



COMMON PROBLEMS WITH FAST SET URETHANE COATINGS



Storage

- Storing in cold temperature even as high as 65°F may cause some components to freeze or gel.
- Keep drums / pails on pallets or insulation and off of cold floors.
- Precondition material to 70-90°F prior to use.

Contamination

- **Moisture and other foreign contaminants can adversely effect cure and can cause foaming of the material.**
- **Drums left open for an excessive length of time**
 - ➔ **Nitrogen or dry air purge can reduce this problem.**

Improperly / Unmixed Material

- Material loses key physical properties.
- Causes foaming.
- Produces color variations.
- Cure problems.

Application on Moist / Wet Surfaces

- Urethanes are moisture sensitive and their application on wet and/or moist surfaces can cause foaming and/or blistering as well as poor surface appearance.
- Loss of adhesion

Incorrect Material Selection

- **Choosing the wrong material can result in heat sagging, poor impact resistance or poor aesthetics.**

Surging Spray Pattern

- Tip is too large.
- Insufficient or intermittent air or hydraulic supply to the pump.
- Worn packings in the pump lowers.
- Cavitation in the transfer or proportioning pumps.

Lack of Spray Pattern

- No material being supplied to the spray gun.
- Lack of fluid pressure.
- Worn tip.
- Oversized orifice.

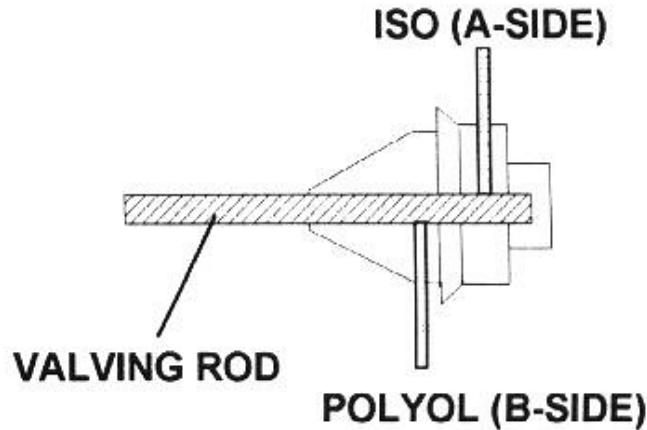
Tails

- ↗ **Material too viscous.**
- ↗ **Dirty or clogged gun.**
- ↗ **Poor atomization.**

ISO Spit Blistering

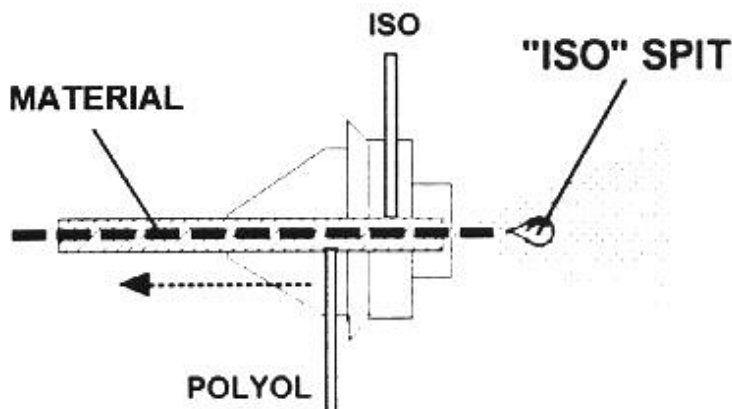
**ALWAYS
TRIGGER
OFF THE
SURFACE**

The valving rod has both "ISO" and polyol ports closed.



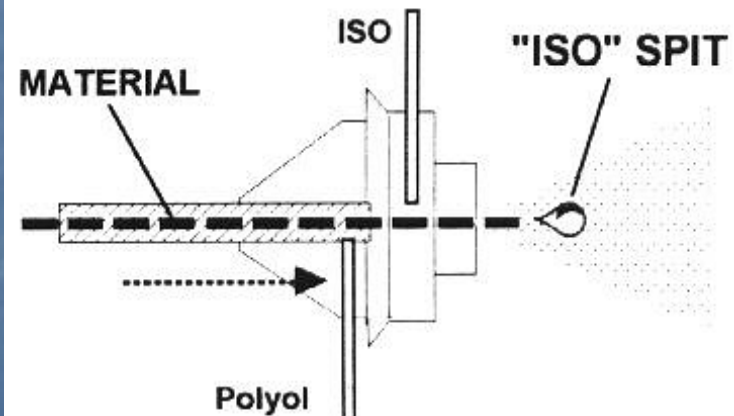
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Valving Rod Opening



The valving rod allows the remaining ISO to begin spraying out of the module chamber before the polyol port opens up.

