M.I.C.I.
Midwest Industrial Coatings, Inc.

Waterborne Specifications

For More Information Call
1-952-252-2000

Metals - Plascron®

Tough, long lasting, and reliable, the high performance Plascron® family of coatings provides unparalleled protection for all your production products. Corrosion resistant with exceptional fade resistance, color retention, and the ability to achieve superior adhesion, these waterborne coatings give your product a distinct and consistent performance advantage. Plascron® coatings are fully compliant with all EPA regulations. Nonhazardous, nontoxic, and nonflammable, these coatings are safe for your employees, your customers, and the environment. The easy-to-use, single component Plascron® coatings are custom formulated and tested to meet your exact requirements for color, durability, and application methods.

Plascron® high performance coatings deliver durability, appearance, and environmental safety, at a price that's often comparable to what you're currently paying for non-customized solvent-based systems. Plascron® coatings are carefully formulated to work in a wide range of applications and usually without any special application equipment required. Can be applied with conventional spray, airless spray, electrostatic spray, HVLP spray, dip, flow coat, and other methods.

- **Corrosion Protection**
  Quality corrosion protection requires complete and consistent adhesion at time of application, even on the most complex or detailed product designs. Quality technicians work with you to create the right coating for every product or part you manufacture. Eliminate worries about blistering or degradation from chemicals or other corrosive agents destroying the appearance of your product.

- **Clarity and Consistency**
  Polished metals retain their luster and brilliance when clear-coated with high performance Plascron® coatings. Unlike other finishes, which can turn cloudy and dull, durable Plascron® coatings apply smoothly and evenly, giving your metals a high gloss finish that lasts and lasts.

- **A Tough Finish**
  Plascron® coatings are the right choice whenever products must stand up to high traffic or heavy use. The vibrant colors resist fading due to weather, chemical agents, or industrial wear and tear. Your products will maintain their quality appearance and durable performance for years to come.

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- **Safe for the Environment**
  Waterborne Plascron® coatings are nonflammable, eliminating the risk of fire or explosions. Our nontoxic, single component formula is completely safe for your employees to use. Every coating is custom formulated to your exact specifications, then fully tested in our laboratory to ensure compliance with pertinent ASTM, ANSI, or other industry standards.

Wood - Plascron® Waterborne nonflammable coating for wood.

Stains, sealers and finish coats meet most stringent EPA standards for Volatile Organic Content and exceed performance of solvent systems: greater durability, improved hardness, increased mar resistance, and unaffected by water and most chemicals. Durable acrylic resins or polyesters cross-link on curing, providing exceptional film properties while maintaining excellent flexibility and adhesion. Coatings are available in a wide range of curing capabilities - air dry, low temperature force curing, or high temperature baking. A full array of color options is available in custom colors or tintable to meet special color requirements, with a range of sheens: gloss, semigloss, or sati, available in finishes of exceptional clarity for special effects.

Break-Through®

The first waterborne acrylic chemically engineered to replace solvent coatings while still meeting the Volatile Organic Content (V.O.C.) standards set by the (Clean Air Act) passed by Congress in 1977. No conventional paints, not even the most popular of the solvent alternatives, can outperform Break-Through®. An excellent product for the industrial maintenance market as it is used anywhere a satin or full high gloss is required. This waterborne is second-to-none in the arena of single-package, air-dry water-based paints.

- Rapid Dry
- Hard as a factory-applied enamel
- Adheres to a variety of surfaces
- Excellent chemical resistance
- Nonflammable
- EPA compliant
- Soap and Water Clean-up

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- **Gloss Retention** far superior to silicone alkyd
- **Hardness** equal to or exceeds factory baked enamel, two component epoxy or two-component urethane (F-2H pencil hardness)
- **Flexibility** 160 in/lbs impact and 1/8 mandrel bend
- **Adhesion** can be used over high gloss enamels, two-component epoxies and two-component urethanes
- **Exceptional Touch-Up** equal to flat wall paint touch-up
- **Built-In Rust Inhibitor** finish coat 200-hour salt spray. For heavy-duty corrosion - primer 3.0 mil dry, 1500-hour salt spray

Break-Through® is without peer for the following applications:

Surfaces:

