



**FLOCCULANTS**

**COAGULANTS**

**ORGANOPHILIC  
CLAY MEDIA**

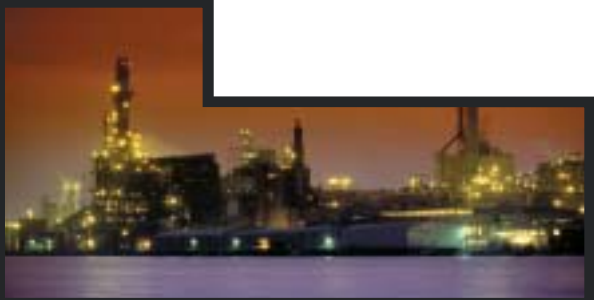
**SOLIDIFICATION  
AGENTS**





CETCO'S CUTTING-EDGE FLOCCULANT TECHNOLOGY AND QUALITY SERVICE HAS LED THE WASTEWATER TREATMENT MARKET FOR OVER 30 YEARS. OUR WASTEWATER TREATMENT GROUP CONTINUES TO BE THE PIONEER AND INNOVATOR IN BOTH THE INDUSTRIAL AND MUNICIPAL WASTEWATER MARKETS IN DELIVERING SOLUTIONS TO MEET CLIENTS' TREATMENT NEEDS.

IN ADDITION TO ITS COMPREHENSIVE LINE OF WORLD-RENOWNED RM-10<sup>®</sup> CLAY-BASED FLOCCULANTS, CETCO OFFERS A COMPLETE LINE OF LIQUID FLOCCULANTS AND COAGULANTS, FILTRATION MEDIA, AND SOLIDIFICATION AND STABILIZATION AGENTS. THIS ENABLES CETCO TO DESIGN AN OPTIMAL TREATMENT PROGRAM TO FIT THE WIDE ARRAY OF CLIENTS' TREATMENT REQUIREMENTS.



# CLAY-BASED FLOCCULANTS



CLEARLY THE MOST INNOVATIVE AND COMPREHENSIVE LINE OF CLAY-BASED FLOCCULANTS AVAILABLE, CETCO'S RM-10® OFFERS A COST-EFFECTIVE TREATMENT ALTERNATIVE IN ONE SIMPLE STEP. USING REACTIVE CHEMICALS, RM-10® OFFERS A SAFE AND SIMPLE-TO-USE PRODUCT FOR THE REMOVAL OF OILS, HEAVY METALS, AND SUSPENDED SOLIDS FROM WASTEWATER.

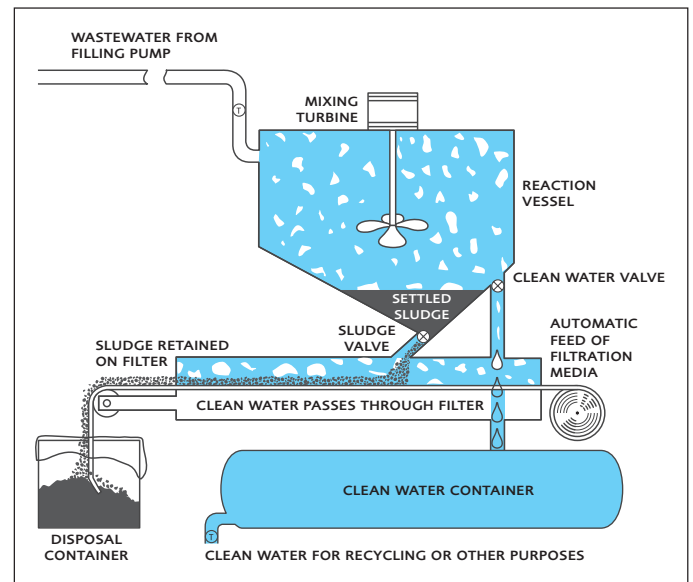
## RM-10®

RM-10 is a proprietary blend of clay minerals, polymers and pH adjusting agents, which allow ONE-STEP removal of emulsified oils and heavy metals from various waste streams. Our system also ensures that the treated effluent will meet POTW discharge limits established by local and state authorities.

- Eliminates laborious, multi-step processes.
- Offers generators of industrial waste streams a safe, simple, and cost-effective means for treatment and disposal.
- Eliminates the need for handling and storing liquid chemicals used in conventional wastewater treatment systems.
- The process is completed within minutes and requires minimal operator intervention.

## Accofloc®

- A high activity sodium bentonite clay used to increase clarity and remove trace metals from water or wastewater.
- Designed to meet the increasingly stringent water quality and discharge regulations required by municipalities.
- NSF approved for use in potable water applications.



