

Single-Ply

Recycling PVC Reclaiming Old Used-Up Roofs?

By Shawn Stanley, Marketing Director, IB Roof Systems

(Editor's Note: Shawn Stanley is marketing director and chairman of the board. He is an active member of the Single Ply Roofing Industry (SP-RI) trade group and currently serves on its board of directors and is the promotional committee chairman. He may be reached at (800) 426-1626.)



At the IRE show recently, I think everyone that attended can agree that sustainability, recyclability, and being "green" overall was an underlying theme. Because of this influence and increasing environmental awareness along with economic pressures from customers, being "green" is becoming a staple in many roofing manufacturers' brochures and literature.

At the show I was approached with a few environmentally toned questions myself regarding, specifically, the recyclability of PVC roofing membrane: Can PVC roofing membranes be recycled? What and where are the markets for recycling? How can contractors find out how to recycle PVC roofs?

Because of this I decided to take liberty and dedicate this column to addressing these questions about PVC roofing membrane and what to do with it after it has reached the end of its service life.

Short History

The first documented PVC roof was 52 years ago in 1956 in Bolivia. Because PVC has such a long track record it has become one of the most

studied and documented products in the roofing industry. The benefits of PVC roofing membrane are well known: long life cycle, inherent fire resistance, ease of repair years after installation, low maintenance, and the ability to engineer different performance characteristics right into the membrane formulation.

But what happens to the benefits of a PVC roofing membrane when its service life is expired?

Can PVC Membrane be Recycled?

Although PVC was always recyclable, it wasn't very easy when it came to roofing membrane. Ten years ago, recycling of PVC membrane was too intensive to be a worthwhile solution. There were a few hurdles to overcome. After decades of service life, thermoplastic aged roofing membranes are dirty, have been exposed to environmental pollutants, and have non-PVC materials incorporated in the membrane such as reinforcement scrim or felt adhered to the back of the membrane. These elements spoiled recycling opportunities in the past. Recently with new technology, grinders can reduce the membrane to a state that the scrim or felt can be easily separated.

Other separating technologies that are being tried in Ferrara, Italy have shown great promise with a process trademarked "Vinyloop". This is a recycling technology based on separation of non-PVC elements in the membrane with the use of solvents. This technology is counted on by members of the European Single-ply Waterproofing Association (ESWA) to deliver tailor-made recyclates that can be used for new high-quality roofing membranes.

PVC roofing membranes are the

material of choice in Europe and according to a report from AMI Consulting in 2002; PVC roofing membranes made up 62% of roofing materials used in Europe. Because of this, European countries have pushed PVC membrane recycling to the forefront with the formation of ROOFCOLLECT in 2003.

ROOFCOLLECT was launched as the European solution for the recycling of post-consumer thermoplastic roofing membranes. Belgium, Luxembourg, the Netherlands, France, Austria, and Switzerland joined the new collecting and recycling initiative for end-of-life roofing membranes, which started in Germany in June 2003. The Scandinavian countries as well as Italy followed in 2005.

In 2004 and 2005 over 1,300 tons of post-consumer PVC roof membrane was successfully recycled. A 2006 report given by Vinyl 2010, an organization dedicated in mass recycling of PVC products, stated that this number is lower than desired due to the fact that PVC used in building application may be expected to give more than 40 years of useful life. For this reason alone, the opportunities for large-scale PVC recycling are still limited by the availability of waste material.

In the U.S., the vinyl industry has been accused of not recycling enough PVC. It is unfair to charge the vinyl industry for not recycling its product when it is still in use on construction projects. The longer a building material is utilized before it needs to be recycled or replaced is by far, more important than recycling a massive amount of a building product just a short time after it has been manufactured. IB Roof Systems and other PVC manufacturers have reclamation

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Recycling PVC

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programs in place in which PVC membrane that was installed in the late 70's is now being reclaimed and recycled.

Being recyclable is not the only way PVC roofing membranes can be *green*. Because of their durability, PVC membranes save money in reroofing costs and when you factor in that the white membranes reflectivity, (typically over 80%), continually reduced energy consumption over its existence it becomes very significant.

What and Where are the Markets for Recycling?

During the manufacturing process of PVC roofing membrane a certain amount of waste is created due to edge trimming or other scraps. With advances in technology most modern PVC manufacturing plants recycle close to 100% of this waste right back into the roofing manufacturing process.

As far as post consumer PVC membrane goes, Jeff Walter from Northwest Polymers, a plastics recycling company stated, "From what we have seen so far in processing the aged PVC membrane material, there is very little waste. As it passes through our system we are recognizing about 99.5% of good, usable materials." He also said that, "one of the good things about vinyl and plastics is that they last for such a long time. The material is still very usable, degradation is minimal, and because of this it can still be made into good products even when it has already served for 30 years."

Old PVC roofing membrane can be recycled in two application areas:

- Sub-base concrete, low-weight roof membrane protection for roof gardens, sound insulation for sub-base light flooring, landscaping and retaining wall projects among other things.
- Light concrete for refilling of roads.

A third application was evaluated in addition to the previous ones. This technology is used mainly to produce pre-fabricated blocks for industrial walls. The good results achieved appear to confirm this sector as a positive option.

Find Out More About Recycling Roof Membranes

The best way contractors can get involved in reclaiming PVC membrane roofing is to contact PVC membrane manufacturers and ask if they have a reclamation program and what they can do to help you on your project. Some manufacturers may aid in providing dumpsters and pay to haul the reclaimed membrane to the recycle plant. Up to 25% savings in disposal fees were recognized on some projects.

So far, of the reported projects, none of the expenses in labor, disposal, or grinding fees exceeded that of normal tear-off and disposal costs.

Low waste, high reflectivity, and the capacity of being recycled after decades of use shows how sustainable or *green* PVC roofing membrane can be.