Mold Release Technologies

for the Injection and Cast Molding Industry
When you invest in Nordson technology, you get more than just equipment and systems. You get experts who are proficient in mold release applications, bringing decades of technical and application expertise.

As a partner in this process, we will guide you step-by-step in selecting the right technology to provide a solution that works for you.

**A partnership with Nordson offers you:**

- A sales team that understands your expectations and goals, providing an on-site audit evaluating your current operation. We will review the audit with you and make recommendations.

- Based on the audit, our team will schedule a demonstration at your facility to assure that we meet your expectations in understanding your operation and production requirements.

- Our engineering team will design a total solution tailored to fit your situation.

- Our installation team will provide guidance, operator training and hands-on assistance.

- Inside technical service specialists will provide you with easy access to the most current information, answering all your technical questions.

- Our direct sales team or worldwide distributor network can offer personalized maintenance contracts.
Enhance Quality...Increase Profitability!

For decades, Nordson has successfully saved customers thousands of dollars on material costs. Our engineered system solutions can be designed to meet almost any application need – and it all starts with our team understanding your current production situation and what your future needs will be.

The Best in Technical Expertise and Support

When you purchase a Nordson system, we assign an experienced project management team dedicated to solving your specific application questions or equipment concerns. We also provide:

- **Expert installation and system start-up specialists** for timely, effective system integration.
- **Technical assistance hotline** for immediate response.
- **Replacement parts in stock** to meet normal or emergency situations.
- **Factory direct service – 24/7/365** to respond quickly to your requests.
- **Formal and hands-on training** at Nordson or on-site at your facility.

Unmatched Customer Lab Facilities

With our state-of-the-art customer test facility, Nordson works closely with customers and material suppliers to meet their expectations for quality and performance. With lab and production facilities around the world, Nordson has an impressive array of capabilities, positioning us to take full advantage of rapid growth in material technology.

Around the globe, you always have convenient access to our experts and engineered system solutions, including dispensing systems, robotics and peripheral automation. Our products are thoroughly tested to assure reliable performance in production environments. We also maintain extensive and sophisticated customer test facilities in the United States, Japan and China. You can assess materials, equipment and Nordson system performance prior to the sale.

From the very start, Nordson customers are welcomed as partners in evaluating the best approach to meet challenging application requirements.
Injection Mold Station

The challenge for improvement is a constant in a manufacturing environment. With this also comes the need to deliver products that consistently meet the industry’s performance specifications, while maintaining your own profitability.

Nordson’s products and systems integrate easily into your existing system…or can be assimilated into a brand new manufacturing operation. Either way, we can help you achieve speed and precision on your production line. Our system solutions are designed so you will benefit from increased productivity, reduced material usage and improved product performance.

The Injection Molding Process

1. The dies are prepared by spraying the mold cavity with lubricant or mold release. This helps control the temperature of the die and it assists in the removal of the product.

2. The cycle begins when the mold closes, followed by the injection of granular plastic, fed by gravity from a hopper into a heated barrel.

3. A screw plunger slowly moves the granules forward, forcing the plastic into a heated chamber, where it is melted.

4. As the plunger advances, the melted plastic is forced through a nozzle that rests against the mold, allowing it to enter the mold cavity through a gate and runner system.

5. When the cavity is filled, a holding pressure is maintained to compensate for material shrinkage.

6. Once the part is sufficiently cool, the mold opens and the part is ejected.
Choosing a Mold Release Agent

Mold release provides the critical barrier between a tooling surface and the materials used to build up a part laminate, enabling separation of the cured part from the mold.

Mold release agents not only provide a physical and/or chemical barrier between the part and the mold, but they also impact many process characteristics, including the flow rate of the material being molded, molding cycle time and release ease. The choice of mold release agents also affects finish characteristics of the released part, such as gloss level, accurate texture reproduction, post molding operations. Release agents can also influence the mold service life, maintenance cycles and overall productivity.

Water-based lubricants, called emulsions, are the most commonly used type of lubricant due to health, environmental, and safety reasons.

