Henkel Technologies

Technical Information Bulletin

TURCOFORM MASK 537-42

Introduction:

Turcoform Mask 537-42 is a one-package hand strippable, protective coating, which possesses a high degree of chemical resistance.

This product is an improved version of Turcoform Mask 537 and gives outstanding protection against corrosive action of hot alkaline and acid solutions and was specially developed for use in the Chem Mill process.

This product incorporates the latest formulation improvements. These are, a high build-up capability (usually two dip applications will give up to 13 mils or 300 microns dry film thickness), a high bubble release capability; and easier flow detection made possible by a fluorescent film. It is conveniently packaged at ready-to-use viscosity for dip application.

This material meets Air Pollution Control Districts' Rule 66 in Los Angeles County, and Regulation 3 in the Bay Area.

Liquid Properties:

Viscosity at 25°C	38 - 42 sec. Zahn Cup 5
Solids content by weight	22 ± 2
Specific weight	1.54
Storage life at 25°C	1 year minimum
Colour	Light green
Flash point T.O.C.	Above 90°C

Film Properties:

Tensile strength	1000 psi min.
Elongation at rupture	580 - 610%
Peel adhesion g/2.5 cm on aluminum	
Before etching	380 - 400 g
After etching	600 - 800 g

Hazardous Properties:

Read precautionary information carefully before opening.*

CAUTION: Prolonged exposure to high concentrations of vapour may cause irritations to eyes and

respiratory tract. Contains chlorinated hydrocarbons. Avoid contact with skin and eyes.

Avoid prolonged or repeated breathing of vapour. Do not take internally.

* Open container carefully to avoid spurting.

Shipping Containers:

100 litres full open top, boltring closure, nonreturnable coated steel drum and 20 litres nonreturnable conipail.

Film Thickness:

A dry film thickness of 250 microns (10 mils) normally provides adequate protection in processing aluminum and magnesium. A minimum of 300 microns (12 mils) is recommended for steel and titanium, since some deterioration of the film occurs in this etchant.

Number of Coats:

Turcoform Mask 537-42 will provide the required film thickness in two coats depending on the use temperature. (See the attached diagram.)

Viscosity:

In principle the product is used as received with the indicated viscosity of 38-42 sec. Zahn Cup at 25°C.

Selection of Reducing Thinner:

Depending on local temperature/humidity conditions and part size, xylene, toluene or Turcoform Mask Thinner 4 may be used to control the viscosity. When fast evaporation solvent is desired, for example during the cold season, toluene may be used.

Do not add too much toluene, as this will substantially lower the flashpoint of the material. Additions of TFM Thinner 4 will not change the flashpoint of the product.

Cure Schedule:

Aluminium and Magnesium Processes:

Air cure schedule: After final coat of mask is tack free, allow film to cure for 4 to 24 hours minimum, depending on temperature/humidity conditions, before etching.

Oven cure schedule: After air curing 2 to 4 hours, mask may be oven cured for 30 minutes at 105°C to speed the curing cycle.

Steel and Titanium Processes:

Air cure schedule: Overnight air cure; no oven necessary.

Oven cure schedule: After air-curing 2 to 4 hours, mask may be oven cured for 30 minutes at 105°C.

Directions for Use:

To assure uniform and reproducible results in applying mask, adequate mixing of the solution is

necessary, prior to and during use. Caution should be exercised to prevent air from being drawn into the mask by the mixing action. Since some solvent is lost to the atmosphere during use, periodic additions of thinner, based on viscosity measurements, are required.

After measuring the viscosity with a 5 Zahn Cup, adjust to the desired operating viscosity with thinner.

In dip and flowcoat systems, a filter is necessary to remove foreign matter or partially cured particles of mask, which may fall into the solution. Avoid excessive heat and drafts on wet film, as these can cause undesirable "skin-drying" of the film. Heat or ventilation used to force the drying of wet film, should be applied only if the user observes that film quality is satisfactory under these conditions.

Dip Applications:

Although Turcoform Mask 537-42 contains anti-settling agents, proper circulation of the mask in the dip tank is recommended, to avoid dipping into run-off (drainage of excess mask) from previous parts.

a. Use mask as received, but verify proper viscosity.
b. Slowly immerse clean part into the mask, up to but not over the top edge of the part. Avoid dipping a part rapidly into the mask, as this introduces air and creates bubbles in the film. Remove part from dip tank.
c. Allow part to dry until the film is tack free; rotate 180°; and recoat. Film build-up should be within the desired thickness now.

Using a dip application of the Mask 537-42 has several advantages over spray applications.

A dip coating in general contains more solids and less solvent and is subsequently less expensive per covered surface of metal.

Furthermore, there is no over spray.

Also on the environmental side the lower solvent content is an advantage, as it will lead to a lower concentration of solvent vapours in the air.

The unique properties of Turcoform Mask 537-42, producing the desired coating thickness in two coats offers the possibility to have a controlled evaporation in a closed area with a solvent reclaim system. This with respect to future environmental regulations on the use of solvents. For more information contact your Turco representative.

Flow coat Application:

1. Dilute mask with thinner to desired flowcoat viscosity.
2. Flow mask onto clean part. Avoid flowing over the top of the part, as this creates bubbles on the backside. Flow nearly to the top leaving a narrow strip of bare metal. This will be coated when the part is reversed. On subsequent coats, likewise leave a narrow strip uncoated.
3. Allow part to dry until the film is tack free; rotate part 180°; and recoat.
4. Repeat cycle until desired film build is obtained.

Cold or Hot Airless Spray Application:

1. Reduce mask to a viscosity of 13 to 18 seconds in a 5 Zahn Cup, using a blend of toluene/ xylene, 1/1; or Turcoform Mask Thinner 4.
2. Use Graco Tip 163-817, 163-721 or 163-719. The Reverse-A-Clean nozzle facilitates cleaning clogged tips.
3. Use 145-160 bar fluid pressure.
4. Application of mask:
    a. Apply one horizontal coat, one pass with 50% overlap.
    b. Apply one box coat (one vertical pass, one horizontal pass)
    c. Allow drying.
    d. Apply two boxes coats, allowing suitable drying time between coats.
    e. Film build should be 10 mils.
5. Hot application should provide film build equal to cold spray in one less coat.
    a. Temperature, 65 - 80°C; backpressure, 100 bar.

ADDENDA:

For most applications the standard Turcoform Mask 537-42 will be satisfactory. For some applications though, a more resistant mask is required and for those applications Turco has made an improved version of TFM 537-42 called Turcoform Mask 537-42-HT with a red dye.

This material is more resistant to oxidizing solutions, acids and temperatures upto 180°C for one hour. Main applications are found in galvanic and heat treatment processes.

General specifications are similar to those of Turcoform Mask 537-42.

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