



Graver Technologies

ECOSORB®

MULTI-FUNCTIONAL PURIFICATION MEDIA

The Ideal Solution for Reclaiming Sugar

ECOSORB is a proprietary adsorbent media that effectively replaces powdered activated carbon (PAC) and diatomaceous earth (DE) in batch treatment processes providing the following benefits:

- ◆ Elimination of carbon and diatomaceous earth dust
- ◆ Lower labor costs
- ◆ Improved quality
- ◆ Reduced solid waste
- ◆ Elimination of re-processing

Many processors of hard candies reclaim sugar from rework by using dusty PAC and DE in antiquated batch processes. The work environment, due to airborne dust, is both aesthetically unpleasant and a potential health issue. In addition, adsorption limitations inherent in batch equilibrium processes restrict adsorption capacity, hence wasting the adsorption potential of the media.

With ECOSORB products there is no dusty carbon or diatomaceous earth. The dust free media is easily precoated on a filter press and the sugar solution simply pumped through the filter cake to the finished product tank. The adsorption efficiency is very high as the ECOSORB media is a potent adsorber of difficult to remove taste, odor and color bodies and there is no batch equilibrium limitation.

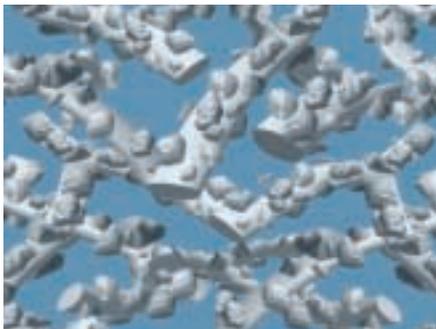


Figure 1

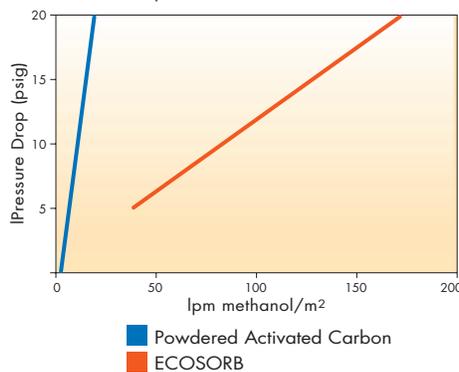
ECOSORB achieves its advantage by a unique proprietary method where finely divided adsorbents are immobilized on inert carriers, delivering a fast adsorption rate at low hydraulic pressure drop. This allows the ECOSORB products to be used as precoat, thereby eliminating the cost and quality inefficiencies of batch processing. Figure 1 demonstrates how each particle of adsorbent is fixed on the inert substrate providing a low pressure drop matrix and easy access to the small adsorption sites. Figure 2 clearly shows the superior hydraulics provided by ECOSORB's unique matrix.



Case History

A major hard candy manufacturer currently uses ECOSORB multi-functional purification media to cost effectively recover sugar from rework. Sources of rework included candy damaged in the packing operation as well as out of spec product. This hard candy manufacturer had been using PAC and DE in a typical batch operation to remove color, flavor/odor, and turbidity. Problems attributable to difficult to remove color / flavor combinations, a dusty work environment, and labor intense batch processing were eliminated by processing with ECOSORB. ECOSORB precoat replaced the PAC/DE batch process and streamlined the operation. See Comparison table below.

Figure 2
HYDRAULIC COMPARISON ECOSORB VS POWDERED ACTIVATED CARBON
Equivalent Adsorbent Basis



ECOSORB precoat vs PAC/DE batch process

Before ECOSORB	With ECOSORB
25,000 lbs of sugar recovered in a three (3) shift operation.	30,000 – 40,000 lbs of sugar recovered in one (1) shift
Frequent re-processing	No reprocessing
Dusty environment	Completely dust free area
600 – 800 lbs of solid waste per day	100 lbs of solid waste per day
10 – 12 shutdowns and re-servicings of filters over three shifts	1 cleanup at the end of one shift



Manufacturing/Regulatory

ECOSORB products are manufactured in our state-of-the-art manufacturing facility in Glasgow, DE. Graver Technologies follows GMP procedures and is ISO 9001 certified. All food grade ECOSORB products are Kosher approved and are in compliance with the appropriate sections of the US Code of Federal Regulations (CFR). ECOSORB products in precoat or deep beds can be rinsed prior to use to meet USP Purified water specifications.

Operating Specifications

Temperature: 5–80°C

pH: 2–12

Flow: 0.12–1.2m³/h/m²

Pressure 0.1–5.0 bar

Chemical Compatibility

ECOSORB products are suitable for applications in aqueous and various organic solvents at pH values of 2–12. Standard ECOSORB products are not suitable for use in strong bases, strong acids or with strong oxidizing agents. Custom formulas are available to increase chemical compatibility for some applications. ECOSORB products have been tested and found to have satisfactory compatibility with water, methanol, ethanol, 2-propanol, tetrahydrofuran and acetonitrile. For additional information regarding chemical compatibility please contact Graver Technologies.



Superior Products & Global Reach

Whether your business is around the corner or around the world, Graver Technologies can support you with superior products and services. Our ion exchange, adsorbent, filtration and membrane products deliver exceptional performance in some of the harshest process environments in North America, Europe, Asia, the Pacific Rim, South America and Africa.

Graver Technologies is a member of The Marmon Group of companies, an international group with over \$6 billion in annual sales. Graver Technologies manufactures products that facilitate and enhance separation and purification processes. Graver Technologies has the technical resources and financial strength that make us the perfect partner for your business, whether it's around the corner or around the world.

To request a standard or custom sample or to discuss your application with a technical representative, please call us:

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