PRODUCT OVERVIEW

PVC VS. ABS PIPE

DWV PIPE

FIRE PROPERTIES

Flame Spread

Flame spread is the tendency of a material to spread a flame away from the fire source. There are a variety of flame spread tests, but the Steiner Tunnel Test in ULC S102.2 and ASTM E84 is commonly used to assess flame spread for building materials.

The flame spread index range for standard rigid PVC (between 10 and 20) is a fraction of the range for standard ABS (between 200 and 275).

Heat Release

The maximum rate of heat release will indicate the potential size of the fire and the possibility that it may ignite surrounding materials.

A review of results from various materials tested to ASTM E1354 at an incident heat flux of 20 kW/m2 shows peak rate of heat release of ABS to be 200 kW/m2 or above, while the same values for PVC are below 100 kW/m2.

Ease of Extinction

This property is a measure of the ease in extinguishing a burning material. It is measured by Limiting Oxygen Index (LOI) according to ASTM D2863; materials which have a higher LOI will be easier to extinguish.

LOI values for PVC (47) are approximately double those of ABS (18).

SOUND DAMPENING

A study done for CMHC indicated that PVC cellular core DWV pipe had lower sound pressure levels (dBA) than ABS cellular core DWV pipe for all installation scenarios (vertical, horizontal, enclosed, bare) tested.

BEAM STRENGTH

The higher Modulus of Elasticity of PVC provides greater beam strength for a length of pipe than ABS, reducing the amount of sag when compared to ABS.

CHEMICAL RESISTANCE

For general usage, PVC Cellular Core DWV pipe exhibits better chemical resistance than ABS Cellular Core DWV pipe.

SALES INFORMATION/COMPARISON

U.S. Sales

- PVC Cellular Core DWV pipe is used in every state in the U.S.
- In 2017, U.S. sales were 288 million lbs, 76% of single family residential DWV market versus ABS Cellular Core DWV pipe, which has sales of 70 million lbs, mainly in California, Oregon, Washington and Arizona.
- For the U.S. states bordering Canada, sales in 2017 of PVC Cellular Core DWV pipe was 35 million lbs (1296 Truckloads), demonstrating successful installation and use in cold weather climates.

Canada ABS DWV Market

- ABS Cellular Core DWV market now accounts for 35 million lbs
- Total ABS DWV Market (Single Family Homes) is comprised of 70% Cellular Core and 30% Solid Wall DWV Pipe
- Since introducing Cellular Core ABS DWV pipe, market acceptance has grown to the point where cellular core is used more than solid wall.

= States that use mainly PVC Cellular Core Pipe for single family dwellings (35 million lbs in 2017, 1296 Truck Loads)

References

C.E. Wilkes, J.W. Summers, C.A. Daniels (Editors). *PVC Handbook*. 1st Ed. 2005
Canada Mortgage and Housing Corporation, Technical Series 02-117, *Research Project on the Noise Produced by DWV Pipes Made of Cast Iron, PVC and ABS*. February, 2003
Plastic Pipe and Fitting Association (PPFA), Marketing Data from reporting member companies.

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