INDUSTRIAL INFO

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Measurably Ahead

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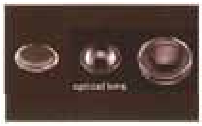



Welcome to the new world of

Nano Mold Coating


What is Nano technology?

- *The technology that deals with devices and processes that can only be measured in nanometres.*
- *One million times smaller than a millimetre, a nanometre (also referred to as a nano or nm for short) is used in measurements that are only visible under extremely high magnifications. By comparison, the cross section of human hair is 50,000 times larger.*
- *Nano technology enables matter to behave more efficiently and possesses a wider range of functionality. It enables us to manipulate, control and accurately define the interdisciplinary behaviour of the very atoms that make up the molecule.*
- *It allows us to tailor-make molecules with specialised functionality, cross functionality and multiple-functionality. When we can fabricate molecules in accordance to task specific design, these molecules function as nanomachines.*

Nanotechnology is the future - and it's here today.

MAY 2011 - NEWS RELEASE

Now there is Nano Mold Coating - Quick Cure!
Heat the mold to 50°C, spray on a fine mist, wipe to a thin even layer, heat to 116°C to cure for 10 minutes - and hey presto you're back in business!!

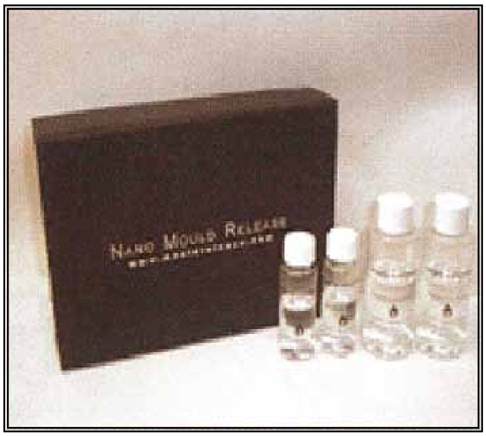
What is Nano mold coating?

Nano mold coating is a semi-permanent, self applied coating that is designed to reduce cycle times, rejects and maintenance, while improving part quality in injection molding, blow molding and rubber molding applications. The coating is created by forming a nanoscale barrier from nano formulated molecules. It is a non-toxic, non-migrating product that can withstand temperatures up to 530°C. The coating can facilitate a part release for up to and in many cases exceeding 300,000 cycles per coat, depending on the molded material, fillers, mold design, material flow rates and pressures.

Nano mold coating can be used for virtually any molded material including heavy glass and mineral filled resins, rubber and silicones and can be applied to any steel or aluminium substrate, as well as other materials such as beryllium, copper, etc.
Nano mold coating is designed to be resistant to most common cleaners and degreasers so molds can be cleaned without removing the coating.

Common Problems In the Molding Industry

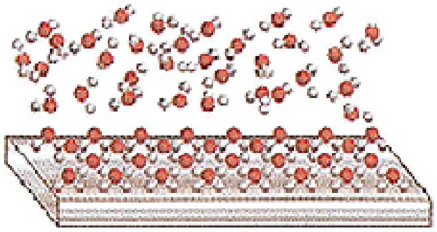
- *Sticking cores and cavities.*
- *Molds not filling properly*
- *Parts sticking in the mold.*
- *Pickup on moving mold parts.*
- *Lubricant contamination.*
- *Streaking & drag marks.*
- *High glass filled resin.*



Major Benefits for the Molding Industry

- *Increases productivity - more parts per hour - parts not sticking in the mold.*
- *Enhances the flow of resin in molds due to its low co-efficient of friction.*
- *Parts release quicker.*
- *Allows the reduction in molding pressure and temperature.*
- *Reduction in part weight as resin is not packed as tight.*
- *Eliminates use of other release agents.*
- *Eases colour changes and cleaning operations.*
- *Not transferred to finished parts, so no washing required prior to printing.*
- *Applied to metal-on-metal die parts, ejector pins and injection screws as an inhibitor to carbon build up.*
- *Can be applied over polished surfaces or coated surface.*
- *May be applied over the whole mold or in specific inserts, cavities or on core pins.*
- *Maintains dimensional integrity of mold.*
- *Eliminate problems in commissioning new die sets and molds.*
- *Resists carbon build-up from burnt deposits due to extremely low co-efficient of friction.*

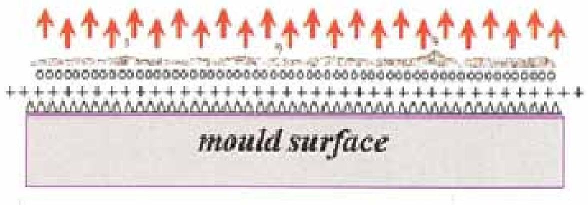
How it Works



Nano mold coating's revolutionary surface coating comprises three instrinsic parts that self-assemble when applied to surface structures.

