

A COMPLETELY CHROMIUM-FREE COATING



From the company that has offered you Corrosion Protective Coatings for over 30 years:



METAL COATINGS
INTERNATIONAL



GEOMET®

GEOMET®, developed as a **chromium-free** solution to the environmental regulations enacted by the government and automotive industry, is the next generation in the Metal Coatings International product line. GEOMET® is a **water-based, VOC compliant** coating comprised of overlapping zinc and aluminum flake in an inorganic binder.

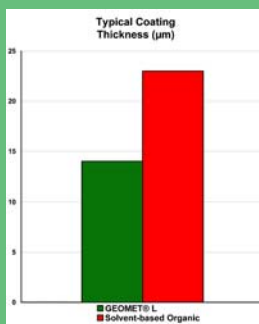


Four Way Corrosion Protection

- ◆ **Barrier Protection:** Overlapping zinc and aluminum flakes provide an excellent barrier between the steel substrate and the corrosive media
- ◆ **Galvanic Action:** Zinc corrodes to protect steel
- ◆ **Passivation:** Metal oxides slow down the corrosion reaction of zinc and steel to provide 3 times greater corrosion protection than pure zinc
- ◆ **Self-Repairing:** Zinc oxides and carbonates migrate to the damaged area of the coating to actively repair the coating and restore barrier protection

Environmental Benefits

- ◆ **CHROMIUM FREE-** Does not contain ANY chromium (NO HEXAVALENT and NO TRIVALENT) in the liquid or on parts. Complies with the following regulations:
 - Environmental Protection Agency (EPA)
 - Occupational Safety and Health Administration (OSHA)
 - DaimlerChrysler CS-9003
 - General Motors GMW 3059
 - Ford WSS-M99P9999-A1
 - EU Directive on End of Life Vehicles
 - EU Directive on Electrical Equipment (RoHS)
- ◆ **NO TOXIC METALS-** Free of nickel, cadmium, lead, barium and mercury
- ◆ **WATER BASED-** Worker/ECO Friendly
- ◆ **VOC COMPLIANT-** Under EPA RACT requirements



Functional Benefits

- ◆ **Thin-** GEOMET®: 7-10 microns
GEOMET® L: 9-14 microns
- ◆ **Hydrogen Embrittlement Free Process-** Coating application process does not require acid pickling or involve electroplating
- ◆ **Bimetallic Corrosion Resistant-** Aluminum flake eliminates the typical bimetallic cell of most zinc coatings when mated with aluminum or steel
- ◆ **Solvent Resistant-** Inorganic nature causes it to be resistant to organic solvents
- ◆ **Heat Resistant-** Maintains Salt Spray performance following heat exposure for 3 hrs @ 550°F (288°C)
- ◆ **Conductivity-** Silver coating systems are sufficiently conductive to accept electrodeposited paints. (Other applications should be tested.)

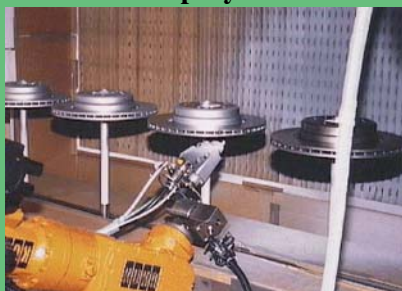
Versatile Application

GEOMET® is applied using conventional Dip-Spin, Spray or Dip-Drain-Spin equipment following an alkaline and/or mechanical cleaning cycle. Coating thickness can be varied by altering elements in the application processes. GEOMET® has a cure window of 575°- 630°F PMT (part metal temperature), for 15 minutes.

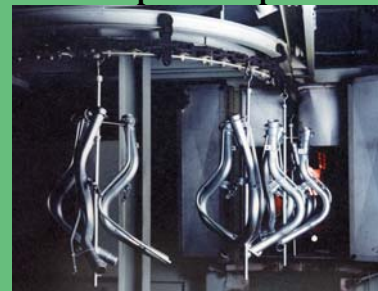
Dip-Spin



Spray



Dip-Drain-Spin



Innovative Curing Methods

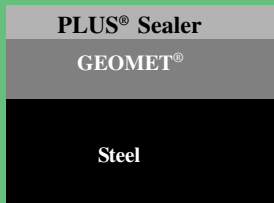
Dip-Spin Monobake- Following the application of the first coat, the parts are baked to a metal temperature of 350°- 450°F for 15 minutes, which sets the coating. The second coat is then applied and baked at 600°- 630°F PMT for 15 minutes to provide the final cure of both coats.

Spray-Coat/Induction-Cure- Following the application of the coating via spray, the parts are exposed to induction heating that quickly elevates the temperature to 600°- 630°F. This process is quick, efficient and compact because the parts reach the curing temperature in a matter of seconds.



