

CoatOSil^{*} 1211 Coatings Additive

non-foaming wetting agent for waterborne coatings

Product Description

Momentive Performance Materials CoatOSil 1211 coatings additive is uniquely engineered and may impart non-foaming and superwetting properties in waterborne coatings for spray applications, high speed roll applications and hard to wet surfaces. It is a 100% active, organomodified silicone that should not interfere with recoatability. It may be an effective replacement for fluorosurfactants in many applications, yet it does not cause the foaming problems often associated with fluorosurfactants. It may also be used in solvent-based and radiation-curable coatings and may enhance the wetting power of the coatings formulations.

Key Features and Typical Benefits

- Helps enable wetting of waterborne systems on hard to wet as well as standard substrates
- May enhance coatings uniformity
- May enable wetting with reduced levels of coalescing agents, hence reduces the levels of volatile organic compounds (VOC) in coatings formulations
- Does not cause foaming in waterborne coatings or inks
- Does not affect recoatability.
- May improve dispersion stability of pigments, and color acceptance

Typical Physical Properties

Actives, %	100
Water Solubility	Dispersible
Color	Straw-colored
Specific Gravity at 25/25°C	0.997
Surface Tension, 0.1% (w/w) in water at 25°C	22 mN/m
Flash Point, °C (°F)	118 (245)
Viscosity, Centipoise at 25°C	120
VOC (g/l)	86

Momentive Performance Materials provides versatile materials as the starting point for our creative approach to ideas that help enable new developments across hundreds of industrial and consumer applications. We are helping customers

solve product, process, and performance problems; our silanes, fluids, elastomers, sealants, resins, adhesives, urethane additives, and other specialty products are delivering innovation in everything from car engines to biomedical devices.

From helping to develop safer tires and keeping electronics cooler, to improving the feel of lipstick and ensuring the reliability of adhesives, our technologies and enabling solutions are at the frontline of innovation.



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Potential Applications

CoatOSil 1211 coatings additive may provide the greatest benefit in waterborne formulations to be applied to hard to wet substrate. The non-foaming characteristics may make it well suited for use in coatings applied by spray or high speed roll methods. Possible applications for coatings containing CoatOSil 1211 coatings additive include:

- Coatings for plastic films and plastic components
- Wood coatings
- Glass coatings
- Coatings applied to contaminated (oily) metal surfaces
- Spray or high speed roll applied coatings

Formulation and Use

CoatOSil 1211 coatings additive should be used in aqueous formulations having pH 6.5-8.5. Outside of this range, loss of wetting power may be noticeable with time.

CoatOSil 1211 coatings additive can be added to the formulation in the grind or during the let-down process. It should be added slowly under low agitation, gradually increasing the mixing speed and allowing the wetting agent to disperse at moderate shear for 5 to 15 minutes. Improper dispersion of the additive may cause surface defects in some systems. Alternatively, it can be mixed with the cosolvent and incorporated into the formulation. If the formulation has been sitting for a long time, mix well before use.

When CoatOSil 1211 coatings additive is added to the grinding resin, it may provide better pigment wetting and may prevent pigments from flocculating. This may result in better storage stability, improved gloss and color acceptance.

CoatOSil 1211 coatings additive at levels of 1 to 4 pounds per hundred gallons of coating is recommended. Levels up to 10 pounds per hundred gallons should be used for organic pigments. A ladder study is recommended to determine optimal usage levels.

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Performance

A model industrial waterborne acrylic lacquer formulation shown in the following table was used to demonstrate the outstanding wetting and non-foaming features of CoatOSil 1211 coatings additive.

Model Waterborne Acrylic Clear Lacquer

Material	Weight	Volume
Add the following with good agitation:		
Model Waterborne Acrylic (41.5 wt %)	528.1	61.3
Water	226.3	27.2
Defoamer	1.3	0.2
Add under agitation:		
2-butoxyethanol	59.6	7.9
2-(2-butoxyethoxy) ethanol	9.9	1.2
Dibutylphthalate	9.9	1.2
CoatOSil 1211	8.5	1.0
	<u>843.6</u>	<u>100</u>
Coating Properties		
Total solids by weight %	26	
Total solids by volume %	21	
Viscosity cps	150-350	
Volatile organic compounds		
lbs/gal	1.95	
grams/liter	233	

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Performance (continued)

CoatOSil 1211 Coatings Additive Wetting Property:

The model waterborne acrylic system solids were reduced with water from 31% to 26%. The coatings were applied by conventional draw downs onto PTFE films. The dry film thickness was ~ 1 mil. The model waterborne acrylic system was compared to a coating made with CoatOSil 1211 coatings additive and a competitive wetting agent. Visual evaluations were made one hour after application.

