

EPDM group champions recycling

By Ed Kane / RSI Contributing Writer

With energy savings and sustainability becoming crucial components of a modern roof system, the ability to recycle roofing products is growing in importance. During the past 18 months, the EPDM (ethylene propylene diene monomer) Roofing Association (ERA) has been conducting research into the possible recycling of its product. Initial results from the pilot phase have been encouraging, enabling an effort to expand our research.

The goal of the project, as established by our industry task force, was threefold:

- To provide a recycling option for EPDM membranes nearing the end of their service lives, as well as for excess EPDM materials from new construction jobsites.
- To provide roof-system designers evidence that specifying EPDM would meet environmental goals and also possibly assist in procuring LEED points.
- To determine potential for reuse: What is the market demand for a product? What would be the potential continuous stream of materials coming into the recycling process? What is a final determination for end-use products?

The task force met with Midwest Elastomers Inc. (MEI), the Wapakoneta, Ohio-based grinder of EPDM and rubber products. We established the likely recycling process and packaging and delivery of the materials. Perhaps most importantly, we also discussed potential impediments to the success of recycling aged, post-in-

moved debris from the top of the membrane, including stones, vegetation, and tree debris. The area was swept to dry the material from the previous night's dew or rain and remove any remaining minor contaminants.



The EPDM membrane, minus adhered flashings and lap seams, was folded and carried to waiting pallets on the rooftop. This process continued for about six weeks, with the used EPDM membrane stacked on pallets and then delivered to MEI, located about 20 miles away.

On Aug. 29, 2006, the EPDM material in the pilot project was ground, under observation by the task force and MEI representatives. The first grind revealed what was described as a "typical" amount of screws, rocks and miscellaneous debris in the material. The end product that was produced was about three-eighths of an inch in diameter. About 25 percent of the ground material was dirt. This amount of dirt would hinder the packing process, as well as take the process to the next stage, a second grind.

Because contaminated material would be a less desirable material to end users and may even render it useless, this was a key point in the process. Two options were considered: future pilot tests would include washing of the membrane, likely on the roof, before putting it through

It was found during the second grind that process changes could remove almost all the dirt product found after the first grind.

situ EPDM roof membranes, such as dirt, foreign contaminants, quality of the grind, cost of recycling, continuity of the material source and need of the end product by users.

The first pilot project was Cookson Elementary School in Troy, Ohio, with a 40,000-square-foot ballasted EPDM roof system installed in 1988. Command Roofing Co., based in Dayton, Ohio, executed the roof system removal and replacement, beginning in late May 2006. This involved the necessary removal of the ballast, cutting out seams and flashings, material storage on pallets (which then needed to be bound in place), and securing of all material on-site until it was moved to a grinder.

While removing the EPDM membrane, the crew re-

moved debris from the top of the membrane, including stones, vegetation, and tree debris. The area was swept to dry the material from the previous night's dew or rain and remove any remaining minor contaminants.

The resulting 20-mesh product was given to Carlisle SynTec and Firestone Building Products, as well as additional representatives who are examining, evaluating, and testing it for potential use in their products. Both companies have agreed to accept all recycled material for their own use, ensuring an end user throughout the project.

The second pilot project was designed to address such concerns as on-site packaging and storage of the material; debris inclusion and surface foreign contaminate

buildup. This project, the 809 Building in Milwaukee, was developed in association with the City of Milwaukee Department of Fleets, and the contractor, F.J.A. Christiansen Roofing Co. Inc., a Milwaukee-based Tecta America company.

The replacement roof-system specifications called for recycling all existing materials being removed, including EPDM roofing, sheet metal, insulation, and ballast. The EPDM was specified to be power-washed prior to removal. The goal of this power washing was to determine whether the slight cleaning of the membrane would result in a cleaner end product. The membrane was removed from this roof, and instead of being ground, it was sent to AdVac Elastomers, where it will be resynthesized into virgin EPDM product for reuse. As of this writing, the material has not yet been resynthesized by AdVac, so results are pending.

EPDM roofing materials account for more than 1 billion square feet of new roof coverings in the United States each year, with more than 500,000 warranted roof installations on more than 20 billion square feet of EPDM currently in place. The qualities that make EPDM membrane popular in the roofing industry — flexibility and resistance to various climatic conditions, including ultraviolet radiation — should make it an attractive recycled material option.

Since these two initial pilot projects, 17 other projects have involved the removal and recycling of more than 800,000 square feet of EPDM membrane. The potential for designers and contractors to offer recycling possibilities to their clients is here. ERA is striving to move the concept forward into a workable process.

The project has revealed great possibilities for the recycled product, but key logistical details remain. Perhaps the key unresolved factor is that the companies that provide synthesizers and grinders indicate they must know the volume of anticipated product during the coming years, to promise a certain amount of material.

ERA will be working in the coming

months to fill that pipeline by encouraging more building owners and contractors to provide material for recycling. We will also attempt to streamline the logistical process, by developing a list of grinders and synthesizers in various regions of the country to enable ease of delivery. **RSI**

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