



Technical Data Sheet

DURAGREEN™ MF 1 Floor Finish Emulsion Polymer

Features & Benefits

DURAGREEN™ MF 1 Floor Finish Emulsion Polymer employs a distinct crosslinking technology and composition offering the following benefits:

- **Durability:** Polishes with DURAGREEN™ MF 1 Polymer exhibit excellent detergent, black heel mark and scuff mark resistance properties relative to traditional products.
- **Labor-Saving:** The excellent properties of DURAGREEN™ MF 1 Polymer offer cleaner looking floors with excellent gloss retention resulting in less frequent need for burnishing, recoating and stripping. The excellent performance properties, coupled with DURAGREEN™ MF 1 Polymer's characteristics, makes it a labor-saving and preferred product.
- **Low Odor:** Suggested formulation MF-1-5, made with DURAGREEN™ MF 1 Polymer, has virtually no odor, making it an excellent choice for flooring in patient care facilities such as hospitals and nursing homes.
- **Environmental Certification:** DURAGREEN™ MF 1 Polymer formulation MF-1-5 is eligible of meeting the criteria of the Green Seal, Standard for Floor-Care Products for Industrial and Institutional Use (GS-40).

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Property	Unit	Result
Appearance		Milky-white liquid
Solids Content	%	40–41
Minimum Film-Formation Temperature (MFFT)	°C	~43
pH		7.0–8.0
Viscosity (Brookfield LVT, #1 Spindle, 60 rpm)	cP	< 100
Density @ 25°C (Lb./U.S. gal.)		~8.8
Specific Gravity		~1.06
Ionic Charge		Anionic
Temperature Guidelines		Protect from freezing

Description

DURAGREEN™ MF 1 Polymer is a high solids (40–41%) floor finish emulsion polymer based on distinct crosslinking technology that produces a high quality, styrene-acrylic polish without relying on zinc cross-linking compounds. Unlike other polymer systems, this novel chemistry offers high durability and excellent gloss retention after repeated detergent scrubbing.

DURAGREEN™ MF 1 Polymer based polishes offer excellent detergent resistance, gloss retention and mark resistance relative to conventional “zinc-free” finishes.

Standard Performance Characteristics

As with all Dow floor polish polymers, DURAGREEN™ MF 1 Polymer shares a number of common performance characteristics. DURAGREEN™ MF 1 Polymer facilitates formulating flexibility to offer a range of performance profiles from minimum maintenance to frequent burnishing. The suggested polish formulations made with DURAGREEN™ MF 1 Polymer meet or exceed an industry slip resistance standard as tested by the Standard Test Method ASTM D-2047. Polish formulation MF-1-5 can be formulated to a range of solids levels from 15 to 25 percent. DURAGREEN™ MF 1 Polymer allows for the manufacture of polishes that can be applied at floor temperatures of 50°F (10°C) and above.

DURAGREEN™ MF 1 Formulation MF-1-5 (20%)

Formulation MF-1-5 is a starting point formulation with very good gloss and excellent wear properties relative to traditional products. MF-1-5 have been enhanced for low to periodic maintenance, but will respond to a variety of floor maintenance. MF-1-5 meets CARB standards for VOC in floor finishes and is eligible of meeting Green Seal Standard for Floor-Care Products.

Material in Proper Order of Addition	Weight Percent	Lbs/100 US Gal	Gallons/100 US Gal
Water	47.49	405.16	48.54
KATHON™ CG/ICP Preservative	0.07	0.60	0.07
Capstone FS-65 fluorosurfactant ¹	0.04	0.32	0.04
Abex-18S anionic surfactant	0.50	4.27	0.50
CARBITOL™ Solvent-low Gravity	4.00	34.13	4.13
Tri(butoxyethyl) phosphate plasticizer	1.50	12.80	1.51
DURAGREEN™ MF 1 Polymer (40.5%)	38.20	325.90	36.97
Alkali soluble resin (30%) ²	3.14	26.79	3.05
Epolene E43N polypropylene polymer (40%) ³	2.36	20.13	2.42
A-C 325N polyethylene polymer (35%) ⁴	2.70	23.03	2.78
Defoamer ⁵	Add the desired level of defoamer		
Totals =>	100.00	853.13	100.00

1. Recommended Wetting Agent Capstone FS-65 (supplied by Chemours at 25% active solution)
2. Michem Dispersion MD-91530 or BYK Chemrez 30
3. Commercial Trade Names: Michem Emulsion 94340 and BYK wax emulsion Aquacer 8940
4. Commercial Trade Names: Michem Emulsion 93235 and BYK wax emulsion Aquacer 8059
5. Recommended Defoamers: DEE FO PI-40 Münzing, info@munzing.us or BYK-024, BYK USA Inc., info@byk.com

DURAGREEN™ MF 1 Formulation MF-1-5 (20%) (Cont.)

Formulation Constants	Theoretical Non-volatile Solids	20%
	Theoretical Density, Lb./U.S. Gal.	~8.5
	Polymer/Resin/Wax Ratio	85/5/10

DURAGREEN™ MF 1 Polymer Matte Formulation MF-1-6M(16%)

Formulation MF-1-6M is a starting point formulation for a matte finish with excellent wear properties in a low maintenance environment.