Concrete, cast or blocks
Drywall, plaster
Wood, floors, moldings, trim
High pressure laminates, formica®
Unglazed and some glazed tile
Metal, steel, stainless steel, galvanized steel, aluminum, and chrome-plated steel
Vinyl wall coverings
Previously painted surfaces

Fixtures:

Metal entry doors
Garage doors, metal or fiberglass
Countertops (high pressure laminates)
Cabinets
Metal lockers
Elevators
Shelving, wood or metal
Office partitions, cubicles
Bathroom partitions
Exposed plumbing, metal or PVC
Exposed ductwork
Railings, stairs

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End Use Applications:

Hotels
Hospitals
Schools
Theaters
Studios
Retail outlets
Shopping malls

Federal buildings
Institutions
Prisons
Museums
Convention centers
Health Clubs
Sports complexes

Break-Through® is available in a variety of coatings to meet your specific need.

Satin, 50 Series
The satin finish provides a rich luster, having the appearance of a high quality polished surface. The lower gloss helps hide imperfections in the surface to which the coating is applied.

Gloss, 70 Series
Use where a high gloss finish is desired. Has the rich wet look and will retain its gloss when exposed to direct sunlight. Good color retention and excellent fade resistance superior to other coatings when used on exterior surfaces.

Clear Finishes, Gloss 70-0, Satin 50-0
The Break-Through® clear finishes are excellent choices for wood, masonry, or nonferrous metals. They have all of the toughness, wear resistance, and other outstanding properties of the pigmented finishes.

Tint Bases
Both the Gloss and the Satin are available in three tint bases: a pastel base, tint base, and a deep base, offering a palette of 900 custom colors. The custom tints are calibrated for the COLORTREND® Cue and Ambiance systems using Nuodex's universal colorants.

N**ew Wood Primer, 91-11**
For interior or exterior unpainted wood surfaces priming with 91-11 is recommended. As a waterborne primer will not seal or block water stains, use Stain Barrier 35-1 where stain sealing characteristics are needed.

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1000 Hour Plus Primer, 91-9300
Applied direct to metal has no equal in providing rust protection for ferrous metals in a waterborne, single component system. Actual tests show the coating intact with no effect after 1500 hours exposure to hot salt spray.

Additive, 48-0
Developed to slow down the drying and increase the “open time” when applying Break-Through® with a brush. This allows mire time for working the paint under the brush during application.

Equipment Cleaner, 49-0
Break-Through®, although a waterborne system, is highly resistant to solvents, acids, and caustics. It cannot readily be removed using commercial paint removers. Break-Through® Cleaner 49.0 is recommended for tools & equipment clean-up.

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GLOSSARY OF TERMS

The following painting terms are abstracted from the glossary of Understanding Paint and Painting Processes

acetone A powerful ketone-type lacquer solvent.

acrylic A coating based on a polymer containing short-chain esters of acrylic and methacrylic acid. Acrylics are widely used as automotive topcoats. Their physical properties can be con-trolled in part by the choice of the alcohol used to make the ester.

active solvent A liquid that can dissolve a paint binder when used alone.

additive Any one of a number of special chemicals added to a paint to bring about special effects. Examples are plasti-cizers, light stabilizers, and fungicides.

adhesion The phenomenon by which one material is attached to another by means of surface attraction.

agglomerate Clumps of pigment crystals that have formed loose clusters containing entrapped air. Usually undesirable in paint, as they tend to settle out and have poor optical properties.

aliphatic solvent A type of solvent comprised mainly of straight-chain hydrocarbons Examples are gasoline, kerosene, hexane, and naphtha.

alkyd A coating based on a polyester binder. The polyester binders are chemical combinations of molecules that con-tain more than one acid or alcohol group. Alkyds are widely used in water-based house paints and automotive primers.

anhydride A reactive form of dicarboxylic acid containing a monomer that has one mole of water removed. The major anhydride used in the synthesis of alkyds is phthalic anhydride.

anti-skinning agents Chemicals added to a paint to help prevent the formation of a surface film on the paint.

aromatic A type of solvent based on benzene ring molecules. Aromatics are often used as diluents in acrylic lacquers Typical examples are ben-zene. xylol. and toluol.