Figure 1 shows the photograph of the model waterborne acrylic system without any wetting agent. Notice that the coating pools in the middle of the PTFE coupon. Severe de-wetting occurs. Figure 2 shows the model waterborne acrylic system containing 0.5% CoatOSil 1211 coatings additive. No de-wetting occurs. The coating stays on the PTFE coupon as a very thin film. Figure 3 shows the model waterborne acrylic system containing 1% actives of a competitive wetting agent. De-wetting also occurs. The model waterborne acrylic system containing 0.5% actives of the same competitive wetting agent shows more severe de-wetting than the coating containing 1% actives. These photographs demonstrate the excellent wetting performance of CoatOSil 1211 coatings additive.

Figure 1.

Model waterborne acrylic system
with no wetting agent
on PTFE film

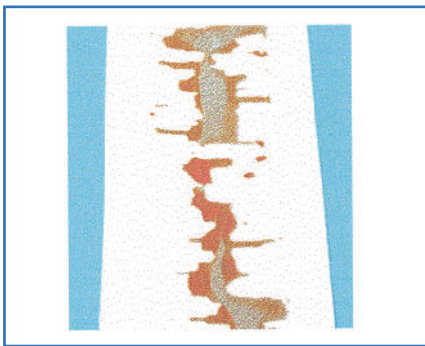


Figure 2.

Model waterborne acrylic system
containing 0.5% actives of CoatOSil 1211
coatings additive on PTFE film

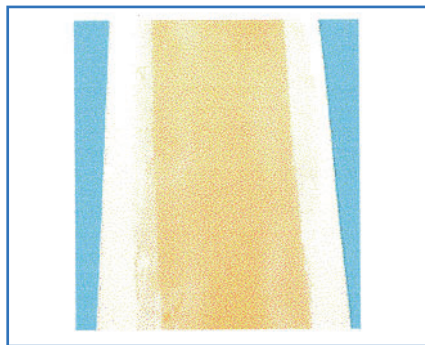
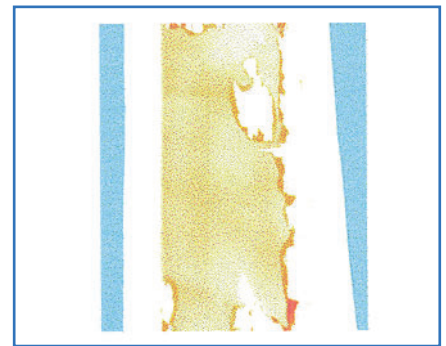


Figure 3.

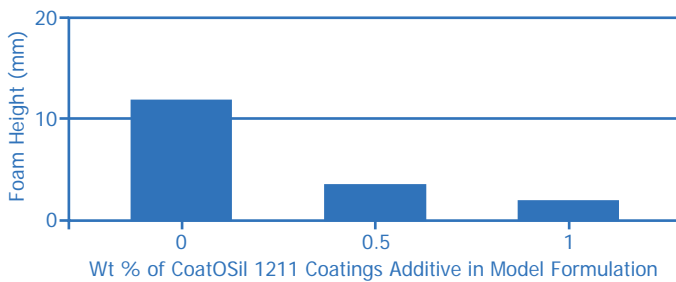
Model waterborne acrylic system containing
1% actives of a competitive additive
on PTFE film



Performance (continued)

CoatOSil 1211 Coatings Additive Non-Foaming Property:
CoatOSil 1211 coatings additive was added to the model waterborne acrylic system at 0.5% and 1%. The mixtures were shaken with a wrist shaker for 1 minute and the foam heights were measured. Figure 4 shows the foam heights vs. the levels of CoatOSil 1211 coatings additive. Notice that CoatOSil 1211 coatings additive does not generate foam, and it even may help control the foaming inherent to the resin.

Figure 4: CoatOSil 1211 Coatings Additive Non-Foaming Property



Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

Product Safety, Handling and Storage

Customers considering the use of this product should review the latest Material Safety Data Sheet and label for product safety information, handling instructions, personal protective equipment if necessary, and any special storage conditions required. Material Safety Data Sheets are available at www.momentive.com or, upon request, from any Momentive Performance Materials representative. Use of other materials in conjunction with Momentive Performance Materials products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

Limitations

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

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Momentive Performance Materials maintains an around-the-clock emergency service for its products. The American Chemistry Council (CHEMTREC), Transport Canada (CANUTEC), and the Chemical Emergency Agency Service also maintain an around-the-clock emergency service for all chemical products:

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Canada	518.233.2500	CANUTEC: 613.996.6666 (collect) or CHEMTREC: 800.424.9300
Europe, Middle East, Africa	+32.(0)14.58.45.45 (Belgium)	CHEMTREC: +1-703.527.3887 (collect)
Latin America, Asia/Pacific, all other locations worldwide	+518.233.2500	CHEMTREC: +1-703.527.3887 (collect)
At sea	Radio U.S. Coast Guard, which can directly contact Momentive Performance Materials at 518.233.2500 or CHEMTREC at 800.424.9300.	

DO NOT WAIT. Phone if in doubt. You will be referred to a specialist for advice.



MOMENTIVE

performance materials

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