Together, these three regions function as a whole and work synergistically in forming a nanomesh (a microscopic netting) that prohibits fluids from coming into contact with surface structures, while, at the same time, allowing an unimpeded flow of vapour out from the substrate into the atmosphere.

Nano mold coating's self-arranging molecules when they are first applied to a surface.



The diagram above shows the three regions of Nano mold coating's self-arranging coating after hardening:

1. ○ *The upper region that permanently adheres itself to the cross-linked nanomesh.*
2. + *The center region upon which the upper and lower regions are permanently fused.*
3. △ *The lower region that anchors itself to the surface.*

At between 100nm (0.0001mm) to 200nm (0.0002mm) in thickness, this coating has hydrophobic (water repelling) anti-stick, anti-static and anti-corrosion properties with an extremely low friction co-efficient.

It reduces surface pressure, repels UV, is non-toxic, is translucent and colourless, does not migrate to other surfaces, does not chemically bond with other substances and can be used with ease of application. Nano mold coating, be it in plastics, rubber or die casting industries, greatly reduces the need to use traditional mold coating products that require much time and labour in machine/tool maintenance. Depending on the mold design and the materials used, Nano mold coating has even eradicated the use of traditional mold coating products. Longer uninterrupted production time with fewer and shorter maintenance periods in production cycles equal higher productivity and reduced costs. A highly polished, glossy surface may appear to be flawlessly smooth when viewed with the naked eye. However, at magnification of 20,000 times, gaps and crevices can clearly be seen. Nano mold coating fills up all the tiny gaps and crevices on surfaces with a microscopic mesh-like structure that can withstand a very wide range of temperatures from -10℃ to 530℃ without compromising the stability of the nano-mesh's cross-linking structure or its adherence to the surface it is applied onto. And because of its unique molecular structure, Nano mold coating's inherent flexibility allows it to stretch and contract with the substrate through such ranges in temperature without cracking or peeling.

Properties

- Withstands temperatures of between -10°C to 530°C.
- Water repellent, hydrophobic, yet vapour permeable.
- Transparent, <200nm.
- Low co-efficient of friction.
- Easy to clean.
- Perfect protection against corrosion.
- Test in salt spray cabinet B117 avarage Red fail. SS 1700hrs RS 1500hrs PS 1386hrs
- Withstands most acids and many chemicals.
- Blocks UV-light completely and prevents fading of colours of paints and plastics.
- No change in manufacturing tolerances.

The coating was tested by the Institute of Medicine and Science at the Tubingen University (NMI-Naturwissenschaftlich-Medizinisches Institute) Germany and showed all the contents of the coating to be NON-TOXIC.

Mold Cleaning and Application

MOLD CLEANING

1. Pre-clean surfaces with a cleaner/degreaser and/or resin remover.
2. Thoroughly clean with ethanol, 100% IPA alcohol, acetone or MEK solvent.
3. Continue cleaning with solvent until there is absolutely no evidence of oil or debris on the cloth.

APPLICATION (HEAT CURE)

4. Apply 1-2 drops of Nano Mold Coating on the microfiber cloth or brush.
5. Apply a very thin and even layer of Nano Mold Coating to the mold surface. Remove any excess pooling immediately. When applied correctly if should just appear wetted, not dripping. Apply in one direction at a time and be careful not to leave swirl marks in the surface.
6. Using a heat gun, apply heat (setting at 200°C-230°C with high air flow) at approximately 50-75mm from the surface. Apply heat for 5-10 minutes to the coated area. Make certain the area is dry. Leave for a minimum of 1 hour to cure (preferably 2-3 hours).
7. For longer coating life, repeat steps 4, 5 and 6 before going into production.

The mold is now ready for production.

APPLICATION (QUICK CURE)

See middle of Page 1 of this Industrial Info!

Availability and Price

5ml Kit	#NAN0005 (Heat Cure)	$316
15ml Kit	#NAN0015 (Heat Cure)	$822
25ml Kit	#NAN0025 (Heat Cure)	$1246
50ml Kit	#NAN0050 (Heat Cure)	$2212

NOTE: *5ml can coat about 7-10 sqft of flat smooth mold surface.*

New 60ml Kit	#NAN0060 (Quick Cure)	$260

All prices + GST