

Durastream™

CPVC COMPOUND

Durastream CPVC Compound for Profiles



High quality Durastream CPVC is heat resistant, flame retardant compound, available in a variety of colors perfect for building components like siding substrates, windows, doors, ceilings, and fences.

Parts made of Durastream compounds maintain shape and color without deformation and physical property, even under elevated temperatures. The cost efficiency of Durastream products can be seen initially during manufacturing, and long term through longevity of components.

ADVANTAGE OF CPVC PRODUCTS

HIGH HEAT RESISTANCE

Heat Resistance is 10-40 higher than PVC, resulting in less shrinkage

GREAT FLAME RESISTANCE

Burning CPVC will self extinguish under normal atmospheric condition of oxygen

LESS SHRINKAGE WITH ELEVATED TEMPERATURE

1-2 % less shrinkage when compared to PVC

ANTI-CORROSION

Good chemical resistance under acidic and alkali conditions

RELATIVELY LOW COST

CPVC is reasonable priced when compared to other engineered thermoplastic materials



DECK OR WPC PRODUCTS



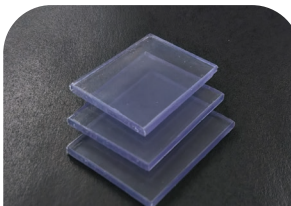
WINDOW PROFILE



SIDING



FENCE



INDUSTRIAL OR BUILDING PLATES

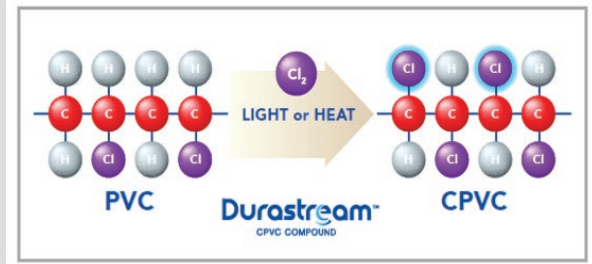
PROFILE APPLICATIONS

WHAT IS THE DIFFERENCE BETWEEN CPVC AND PVC?

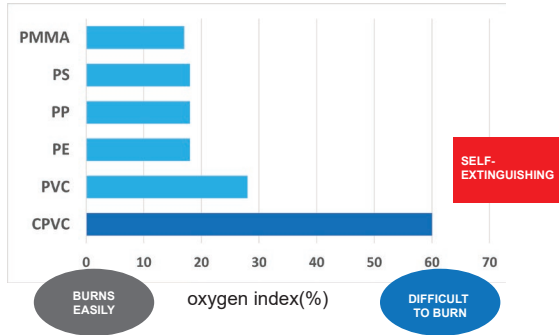
PVC (polyvinyl chloride) is a trusted thermoplastic often used for piping and fitting in residential and commercial building applications.

CPVC (chlorinated polyvinyl chloride) is a PVC homopolymer that is produced through a chlorination reaction involving either heat or light. Chlorine (Cl₂) is added to the PVC and reacted through a basic free radical mechanism. See the figure below.

The resulting CPVC resin is more resistant to heat, pressure, and fire than the PVC it came from. The degree chlorination for CPVC is linked to this improved performance. For example, if the degree of chlorination is increased by 1%, HDT (heat deflection temperature) would likely increase 4-5%.



BURN RESISTANCE



When exposed to fire, Durastream CPVC will self extinguish under normal atmospheric condition. According to NASA, Earth's atmosphere is composed of 21% oxygen. Durastream CPVC will self extinguish under normal atmospheric conditions because CPVC needs approximately 60% oxygen content to continuing burning. Durastream CPVC also resists ignition for these same reasons.

Oxygen Index Testing

This test is used to determine the flammability of plastics by comparing the limiting oxygen index (LOI).

Note that the flame retardancy improves by increasing chlorine contents; the LOI of CPVC is double that of PVC.

FLAMMABILITY AND FLAME SPREAD

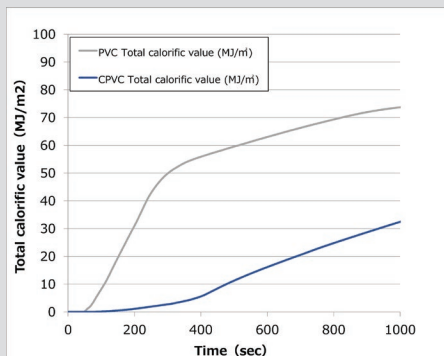
The flammability of Durastream CPVC has been tested and trusted for many years in fire sprinkler pipes, aircrafts sheeting, and window profiles.

Durastream CPVC has achieved the highest rating of V-0 under the UL 94 flammability standards. The V-0 rating indicates the specimen did not burn with flaming combustion for more than 10 seconds after either application of the test flame.