Synergistic Sealers

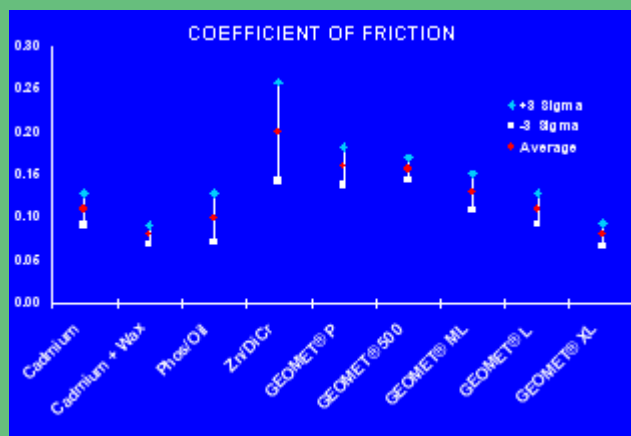
The PLUS® sealers, developed to complement the GEOMET® coating, provide a complete coating system that sets industry standards with dynamic versatility. The PLUS® sealers, applied in one coat over GEOMET®, provide the following characteristics:



- Consistent torque/tension values
- Extended corrosion protection
- Extended bimetallic protection
- Extended resistance to solvents, gasoline and brake fluid
- Good temperature resistance
- Available in a variety of colors

Torque/Tension Properties

The PLUS® sealers provide consistent torque/tension that compares with Cadmium and Cadmium + Wax.



Corrosion Resistance

Salt Spray - The GEOMET® coating systems provide Salt Spray protection (per ASTM B-117/ISO 9227) of 720 hours on threaded fasteners, clips, clamps and stampings. The following pictures show a comparison of GEOMET® L and Zinc Plating with Yellow Chromate.

GEOMET® L



Zinc Plate/Yellow Chromate



1000 Hours Salt Spray

Cyclic Tests - In order to establish a correlation between accelerated corrosion tests and real-life performance, automotive manufacturers have developed their own test methods. The following pictures show the performance of GEOMET® following exposure to these cyclic tests.

GEOMET® Cyclic Performance

GEOMET® L / ML GM 9540P- 40 Cycles



GEOMET® ML APGE - 50 Cycles



GEOMET® L SAE J2334 - 60 Cycles



Specialized Coating Systems

The GEOMET® coating systems are developed to alleviate the concerns of engineers in response to corrosion resistance, lubricity and functional tolerances. The following illustrates the qualities of each individual coating system when properly applied:

COATING SYSTEM		COLOR	MINIMUM THICKNESS* (µm)	MINIMUM COATING WEIGHT* (g/m²)	TORQUE-TENSION			
NAME	TOPCOAT				COEFFICIENT OF TORQUE		COEFFICIENT OF FRICTION	
					PS 5873L	GM 9064P	WZ 101	DIN 946
FASTENER / SMALL PARTS COATING SYSTEMS								
GEOMET® 500 A	None	Silver	6	24	.18	.16	.15	.15
GEOMET® 500 B	None	Silver	8	36	.18	.16	.15	.15
GEOMET® P	PLUS®	Silver	9	28	.21	.20	.16	.16
GEOMET® ML	PLUS® ML	Silver	9	28	.18	.17	.13	.13
GEOMET® L	PLUS® L	Silver	9	28	.16	.15	.12	.11
GEOMET® XL	PLUS® XL	Silver	12	31	.10	.09	.08	.08
GEOBLACK® 117	GEOKOTE® 117	Black	12	32	.21	.20	--	.16
GEOBLACK® 137	GEOKOTE® 137	Black	11	31	.18	.17	--	.13
GEOBLACK® 147	GEOKOTE® 147	Black	11	31	.16	.15	.13	.11
GEOBLACK® ML	PLUS® ML Black	Black	10	32	.16	.17	.13	.13
NON-FASTENER / LARGE PARTS COATING SYSTEMS								
GEOMET®	None	Silver	Per Specification		--	--	--	--
GEOBLACK® 200	GEOKOTE® 200	Black	13	33	--	--	--	--

DaimlerChrysler PS-5873L: M-10 Sems coated bolt; plain uncoated nut
GM 9064P: M-10 coated bolt; zinc plated washer; zinc plated nut

DIN 946: M-10 coated bolt; plain uncoated nut
WZ101: M-10 coated bolt; surfaced washer

* or per automotive specification

COATING SYSTEM	FLUORESCENT COLOR UNDER BLACK LIGHT	SALT SPRAY HOURS (MINIMUM)	CYCLIC TEST RESULTS (Minimum)			ORGANIC SOLVENT RESISTANCE	TEMPERATURE RESISTANCE** (INTERMITTENT)	
			GM 9540 P	APGE	SAE J2334		°F	°C
GEOMET®	Purple	Per Spec	Per Spec	Per Spec	Per Spec	Excellent	550	288
GEOMET® 500 A	Purple	600	24	25	40	Excellent	550	288
GEOMET® 500 B	Purple	1000	40	50	80	Excellent	550	288
GEOMET® P	Orange	720	40	50	60	Excellent	800	427
GEOMET® ML	--	720	40	50	60	Excellent	600	316
GEOMET® L	Green	720	40	50	60	Excellent	800	427
GEOMET® XL	Blue	720	40	50	60	Excellent	---	---
GEOBLACK® 117	--	480	40	30	40	Good	360	182
GEOBLACK® 137	--	480	40	30	40	Good	360	182
GEOBLACK® 147	--	720	40	30	60	Good	360	182
GEOBLACK® ML	--	1008	40	50	60	Good	360	182
GEOBLACK® 200	--	720	40	30	60	Excellent	360	182

** Maintains Salt Spray performance following heat exposure for 3 hours at the specified temperature.

Global Availability

The Metal Coatings International coating systems are marketed through licensing agreements to over 200 captive and job shop coaters worldwide. For a full list of specifications or to contact our global affiliates, please visit our website at www.geomet.net



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