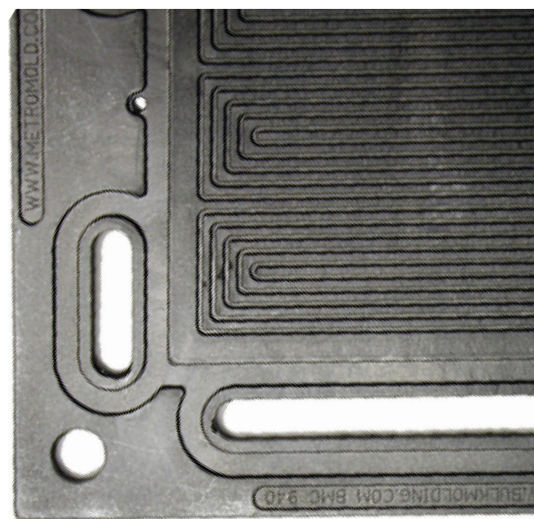
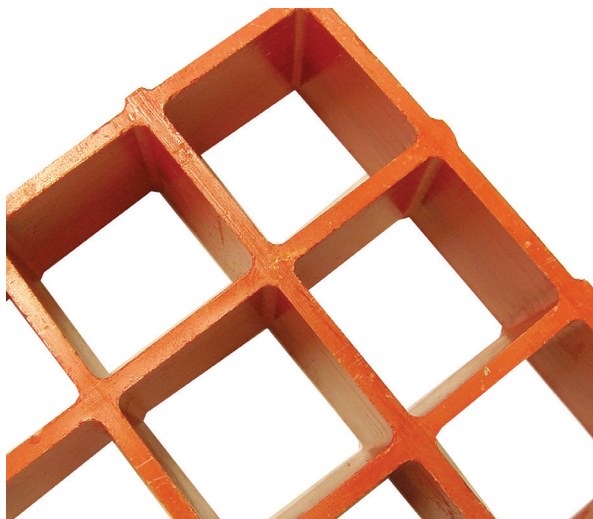


## Solutions for Composites: Internal Mold Release

- Excellent Release
- Specific Formulations Based on Resin & Cure
- Improves Flow
- Enhances Wetting of Reinforcements
- Promotes Dispersion of Filler/Color
- Better Parts with Improved Physicals & Gloss





Internal mold releases are typically used at addition rates of 0.25 – 1% based on resin weight; however, certain processes (like pultrusion), or high filler loadings may necessitate higher addition levels. For best results, pre-production evaluations should be conducted – please refer to AXEL’s technical document *Testing Internal Mold Releases for Composites*.

AXEL recommends adding internal mold release to the resin and mixing well before adding catalysts or accelerators. In two component resin systems it is best to add the internal mold release to the less viscous or less reactive component.

### Polyester & Vinyl Ester

| Peroxide Type / Group Classification   | MoldWiz® Products | Typical Application/Comments  |
|--|-------------------|---|
| <b>BPO</b><br>Diacyl Peroxide  | INT-54            |   |
|  | INT-542WT         |   |
|  | INT-1854          |   |
| <b>MEKP</b><br>Ketone Peroxide   | INT-15TBT         | For clear or white gel coats  |
|  | INT-937           | Open molding  |
|  | INT-EQ6           |   |
|  | INT-15TBT         |   |
|  | INT-DCP-220       | Difficult release and/or DCPD resin                                       |
|  | INT-DLP22E        |   |
| <b>AAP</b>   | INT-1838P         |   |
|  | INT-DLP22E        |   |
| <b>2, 4-Pentanedione</b><br>Ketone Peroxide  | INT-389A          |   |
|  | INT-15TBT         |   |
| <b>Perkadox®16 (Akzo)</b><br>Peroxydicarbonate   | INT-PS125         |   |
|  | INT-PUL24         |   |
| <b>TBPB Tertiary Butyl Perbenzoate</b><br>Peroxyesters   | INT-PS125         |   |
|  | INT-PUL24         |   |
|  | INT-PUL34         |   |
| <b>Perkadox®16 (Akzo) + Triganox®C (Akzo)</b><br>Two Tier Cures<br>Peroxydicarbonates + Peroxyesters | INT-PS125         | Pultrusion<br>NOTE: PLEASE REFER TO PULTRUSION GUIDE FOR MORE INFORMATION |
|  | INT-PUL24         |   |
|  | INT-PUL34         |   |
| <b>Dicumyl Peroxide</b><br>Dialkyl Peroxides   | INT-PUL24         |   |
| <b>Cumene hydroperoxide</b><br>Hydroperoxide   | INT-PUL34         | Often used with thick sectioned parts or vinyl ester resins               |
|  | INT-PUL24         |   |
| <b>Lupersol®231 (Atofina)</b> Peroxyketals   | INT-626HT         | Rapid molding and prolonged shelf life;<br>SMC & BMC                      |

