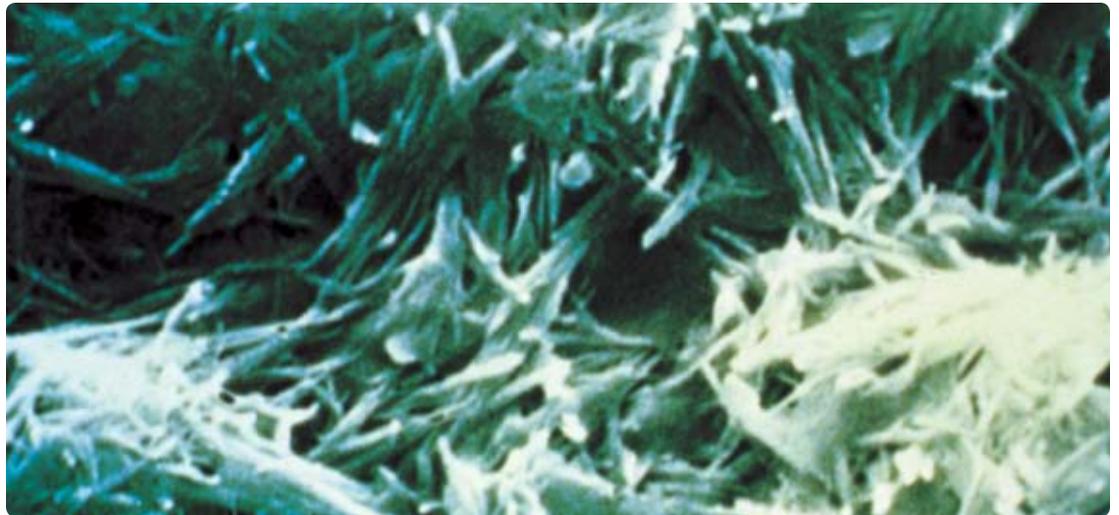




ultra:clear®
clarification media



Scanning Electron Micrograph
of attapulgite clay from Ochlocknee, Georgia

HIGH PERFORMANCE ADSORBENT MEDIA

For Jet Fuel Clarification

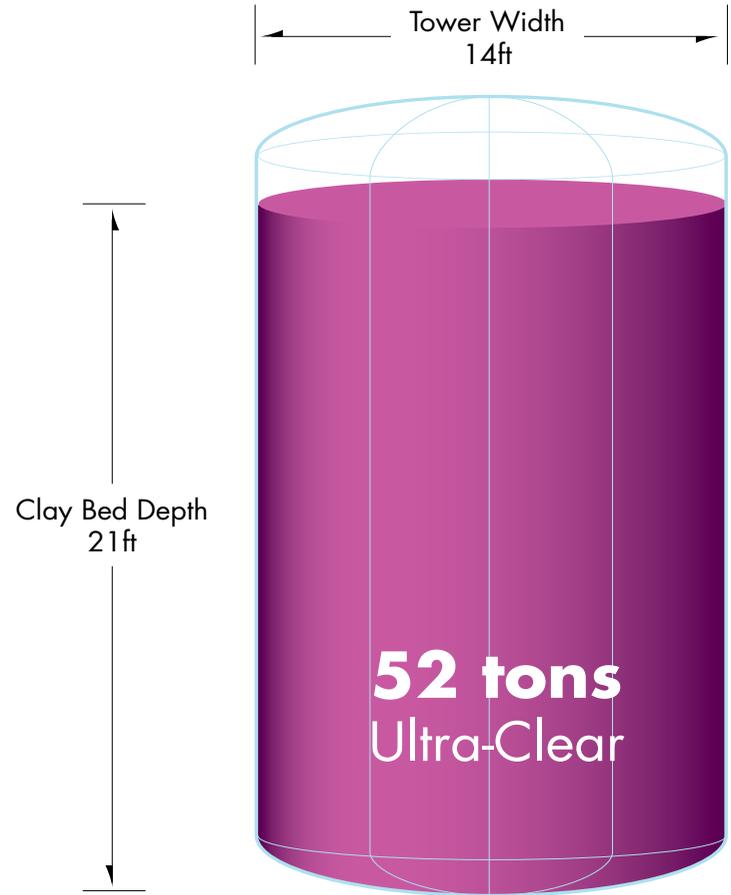
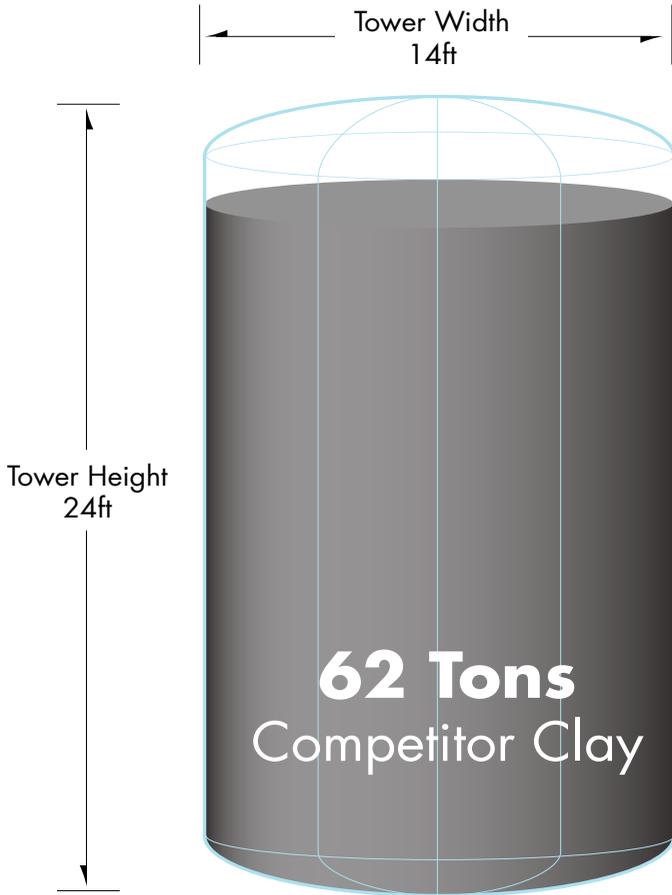
Ultra-Clear® is a high-performance adsorbent media that removes polar compounds in jet fuel to assure it meets product specifications such as thermal stability, microseparator, and water reaction. Ultra-Clear granules have a large, highly active surface area that adsorbs oil soluble surfactants, organometallic compounds such as copper-complexes, and particulate matter that would jeopardize jet fuel specifications.

