ABS PIPE:

A BRILLIANT SOLUTION TO SUSTAINABILITY AND COST REDUCTION

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Introduction

Today, homeowners and builders are selecting products that offer increased comfort while at the same time providing environmentally responsible methods of saving both energy and natural resources.

Since its introduction, ABS has become a leading source of material for DWV installations due to its outstanding combination of low cost, ease of installation, and superior performance. Every major standards organization and code authority in the United States and Canada recognizes ABS pipe and fittings for use in DWV building sewer applications.

Homeowners and builders are increasingly choosing products that enhance comfort and are environmentally friendly.

Homeowners and builders are looking for cost-effective, easy-to-install solutions that are environmentally friendly and recyclable. ABS pipe has demonstrated its ability to conserve energy and water over four decades of its manufacture, installation, and utilization in plumbing systems. ABS is a polymer composed of Acrylonitrile, Butadiene, and Styrene.

Acrylonitrile provides chemical and heat resistance, butadiene offers toughness, and styrene contributes stiffness or strength and ease of processing.

History

ABS pipe and fittings were originally developed in the early 1950s for the oil fields and the chemical industry. In 1959 John F. Long, a prominent Arizona builder, utilized ABS pipe in an experimental residence.

Twenty-five years later, an independent research firm dug up and analyzed a section of the drainpipe. The result: no visible evidence of rot, rust, or corrosion.

In 1960, the FHA approved the use of ABS pipe for Drain Waste and Vent (DWV) applications.

Sustainability

Solvent cements for joining ABS pipe that meet California South Coast Air Quality Management District's (SCAQMD) low volatile organic compound (VOC) requirements are readily available from several manufacturers and can be used towards obtaining the low-VOC paint and adhesive credits in some green building systems. ABS solvent cements typically have lower VOC compared to other solvent joining systems and do not utilize primers.

The energy required to produce ABS pipe is substantially less.

The energy required to produce seven pounds of ABS and extrude ten feet of pipe is substantially less when compared to smelting 21 to 70 pounds of metal and casting or forging a 10-foot metal pipe. Recycling ABS material requires substantially less energy than metals.

Preferred Choice for DWV Systems

Today, ABS pipe is the preferred choice for many installers of drain, waste, and vent (DWV) systems. Pipe systems made of ABS are used for homes, manufactured housing, commercial and industrial buildings, as well as mobile homes and recreational vehicles. ABS pipe is durable, which helps to reduce a building's operating and life-cycle costs. It contributes to a positive building valuation and reduces construction and demolition waste that would otherwise end up in a landfill.

ABS reduces building operating and life-cycle costs.

While some ABS pipe is produced with a solid wall, most of it is made with a cellular or "foamed" core. The developers of ABS cellular core pipe learned from nature about how to conserve material and still produce a strong tube-like structure. They accomplished this by producing closely packed hollow cells in the core of the pipe; much like the closely packed long thin tubes found in wood fiber. These hollow cells connect to the inner and outer walls of the pipe, producing a lightweight yet unbelievably strong structure.

High-impact ABS material is strong and resistant to damage from job site environments. ABS has an operating temperature range from +140°F down to a frigid cold of -40°F while still main- taining the stringent impact strength requirements defined by the codes and standards. Plumbing codes were created to ensure our public safety. ABS pipe and fittings are recognized in all relevant plumbing codes, including ICC, IAPMO, and NSP codes. ABS pipe that is joined with solvent cement offers an easy-to-install a leak-free system that can dispose of water or waste fluids without contaminating surrounding materials or the living environment.

The reduction and loss of metal pipe by corrosion and oxidation is a significant consideration in se- lecting pipe materials. ABS pipe systems do not corrode, maintaining smooth walls and superior flow throughout their lifetime. ABS also offers excellent resistance to most household chemicals.ABS DWV pipe and fittings are produced to meet the demanding requirements of ASTM International, CSA Group, and NSF Standards 14 and 24.CSA Group, ICC-ES, the International Association of Plumbing and Mechanical Officials (IAPMO R&T), and NSF, provide third-party certification and auditing services to facilities manufacturing ABS pipe and fittings.

Recyclable

ABS material is a thermoplastic. All thermoplastics are recyclable. Thermoplastics can simply be melted again to be used in a new application after their long projected service life or burned for energy. ABS pipe and fitting manufacturers currently use their own "in-house" rework ABS material (recycled) within their manufacturing processes.

For example, during production, some pipe and fittings must be scrapped until the tool and die reaches thermal equilibrium. This "start-up" material can be reworked and converted back into ABS pipe and fittings. Standards processes to expand the use of recycled ABS plastic pipe and fitting material into new products continue through ASTM.

ABS pipe systems do not corrode. All thermoplastics can be recycled and reused.

Lightweight

ABS plastic pipe is a lightweight pipe material commonly used. A 10-foot length of 3" ABS cellular core pipe weighs just 7 pounds. A metal pipe of the same size weighs between 21 and 70 pounds. This represents a 66-90% weight reduction when using ABS pipe. The lighter weight of ABS pipe translates into a safer work environment, reduced hours to install, a reduction of the need for heavy lifting equipment, and lower transportation costs and impact.

ABS pipe is the preferred choice for many installers of drain, waste, and vent (DWV) systems.

Resistance to Ignition

Flashpoint is the minimum temperature required for a material to produce a gas that will ignite when subjected to a flame. **Auto ignition** is the minimum temperature at which point the material will catch fire without a flame present.

ABS material has a higher resistance to heat and fire than some types of wood commonly used in building construction.

Material	Pine Wood	ABS Pipe
Flashpoint (oF)	550-600	730-752
AutoIgnition (oF)	800	923-950

ABS pipe requires less techical skills to install and saves on construction costs.

Ease of Installation

The joining of ABS pipe does not require open flames (for melting of solder). Installation is accomplished using an easy “one-step” primerless solvent cementing system, which is very quick. This helps further to conserve resources and workforce while requiring less technical skill to install. An ABS DWV installation in a typical two-bathroom home can be completed two to six hours faster than with other materials compared to metallics.

Cost Benefits

Pipe systems made with ABS material can be half the cost of metallic alternative materials. This can save a significant amount on construction costs.

Construction cost savings can be applied to obtaining other green building credits or applied to upgraded insulation or HE appliances which will further improve the building’s overall performance rating.

Conclusion

ABS pipe is a popular choice for many homeowners and builders because it is durable, cost-effective, and ideal for drain, waste, and vent systems (DWV). Its sustainability, recyclability, and low-energy production requirements reduce environmental impact.

ABS pipe is also corrosion-resistant, lightweight, and easy to transport, setting it apart from traditional metal pipes. Additionally, it offers cost benefits, including lower material costs and quicker installation times, making it the preferred choice for many plumbing and pipe applications.