Plastic	JIS standard	UL94
	oxygen index(%)	Combustion test
CPVC	60	V-0
PVC	28-38	V-0
PE	18-19	HB
PP	18-19	HB
PS	18-19	HB
PMMA	17-18	HB

FIRE PERFORMANCE

Calorific value is a measurement of total energy released as heat when a substance undergoes complete combustion with oxygen. CPVC has less calorific value than PVC and therefore improved flame retardancy, as can be seen by comparing both materials' ignition timing. PVC starts igniting after 40 seconds, whereas CPVC start after 335 seconds. Durastream CPVC also has lower smoke generation rates.

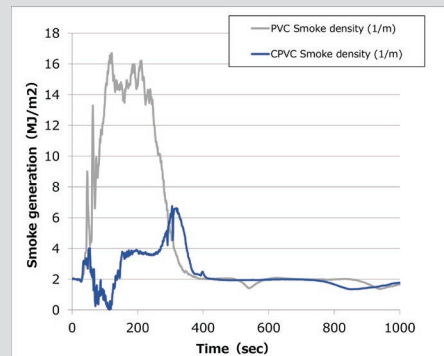


- Test condition Radiation amount 50.0kW/m² (heater temperature 740°)
Sample distance 25mm Test time 1000s
 - Test machine Toyo Seiki Corn Calorimeter III
- This data does not guarantee performance. It represents the actual values measured.

① PVC ignition (40s)



② C-PVC ignition (335 s)



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WEATHER INDUCED DEFORMATION

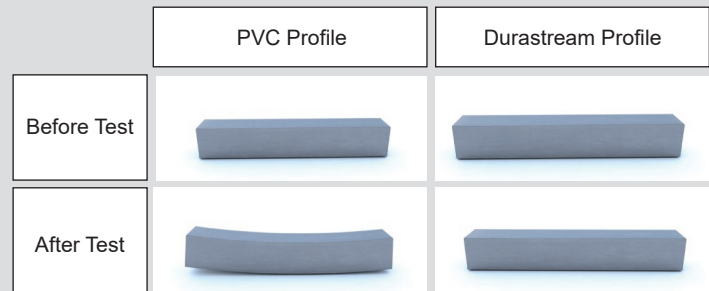
Building profiles used in window frames, siding, decks, and fences are exposed to the elements; temperatures rise during the day and fall at the night. Due to this temperature cycle, the mold profile expands and shrinks daily, causing damage and degradation of the profile over time.

Drawing on decades of experience and testing, Durastream CPVC products utilize a unique blending technology that mitigates shrinking and bending.

	Results	Remark
DURASTREAM CPVC	0.7-0.9%	No curvature
CPVC Other supplier	1.5-3.0%	Curvature
General PVC	2.0-2.5%	Curvature

This data does not guarantee performance. It represents the actual values measured.

Test standards: JIS A5558
 Evaluation temperature: 100°C (212F)
 Evaluation time: 1 hour
 Test Standard criteria: Shrinkage less than 2.5%



PVC profiles are more likely to bend than Durastream CPVC

HEAT STORAGE AND EXTERIOR APPLICATIONS

As mentioned previously, profiles used in window frames, siding, decks, and fences are at risk for deformation due to daily and yearly heat variances. Thermoplastics that absorb or store this heat will undergo greater deformation.

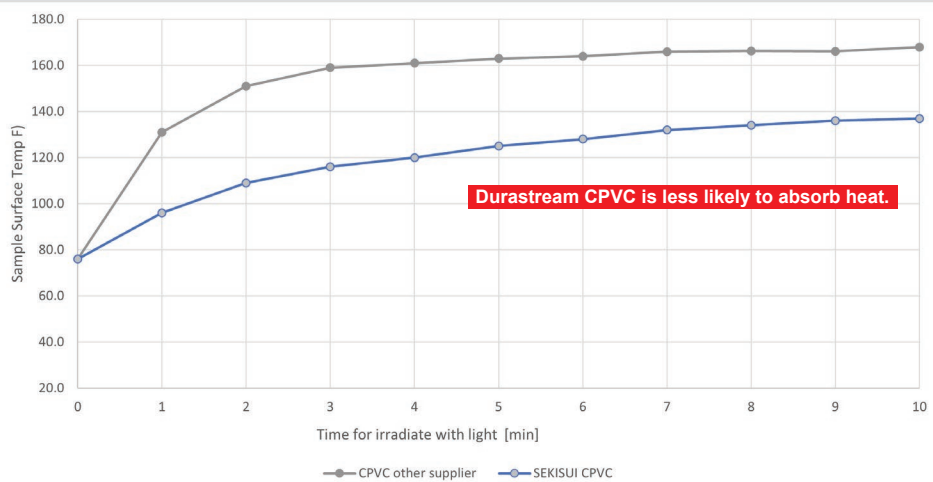
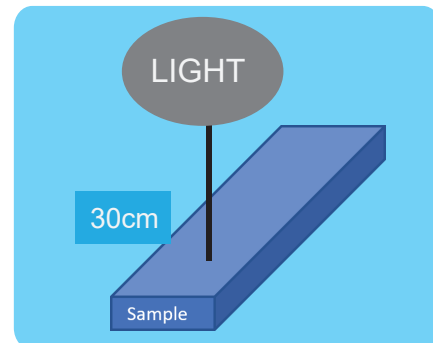
The testing below demonstrates Durastream CPVC's lower heat absorption rate when compared to competitor CPVC compounds. This feature is one of many competitive benefits of Durastream CPVC compound.

