

Sustainable Filler Products for the Carpet Industry

C2C Fillers

POST CONSUMER CARPET BACKING

CS Fillers

POST CONSUMER GLASS



7th Annual CARE Conference
Lansdowne, Virginia
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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:**

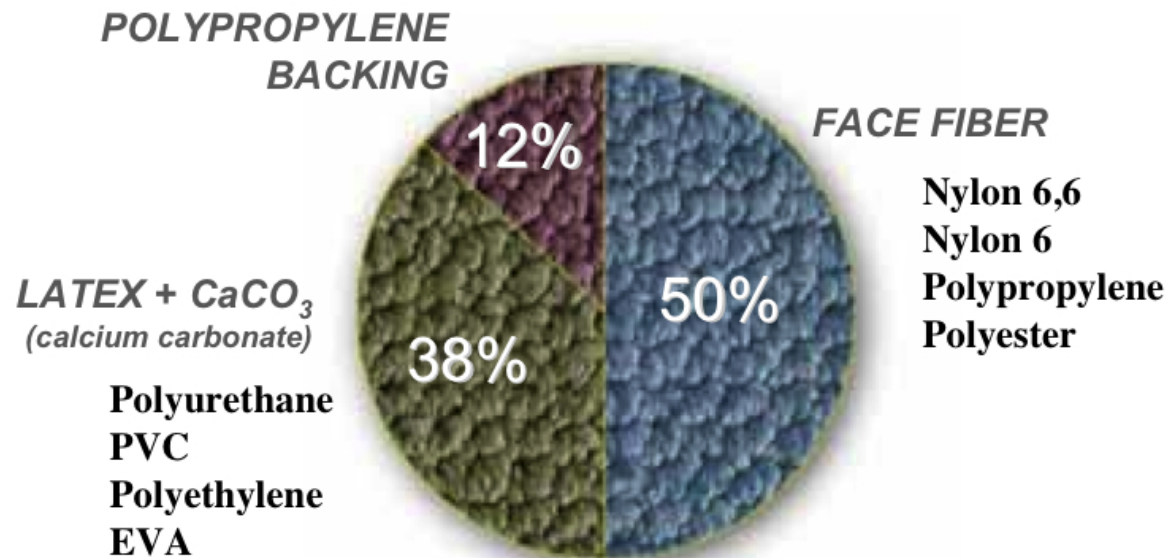
Vitro Minerals ~> Recycled glass

Polar Materials ~> Recycled carpet backing

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

Broadloom Carpet Composition

- 1.8B square yards sold in 2002
- average weight = 4.4 lb/square yard



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 almost 40% 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 C2C-35.**

The Solution – C2C 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 glass.**
- **Process includes sterilization of recycled carpet portion.**
- **C2C Fillers can be used by carpet mills through existing silos/mix systems. No capital required.**

The Solution – C2C Fillers

- **C2C fillers have been extensively tested in several latexes — mill trials successful.**

GRADE	MIX MINERAL	PC CONTENT
C2C 200	PC Glass	100%
C2C 50	Limestone	50%
C2C 35	Limestone	35%
C2C 20	Limestone	20%

C2C Production

- **Currently two production plants:
Jackson, TN; Spartanburg, SC**
- **Production:
Dalton, GA – summer '09
California – fall '09.**
- **Dalton capacity 100,000 tons/yr
JV with Franklin Industrial Minerals.**

Benefits of C2C...

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

Benefits of C2C...

- **C2C fillers are themselves recyclable — supports effective product end-of-life management.**
- **No additional capital investment required for carpet mills. C2C runs through current filler process.**
- **Adjustable PC content allows other PC carpet additives.**
- **Plants in Dalton and California will utilize backing fillers sourced locally.**

Carpet Recycling Issues...

- **Carpet recyclers need stable outlets for fibers in order to generate our sand feedstock.**
- **WTE should be a default destination for fiber when other fiber markets fluctuate.**
- **Polar's technology allows for large scale re-use of 35% of carpet weight recycled.**
- **Sand disposal costs disappear.**
- **Carpet that has nylon fiber harvested is especially rich in sand feedstock if the remaining carcass is shredded.**

C2C Recycled Carpet Fillers CS Recycled Glass Fillers

**Sustainable Filler Products
for the Carpet Industry**

THESE PRODUCTS ARE AVAILABLE TODAY!



VITRO MINERALS, INC. / POLAR MATERIALS, INC.



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