



GEOMET[®]

High Performance Coatings For Metal Finishing

WATER-BASED • CHROMIUM-FREE • THIN FILM

Application Examples

- Beams
- Brackets
- Clamps
- Clips
- Fasteners
- Fuel Filler Tubes
- Rings
- Rotors
- Springs
- Stampings



GEOMET® is a proprietary water-based family of products containing metal oxides, metallic zinc and aluminum flakes. The zinc and aluminum platelets align in multiple layers forming a metallic silver film. Applied as a liquid, the coating is totally inorganic after thermal curing.

RANGE OF PRODUCTS

GEOMET® COATINGS

The standard of water-based inorganic metal finishing systems, GEOMET® is a high performance, chromium-free and cost-effective finish compared to zinc and trivalent plating.

GEOMET® coating systems, which include silicate sealers – black and colored topcoats – are applied to a variety of components to provide corrosion protection to ferrous metals including powdered metal parts.

The GEOMET® coating systems are accepted worldwide as reliable corrosion protection against road salt, humidity, solvents and other corrosive elements.

www.geomet.net

GEOMET® 321 :: A zinc and aluminum flake coating in an inorganic binder.

GEOMET® 500 :: An integrally lubricated, zinc and aluminum flake coating in an inorganic binder.

GEOMET® 720 :: A zinc and aluminum flake coating in an inorganic binder, developed to meet the requirements of Asian automotive companies.

GEOMET® 360 :: A zinc and aluminum flake coating in an inorganic binder with higher aluminum content for brake rotor applications.

PLUS® Sealers :: Inorganic silicate sealer topcoats provide consistent torque tension values and additional corrosion protection. Sealers include P/ML/VL/L/XL in clear, for a silver colored appearance, as well as pigmented blue, yellow, red and green for identification purposes.

GEOLACK® :: Black topcoats are applied over GEOMET® to meet appearance and frictional requirements and include: PLUS® ML BLACK, GEOKOTE® 137 and GEOKOTE® 147.

SPECIFICATIONS

Coating System	Color	ISO 16047 Friction Coefficient (MEAN)	ISO 16047 K Factor (MEAN)	Coating Weight (MINIMUM g/m ²)	Salt Spray Hours
GEOMET® 321 P	Silver	0.17	0.21	26	1000
GEOMET® 321 ML	Silver	0.13	0.17	26	1000
GEOMET® 321 VL	Silver	0.12	0.16	26	1000
GEOMET® 321 L	Silver	0.11	0.15	26	1000
GEOMET® 321 XL	Silver	0.08	0.11	29	1000
GEOMET® 500 A	Silver	0.15	0.20	25	600
GEOMET® 500 B	Silver	0.15	0.20	36	1000
GEOMET® 720	Silver	---	---	22	1000
GEOLACK® ML	Black	0.13	0.17	31	1000
GEOLACK® 137	Black	0.15	0.20	29	720
GEOLACK® 147	Black	0.13	0.17	29	720

For additional specifications, please visit: www.geomet.com

MARKETS SERVED

- Agricultural
- Appliance
- Automotive
- Construction
- Electrical
- Heavy Equipment
- Heavy Truck
- Marine
- Military
- Wind Energy



GEOMET

NORTH AMERICA
Metal Coatings International Inc.

EUROPE/AFRICA
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ASIA/PACIFIC RIM
Nippon Dacro Shamrock

SOUTH AMERICA
Metal Coatings Brasil

○ Environmental Benefits

Entirely Chromium-Free :: Meets the following regulations: Environmental Protection Agency (EPA), Chrysler CS-9003, General Motors GMW 3059, Ford WSS-M99P9999-A1 (Hex 9), the EU Directives on End of Life Vehicles (ELV) and Electrical Equipment (RoHS).

No toxic metals :: Free of chromium, nickel, cadmium, lead, barium, and mercury.

Water-Based :: Water clean up; worker friendly; no offensive odor.

