Polyvinyl Alcohol (PVA) Mold Release

The use of Polyvinyl Alcohol (PVA) as a Mold Release Agent

The Release Agent PVA has two solvents, methylated spirits (denatured alcohol) and water. This solution is a film-forming agent, which upon drying will form a release film. PVA assists in demoulding with water, as it is water-soluble.

When is PVA used?

PVA is used as an additional aid for release with mold release waxes in the following situations:

a) Release of fiberglass molds from plugs or patterns under low temperature conditions or where there is concern of undercure in the plug.

b) The removal of fiberglass components from molds:

(i) First three parts from new molds if mold not fully cured, i.e.: "insurance" coat over newly waxed surface.
(ii) Complex shapes, in particular on male molds where parts shrink on to the mold.
(iii) One-off parts from poor mold surfaces, e.g. old molds brought back into service.
(iv) Where difficulty of release is experienced.

Preparation of Surface

PVA must not be applied to any surface that contains moisture, e.g. plaster or damp timber; nor should it be applied to surface coats or molds which are alcohol or water-soluble.

The surface of the mold must be free from foreign matter, especially silicone-based products. Clean the surface of the mold with suitable solvent such as mineral spirits, toluene, or styrene, and allow to dry thoroughly.

Mold release wax is then applied according to data sheets. Hard waxes, such as TR regular and Hi-Temp, are generally used for smooth surfaces. Softer waxes, such as Partall #2, are generally used for filling rough surfaces, such as a Hawaiian tiki.

Application of PVA

PVA may be sprayed, or hand applied, using a sponge of good quality. The best results will be obtained by spraying a fine mist at 90 to 100 psi. First, apply a mist coat and then follow with a heavier coat. Do not apply a wet coat that melts the coats underneath and causes runs or drips. One should not flood the surface with PVA but just enough to achieve an even film. If drying time is too slow, up to 5% of 80 parts methylated spirits, 20 parts water blend may be added as thinner (denatured alcohol). The positive test for adequate film dryness is dry-to-touch.

The dye, which is added to PVA to assist in obtaining an even film, may stain the hands, so we suggest wearing rubber gloves.

One quart will cover approximately 80 – 90 sq. feet.

Normal drying time is 15-30 minutes. Shelf life – 12 months maximum. Do not use PVA which has become lumpy or stringy.

Hot air heaters tend to blow dust on to the film, which results in pits on the article; it is preferable to heat the mould by radiant heat for improved drying. Remember do not try to laminate over a damp PVA film; always allow to dry completely or undercure and certain stick-up will result.

Cleaning after removing part from mold

Wash the article with water; this will remove all the PVA. For a high finish, wax and polish the article with a recommended wax system. Some PVA may remain on the mold and this must also be washed off.

PVA does not leave as smooth a surface on the part as polished wax. PVA should be used on a new mold as infrequently as possible (normally first 3 parts) in order to avoid having to polish or refinish the part after it comes out of the mold. When the PVA film comes off the mold on the part, that indicates the wax is working and PVA is no longer needed.

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