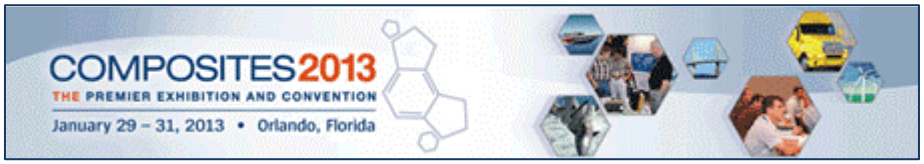

New Strategies for Improving Release & Reducing Scumming in DCPD, Epoxy and Urethane Molding

Presented by:

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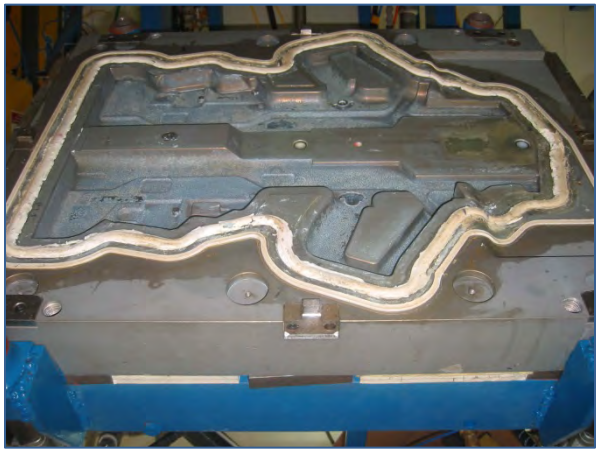
AXEL

What Limits Productivity?

- Buildup
- Scumming
- Poor release

Especially in closed molding

Especially with DCPD, urethane, hybrid resins



Understanding /Controlling the Problem at the Source

- Process differentials
  - resin type
  - part requirements
- Mold construction (substrate, geometry etc.)
- Selection of polishes, cleaners, sealers and release products
- Application and handling of release products
  - equipment
  - “hygiene”
- Cure and temperatures
  - resin
  - mold sealer and release

Mold Construction (construction, geometry etc.)

- Requirement for primer or sealer
- Frequency of release application / Touch-up
- Choice of release product

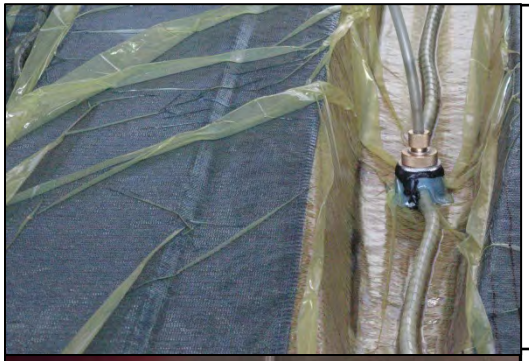
Case History: Difficult Mold Geometry

- Resulted in poor release
- Required Frequent application of release
- Resulted in buildup and mold damage
- Customer decided to gelcoat the part to resolve the problem

After Auditing the Process:

- New release product initiated
- Gel coat no longer required to assure release – labor/cost reduced
- Molds no longer constantly damaged

Process Differentials / Resins

	**INFUSION**	• Long dwell time. ❖ Requires chemically resistant release.
	**PU RIM**	• Detailed geometry of part • Mold geometries can be very complex ❖ Highly reactive resin /requires highly cross-linked, well cured release
	**Compression Molding**	• High pressures abrade release • Plant conditions difficult for controlling application of semi-perm ❖ Sacrificial mold release may be more suitable ❖ Internal mold release should be considered

Process Differentials / Resins

These factors are particularly important in closed molding and when using DCPD, epoxy, urethane and many hybrid resins

- Resin cure
  - poor cure contributes to buildup and poor release
  - check barcol hardness
  - de-mold at optimum time
- In process maintenance
  - touch-up schedule
  - periodic cleaning

Case History: Process Control in DCPD resin

- Wet styrene is visible when molds open
- Buildup on molds from poor release and over application

❖ Introduced periodic quick acetone wipe

❖ Introduced touch-up schedule based on mold geometry

Material Selection

Applies not only to mold release, but also to all products used in mold preparation:

- **Compounds and polishes**
- **Cleaners**
- **Rags**
- **Gloves**

Do you know what is in your polish or compound?