○ Functional Benefits

Superior Corrosion Protection :: GEOMET® provides excellent cyclic corrosion performance when tested according to automotive manufacturer's test methods incorporating heat, salt spray, and humidity (SAE J2334, GMW 14872, Ford CEPT: 00.00-L-467, Asian CCT).

Mechanical Damage Resistance :: The USCAR 32 mechanical damage test, designed to simulate coating damage relating to secondary operations such as sorting, demonstrates the superior protection of GEOMET® coatings.

Adhesion :: GEOMET® does not come off on workers hands.

Self-Repairing :: If the coating is damaged, zinc oxides and carbonates migrate to the damaged area of the coating to self-repair and restore barrier protection. When a coated fastener is abraded during installation, barrier protection is restored as the coating self-heals.

Proving Grounds :: Galvanic and self-repairing properties, coupled with superior resistance to mechanical damage, results in high on-vehicle performance.

Thin Dry Film :: GEOMET® is seven microns thickness on average without topcoat, and nine microns on average with topcoat. There is no need to undersize threads to compensate for coating thickness.

Hydrogen Embrittlement Free Process :: Coating application process does not induce hydrogen embrittlement, unlike electroplating.

Bimetallic Corrosion Resistant :: GEOMET® performs well when in contact with aluminum and zinc.

Solvent Resistant :: Inorganic nature of GEOMET® results in organic solvent resistance to automotive fluids including brake fluid, the most aggressive solvent.

Heat Resistant :: Maintains corrosion resistance even following an intermittent heat shock. Coating is effective for rotor applications.

Conductive :: Metallic flake concentration allows for electrical current to be passed to the substrate. It is recommended that conductivity levels be tested to determine suitability for the application.

Paintable :: Paints, including electro-deposited, may be applied over GEOMET®.

APPLICATION PROCESSES

The process of applying the GEOMET® coating requires the substrate to be clean bare steel – free of oil, heat-treat scale, rust and other contaminants.

○ Cleaning Methods

Alkaline Cleaning :: In order to remove manufacturing oils, an alkaline wash by immersion or spray is used.

Mechanical Cleaning :: Blasting follows alkaline cleaning to remove heat-treat scale and/or flash rust. Typical media includes shot or grit.

Alkaline Descalers :: Neutral to slightly alkaline descalers are also suitable pretreatment for internally threaded fasteners that cannot be effectively blasted. Descaling may be done alone or with an iron phosphate.

○ Application Methods

Dip-Spin :: Small parts are coated using the dip-spin application method. Parts are loaded into a perforated metal basket and immersed into the GEOMET® coating. The basket lifts and excess coating is spun-off the parts. Following coating, the parts are conveyed into a convection oven for curing.

Spray :: Large parts, typically one half pound or larger, can be coated using the spray application method. Parts are fixtured on a rack and conveyed past air or electrostatic spray nozzles that are set to provide optimum coating thickness on each part surface. Following coating application, the parts are cured in a convection oven or by induction-heating coils.

Dip-Drain-Spin :: Large parts, such as tubes, can be coated using the dip-drain-spin application method. Parts are racked, dipped into the GEOMET® coating, raised up and spun to remove the excess coating. Following coating, the parts proceed into a convection oven for curing.

○ Curing

Parts are subjected to a five minute minimum pre-cure to set the coating, followed by a higher temperature for a complete cure. Topcoats are applied and cured in a similar manner.

NOF Metal Coatings Group

invented zinc flake coatings in 1974, and today continues to be the leading worldwide developer and manufacturer of water-based inorganic coating technology. Our patented coatings, including GEOMET®, PLUS® sealers and GEOBLACK® systems revolutionized the fastening industry by providing high-performance corrosion protection. These product developments are the results of several years research in our laboratories and close cooperation between our North American, European, Asian and South American partners. With research and development, chemical manufacturing, technical service, sales and coating application facilities located worldwide, we continue to develop new specialty coatings to serve the ever-changing needs of metal related industries.

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