Fats, Oil & Grease
- Floor Scrubber/Mop Water
- Food Processing
- Heavy Metals
- Improve Filter Press Performance
- Improve Vacuum Drum Performance
- Machine Oil Coolant
- Metal Finishing
- Municipal
- Paints, Inks & Dyes
- Parts Washing
- Printing
- Sludge Thickening and Conditioning
- Steam Cleaning
- Steel Production
- Tank Washing
- Vibratory De-Burring



### Industrial Wastewater Treatment Products

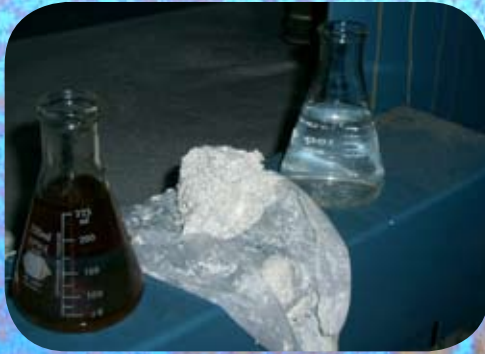
CETCO Oilfield Services' cutting-edge flocculant technology and quality service has led the wastewater treatment market for over 30 years. Our Industrial Wastewater Treatment Products Division continues to be the pioneer and innovator in the industrial, municipal, and oilfield wastewater markets in delivering solutions to meet our clients' treatment needs.

In addition to our comprehensive line of world-renowned RM-10® clay-based flocculants, CETCO Oilfield Services 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 Oilfield Services to design an optimal treatment program to fit the wide array of our clients' treatment requirements.

# CUTTING-EDGE TECHNOLOGY

clay-based flocculants

are easy to use for the removal of emulsified oil, heavy metals, and suspended solids from wastewater



### RM-10<sup>®</sup> Benefits

Dry Chemical	Decreased Process Time	Versatile Technology	Cost-Effective	Consistent Results
<ul style="list-style-type: none"><li>• Packaged in 50# bags or bulk bags for easy storage and movement</li><li>• Semi-granular and granular blends minimize dusting</li><li>• Can be easily introduced to a waste stream with a dry feeder</li></ul>	<ul style="list-style-type: none"><li>• RM-10 combines multiple functions of traditional treatment simultaneously into one simple step</li><li>• Base clays used in RM-10 blends allow faster precipitation and setting of contaminants</li><li>• Typical treatment time required for full reaction is less than two minutes</li></ul>	<ul style="list-style-type: none"><li>• Effective treatment of waste streams with a pH from 2-12</li><li>• Can be utilized in batch or continuous flow treatment schemes and in most cases with existing equipment</li><li>• Removes heavy metals, Total Suspended Solids (TSS), oils, and other organic and inorganic matter</li></ul>	<ul style="list-style-type: none"><li>• Requires very little operator input</li><li>• Only one product to add and maintain</li><li>• Generates a solid waste that is easily de-watered and is typically classified as non-hazardous</li></ul>	<ul style="list-style-type: none"><li>• RM-10 products are more forgiving if overdosing occurs</li><li>• High affinity for metals, organics, and other contaminants</li><li>• Proven technology for over 30 years</li></ul>

# RM-10<sup>®</sup>



### Clay-Based Flocculants

For over 30 years, 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.

#### RM-10®

Our trusted RM-10 products are a non-hazardous blend of sodium bentonite, pH adjusting agents, polymers, and other proprietary components. RM-10 offers generators of various wastewater streams a safe, simple, and cost-effective means of treatment and disposal. CETCO Oilfield Services 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 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.

#### AccoFloc®

AccoFloc products 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 to increase clarity and remove trace metals from wastewater.

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

#### AccoFloc is offered in two forms

AccoFloc 350 is a high-activity powdered sodium bentonite chosen especially for its flocculation characteristics.

AccoFloc SDG 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 Standard 60, Drinking Water Treatment Chemicals – Health Effects.