## Epoxy

Typical loading level of MoldWiz® internal mold release in epoxy resin, is 0.5% - 1.5%, (5-15g/kg resin) based on resin weight, and depending on the type of molding process. Resin formulations with higher filler loading generally require higher loadings of internal release.

| Cure Type / Group Classification                                    | MoldWiz® Products | Typical Application /Comments   |
|---|-------------------|---|
| Aliphatic amines<br>Example: DETA                                   | INT-1846N2        | Neutralized to prevent acceleration of cure                                 |
| Aliphatic amines  | INT-1850HT        | For higher temperature processing<br>>350°F/175°C                           |
| Cycloaliphatic amines<br>Example: PACM                              | INT-1840          | For quick curing; filament winding  |
|   | INT-1846          |   |
| Aromatic amines, MDA & non-MDA based                                | INT-1857DC        | High temperature cures<br>>450°F/230°C                                      |
|   | INT-1888LE        |   |
| Acid anhydride<br>Example: phthalic anhydride                       | INT-1888LE        |   |
|   | INT-1890M         |   |
| Acid anhydride,<br>w/ tertiary amine or imidazole<br>Example: MTHPA | INT-1888LE        | Systems with high Tg; pultrusion  |
|   | INT-1324B         |   |
|   | INT-1846N2        | High temperature cures<br>>350°F/175°C; pultrusion                          |
| Anhydride<br>general purpose  | INT-1888LE        |   |
| Water dispersible amines or<br>polyamides                           | INT-EP545(SL)     | Good dispersion for epoxy emulsions;<br>suitable for treating surface veils |
| DICY (imidazole accelerated)  | INT-1324          | Pre-preg or wet systems   |
| DICY with other amines  | INT-1324B         |   |
|   | INT-1888LS        |   |

**Phenolics**

| Resin Type                    | MoldWiz® Product  | Typical Application /Comments |
|-------------------------------|-------------------|-------------------------------|
| Novolac Powdered, Hexa-cured; | INT-326PWD        | Compression molding           |
| Novolac or Resol Liquid       | INT-1850HT        | Pultrusion                    |
|                               | INT-PUL14         |                               |
| Resol Alcohol-based           | INT-12            | Phenolic Laminates            |
|                               | INT-1312MS        |                               |
| Resol Aqueous-based           | INT-1E-11S Series | Phenolic Laminates            |

**Polyurethanes**

|                 | Product No. | Typical Applications / Comments  |
|-----------------|-------------|--|
| <b>MoldWiz®</b> | INT-1230    | General purpose release: foam or elastomers and non-aqueous in-mold coatings |
|                 | INT-120IMC  | Release additive for in-mold coatings and polyureas                          |
|                 | INT-EPH19   | Release additive for water-borne polyureas                                   |
|                 | INT-1681OG  | Release for optical grade cast PU  |
|                 | INT-1948MCH | Release for PU pultrusion  |
|                 | INT-1940RTM | Release additive for RTM, infusion, or other closed molded PU processes      |

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