benzoic acid An aromatic monocarboxylic acid used in terminating chain growth in polyester or alkyd polymers. Also used in the manufacture of plasticizers.

beta rays Beams of electrons that can be used to cure certain kinds of paint.

binder The paint material that forms the film, so called because it binds the pigment and any additives present into a solid durable film. Also referred to as the resin.

branched polymer A polymer that has some branching along its backbone chain. An example is low-density polyethyl-ene.

catalyst A chemical used to change the rate of a chemical reaction. Differs from a curing agent in that the catalyst is not itself chemically consumed in the reaction, while a curing agent is. Technically, catalysts that increase reaction rates are called accelerators; those that decrease reaction rates are called inhibitors or retarders.

cathodic protection The prevention of corrosion of a metal by electrically connecting it to a sacrificial anode. The anode is itself decomposed, and the object of interest is protected. The sacrificial anode must be replaced periodically.

coalescence The fusing or flowing together of liquid or solvent particles.

colloids Aggregates of molecules in solution (dispersion) resulting in particles having dimensions in the 0.001 milli micron to 1000 micron range.

condensation cure Any crosslinking process that liberates water and other simple molecules during the reaction.

conjugated double bond Two double bonds in alternate posi-tions as indicated by the formula -CH-CH-CH-CH-.

copolymer A polymer comprised of two or more different monomer units.

critical pigment volume concentration (CPVC) The volume percent pigment in a coating in which the pigment parti-cles are surrounded by resin so that no free surface pigment exists cure. The process by which paint is converted from the liquid to the solid state.

Desmodur N® An aliphatic-type polyisocyanate commercially available from Mobay Chemicals.

diluent A liquid that extends a solution but definitely acts to weaken the solvent power of the active solvent.

double bond An unsaturated hydrocarbon of the type CnHn with the formula -C=C-, indicated by the suffix -ene.

drier A catalyst added to speed the cure of oil-based paints. Driers are often metal salts of carboxylic acids.

drying oil A water-insoluble liquid, usually obtained from a plant source, that reacts with oxygen (from the air) to form a crosslinked polymeric film.

electrocoating (E-coat) See ìelectrodeposition.î

electrodeposition The process by which electrically charged paint is plated on conductive surfaces of the opposite charge.

electrolyte A substance that dissociates to some extent into two or more ions in water and other polar solvents. Solutions of electrolyte conduct electrical current and can be decomposed by it (electrolysis).

electron beam curing A system for curing paint films using the energy of an electron beam. The process lends itself to high-speed curing of paint on flat surfaces. Special paints must be used and personal shielding is required.

electron beam radiation Radiation generated from high-energy electrons that is used in crosslinking coating systems.

electrostatic spray The process by which paint particles are electrically charged and attracted to a substrate bearing an opposite charge.

emulsion polymerization The formation of a polymer in which the growing polymer molecules form droplets in the reaction medium This situation arises when the solvent can dissolve the monomer, but not the polymer.

emulsion A class of colloidal dispersions containing two or more immiscible liquids such as oil in water. Emulsions are usually unstable and will separate into their components unless a stabilizing agent is present.

enamel A broad classification of free-flowing clear or pig-mented varnishes, treated oils, or other forms of organic coat-ings that usually dry to a hard, glossy or semi glossy finish.

epoxy Synthetic resins formed by the condensation of epi- chiorohydrin and bisphenol-A.

exempt solvents Solvents that are not subject to air pollution legislation. Many alcohols, esters, some ketones, and mineral spirits are exempt. Aromatic and some ethylenic compounds are not exempt, and their use as solvents is there-fore subject to regulation.

flash time The time between paint application and baking. Usually a considerable quantity of solvent is lost during this interval, and this solvent loss prevents popping problems in the oven.

functionality Ability of a compound to form covalent bonds.

gamma radiation High-energy radiation, similar to X-ray radiation, that is emitted by radioactive substances.

glass transition temperature The temperature at which polymer molecules are able to move fairly freely in the solid state.

hiding power The ability of a paint to mask the color or pattern of a surface. Usually expressed as square feet per gallon or square meters per liter.

high-solids paint Paint containing 35-80% solids. These pro-ducts have become popular because of the reduction in solvent emissions associated with their use.

