

Sustainable Filler Products for the Carpet Industry

B2B Fillers

POST CONSUMER CARPET BACKING

CS Fillers

POST CONSUMER GLASS

V2V Fillers

RECYCLED VINYL

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Introductions

- **Vitro Minerals and Polar Materials are companies that specialize in recycled materials that can be used to replace mined minerals:**

Vitro Minerals ~> Recycled glass

Polar Materials ~> Recycled carpet backing

~> Recycled vinyl

- **Vitro Minerals' *CS Glass Powders* are finer and less abrasive than other glass products.**

FTC Environmental Marketing Guidelines...

- **Recycled content must be diverted from a solid waste stream.**
- **Cannot be reclaimed back into the original product with minimal processing.**
- **Must disclose specifics of Post Consumer and Post Industrial content.**

Alternative Recycled Fillers...

Post Industrial	Post Consumer
Factory glass	Bottle glass
Fly ash	Carpet backing
	Vinyl products
	Paper
	Asphaltic materials

The Facts...

- **Carpet recycling focused on face fiber, approximately 50% of the weight of the carpet, and all of recycle value.**
- **Carpet shredders generate 35-50% waste from carpet recycling — sand and short fibers — that have high disposal costs.**
- **Sand is sticky due to latex adhesive content and is loaded with unusable fibers.**

The Numbers...

(Varies with Carpet Weights)

- **New carpet is up to 50% backing.**
- **Backing is about 80% filler and 20% latex.**
- **Therefore, the quantity of filler in carpet can be as high as 30 wt%.**
- **NSF 140 Platinum requires 10% post consumer content.**
- **Can meet NSF 140 post consumer requirement with B2B-35.**

The Solution – B2B Fillers

- **Polar Materials Patent Applied For multistage processing to produce economical and effective filler using sand generated by carpet recycling.**
- **Processing includes integration with new filler to overcome stickiness; either limestone or PC materials.**
- **B2B Fillers can be used by carpet mills through existing silos/mix systems. No capital required.**

Sustainable Filler Production Sites

- **Glass products:**
Jackson, TN
Spartanburg, SC
Kennesaw, Ga
- **B2B Products:**
Dalton, GA
California – 2010
- **V2V Products**
Wellsville, OH
- **Dalton capacity 100,000 tons/yr**
JV with Franklin Industrial Minerals.

Benefits of B2B...

- **Achieves NSF 140 recycle content goals in the most cost effective and environmentally responsible fashion.**
- **Most cost-effective way to achieve increased old carpet re-use.**
- **Greatly improves economics of carpet recycling.**
- **Immediately reduces amount of carpet waste being landfilled.**

Benefits of B2B...

- **B2B fillers are themselves recyclable — supports effective product end-of-life management.**
- **No additional capital investment required for carpet mills. B2B runs through current filler process.**
- **Adjustable PC content allows other PC carpet additives.**
- **Plants in Dalton and California will utilize backing fillers sourced locally.**

Benefits of B2B and Fine Particle Glass...

- **Low abrasion**

Sample	Wt Loss (g)*
B2B-50	0.025
Fine glass (CS-325)	0.052
Fly ash-1	0.113
Coarse glass (GF-220)	0.130
Fly ash-2	0.156

* Taber Multi-media Abrader Model 5500
Tests conducted by Taber Industries

Using B2B Products...