RM-10® is used in both batch treatment systems (shown above) and in continuous flow systems.

## RM-10® FEATURES & BENEFITS

Dry Product	Decreased Process Time	Versatile Technology	Cost Effective	Consistent Results
<p>Packaged in 50# bags or bulk super sacks for easy storage and movement</p> <p>Low dust and granular blends minimize dusting</p> <p>Can be easily introduced to a waste stream with a dry feeder</p>	<p>RM-10 combines multiple functions of traditional treatment simultaneously, into one simple step</p> <p>Base clays used in RM-10 blends allow faster precipitation and settling of soluble metals</p> <p>Typical treatment time required for full reaction is less than two minutes</p>	<p>Effective treatment of waste streams with a pH from 2-12</p> <p>Can be utilized in batch or in-line treatment schemes and in most cases with existing equipment</p> <p>Removes heavy metals, TSS, oils, other organic and inorganic matter</p>	<p>Requires very little operator input</p> <p>Only one product to add and maintain</p> <p>Generates a solid waste that is easily de-watered and is typically classified as non-hazardous</p>	<p>RM-10® products are more forgiving if overdosing occurs</p> <p>High affinity for metals, organics, and other contaminants</p> <p>Proven technology for over 30 years</p>



In one step, RM-10® effectively breaks emulsified oils, and removes heavy metals and suspended solids.



# LIQUID COAGULANTS & FLOCCULANTS



CETCO'S WIDE RANGE OF LIQUID COAGULANTS AND FLOCCULANTS PROVIDES AN ECONOMICAL OPTION, WITH SUPERIOR EFFICIENCY, IN TREATING HIGH VOLUME WASTE STREAMS. THIS INNOVATIVE LIQUID FORMAT ALLOWS FOR EASY AUTOMATION OF THE TREATMENT PROCESS REDUCING OPERATOR INVOLVEMENT. THIS EASY-TO-APPLY LINE OF PRODUCTS WAS DEVELOPED FOR THE REMOVAL OF EMULSIFIED OILS, SUSPENDED SOLIDS, INSOLUBLE BOD/COD, AND METALS FROM WASTEWATER.

## CETcoags™

The CETcoags are an easy to apply, cost effective and comprehensive line of coagulants and coagulant blends. They have proven effective in treating the wastewater generated from a broad spectrum of industrial processes. This is made possible because the CETcoags are themselves different, ranging in composition from totally synthetic to naturally occurring.

## CETflocs™

The CETflocs are a comprehensive line of flocculants available in both liquid and dry form. Like the CETcoags, they have proven effectiveness in treating a wide range of wastewater compositions. The CETflocs are available in a variety of molecular weights and charge densities.

## Blends

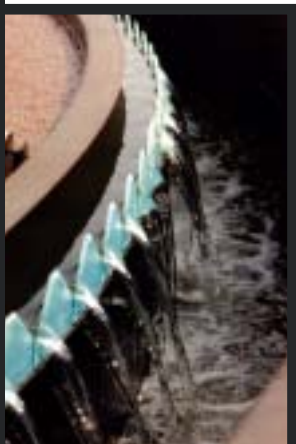
CETCO blends combine the low sludge generation of organic coagulants with the economy of inorganic coagulant aids. In addition, they offer ease of application requiring one addition instead of two or more. This requires less equipment which translates into lower maintenance costs.

## Coagulant Aids

Coagulant Aids are inorganic-based products with decades of proven effectiveness. They are low cost and highly efficient.

## FEATURES & BENEFITS

PRODUCTS	FUNCTIONS	APPLICATIONS	ADVANTAGE
<b>Coagulants: Synthetic and Natural</b>	Breaks emulsions and releases emulsified FOG and solids	Most industrial wastewater applications containing FOG, solids, and metals	Broad spectrum of products effective over a wide dosage range Very effective on high solids streams
<b>Flocculants</b>	Increases floc size	Any industry that generates wastewater	Forms strong separating floc quickly Available in wide range of mol. wt and charge density
<b>Blends: Organic and Inorganic</b>	Breaks emulsions and creates floc	Any industry that generates wastewater	Allows addition of coagulant and coagulant aid in a single step Lowers overall treatment cost



*CETCO's liquid chemistry can be effectively implemented in a wide range of existing treatment equipment.*