Ultra-Clear is a unique, naturally occurring attapulgite that has been thermally processed to provide hard, durable granules that won't swell or break down in the presence of water. They have approximately 150 m²/g of active surface area that provides long bed life and efficiently removes jet fuel contaminants.

Clay Treating

THE COST-EFFECTIVE SOLUTION

Ultra-Clear granules originate from a unique deposit of attapulgite clay that has a bulk density as much as 20% lower than other attapulgite clays used in jet fuel applications. This means you have to purchase fewer metric tons of Ultra-Clear to fill your clay tower (see adjacent chart).



SURFACTANT ADSORPTION



SURFACTANTS

Naphthenic Acid
Sodium Naphthenate
Phenol
Benzene Sulfonic Acid
Sodium Benzene Sulfonate

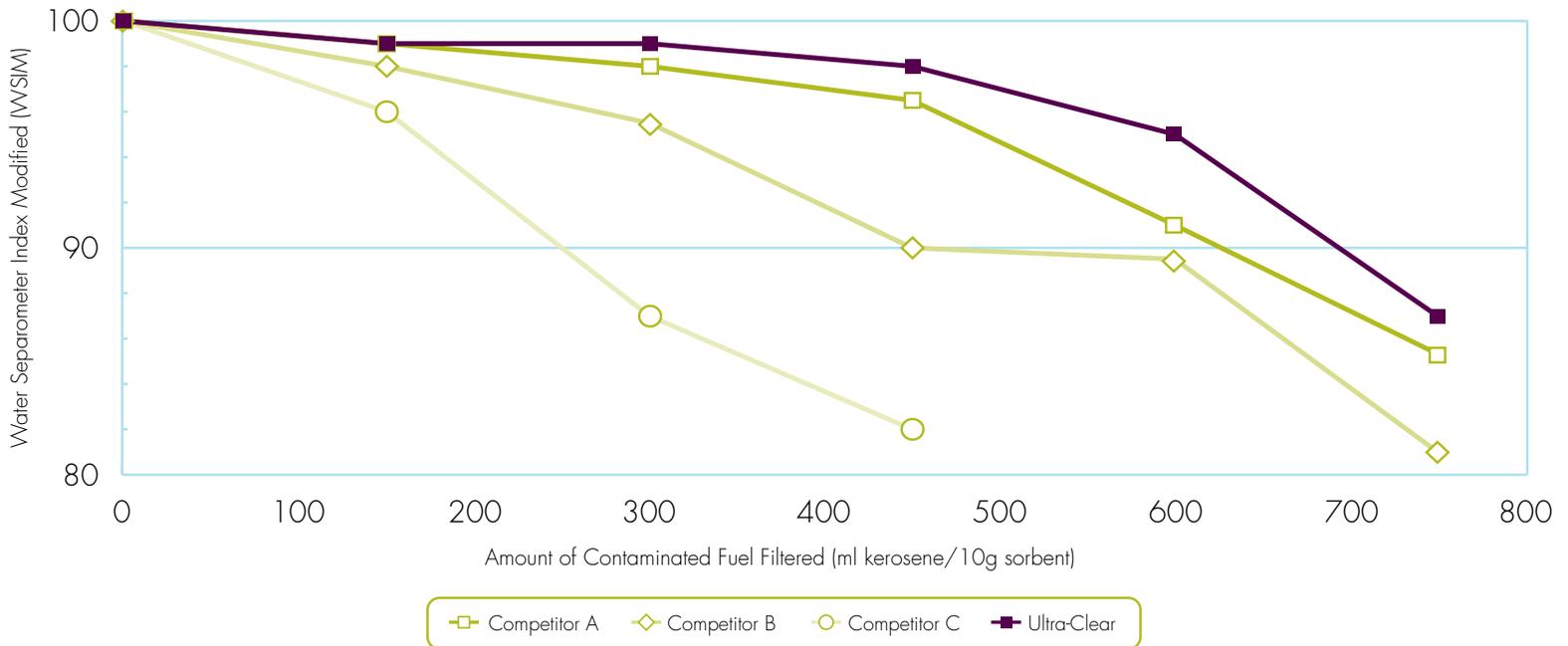
The highly active surface of Ultra-Clear attracts and adsorbs surfactants that naturally occur in the crude oil, are added to fuel, or picked up through the fuel distribution system. Surfactants can cause problems even if they don't lead to the formation of a water-jet fuel emulsion. The presence of surface active substances in the fuel inhibits the ability of a filter separator/