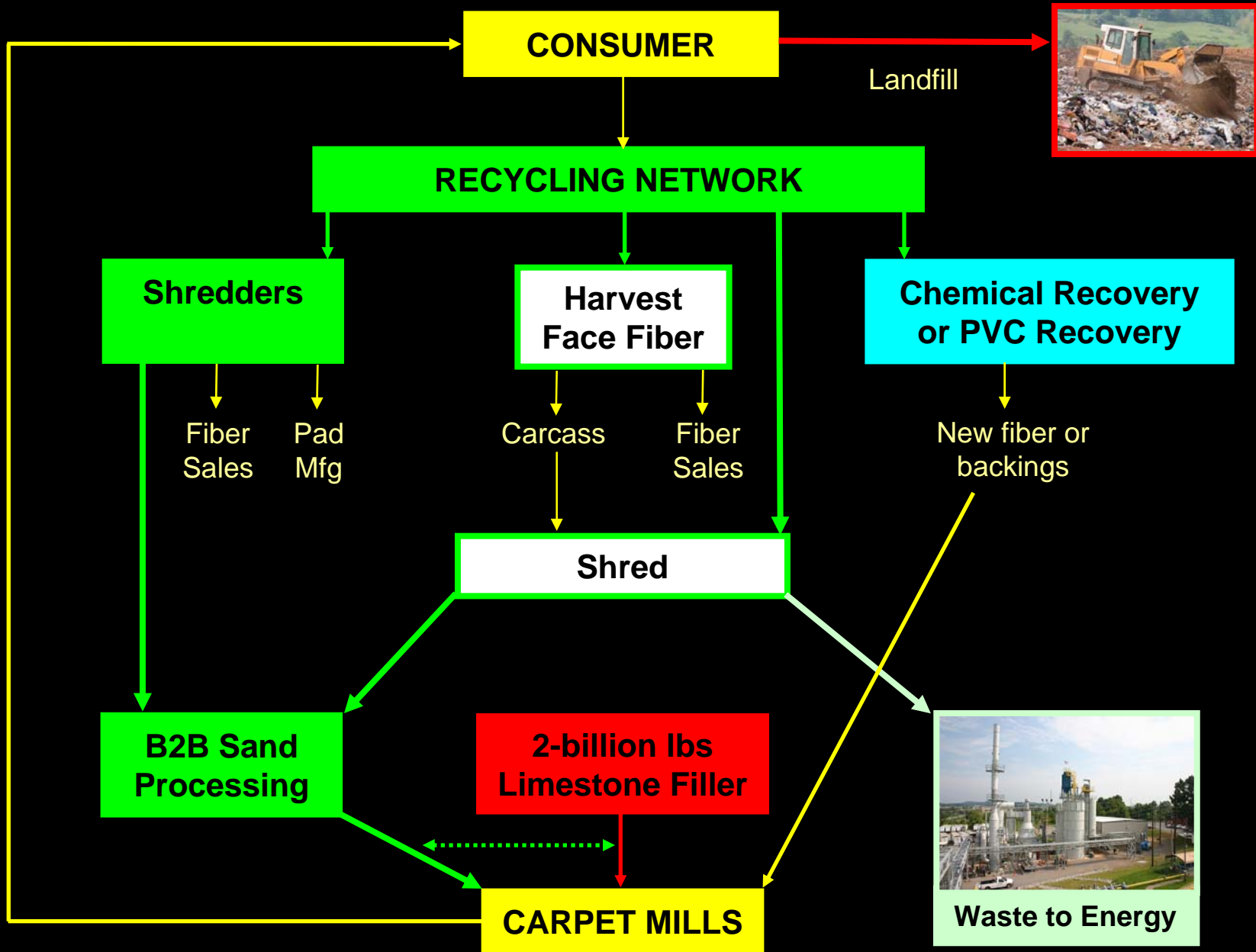
- **Viscosity**
- **Biocides**
- **Fiber content**
- **Processability**

Use of Fine Particle Glass...

- **Post consumer CS Glass is processed to a clean state.**
- **Ground to finer than 325 mesh to avoid abrasion.**
- **Surface treated to enhance properties.**
- **Usable in PVC plastisols, polyethylene backing, hot melt adhesives, and flooring adhesives.**

Carpet Recycling Issues...

- **Carpet recyclers need stable and growing outlets for fibers to recycle more carpet.**
- **40% of intake for recycling can be diverted to B2B production.**
- **Reusing the backing component greatly improves the economics of carpet recycling.**
- **Landfill bans and end-of-life disposal responsibility will change the landscape.**



For Rapid Expansion of Landfill Diversion...

- **Adopt B2B to improve economics of carpet recycling network.**
- **Encourage recycling by including a recycling surcharge.**
- **Place added emphasis on coal substitution for Waste to Energy.**

In Appreciation...

- **Latex companies for reformulating to accommodate B2B Fillers.**
- **Interface / Bentley Price Street first mover status.**
- **Mohawk Carpet for cross-licencing IP.**
- **Shaw for leadership in a sustainable carpet industry.**
- **CARE / CRI for focusing on solutions.**

B2B Recycled Carpet Fillers
CS Recycled Glass Fillers
V2V Recycled Vinyl

Sustainable Filler Products
for the Carpet Industry

Dalton, GA • Victorville, CA • Jackson, TN • Wellsville, OH



VITRO MINERALS, INC. / POLAR MATERIALS, INC.



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