PROTECH
Powder Coatings
Innotek OXYPLAST THERMOCLAD CHEMIONICS CORPORATION

HOT MELT PLASTISOLS

Hot melt plastisol is a liquid dispersion of PVC (vinyl) resin, plasticizers, heat stabilizers, and a variety of other additives. These plastisols can be custom formulated to achieve a wide variety of properties, which include hardness, color (including clear), surface finish, density, and resistance properties such as flame and weather. Hot melt plastisols can also be formulated to meet regulatory compliance such as Non-Phthalate and California Prop 65 requirements.

Primary applications for plastisol hot melts are soft plastic fishing lures and molds for casting artificial stone. Hot melt plastisols have excellent heat stability and flow properties, enabling the end-user to pour or inject the hot plastisol into room temperature molds or mold boxes. When the plastisol is cooled, it is transformed into a soft, rubber-like material.

THE PROCESS:

Hot melt plastisol is a low viscosity liquid material.
The plastisol must be heated to a high enough temperature for proper flow and fusion to occur.
Typical processing temperatures are 325°F to 365°F to ensure proper flow and fusion.
As the plastisol is heated, it will change from a liquid state to a semi-solid state.
The plastisol will remain in a semi-solid state until it reaches a temperature of ~325°F.
After the plastisol reaches ~325°F or higher, it will return back to a liquid/molten state.
Continually agitate the plastisol while heating in order to keep even heat distribution.
Slow agitation, which scrapes the surface of the heating vessel, is essential to avoid scorching.
Excessive heat will cause the plastisol to degrade and discolor.
Pouring the hot melt plastisol into the mold/mold box should be done in a slow, uniform manner.
Pouring too quickly can result in air bubble entrapment in the finished part/mold.
If the use of recycled (solid) hot melt plastisol is desired, cut into small sections.
Add the recycled hot melt plastisol to the heating vessel, while heating fresh plastisol (325°F+).

EQUIPMENT:

Industrial melters with built-in stirrers are typically used to process hot melt plastisols.
Microwave ovens, as well as conventional ovens, can also be used.
Preferred materials for the heating vessel are aluminum, stainless steel, nickel, porcelain, or glass.
Temperature controlled heating vessels, which apply even distribution of heat, is important.
Operating temperatures of the heating vessels from 400°F - 450°F are common.
Keep the temperature of the hot melt plastisol below 375°F.
Care must be taken to not scorch the hot melt plastisol while being heated.
Maintain the level of plastisol at half to two-thirds of the capacity of the melter to avoid burning.
Operating parameters are dependent on size, efficiency, and age of the heating vessel.

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STONE MOLDS:

Pour the heated hot melt plastisol over the non-porous master, fastened to a mold box.
A preheated master is beneficial in increasing the flow properties of the hot melt plastisol.
If desired, preheat the master to ~200°F prior to pouring the hot melt.
Pour the hot melt plastisol in a uniform, continuous manner to avoid air bubbles.
Coat the surface of the master first, and then fill the rest of the mold box with hot melt.
A smooth even coating of hot melt over the surface of the master is important.
When the plastisol is sufficiently cooled, it can then be removed from the mold box.

Standard Hot Melt: Shore A 24
Corner Mold Hot Melt: Shore A 40
Custom formulations are also available.

Please contact us for a list of companies who can supply hot melt processing equipment.

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ISO 9001:2015