Evaluation

Light source: 3 Infrared lamp
 Temperature measurement instrument: Non-Contact Thermometer
 Distance between Light- Sample: 30cm

Test process

- ① Irradiate the sample with a light source at distance of 30cm from the top
- ② Measure the sample surface temperature every minute
- ③ Irradiate for 10 minutes and complete



Durastream CPVC is less likely to absorb heat.

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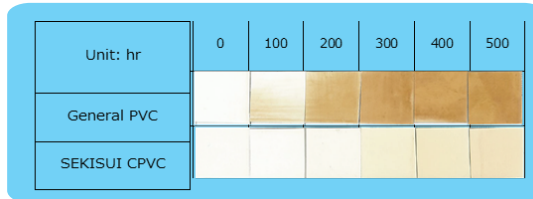
WEATHERABILITY

UV Exposure

Profiles and siding used on building exteriors can also become discolored or deteriorated due to heat and UV exposure. Through extensive testing and development, SEKISUI has developed Durastream CPVC to be more color stable than competitor materials, even in direct sunlight and heat. Durastream CPVC is also compatible with other thermoplastics commonly used for outdoor applications.

1. Evaluation condition
- | | |
|-------------------|---------------------------------------|
| Test Equipment | UV long life fade meter |
| Room temperature | 40° (104 F) |
| Panel temperature | 63° (145 F) |
| Evaluation time | 500 hours (Every 100 hours, Sampling) |

2. Test Results

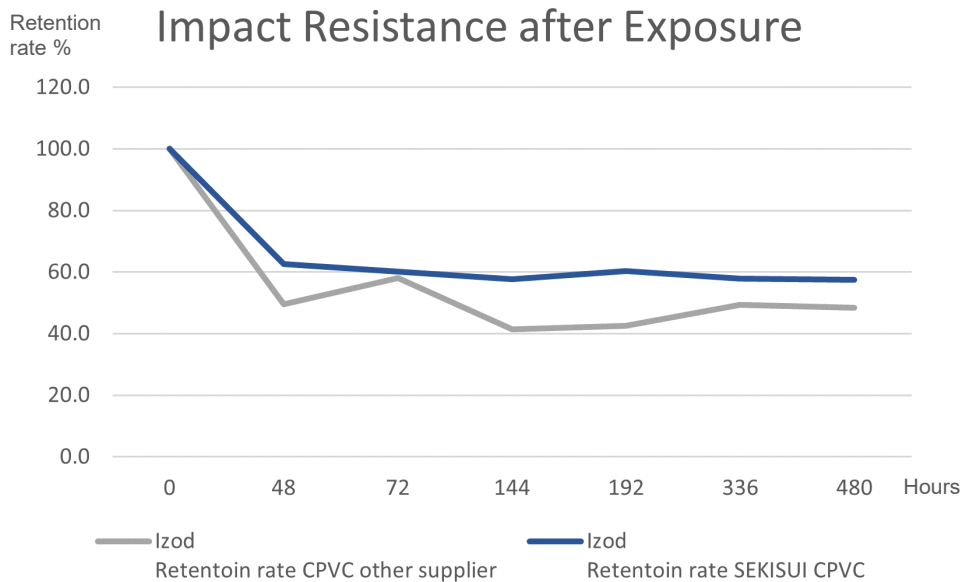


Test of impact strength

Continuous exposure to ultraviolet rays can cause damage to the integrity of the thermoplastic in use. Beyond discoloration, the material can also become brittle and more prone to failure. Impact resistance retention rate (IZOD) is a great method to measure and compare the level of deterioration and structural integrity of any material. This evaluation recreates continuous exposure to sunlight, and higher retention rate imply less deterioration and higher remaining impact strength. Results clearly show Durastream CPVC maintains impact strength better than competitor materials in continuous sunlight.

1. Test condition
- | | |
|-------------------|---------------------------------------|
| Test Equipment | Dew Panel Light control weather meter |
| Cycle | Irradiation - Wet 4-hour cycle |
| Panel temperature | 63° (145F) |
| Evaluation time | 480 hours |

2. Impact resistance after exposure



This data does not guarantee performance. It represents the actual values measured.