coalescer to separate free water from the fuel, commonly called "disarming the coalescer." Entrained or emulsified water in the fuel is dangerous, and Ultra-Clear is the product of choice to efficiently remove surfactants to meet MSEP fuel specification. As part of Oil-Dri's quality control measures, Ultra-Clear is tested for MSEP activity prior to shipment.

ULTRA-CLEAR VS. COMPETITORS

WSIM Performance

The chart below compares the efficiency of Ultra-Clear granules to adsorb surfactants and attain higher MSEP (WSIM) test results versus alternative clays used to treat jet fuel.





OXIDATION STABILITY

Advances in jet aircraft and engine technology have increased the heat load on turbine fuel. Exposure to higher temperatures accelerates oxidation of the fuel and leads to the formation of gum and carbon deposits in fuel systems resulting in reduced efficiency, increased maintenance, and potentially

disastrous accidents. Ultra-Clear granules are highly effective at removing soluble copper compounds found in the fuel following the refining process. These compounds are known to promote oxidation and can lead to JFTOT failure.



FIXED BED PERFORMANCE

Longer Bed Life | Increased Uptime | Greater Overall Efficiency



Water can cause low-quality clay particles to soften and swell, increasing the occurrence of “channeling” in the clay treater. This also reduces the total surface area of the clay granules and leads to a reduction in the adsorption of polar

compounds. Ultra-Clear granules have been thermally processed to resist swelling when exposed to water in the clay treater, resulting in longer bed life, increased uptime, and greater overall efficiency of your refining process.

Ultra-Clear has up to 150 m²/g of active surface area while typical attapulgite clays have 116 m²/g. With more surface area available for adsorbing contaminants, clay bed performance is enhanced and bed life is lengthened.

INDUSTRIAL OILS & OTHER USES

Other Applications

The attributes that make Ultra-Clear granules a high-performance jet fuel treatment solution readily lend themselves to other applications. Ultra-Clear effectively removes color bodies, surfactants, water, free fatty acids, organic oxides, and other polar contaminants from a wide range of oils, liquids, and waxes.

Transformer Oils

Ultra-Clear granules remove contaminants and moisture from used transformer oil to improve interfacial tension, dielectric strength, power factor, acid number, and color of the oil. Recycling extends useful life and reduces costs associated with disposal of spent oil.

Mineral Oil

Ultra-Clear removes color bodies, acids, and other by-products to meet specifications in the refining stage of the process.

Motor Oil

Ultra-Clear helps meet color specifications by removing color bodies.

Dry-Cleaning Fluid (PERC)

Organic Solvents

Waxes

Distillates

PRODUCT OPTIONS & SPECIFICATIONS

Options

Ultra-Clear granules are available in three standard mesh sizes for use in fixed-bed clay treaters or clay-packed filter cartridges (bags or cloth).

Typical Properties

| 8/16 MESH | 16/30 MESH | 30/60 MESH | Product Mesh Size |
|----------------------|-----------------------|-----------------------|--------------------------------------------|
| 31 | 32 | 32 | Density lbs./ft³ |
| 1.0 | 1.0 | 1.0 | Free Moisture |
| LVM | LVM | LVM | Volatile Classification |
| 4.6 | 4.6 | 4.6 | Loss on Ignition at 1000°C wt% |
| 6.7 | 6.7 | 6.7 | pH |
| 76.0 | 71.7 | 78.2 | Hardness Resistance to Attrition |
| 0.4 | 1.6 | 8.8 | Particle Count million/lb. |

ultra:clear[®]
clarification media



THE TRUSTED SOLUTION

Customers around the world count on Ultra-Clear's
adsorbent properties to keep their products
meeting specifications.

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clarification media

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