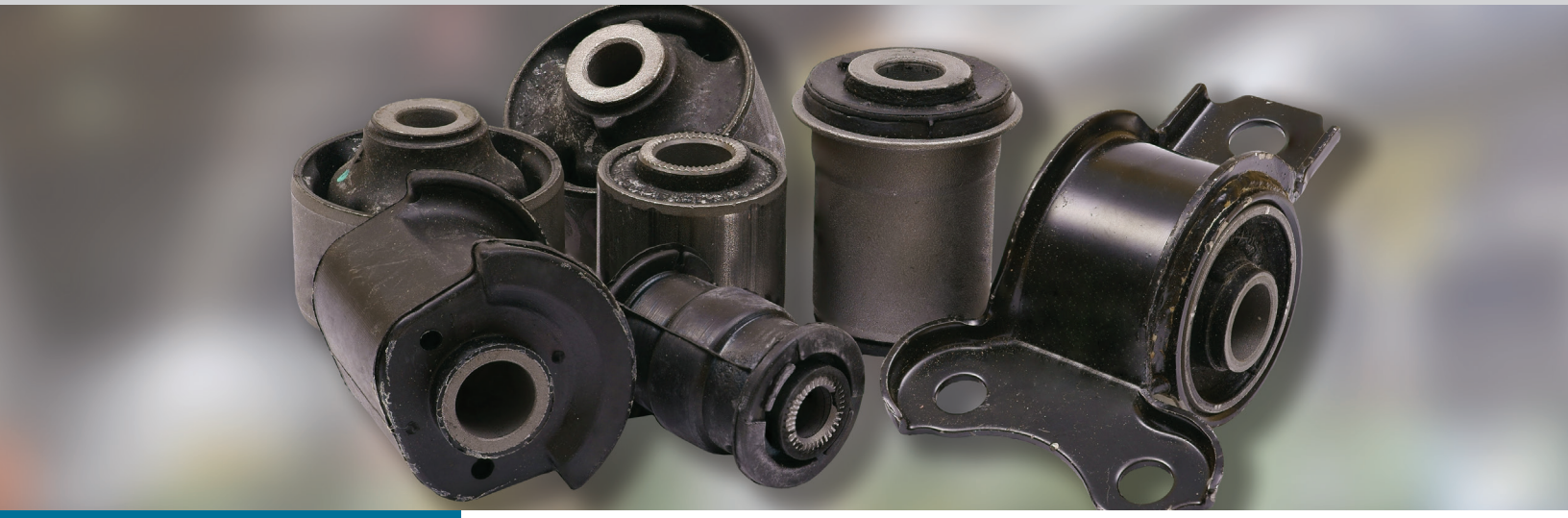
DiamondKote™ TECHNICAL BULLETIN



HOW MOLD RELEASE WORKS

Imparts a physical and chemical barrier between the mold surface and compound being molded

Prevents the elastomer from adhering to the mold.

Apply to hot mold surface

Reactive polymer forms a chemical bond to the surface

Hard, protective layer/coating when cured

FOCUSED SELLING RUBBER TO METAL / ANTI VIBRATION

- Natural rubber and EPDM predominate in this sector
- Generally done by injection molding
- Significant user of our semi-permanent Franklynn DiamondKote™ release agents
- Major competitors are Chemtrend (Monocoat) and Frekote
- Key Accounts: Bridgestone APM, Hutchinson, Tenneco, Boge, DTR, Cooper Standard, ZF, Hubbell, Toyo Rubber, Trelleborg, Flexible (AirBoss)

AVB / RTM FAILURE MODES (PAIN POINTS)

- **Weld Lines -** In anti-vibration and rubber-to-metal molding, Weld lines (aka Knit or Meld lines) can form at the junction of two flow points. Due to pressure and geometric variables, a line forms because the two separate flows of elastomer are unable to properly bond during the molding process. Knit lines are points of weakness in a component.
- **Bond Failure -** During anti-vibration component molding, a bond failure occurs if the rubber fails to properly adhere to a metal insert. The failure can be a result of the process aides used in the rubber compounding process and/or during the molding process as a result of the release agent used.
- **Flow Cracks -** If rubber is obstructed or does not flow evenly into the mold, then it can become brittle and break open. Flow cracks vary based on durometer, injection speed, and temperature; however, they can be addressed via process aides and/or mold release aides.
- **Dirty Molds -** Tool cleanliness can impact many points of the operational process. The molds themselves have different surface finishes, drafts, draws, and undercuts which impact how dirty a mold can become, what materials can adhere to it, and how effectively a part can be demolded. When a tool becomes 'fouled', operations will see an increase in scrap as a result of rubber material not flowing properly, and release issues with subsequent parts. Operations will have to shut down and clean the mold, costing hours of production time.