- Can be a source of streaks in mold release/sealer application
- Can compromise adhesion release/sealer to mold reduce longevity of performance
- Can cause premature hazing on mold surface or other cosmetic issues

Case History: Mold Prep & Material

Audit Findings

- Mold compound/polishes containing wax, animal fat or silicone
- Various types of rags, included in one box
- Use of latex gloves
- Gloves not disposed of between polishing, cleaning and release application

Case History: Mold Prep Materials

If the mold is clean, water or cleaner should wet the surface, not bead

Audit Recommendations

- **Addition of water-based stripper to remove residue from compound**
- **ONLY 100% cotton cloths for stripping and cleaning**
- **Blue paper “Shop Towels” for application of all semi-perms**
- **Disposable 4-8 mil nitrile rubber gloves ONLY! NO latex**
- **Dispose of gloves between EACH mold preparation process**

Case History: Flange Treatment

Audit Findings & Recommendations

- Flange wax is messy
- Buildup on flanges and edges requires hard scraping – results in damage
- ❖ Water-based flange and edge treatment is more effective

Application

Dedicated prep area

- Eliminate contamination from polishing, grinding, overspray , etc.

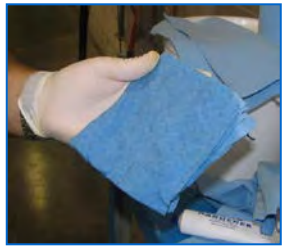
Proper lighting

- Lighting just above the height of the workers & Molds.
- Fluorescent lighting every three feet or less.
- Lighting on the side walls
- Floors & walls painted white
- Supplemental portable lighting if needed

Improve access for Application

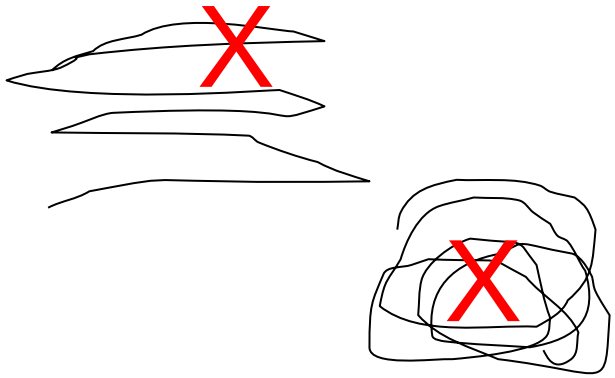
- Provide lifts, rotating cradles etc. when possible
- Avoid walking on molds
- Easy access ensures better release application

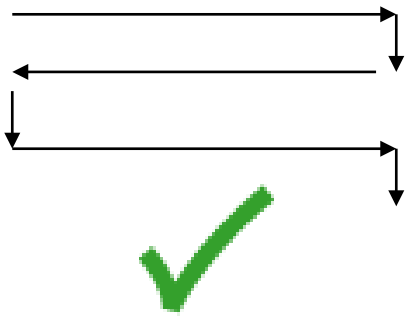
Application – Wipe-On Sealers and Releases



- Industrial paper towels work best for solvent based semi-permanents
- 100% cotton is better for water-based products
- DO NOT OVERAPPLY – multiple thin coats are better
- Use a controlled linear application with slight overlap
- Allow time for proper cure on semi-permanents

  This will vary depending on temperature and humidity





Application – Spray

- HVLP spray equipment with pressure pots are preferred
- Gravity fed guns cup guns can also be considered, but cannot be tipped at extreme angles
- Pressure settings and nozzle size will vary depending on mold size - proximity of application
- Air water separators valves should be used on feed lines; locate these close to gun
- Equipment should be totally stripped and flushed with cleaner after each use

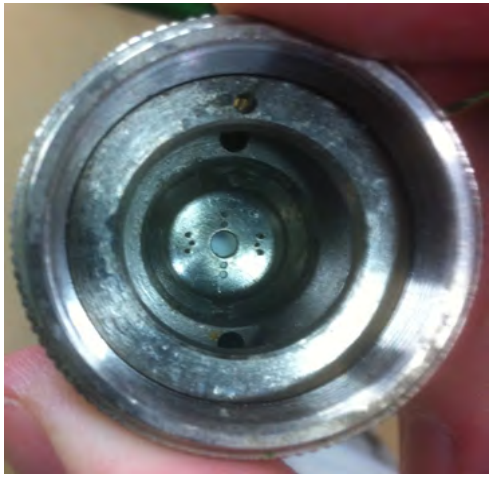
Storage & Handling

- No open cans of release
- No punching holes in cans to dispense products
- No rags stuffed in open cans
- Use proper dispensing bottles in production areas
- Store above freezing and bring up to ambient temperature before use.

Case History –
Material & Equipment Handling

- Customer experiences poor release, sticking
- Molds have buildup or resin and release

Case History –
Material Selection & Equipment Handling



Audit Findings & Recommendations

- Clean equipment after each use
- Use larger nozzle size to avoid plugging in use
- Use disposable pressure pot inserts – Dispose after use
- Alternative semi-permanent mold release recommended

  better release with less frequent application

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