

3M Advanced Materials Division

3M™ Stain Resistant Additive SRC-220

for Use on Porous Surfaces

Important Notice: This application profile is intended for general information purposes only and should not be used as a recommendation, endorsement, or specification for a particular application. It reflects an application that one or more 3M customers have found for a 3M product or products in their particular application and under their unique conditions of use. One customer's successful use of a product in a particular application is not necessarily representative and is not a guarantee of the results another customer may have in the same or similar application. Every customer is responsible for evaluating the 3M product to determine whether it is fit for a particular use and suitable for the customer's application. Moreover, the fact that an application is profiled here does not mean the application has been reviewed or considered for appropriateness by 3M sales, marketing, technical service, product responsibility, or regulatory in your country or region. Each customer is solely responsible for evaluating third party intellectual property rights and for ensuring that its use of 3M product does not violate any third party intellectual property rights. Before suggesting an application profiled here, please be sure to review it for appropriateness with your local 3M sales, marketing, technical service, product responsibility, and regulatory organizations.

Product Description

3M™ Stain Resistant Additive SRC-220 is an aqueous fluorinated polyurethane dispersion (PUD) that provides stain resistance, release, and oil and water repellency characteristics to porous surfaces such as cured concrete, grout, unglazed tile, granite, clay, slate, limestone and terra cotta. SRC-220 additive can be diluted with water, water-miscible organic solvents and water-solvent mixtures to create a penetrating sealer. Suggested active solids concentration for penetrating sealer applications is 2 to 5%. This product is suitable for both indoor and outdoor use.

Suggested Applications

SRC-220 additive can be diluted using water, water-miscible solvents (such as alcohols, ketones, ethylene-glycol-monobutyl-ether, dipropylene glycol monomethyl ether and other glycol mono- or di- ethers) and water-solvent mixtures. When applied at a 2 to 5% concentration and used as a penetrating sealer, SRC-220 additive provides water and oil repellency and stain resistance to porous surfaces such as cured concrete, grout, unglazed tile, granite, clay, slate, limestone, sandstone and terra cotta. The sealer is easily applied, dries quickly, is durable and causes no significant change to the appearance of the treated surface.

Note: When using solvents or other chemicals, be sure to read and follow the manufacturer's precautions and directions for use before using.

Laboratory tests show that repellency and stain resistance improves when SRC-220 additive is diluted with a water-miscible solvent or a water-solvent mixture, as compared

to dilution with water only. When SRC-220 solutions are applied to stone of high density, such as marble, granite or slate, the use of solvents or solvent-water blends improves stain resistance and sealer penetration. Surfactants, biocides, additional UV stabilizers and other coating additives may be incorporated to adjust formulation performance.

Note: SRC-220 additive is not compatible with xylene, mineral spirits and other non-polar hydrocarbons.

Typical Physical Properties

Not for specification purposes. All values determined at 77°F (25°C) unless otherwise specified.

Properties	3M™ Stain Resistant SRC-220
Appearance	Slightly translucent solution
Percent actives (weight %)	15%
Viscosity	<30 cps
Density	1.1 g/ml
VOC (ASTM 3960-89)	<240 g/l
pH	7 – 8
Boiling point	100°C
Vapor pressure @ 20°C	18 mmHg
Evaporation Rate	1, Water = 1
Flash Point	>93.3°C
Stability	Minimum one year from date of manufacture under normal storage conditions. Bring to room temperature and stir before using.
Solvent	DPM (5%) and water (80%)

3M™ Stain Resistant Additive SRC-220 for Use on Porous Surfaces

As a Penetrating Sealer for Concrete, Porous Stone and Pavers:

SRC-220 concentrate was diluted to 4% solids in water, to 3% solids in ethylene glycol monobutyl ether (EGBE or 2-butoxyethanol) and to 3% solids in a 9:1 water/EGBE solution. These blends were compared to a leading water-based fluorochemical tile sealer and to a solvent-based silicone sealer. Each sealer was applied to Limestone tile and Mexican Saltillo tile (two coats for each sealer) and allowed to dry for 24 hours. A variety of stain-causing materials were applied to the treated surfaces. The materials were allowed to stand for 24 hours; the tiles were washed with water, sponged and allowed to dry. The location on each of the tiles where the stain-causing materials were placed was then rated using the scale shown above Tables 1 and 2. The performance ratings for Limestone and Mexican Saltillo are shown in Tables 1 and 2, respectively. The results showed that SRC-220 additive in water provided comparable stain resistance and stain release to a leading fluorochemical tile sealer. The addition of a small amount of solvent, such as EGBE, improves the water repellency, oil repellency and stain resistant performance of SRC-220 additive, as compared to a leading fluorochemical sealer.

