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TECHNICAL DATA SHEET

Fluorosil[®] OH C7-F
Fluorosil ACR C7-F

Reactive Fluoroalkyl Silicones

DESCRIPTION

Fluorosil[®] OH C7-F is a liquid fluoroalkyl and alkylcarbinol functionalized silicone based on non-PFOS fluoroalkyl chains. The fluoroalkyl pendant gives excellent softness and slip, while the carbinol offers reactivity for substantivity and improved performance. **Fluorosil ACR C7-F** is an acrylate ester of that material.

TYPICAL PROPERTIES

	Fluorosil OH C7-F	Fluorosil ACR C7-F
Appearance	liquid	liquid
Colour, Gardner	2	2
Reactive sites	2	2
CF2 content, %	17%	17%
OH Value	45	NA
Viscosity, cps	90	100
Active Content %	100%	100%
Solubility (1%):		
-Water	Insoluble	Insoluble
-IPA	Soluble	Soluble
-Mineral Spirits	Soluble	Soluble

USES AND APPLICATION

The unique properties of **Fluorosil OH C7-F** result in benefits such as solvent, stain, mar and fingerprint resistance; flexibility; lubricity; softness and slip. The primary hydroxyl group provides reactivity with moieties such as isocyanate, epoxy and esters. The molecule migrates to surfaces, and reacts into the matrix giving improved properties and substantivity.

In the absence of groups with which it can react the OH provides hydrogen bonding to surfaces again providing substantivity.

Fluorosil ACR C7-F offers the same benefits in UV cured acrylate systems or free radical polymerization processes.

Recommended usage level is between 0.2 – 5.0 wt% of the formulation. Slip, softness, lubricity and mar resistance require only the lower end of the use level range while stain and fingerprint resistance and flexibility benefit from higher use levels.

APPLICATIONS DATA

We have screened **Fluorosil OH C7-F** and **Fluorosil ACR C7-F** against other additives in five different coatings systems. In all, these gave the best balance of stain, fingerprint and mar resistance, slip, cost, and compatibility even over additives with a much higher amount of fluoroalkyl content built onto the backbone. There seems to be a synergy between the fluoroalkyl and the silicone parts of the molecule resulting in improved properties.

In the interest of space, we will not duplicate all of those experiments here, but the detailed data is available upon request or the relevant technical papers can be downloaded from our website www.siltech.com.

Seen in Chart 1, Static and Kinetic COF are reduced dramatically by the **Fluorosil OH C7-F** and **Fluorosil ACR C7-F** products in the three industrial coatings. The UV cured silicone resin system has low COF already due to the resin. The paint system shows a measurable, but small reduction.

Chart 1: COF data

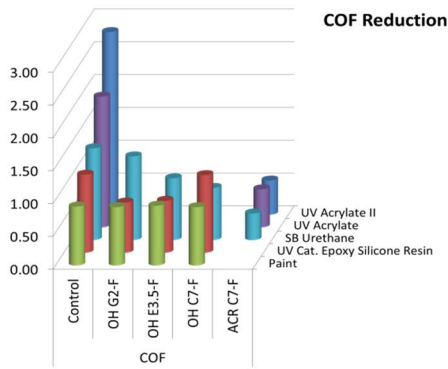


Chart 2: Mar and Stain Resistance

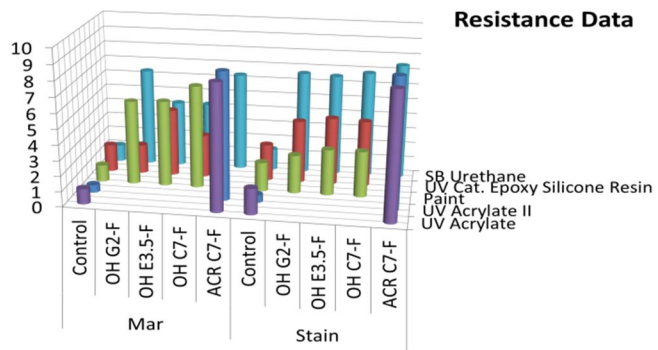


Chart 2 above, one sees improvements in all five systems over the additive-free control and other developmental structures for the **Fluorosil® OH C7-F** and **Fluorosil ACR C7-F** products in mar resistance and average of stain resistances. Not shown here is the improvement in fingerprint resistance seen in both of the organic acrylate UV cured systems, the only two where we evaluated this property.

The following table summarizes performance and recommendations with the properties we have evaluated in these five systems. The ++ indicates strong protection; + indicates some protection; and - indicates little or no effect. The blank areas indicate that we have not evaluated those combinations of property, coatings system and additive.

	Waxy stains					Aqueous Stains										
	Crayon			Pencil Crayon	Silicone Pigment	Ink	Black marker			Juices						
	SB Urethane	UV Urethane	UV Epoxy	Urethane	UV Epoxy	Cat. Silicone	Cat. Silicone	Paint	Cat. Silicone	SB Urethane	UV Urethane	UV Epoxy	Cat. Silicone	Paint	Paint	Cat. Silicone
Fluorosil																
OH C7-F	+					++	+	+		++			+	++	++	++
ACR C7-F	++	++	++	+	++					++	++	++				

SAFETY

Before handling, read the Material Safety Data Sheet and container label for safe use, physical and health hazard information.

THIS MATERIAL IS NOT FOR MEDICAL OR DRUG USE.

STORAGE AND SHELF LIFE

When stored in the original, unopened containers between 10 and 40°C, **Fluorosil OH C7-F** and **Fluorosil ACR C7-F** have a shelf life of 12 months from date of manufacture.

PACKAGING

Fluorosil OH C7-F and **Fluorosil ACR C7-F** are available in 20kg and 200kg containers.

LEGAL DISCLAIMER

Siltech Corporation believes that the information in this technical data sheet is an accurate description of the typical uses of the product. Siltech Corporation, however, disclaims any liability for incidental or consequential damages, which may result from the use of the product that are beyond its control. Therefore, it is the user’s responsibility to thoroughly test the product in their particular application to determine its performance, efficacy and safety. Nothing contained herein is to be considered as permission or a recommendation to infringe any patent or any other intellectual property right.

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