Material in Proper Order of Addition	Weight Percent	Lbs/100 US Gal	Gallons/100 US Gal
Water	58.37	495.99	59.42
KATHON™ CG/ICP Preservative	0.07	0.59	0.07
Capstone FS-65 fluorosurfactant ¹	0.04	0.32	0.04
ABEX-18S anionic surfactant	0.36	3.06	0.36
CARBITOL™ Solvent-low Gravity	2.89	24.56	2.97
Tri(butoxyethyl) phosphate plasticizer	1.08	9.18	1.08
DURAGREEN™ MF 1 Polymer (40.5%)	27.62	234.70	26.63
Alkali soluble resin (30%) ²	2.27	19.29	2.19
Epolene E43N polypropylene polymer (40%) ³	1.71	14.53	1.74
A-C 325N polyethylene polymer (35%) ⁴	1.95	16.57	2.00
BYK RM 31-24 wax additive	3.64	30.93	3.50
Defoamer ⁵	Add the desired level of defoamer		
Totals =>	100.00	849.73	100.00

Formulation Constants	Theoretical Non-volatile Solids	16%
	Theoretical Density, Lb./U.S. Gal.	~8.5
	Polymer/Resin/Wax Ratio	85/5/10

1. Recommended Wetting Agent Capstone FS-65 (supplied by Chemours at 25% active solution)
2. Michem Dispersion MD-91530 or BYK Chemrez 30
3. Commercial Trade Names: Michem Emulsion 94340 and BYK wax emulsion Aquacer 8940
4. Commercial Trade Names: Michem Emulsion 93235 and BYK wax emulsion Aquacer 8059
5. Recommended Defoamers: DEE FO PI-40 Münzing, info@munzing.us or BYK-024, BYK USA Inc., info@byk.com

Performance Properties

Gloss Retention of Polymers/Finishes with Daily Detergent Scrubbing and High Speed Burnishing

Four coats of polish applied with string mop applicator to test floor area. Polish application rate was 2000 square feet/gallon. Gloss readings were taken once a week following detergent scrubbing with neutral cleaner and burnishing with synthetic fiber pad using 2600 rpm battery operated burnisher. The results of this test show that after 7 days in traffic the DURAGREEN™ MF 1 Polymer-based polish exhibited exceptional gloss retention versus a leading conventional “zinc-free” polymer.

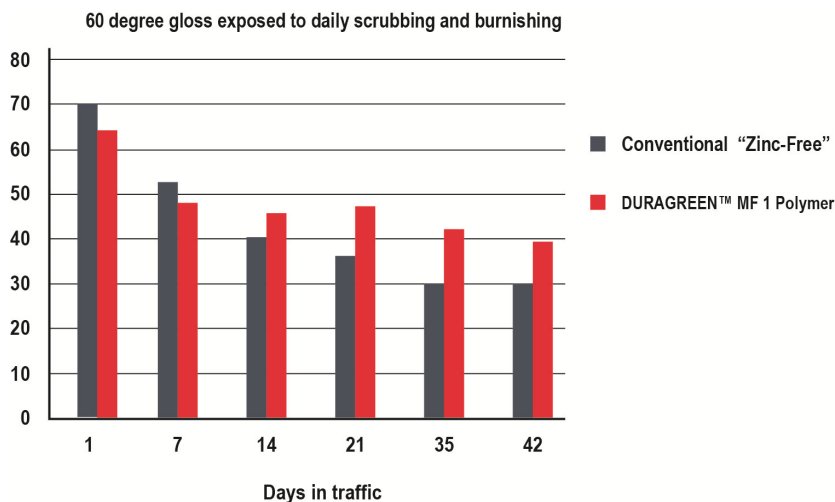


Figure 1: Gloss Retention – Daily Maintenance

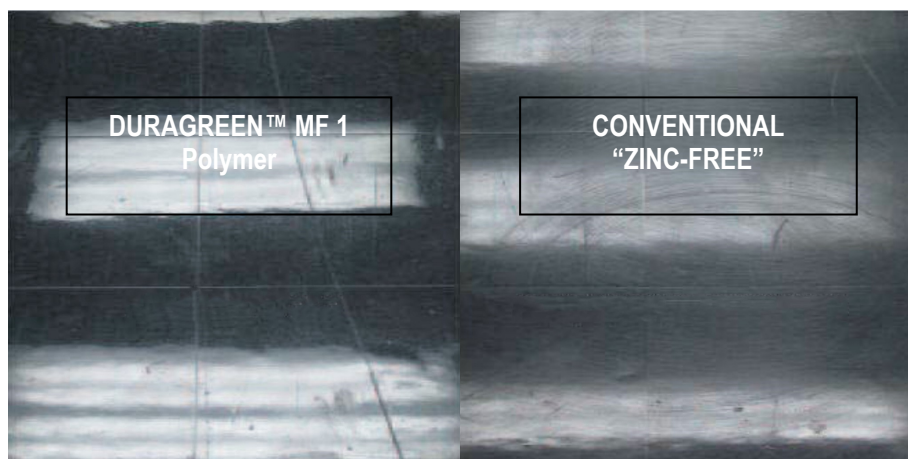
Typical values, not to be construed as specifications. Users should confirm results by their own tests.

Floor Test Data

DURAGREEN™ MF 1 Polymer versus a leading conventional “zinc-free” polish after 6 weeks of daily detergent auto-scrubbing and burnishing.

Below is a close-up of a floor test of two polishes one based on DURAGREEN™ MF 1 Polymer (left) and a leading conventional “zinc-free” emulsion (right). After 6 weeks of traffic and daily detergent auto scrubbing and burnishing the DURAGREEN™ MF 1 Polymer based polish maintains its high gloss and exhibits very little marking and scratching. The gloss of the DURAGREEN™ MF 1 Polymer based polish is so high that you can see the overhead lights reflecting off the coating. The commercial “zinc-free” polish on the right is significantly dulled and scratched and has much lower gloss and overhead light reflectance.

Floor Test Data (Cont.)



Handling Precautions

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life and Storage

Store products in tightly closed original containers at temperatures recommended on the product label.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Health and Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, dow.com or consult your local Dow representative.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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