There are four types of water-based lubricants:
- Oil in water
- Water in oil
- Semi-synthetic
- Synthetic

Oil-in-water lubricants are often preferred because, when the lubricant is applied, the water cools the die surface by evaporating while depositing the oil. This helps release the part.

Oils that are used include heavy residual oil (HRO), animal fats, vegetable fats and synthetic fats. HROs are gelatinous at room temperature, but at the high temperatures found in die casting, they form a thin film.

Other substances are added to control the emulsions viscosity and thermal properties. These include graphite, aluminum, and mica. Other chemical additives are used to inhibit rusting and oxidation. Emulsifiers are added to water-based lubricants, so that oil-based additives can be mixed into the water. These include soap, alcohol esters, and ethylene oxides.

Creating the Correct Spray Pattern

You can test the spray pattern by using a piece of cardboard. First make sure the spray equipment nozzle and air cap are clean and unrestricted. Hold the spray gun 6 inches to 8 inches from the cardboard. This represents the distance between the spray gun and the mold’s surface. Spray the mold release onto the cardboard in a sideways sweeping motion. The pattern should be solid yet dry quickly. Any splotches will show areas that may be under sprayed or unevenly applied. Liquid running down the surface means the liquid is being applied too heavily. Once the spray pattern is acceptable, you are ready to spray the mold.
Nordson provides a wide range of equipment to meet most any need – from simple manual systems to automated configurations that are more sophisticated. With electrostatic and non-electrostatic systems available, our experts can design a solution to provide the highest level of performance.

**Products to Overcome any Production Challenge**

**Trilogy® Electrostatic Low Pressure Spray Systems**
- Better transfer efficiency, reduced material costs and improved part finish – incorporating the highest kV in the industry – 93 kV
- Minimize maintenance costs and downtime – with tough and durable gun bodies.
- Enhanced operator comfort for better productivity – incorporating well-balanced, handle-forward gun design
- Ideal for a variety of substrates, coatings and part profiles – featuring two atomization technologies – air spray and high volume, low pressure (HVLP)
- Available in manual and automatic configurations

**Trilogy Non-Electrostatic Spray Systems**
- Excellent finish quality – using fine atomization technology
- Minimal overspray – from soft, controllable spray pattern
- Highly durable – to withstand harsh manufacturing environments
- Easy to handle and maintain
- Available in more than 14 gun configurations – manual and automatic; air assist airless, air spray and low-volume/low pressure; gravity or pressure feed
Iso-Flo® Voltage Blocking Systems

- An easier, safer and far more cost-effective way to spray electrostatically charged waterborne coatings
- Reservoirs sized for productivity and savings – large enough to ensure continuous release agent supply, but small enough to minimize waste
- Simple, low-maintenance design – high capacity pumps are field-repairable
- Fast, efficient color changes – with simple configurations
- Highly durable – incorporates an easy-access steel enclosure
- Factory Mutual and CE approved

Trilogy® Electrostatic Dolly System

- Incorporates dolly, heater, diaphragm pump and gun
- Can be ordered with a single part number
- Pre-assembled – no set-up required
- Accommodates either 115 or 230 volt heaters

Diaphragm Pumps

- Eliminate leaking and speed installation with side fluid ports
- Corrosion resistant center body withstands chemical exposure
- Stall-free, ice-free air motor design
- Highly versatile – available in ¼", ¾", ½" and 1" configurations
Global Presence and International Strength

Nordson provides engineering services and systems for major automotive manufacturers around the globe. With direct operations in 30 locations, we serve virtually every industrialized country in the world.

Our international operations are staffed by local people who understand their particular countries’ customs and business practices. Combined with thorough training in Nordson technologies and service, they provide problem solving expertise at the local and international level.

As the liquid industry continues to pull resources from around the globe, you can be assured that Nordson will be where you need us, when you need us, with the systems and service that help you improve manufacturing efficiency and product quality.

Standing Behind You…Every Step of the Way

Nordson has earned a reputation for its commitment to the success of our customers. From start to finish, Nordson customers are considered partners in evaluating the best approach to meet challenging application requirements. We will be there from systems engineering and development through installation and start-up. After, our worldwide service and support team will remain with you – 24/7.

www.nordson.com/liquid