homopolymer A polymer containing only one kind of monomer.

inhibitor A chemical added to retard some particular reaction. Examples are antioxidants and anti-skinning agents.

interfacial free energy The minimum amount of work required to create an interface between two immiscible materials.

latent solvent A liquid that cannot itself dissolve a binder but increases the tolerance of the paint for a diluent.

linear polymer A polymer containing little or no branching Examples are high-density polyethylene and nitrocellulose or acrylic lacquers.

molecular weight The relative mass of a molecule in relation to that of a hydrogen atom, It is obtained by adding together the atomic weights indicated in the formula of the substance.

monomers Low-molecular-weight reactive materials that are used in the synthesis of polymers.

nonconjugated double bond Double bonds that are not in the relationship outlined under conjugated double bonds. They are indicated by the formula -C-C=C-C-C=C-C.

oil-based paints Paints with films that form solids by the air-induced crosslinking of certain unsaturated plant oils known as drying oils. Oxygen is consumed in the process.

paint A material that when applied as a liquid to a surface forms a solid film for the purpose of decoration and/or protection. Generally, a paint contains a binder(s), solvent(s), and a pigment(s). Often other materials are present to give special properties to the paint film. Examples of such additives are rust inhibitors, light stabilizers, and softening agents (plasticizers).

percent solids The percent mass of a paint due to its nonliquid components.

pigment Small particles added to the paint to influence properties such as color, corrosion resistance, and mechani-cal strength.

pigment volume concentration (PVC) The percent volume of a paint film occupied by the pigment.

plasticizer A low-molecular-weight material added to polymeric materials such as paints, plastics, or adhesives to improve their flexibility.

polyamides Polymeric compounds synthesized by the reaction of amine and carboxylic-containing compounds. They are sometimes amine terminated and used in the crosslinking of epoxide polymers.

polymers Large molecules built up by the combination of many small molecules.

primer A type of paint applied to a surface to increase its compatibility with the topcoat or to improve the corrosion resistance of the substrate.

refractive index The ratio of the velocities of light in a medium and in air under the same conditions. The result is that light passing from one medium to another is bent to some degree.

skinning The formation of a thin, tough film on the surface of a liquid paint film, usually due to reaction with the air or to rapid solvent loss.

styrene An unsaturated reactive monomer used extensively in the synthesis of polymers. It can also be used to thin out reactive polyesters with subsequent crosslinking in the ethylenic groups.

thermoplastic A type of polymer that softens and melts when heated and then resolidifies upon cooling. Thermoplastics generally have linear or branched structures.

thermosetting A type of polymer that does not soften appreci-ably when heated. Thermosets may char when heated in air. They are generally crosslinked polymers.

thixotropy The tendency for the viscosity of a liquid to be shear-rate dependent. When the liquid is rapidly shaken, brushed, or otherwise mechanically disturbed, the viscosity decreases rapidly. Thixotropic behavior is the result of molecules or particles in the liquid forming weakly associated structures that break apart when agitated.

throwing power The ability of an electrodeposition resin to coat recessed areas, usually measured by noting the coating distance up a cylindrical tube that is coated in an electro-deposition bath.

topcoat Usually the final paint film applied to a surface.

ultraviolet radiation High-energy short-wavelength radiation used in coatings to crosslink primarily acrylic and methacrylic systems by means of free-radical reactions.

UV stabilizers Chemicals added to paint to absorb the ultra-violet radiation present in sunlight. Ultraviolet radiation decomposes the polymer molecules in a paint film, and thus UV stabilizers are used to prolong paint life.

vehicle The combination of binder and solvents or diluents, which are used to put the binder in a liquid, usable form.

vinyl cure A curing process involving the crosslinking of vinyl groups.

vinyl toluene An unsaturated, aromatic monomeric compound reacted into oil-modified alkyds to modify its drying properties.

viscosity The property of liquid that enables it to resist flow, often measured by the time required for a given volume of liquid to flow through a small hole in the bottom of a cup under controlled conditions. A thick liquid-like molasses has a high viscosity.

volatile organic compounds (VOC) Volatile organic materials, such as solvents, that are present in many coating products.