# ACCOFLOC®

### Liquid Coagulants and Flocculants

CETCO Oilfield Services' wide range of liquid coagulants and flocculants provides an economical yet highly efficient option in treating high volume waste streams. This innovative liquid format allows for easy automation of the treatment process thereby reducing operator involvement. This easy-to-apply line of products was developed for the removal of emulsified oil, suspended solids, insoluble BOD/COD, and metals from wastewater.

#### CETcoags™

The CETcoags are an easy to apply, cost-effective, and comprehensive line of coagulants. They are liquid chemicals that neutralize the charge in water allowing particles to coalesce. This is made possible because the CETcoags are themselves different, ranging in composition from synthetic to naturally occurring.

#### CETflocs™

The CETflocs are a comprehensive line of flocculants available in both liquid and dry form. The CETflocs are used to agglomerate and ultimately flocculate contaminants in the wastewater. The CETflocs are available in a variety of molecular weights and charge densities.

#### Coagulant Aids

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

## Benefits of CETCO Oilfield Services Coagulants and Flocculants

Product	Function	Application	Advantage
CETcoags	Breaks emulsions and coalesces particles	Most industrial wastewater applications	<ul style="list-style-type: none"><li>• Broad spectrum of products is effective over a wide dosage range</li><li>• High efficiency</li></ul>
CETflocs	Increases floc size	All industries	<ul style="list-style-type: none"><li>• Forms strong separating floc quickly</li><li>• Available in wide range of molecular weight and charge density</li></ul>
Coagulant Aids	Initiate precipitation and adjust pH	All industries	<ul style="list-style-type: none"><li>• Allows for pH adjustment without hazardous liquids</li><li>• Lowers overall treatment cost</li></ul>

# COAGULANTS & FLOCCULANTS



**CE-200GA UNIT IN ACTION TREATING ALL PLANT WASTEWATER**  
 RM-10 was 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 and before carbon. The activated carbon was used as a final polish.

### Organophilic Clay Media

With an extremely high surface area, CETCO Oilfield Services' organophilic clays, PM-100™ and PM-199™, have the ability to adsorb 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, CETCO Oilfield Services offers GAC (Granular Activated Carbon) and other absorption medias for efficient removal of heavy metals, organic, and inorganic matter.

### PM-100™ and PM-199™

PM-100 is a chemically modified clay/antracite 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 adsorbed onto the product surface 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 increase the overall efficiency of GAC by preventing surface pores from being blinded by oils, greases, and other less water-soluble organics
- PM-199 is a granular, 100% organophilic clay media. It is normally only used in our high efficiency cartridge systems.

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

## Organophilic Clay Media Features and Benefits

Granular Product	Features	Benefits
<ul style="list-style-type: none"> <li>• PM-100 is a modified clay/anthracite media</li> <li>• PM-199 is 100% modified clay</li> <li>• Non-reactive, non-hazardous</li> <li>• Packaged in 50# boxes, bags, or bulk</li> </ul>	<ul style="list-style-type: none"> <li>• High affinity for low-soluble organic molecules</li> <li>• Can adsorb up to 50% of its weight in oil and other high-molecular weight organics</li> <li>• Unique sorption mechanism eliminates blinding and maintains flow rates</li> <li>• Can accommodate surges in organic concentration levels caused by plant upsets</li> </ul>	<ul style="list-style-type: none"> <li>• Extends the life and adsorbency of activated carbon by removal of larger molecular organics which tend to blind the pore structure of activated carbon</li> <li>• Allows water to pass and will not be depleted if organic material is not present</li> <li>• Removes dissolved, mechanically emulsified, and free oil from wastewater</li> <li>• Can be easily adapted in general filtration systems</li> <li>• Can be applied as a fixed-bed media or in removable cartridge filters</li> </ul>

**PM-100™ & PM-199™**

LiquiSorb® is capable of absorbing up to 250x its weight in water



Latex flowing through LiquiSorb feeder mounted to dump cart (left)

Tire chord latex solidified with LiquiSorb 200 (below)



### Stabilization and Solidification Agents

CETCO Oilfield Services 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.