# ORGANOPHILIC CLAY MEDIA

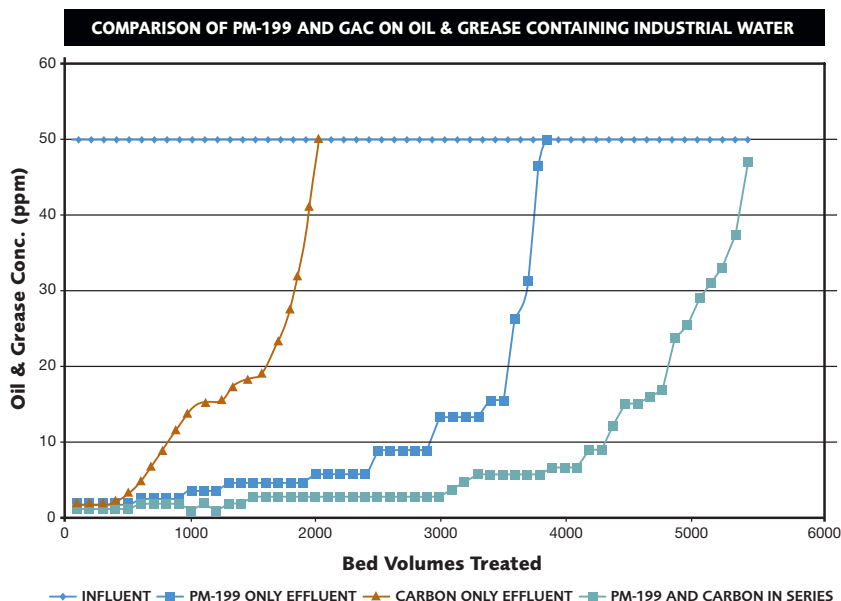


WITH AN EXTREMELY HIGH SURFACE AREA, CETCO'S ORGANOPHILIC CLAYS, PM-100 AND PM-199, HAVE THE ABILITY TO ADSORB UP TO 50% OF THEIR WEIGHT IN OIL AND GREASE. THIS MAKES IT AN EXTREMELY COST EFFECTIVE MEDIA AS OPPOSED TO ACTIVATED CARBON. THESE ORGANICALLY MODIFIED CLAYS HAVE A GREAT AFFINITY FOR OILS AND GREASE, AND OTHER LOW SOLUBLE AND HIGH MOLECULAR WEIGHT ORGANICS.

## PM-100

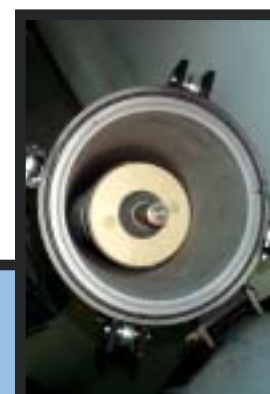
PM-100 is a chemically modified clay/anthracite filtration media that reliably removes oil, grease, and other low-soluble, high-molecular weight organics from wastewater. This mixed media is designed for through-flow systems.

- Low soluble organics are adsorbed onto the product surface while clean water passes through.
- Offers a highly efficient post-treatment for various industrial waste streams. It can also be used as a pre-treatment to GAC to increase its overall efficiency. It prevents surface pores from being blinded by oils, greases, and other less water-soluble organics.
- Can extend the lifetime of GAC by as much as 500%, resulting in higher carbon sorption capacity and more effective and consistent removal of heavy metals and solvents.
- Can be applied as PM-199 in a disposable cartridge.



## FEATURES & BENEFITS

Granular Product	Organically Modified	Cost Effective	Versatile Technology	Consistent Results
<p>PM-100 is a modified clay/anthracite media</p> <p>PM-199 is 100% modified clay</p> <p>Non reactive, non-hazardous</p> <p>Packaged in 50# boxes or bulk super sacks</p>	<p>Has a high affinity for low soluble organic molecules</p> <p>Allows water to pass and will not be used up if organic material is not present</p>	<p>Can absorb up to 50% of its weight in oil and other high molecular weight organics</p> <p>Extends the life and adsorbency of activated carbon by removal of larger molecular organics which tend to blind the pore structure of activated carbon</p>	<p>Removes dissolved, mechanically emulsified, and free oil from wastewater</p> <p>Can be easily adapted in general filtration systems</p> <p>Can be applied as a fixed-bed media or in removable cartridge filters</p>	<p>Can accommodate surges in organic concentration levels caused by plant upsets</p> <p>Unique sorption mechanism eliminates blinding and maintains flow rates</p>



CETCO's proprietary radial-flow canister design offers a more effective and economical alternative to standard fixed-bed filter vessels.

