HDPE? PVC? ABS?

Post Reply

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| katsaw@pacbell.net ▼ | Topic: HDPE? PVC? ABS?  
HI ARCSA,  
Recently, I've heard that HDPE is the best piping material to use when capturing rainwater and directing it to a cistern. What is the latest consensus on PVC? How about ABS? I've been told that ABS leaches chemicals at a lower temperature than PVC so it should not be used for rainwater harvesting. Can someone give me the run down on best practices regarding pipe? Is HDPE classified as food-grade?  

Thanks,  
~Kat Sawyer |
Dear Kat,  
I'm sorry your questions languished so long.  
The National Sanitation Foundation has a search engine to identify products that are suitable for drinking water use. Here is the link: http://www.nsf.org/certified/pwscomponents/  
There are HDPE products, as you will see.  
Here are quotes from the manual ARCSA uses for their Accreditation program (Rainwater Harvesting Planning and Installation - Texas AgriLife Extension):  
PVC PIPE AND FITTINGS FOR PW OR DWV  
The NSF determines standards for marking PVC pipe to indicate whether it is for potable water or drain, waste, and vent. The NSF-pw mark identifies the pipe for use with potable systems and the NSF-dwv mark identifies it for use as drain, waste, and vent. The pw/dwv demarcation is also relevant to fittings.  
PVC is approved by ANSI/NSF organizations for use with potable water partly because it has a smooth interior wall and is inert to attack by strong acids, alkalis, salt solutions, alcohols, and other chemicals. PVC is relatively corrosion free both internally and externally. White PVC pipe is rarely UV resistant and must be painted or otherwise protected from the sun to prevent damage from solar radiation and the growth of algae inside the pipe. As a result of having smooth walls and resistance to corrosion and buildup, the pipe has relatively low friction loss. Thick-walled PVC has a high tensile strength, is resistant to impact and can withstand high pressures for a long period of time. Regarding fire safety, PVC is self extinguishing and does not support combustion.  
ACRYLONITRILE BUTADIENE STYRENE  
Acrylonitrile Butadiene Styrene (ABS) is a plastic material used to make light, rigid, molded products such as children’s interlocking building blocks, golf club heads, and clarinets. Pipes and fittings made from ABS are primarily used for drainage purposes. ABS pipe is made to conform to the ASTM D2661 standard that specifies ABS plastic pipe for drain, waste, and vent (DWV). ABS pipe and fittings can be made to interchange with PVC schedule 40 iron pipe sizes and fittings but is not pressure rated. In pressure applications, misuse can lead to injuries caused by a pipe bursting. ABS fittings are stamped with an ABS label and are recognizable because of their shallow sockets.  
MARKINGS FOR PIPES AND FITTINGS  
All PVC pipes have printed external markings along their length (Figure 15.1). Fittings are also marked by letters/numbers integral to the mold. Pipe markings include the manufacturer’s name or trademark, the standard to which it conforms (for example ASTM), the nominal pipe size, and the material designation code. Pressure pipe is marked with the pressure rating; pipes used for drainage only are be marked with DWV. Schedule number or standard dimension ration (SDR) indicates type of pipe; some pipes are marked for potable water or drain, waist, and vent.  
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Edited by arcsajohn - 28/Mar/2013 at 6:15pm
John Hammerstrom
Past President ARCSA, 2010-2011