Valving Rod Closing



When you stop spraying, the valving rod moves forward and blocks off the polyol hole first so there is a short burst of "ISO" that's allowed to spit out before the "ISO" port is closed.

Large Blisters

(1" - 12" diameter)

Using Fast Set Materials

- Spurt of off-ratio material.
 - Usually a different color.
 - May not be immediately apparent.
- Poor or inadequate mixing in the mixing chamber.

Large Blisters

(1" - 12" diameter)

Using Fast Set Materials

- Second coat applied prior to the cure of the first coat (a.k.a. “thermal blistering”).
- Transfer or proportioning pumps are cavitating.
- Solvent blistering as a result of residual cleaning / flushing solvents.

Large Blisters

(1" - 12" diameter)

Using Fast Set Materials

- **Substrate contamination (i.e.: oils, silicone or release agents).**
- **Moisture on the surface.**
- **Fingering in the spray pattern.**
 - **Poor mixing and independent streams of "A" & "B" streams being sprayed.**

Small Blisters

(<1" diameter)

Using Fast Set Materials

- Thermal blistering.
- Material temperature.
- Recoat window.
- Triggering the spray gun on the surface.
- Moisture.
 - High Humidity
 - Contamination of material
 - Wet substrate

Small Blisters

(<1" diameter)

Using Fast Set Materials

- Solvent blistering as a result of residual cleaning / flushing solvents.
- Micro blistering or foaming
 - Air entrapment during mixing
 - Air entrapment during spraying
 - Moisture on the substrate
 - Too much material applied at one time or too quickly.
- Surface contamination with oils, etc.

Regularly Occurring Blisters At/Near Lap Areas

- Off ratio or a poorly mixed spurt of material.
 - May be different color.

Soft, Gummy or Tacky After Adequate Cure Time

- Inadequate mixing.
- Impingement mixing atomization too coarse.
- Sprayed off-ratio.
 - One or both components too cold, producing cavitation of transfer or proportioning pumps.
 - Pre or line heaters not set high enough to produce balanced flow to the gun.
 - Restrictions in the fluid system.

Soft, Gummy or Tacky After Adequate Cure Time

- **Moisture settling on the surface.**
 - **Fog.**
 - **Dew.**
- **Moisture on the surface during application.**

Foaming or Microcellular Structure

- ↗ **Excessive temperature**
 - ↗ Fluid system
 - ↗ Exotherm
 - ↗ Substrate
- ↗ **Moisture**
 - ↗ High humidity
 - ↗ On substrate
 - ↗ In material
- ↗ **Tip too small or atomization too high.**

Runs & Sags

- ↗ **Material temperature too low.**
- ↗ **Excessive coating thickness.**
- ↗ **Off ratio material.**

Pinholes

- ↗ In substrate (out-gassing)
- ↗ Moisture contamination of material.
- ↗ Moisture on the substrate.
- ↗ Excessive heat.
- ↗ Over atomization.

Fish Eyes

- **Surface contamination.**
- **Oils**
- **Silicone**
- **Release agents**
- **Material not wetting out and covering the surface.**

Adhesion

- **Insufficient surface preparation**
- **Incorrect primer selection**
- **Recoating outside the recoat window.**

Mottled Gloss, Gloss Too High, Tacky Surface

- **Off ratio - “A” rich**
 - “B” too cold to pump producing cavitation.
 - “B” side obstruction - will usually reflect on gauges.
- **Improper or inadequate mixing.**

Dull Gloss

(Fast Set)

- **Off ratio material**
 - Normally excessive “B” but may also be “A”.
 - May also show slow cure & film properties.
- **Material temperature too high.**
- **Peak exotherm too high.**

QUESTIONS

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777 Futura Coatings