# STABILIZATION AND SOLIDIFICATION AGENTS



CETCO REVOLUTIONIZES THE WASTE TREATMENT MARKET WITH ITS BROAD RANGE OF INNOVATIVE STABILIZATION AND SOLIDIFICATION PRODUCTS. THESE PRODUCTS ENSURE COMPLIANCE WITH FEDERAL DISPOSAL STANDARDS WHILE OFFERING A MORE COST-EFFECTIVE AND SAFE APPROACH COMPARED TO LIME, FLY ASH, DIATOMACEOUS EARTH, OR OTHER TRADITIONAL ABSORBENTS.

## Liqui-Sorb™

Liqui-Sorb is a granular cross-linked superabsorbent 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 Test (EPA 9095) and Liquid Release Test (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 wastes containing organic matter.

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

## Insta-Sorb™

A proprietary blend of clay and inorganic minerals, Insta-Sorb offers the same capabilities of Sorbond LOC, while increasing absorption efficiency with oily wastes.

- Non-biodegradable
- Enhances dewatering of solids and helps treated solids pass Paint Filter Test (EPA 9095)
- Requires mixing – sets up in less than 24 hours
- Available in powder form
- Minimal humidity effects

## ABSORPTION RATIO CHART

PRODUCT	DESCRIPTION	FUNCTION	TYPICAL ABSORPTION RATIO By Weight (absorbent:water)
<b>Liqui-Sorb™</b>	Superabsorbent Media	Solidification of aqueous matter, increases volume by less than 1%	1:250 (DI Water) 1:75 – Typical 1:40 – 2% Salts
<b>Liqui-Sorb™ 1000</b>	Superabsorbent and Adsorbent Media	Solidification of aqueous solutions and semi solids containing organic matter	Dependent on organics present
<b>Sorbond® UP/UG</b>	Clay-Based Absorbent Media	Solidification of general wastes ranging in pH 2-12	Up to 1:9
<b>Sorbond® LPCII</b>	Clay-Based Absorbent Media	Solidification/ Stabilization of wastes containing heavy metals	Up to 1:7
<b>Sorbond® LOC</b>	Clay-Based Absorbent Media	Solidification/ Stabilization of wastes containing organics	Dependent on organics present
<b>Insta-Sorb™</b>	Clay-Based Absorbent Media	Solidification/ Stabilization. More efficient than Sorbond in aqueous solutions	Dependent on organics present



Sorbond is used to solidify contaminated soils or sludges that can ultimately be disposed of in regulated waste facilities.



Contaminated sludges attach themselves to CETCO's stabilization agents which render the sludges non-leachable.

# RESEARCH & TESTING LABORATORY



CETCO'S 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 WATER TREATMENT PROGRAMS FOR INDUSTRIAL, MUNICIPAL, PIPELINE, AND OIL PRODUCTION WASTEWATERS. BASED ON OUR EVALUATION OF EACH CUSTOMER'S WATER, WE PROVIDE EFFICIENT, COST-EFFECTIVE TREATMENT OPTIONS USING OUR SPECIALIZED LINE OF PRODUCTS, WHILE PROVIDING UNSURPASSED CUSTOMER SUPPORT.

THE CETCO WATER TREATMENT 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:** 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.

**Oil and Grease:** Hexane extraction infrared analysis, 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 Spectrometer, which is capable of determining the presence and concentration of most metals.

**Total Organic Carbon (TOC):** Measures level of total organic carbon in a 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 Leachate Procedure (TCLP):**

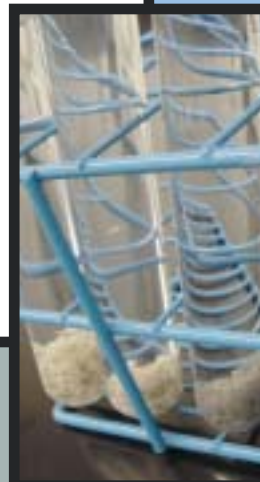
Determines the ability of elements to leach from a sludge. Sludge, acid, and DI water are mixed overnight and the resulting solution is filtered. The filtered water is then analyzed for contaminants of concern.

**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 solid 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.





**DRILLING PRODUCTS**



**LINING TECHNOLOGIES**



**BUILDING MATERIALS**

**CETCO**<sup>®</sup> sets the pace for product research and development. We are committed to bringing you innovative, cost-effective products that go beyond merely meeting your needs. Our growing range of products and services reflects a keen market awareness, making CETCO the established leader in many environmental disciplines.



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**WASTEWATER TREATMENT**