#### LiquiSorb®

LiquiSorb is a granular cross-linked super absorbent media that rapidly absorbs and retains 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
- Less than 1% free swell
- Non-biodegradable
- Non-exothermic
- Helps treated solids pass Paint Filter Liquids Test (EPA 9095) and Liquid Release Test (EPA 9096)
- Requires no mixing – gels in less than 2 minutes

#### Sorbond®

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

# STABILIZE

# 1 STEP PROCESS

*liquid to solid in minutes*

# PitDry™

## **PitDry™ OP and PitDry™ HDD**

This revolutionary new application is the only one on the market that converts spent drilling fluids into disposable, dumpable solids in minutes. With this unique process, available only from CETCO Oilfield Services, you simply pump spent fluid through one of our partner's patented mixers, the PDM-300 or the PDA-300, while adding our PitDry reagent.

PitDry is a powdered, inorganic mineral formula used for the solidification and stabilization of drill fluids. PitDry chemically fixates heavy metal bearing wastes, stabilizes hydrocarbons and other organic and inorganic material while minimizing total solids volume by as much as 20%.

- Economical disposal solution
- Proven results – ensures compliance
- Simple one-step process – sets up in 24-72 hours
- Converts liquid to solid in minutes
- Flexible – manually operated units and fully automatic mixing systems are available
- Mobile – small foot plan unit, stationary or portable
- Operates on a wide range of pH
- Low exothermic reaction during treatment
- High adsorption capability promotes encapsulation for heavy metals and organic contaminants (both Micro and Macro Encapsulation)
- Treats solids to pass all the following tests:
  - o Paint Filter Liquids Test (EPA 9095)
  - o Slump Test – CSA Test Method A23.25C
  - o Liquid Release Test (LRT) Procedure (EPA 9096)
  - o Toxicity Characteristic Leaching Procedure (EPA 1311)
  - o Leachable BTEX (benzene, toluene, ethyl benzene, and xylenes)
  - o Solids meet Class II Landfill Criteria

Simply pump spent fluid through a PDM-300 machine while adding PitDry reagent.



# SOLIDIFY

# Absorbents doing a solid job

## Absorption Ratio Chart

Product	Description	Function	Typical Absorption Ratio by Weight (absorbent: water)
<b>LiquiSorb® 200</b>	Superabsorbent Media	<ul style="list-style-type: none"> <li>• Solidification of aqueous matter, increases volume by less than 1%</li> </ul>	1:250 DI water 1:75 Typical 1:40 2% Salts
<b>LiquiSorb® 1000</b>	Superabsorbent and Adsorbent Media	<ul style="list-style-type: none"> <li>• Solidification of aqueous solutions and semi solids containing organic matter</li> </ul>	Dependent on organics present
<b>Sorbond® UP/UG</b>	Clay-Based Absorbent Media	<ul style="list-style-type: none"> <li>• Solidification of general wastes ranging pH 2-12</li> </ul>	Up to 1:9
<b>Sorbond® LPCII</b>	Clay-Based Absorbent Media	<ul style="list-style-type: none"> <li>• Solidification/Stabilization of wastes containing heavy metals</li> </ul>	Up to 1:7
<b>Sorbond® LOC</b>	Clay-Based Absorbent Media	<ul style="list-style-type: none"> <li>• Solidification/Stabilization of wastes containing organics</li> </ul>	Dependent on organics present
<b>PitDry™ HDD</b>	Clay-Based Absorbent Media	<ul style="list-style-type: none"> <li>• Solidification of aqueous matter range, low to high solids</li> <li>• Decreases overall weight and volume by 20%</li> </ul>	1:50 DI water 1:40 Typical 1:25 2% Salts
<b>PitDry™ OP</b>	Clay-Based Absorbent Media	<ul style="list-style-type: none"> <li>• Solidification of aqueous matter range, low to high solids</li> <li>• Contaminants include hydrocarbons and other organics</li> <li>• Decreases overall weight and volume by 20%</li> </ul>	1:50 DI water 1:25 Typical 1:20 2% Salts



### Research and Testing Laboratory

CETCO Oilfield Services' 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.

CETCO Oilfield Services 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.
- 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 2 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.

WATER TREATMENT | PIPELINE | WELL TESTING | WASTEWATER | RENTALS | NITROGEN | REELED TUBING



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