Note: SRC-220 additive can be added to formulations designed to enhance the cure of newly placed concrete. Testing formulations using accepted industry acrylic resins have shown that adding SRC-220 additive can provide post-curing stain resistance. See your 3M representative for additional information.

Rating	0	1	2	3	4	5
Description	No Stain	Very Light Stain	Light Stain	Moderate Stain	Heavy Stain	Stain Penetrated Within One Hour

Table 1: Stain Resistance Results for Limestone

Stain-Causing Material	4% SRC-220 in Water	3% SRC-220 in EGBE	3% SRC-220 in Water-EGBE Blend	Commercial Fluorochemical Sealer in Water	Silicone Sealer in Solvent	Control-Not Sealed
Cooking Oil	0	0	0	0	4	5
Coffee	1	0	1	1	2	4
Grape Juice	1	0	1	1	2	5
Cola	1	0	0	0	3	4
Red Wine	1	1	1	2	3	5
Soy Sauce	0	0	0	0	2	5
Dirty Motor Oil	0	0	0	0	4	5
Brake Fluid	2	1	1	0	4	5
Anti-freeze	1	0	0	3	3	5
Transmission Fluid	1	0	0	0	4	5
Total Stain Score	8	2	4	7	31	48

Table 2: Stain Resistance Results for Mexican Saltillo

Stain-Causing Material	4% SRC-220 in Water	3% SRC-220 in EGBE	3% SRC-220 in Water-EGBE Blend	Commercial Fluorochemical Sealer in Water	Silicone Sealer in Solvent	Control-Not Sealed
Cooking Oil	0	0	1	1	4	5
Coffee	1	1	1	2	3	5
Cola	1	0	0	1	3	4
Red Wine	2	1	1	3	3	5
Soy Sauce	0	0	0	2	2	5
Dirty Motor Oil	2	1	1	2	5	5
Anti-freeze	1	1	1	1	3	5
Transmission Fluid	2	1	1	2	4	5
Total Stain Score	9	5	6	14	27	39

Stain resistance on certain other stone substrates is available on request.

3M™ Stain Resistant Additive SRC-220 for Use on Porous Surfaces

3M™ Stain Resistant Additive for Building Maintenance

Companies performing building maintenance can also employ SRC-220 additive to reduce staining and soil adhesion to porous surfaces between cleanings. After a porous stone floor, a concrete walkway, or a stone wall is cleaned, a diluted solution of SRC-220 additive can be wiped, sprayed or rolled onto the surface and allowed to penetrate. The dilution solvent and percent solids will vary by the type of surface being protected. Dilution to a 2% to 5% solids concentration can be used as a penetrating sealer. SRC-220 additive provides water and oil repellency and stain resistance to porous surfaces such as cured concrete, grout, unglazed tile, granite, clay, slate, limestone and terra cotta. Solvent selection information is provided above in the section entitled, “Suggested Applications.”

Durability

Durability testing was performed to determine the ability of SRC-220 formulations to continue providing stain resistance to porous surfaces following repeated cleanings. The procedure was to coat a porous surface with two coats of dilute SRC-220 additive (specified in Table 3 to the right). The stain resistance of the coated surface was rated. Test stains were placed on the treated surfaces and left standing for 24 hours. They were then cleaned with plain water and a paper towel. Stain resistance was scored on a 0 – 5 scale for each stain, with 0 as best and 5 as the worst staining. The treated surfaces were then scrubbed 500 times using a Gardner Linear Wear Tester with a Scotch-Brite™ High Performance Cloth and detergent. Staining was retested following the scrubbing test. Three SRC-220 formulations were tested on porous surfaces as shown to the right.

