

Greener, Water Based Mold Release- the Opportunity and the Challenge

Today's environmental concerns are challenging. More than ever molding manufacturers are considering the use of water based release agents. Water based mold releases offer compelling opportunities as well as a number of challenges. Before beginning the transition to water based releases, please consider the following discussion of both the opportunities and the challenges.

The Opportunities



There are six areas of opportunity associated with water based releases:

- Due to the higher mass of water, as compared to most solvent, molders can use less mold release when mold releases are formulated with water. When a water based release is sprayed, droplets hit the mold with their greater mass. The greater mass means droplets stay on the mold showing less tendency to evaporate in the air than with a solvent based liquid. Water based release agents can achieve a 10% to 40% reduction in the volume of release being consumed.
- Water based release agents, unlike solvent based release agents, are not tied to petroleum shortages or escalating prices. Not relying on a petroleum based release provides manufacturers with a more stable cost of production over time. With the more predictable water based costs, standard engineering techniques can more easily be used to achieve cost reduction.
- Water based release agents are more environmentally friendly than petroleum based release agents. Petroleum materials demand more energy to be found and then refined, while water is readily available and requires little or no processing. Fewer VOCs in water based release agents helps molding manufacturers meet regulatory requirements. VOC reduction can help streamline the process for building or expanding an existing plant. Less regulatory red tape speeds the permitting process.
- Ventilation requirements are less costly and less complex for water based mold release agents. Solvent based release agents require ventilation to the outside to maintain healthy working conditions. With the use of water based release agents, there is no longer a requirement to ventilate to the outside. In some situations simply filtering the air to remove air borne particulates is sufficient. Minimizing ventilation requirements means savings on energy costs in normal climates.
- Less flammable material is another opportunity with water based releases. The chances of a spark triggering a fire, are minimized. The lower risks associated with water based release agents can mean lowering insurance premiums as well as controlling costs for storing flammable liquids
- Finally, switching to a water based release doesn't mean manufacturers have to change mold types, spray equipment or the materials used to make parts. Whether the mold is simple or complex, made of aluminum, epoxy, steel, or urethane, no change needed for a water based release. Continuing to use the same spray equipment, including, a fixed automated system, manual guns or articulating

robots will still be effective. No expensive new equipment is required. This is true when manufacturing open or close cell polyurethane molded parts, the range of composite products, rubber applications and even most types of concrete components.

The Challenges:

With all of these positive benefits, it might well seem that the movement to water based releases doesn't require careful consideration. However, there are at least three issues to consider:



- Switching from a solvent based release to a water based release will require training for your production staff. The application process does need to be closely reviewed with production workers, even though the molds and spraying equipment may not change. If manual spray guns are being used, practicing with the new release will be important. Complete coverage is needed to achieve ease of release. As the water based release comes into production, workers must understand the importance of careful application and make the subtle adjustments required by most production changes.
- Build up on the molds may be triggered by the reaction of water with the material used to create the parts. This build up can be difficult to remove, meaning additional costs. However, the solution to this issue is straightforward. As a mold comes into production it must be clean and well conditioned. Using an effective conditioner means less opportunity for release agent and the parts' material to react, thus avoiding the build up. In creating polyurethane parts, the water in the release can react with the isocyanate causing polyurea build up, which is difficult to remove. However, the issue of build up when using water based release agent can also be a challenge for composite and rubber parts as well. Never use a clean mold with a water based release that has not been properly conditioned. The conditioning barrier covering the mold will limit build up issues.
- Finally, relating to both of the previous issues, water based releases require a slightly higher level of consistency in application, cleaning and conditioning than solvent products. Yet maintaining consistency in manufacturing parameters and operations is the means to achieving lower scrap, more efficient production and higher productivity.

Water based mold release agents have been on the market for more than twenty years. Over the last decade two key improvements occurred. First, manufacturers of release agents, like Huron Technologies, developed the chemistry to allow successful release without requiring that the release agent be completely dry before the polyurethane or other part material was poured. This means faster production and successful release. Secondly, release formulations were improved to produce water based release agents with a smaller and smaller percentage of solids, or active ingredients. While early water based releases may have had 10% solids, today's successful releases can have as little as 2% solids.

If you are ready to switch to a water based release solution, please call us today. For more information contact Huron Technologies, Inc. by phone or email:

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