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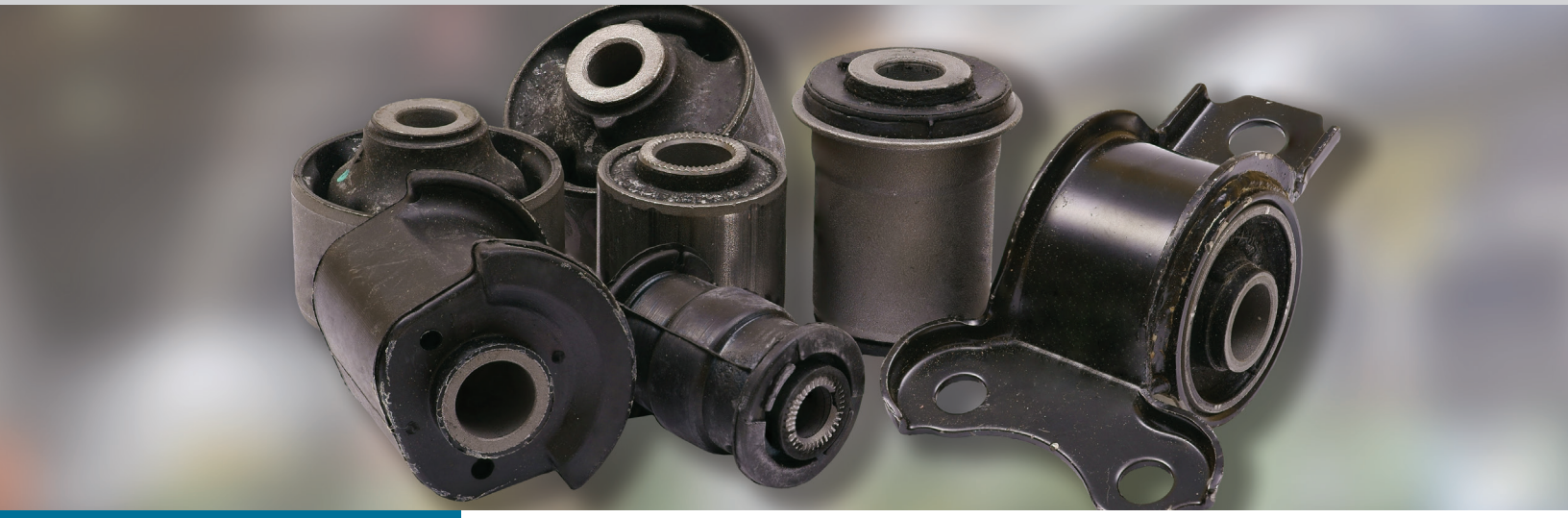

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VALUE PROP FOR ANTI-VIBRATION SEGMENT

- Anti-Vibration Market Segment needs:
  - *Increase throughput and optimize their production process to meet/exceed customer order demands.*
  - *Ensure the highest level of finished part quality by eliminating rubber-to-metal bond failures which can result in returns and lost or decreased business.*
  - *Optimize mold flow to reduce defects from knit lines, finish, and flow cracks.*
  - *Decrease mold release usage and decrease per-unit costs to stay competitive with other AVB part suppliers.*
  - *Decrease scrap to ensure operational excellence, and reduce/eliminate rework costs.*
  - *Decrease operational downtime by reducing need for mold cleaning.*

- ITW's Franklynn DiamondKote™ Mold Release Agents provide an average $550,000 in savings for a typical Tier 2 supplier. The cost savings are derived from an average 50% reduction in mold release consumption, 3-10% increase in production throughput, and a 20% reduction in scrap. Specifically, we are able to address the top pain points in the AVB industry that drive these operational costs by:
  - *Reducing the spray frequency by an average of 59% and mold release consumption by an average of 50% per molding cycle.*
  - *Reducing open clamp time by an average of 3% to allow more cycles per shift.*
  - *Reduce mold heat loss (which causes scrap and rework) by reducing spray frequency.*
  - *Reduce/eliminate scrap resulting from rubber process aides (adhesive residue & by-products of off-gassing) building up on the mold by an average of 48%.*
  - *Reduce the number of mold cleanings by an average of 20% which will increase production efficiency and increase tool life.*

- Unlike ChemTrend and Frekote, our solutions are all:
  - *Water-based, ensuring the AVB facility does not exceed its VOC limits and does not expose operators to hazardous chemicals.*
  - *Use high performance materials in our formulas that meet the highest standards of the AVB market. Our superior formulations easily pass "flood" and "destruction" tests.*
  - *Our products are designed and supported by a highly trained and experienced technical team. Our Field Sales Representatives and Technical Service Specialists are always there to answer your questions and assist you with application*

- As demonstrated by ITW Pro Brands: ISO-9001 Certification, competitive lab and field testing, over 100 years of collective experience in Mold Release Coatings, experience as a preferred supplier to the largest companies in the AVB Segment, and validated ROIs for our release formulas ***(Confidential)***

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