Rating	0	1	2	3	4	5
Description	No Stain	Very Light Stain	Light Stain	Moderate Stain	Heavy Stain	Stain Penetrated Within One Hour

Table 3: Contact Angle and Stain Resistance of SRC-220 Coated Stone Before and After Cleaning

	Limestone						White Granite	
	4% SRC-220 in Water	4% SRC-220 in Water	4% SRC-220 in Water DPM 9:1	4% SRC-220 in Water DPM 9:1	3% SRC-220 in IPA/ DPM 9:1	3% SRC-220 in IPA/ DPM 9:1	3% SRC-220 in IPA/ DPM 9:1	3% SRC-220 in IPA/ DPM 9:1
Scrub Cycles	0	500	0	500	0	500	0	500
Adv Water Contact Angle	109	99	124	101	115	110	67	45
Adv Hexad Contact Angle	73	67	94	73	79	73	51	31
Transmission Fluid	1	1	0	0	0	0	0	0
Motor Oil	0	0	0	0	0	0	0	0
Corn Oil	0	0	0	0	0	0	0	0
Anti-freeze Coolant	1	1	1	1	0	0	0	0
Soy Sauce	0	1	0	1	1	0	0	0
Red Wine	1	2	1	1	0	1	0	1
Grape Juice	1	1	0	1	0	1	0	0
Coffee	1	1	1	1	0	0	0	0
Total Score	5	7	3	5	1	3	0	1

Note: All three SRC-220 formulations were tested on limestone, but only the 3% SRC-220 diluted with IPA/DPM (9:1 ratio) was used on white granite. Solvent dilutions of SRC-220 additive are needed for maximum performance on higher density stone surfaces, such as marble and granite.

As shown in Table 3, SRC-220 additive stain resistance remains at its high initial level following 500 cycles of cleaning. The contact angle measurements shown in Table 3 indicate the ability of the stain to wet the porous surface. A higher contact angle will resist wetting and, therefore, resist stain penetration. The scrubbing cycles lower the contact angle slightly, but stain performance is virtually unchanged.

3M™ Stain Resistant Additive SRC-220 for Use as a Stain Resistant Additive

3M™ Stain Resistant Additive SRC-220 Formulation Information

Water or water miscible solvents should be added to concentrated SRC-220 additive with agitation to create the required active solid level. Surfactants and defoamers can be added to the formulation, but are normally not required. SRC-220 additive can be added to many coating formulations; however, the user should test each formulation for compatibility before using.

Storage

SRC-220 additive is stable after limited freezing and thawing. Repeated freezing and thawing should be avoided. The shelf life of the product is one year from date of manufacture under normal storage conditions. SRC-220 additive is classified as “non-hazardous and non-flammable” by the U.S. Department of Transportation.

Regulatory Summary

SRC-220 additive contains low levels of volatile organic compounds (VOCs).

3M has been a leader in developing next generation surface protection materials with performance and environmental advantages. SRC-220 additive is based upon stable polymers with minimal environmental impact and is not bioaccumulative.

The components of SRC-220 additive are in compliance with the chemical notification requirements of TSCA.

Warranty, Limited Remedy, and Disclaimer: Many factors beyond 3M’s control and uniquely within user’s knowledge and control can affect the use and performance of a 3M product in a particular application. User is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user’s method of application. User is solely responsible for evaluating third party intellectual property rights and for ensuring that user’s use of 3M product does not violate any third party intellectual property rights. Unless a different warranty is specifically stated in the applicable product literature or packaging insert, 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OF NON-INFRINGEMENT OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. If the 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M’s option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability: Except where prohibited by law, 3M will not be liable for any loss or damages arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.

Technical Information: Technical information, recommendations, and other statements contained in this document or provided by 3M personnel are based on tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed. Such information is intended for persons with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.

Product Safety and Handling

SRC-220 additive is intended for use in contained and non-dispersive applications. Before using this product, read the product label and Safety Data Sheet (SDS) and follow all precautions and directions for use.

3M does not recommend this product for use in food contact applications or applications involving repeated exposure of wet material through skin contact, inhalation or ingestion. It is not intended for medical or pharmaceutical applications. Neither 3M nor the U.S. Food and Drug Administration has evaluated or reviewed this product for such applications.

It is the user’s responsibility to determine whether this product is durable and properly cured for the end use.

Incinerate in an industrial or commercial facility in the presence of a combustible material. Combustion products will include HF. Facility must be able to handle halogenated materials. As a disposal alternative, dispose of waste product in a facility permitted to accept chemical waste.

For additional information about safety, handling, and disposal, see the product Safety Data Sheet.



3M Advanced Materials Division

3M Center
St. Paul, MN 55144 USA

Phone 1-800-367-8905
Web www.3M.com/paintsandcoatings

Please recycle. Printed in USA.
© 3M 2016. All rights reserved.
Issued: 12/16 12156HB
98-0212-3872-4

3M and Scotch-Brite are trademarks of 3M. Used under license by 3M subsidiaries and affiliates.