

Recycling PVC piping systems by David A. Chasis

Recycling of all manufactured products is getting a lot of press for being the environmental way of the future: rightfully so. But for a product that is resistant to chemical and corrosive attack and has a service life of over 100 years without significant decline in performance, you would think the environmental activists would tone down their rhetoric somewhat regarding PVC piping systems. These systems are matchless when it comes to being leak-proof, durable, easy and safe to install, cost effective and environmentally sensible. These attributes have been repeatedly proven in long-term performance results when compared to other non-plastic piping materials. So, why all the hoopla about recycling PVC pipe?

Most likely the cause that provokes the fury of the ill-equipped activist is the arena of short-term product life (10 years or less) of such items as packaging, electronics, clothing and automobiles which tend to spotlight concerns for all manufactured products no matter what the life of the product may be. But to be fair, let's examine the recycling of PVC (polyvinyl chloride) pipe and see if we can ascertain the economic, energy use and environmental impact it has on our planet.

In recycling terms, PI does not stand for "private investigator" but rather "post-industrial" which is the name given for scrap left over from the manufacturing process. In the manufacture of PVC piping, PI includes mostly scraps developed from production start-up, shut-down, out-of-spec pipe and quality control testing samples. This scrap is routinely reground and later introduced back into the production process. It is estimated that less

than 1 percent of the PVC material used by piping manufacturers is not used to produce product. In other words, PVC pipe manufacturing has excellent marks in PI recycling.

Post-consumer (PC) recycling reclaims material after the product has been used for its intended purpose. When PVC pipe and building products such as siding, window, fencing or decking are discarded due to remodeling, new construction debris, demolition or piping relocations, you would think the manufacturers could recycle these materials. Unfortunately, it is not as easy as it sounds and here's why.

Compounds and methods to produce *extruded* PVC pipe are completely different for fittings and other PVC *molded* products. Every manufacturer can have a slightly different recipe than their competition for each product line. However, all compounds must conform to ASTM, NSF and PPI standards. Thus to recycle PVC piping the product components must be returned to the original manufacturer. This action could be hindered in that most piping systems consist of components from multiple manufacturers since most PVC piping products are interchangeable. Plus, what do you do with solvent-cemented pipe and fitting joints that are basically impossible to take apart? And to ensure conformance of dimensions, burst and working pressure, the ASTM standards limit the amount of recycled material that can be mixed with virgin material to produce pressurized pipe and fittings. In addition, these piping systems may be contaminated from previous use which would not meet NSF requirements to transport potable water. It is possible that ASTM and NSF standards may be waived if the manufacturer uses post-consumer material in the manufacturing of non-pressure pipe or fittings for non-potable water applications.

"Take-back" programs of PVC piping products are presently being discussed by industry manufacturers and their associations in order to lessen the impact on the environment. Although the take-back goods may be limited in piping products, they can certainly be reground and used in creating a myriad of products incorporating the lightweight, chemically resistant and maintenance-free benefits of PVC.

Today, most post-consumer PVC pip-

ing products are incinerated or put into landfills. It's so "un-green" you say. That's true to a point but there is an extremely small amount of PVC piping products when compared by weight to other building products not recycled. A study done for the U.S. Environmental Protection Agency determined that 49 percent of new construction and residential and commercial demolition debris was actually recycled. Most of this debris consisted of concrete, wood, metal and roofing materials. PVC piping represented 0.4 percent of all the measurable debris.



Regrind at a PVC pipe plant for inclusion into making new pipe.

It is true that PVC piping in landfills do not decompose. In fact, it is one of the primary reasons that PVC pond liners and piping to vent methane are used in landfill sites. But again, the long life and small amount of PVC piping being disposed produces a rather insignificant impact to the environment. In addition, PVC can be safely incinerated in modern facilities with its energy recaptured and used while contributing no damaging emissions.

Yes, we should be concerned about recycling PVC piping systems. But also realize that PVC piping is one of the most durable products on earth with arguably no known end-life. Its outstanding durability will have PVC piping systems outlasting many of the structures or underground applications in which it is installed. Viva la PVC! ■

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Drainage pipe (not for potable water) using recycled PVC.