

## Starfactant® 20

### Use

Starfactant™ wetting agents are a new, novel line of nonionic surfactants from Cognis that offer unique combinations of benefits to coating and graphic art formulations. These benefits include excellent substrate wetting with defoaming, gloss improvement and pigment wetting.

Starfactant™ 20 is a non-ionic, 100% active wetting agent effective in water borne coatings intended for metal, wood and plastic substrates. This new wetting agent is effective in coatings and inks based on a wide variety of emulsions including PUD's, acrylics, and styrenated acrylics. Starfactant™ 20 does not stabilize foam and can act as a defoamer in formulations in addition to its outstanding wetting properties. When used at the recommended level, Starfactant™ 20 should not diminish the corrosion resistance or change the recoat characteristics of the coating. The product is free of silicones, alkyl phenol ethoxylates (APE's) and solvent.

### Composition

A hyper-branched surfactant with a central hydrophile

### Specification

Appearance	Clear till hazy yellowish to brownish liquid
Density (g/ml)	0.98 - 1.01
Color, Gardner	1.0 - 7.0

### Additional data

Actives	100 %
Viscosity	100 cps
Solid content	99 %
VOC, EPA method 24	Less than 1%
pH-value (5% in 3/1 water) (IPA)	5.0 - 9.0

### Properties

Starfactant™ 20 is typically added to paint and coating formulations at 0.25 to 0.75%.

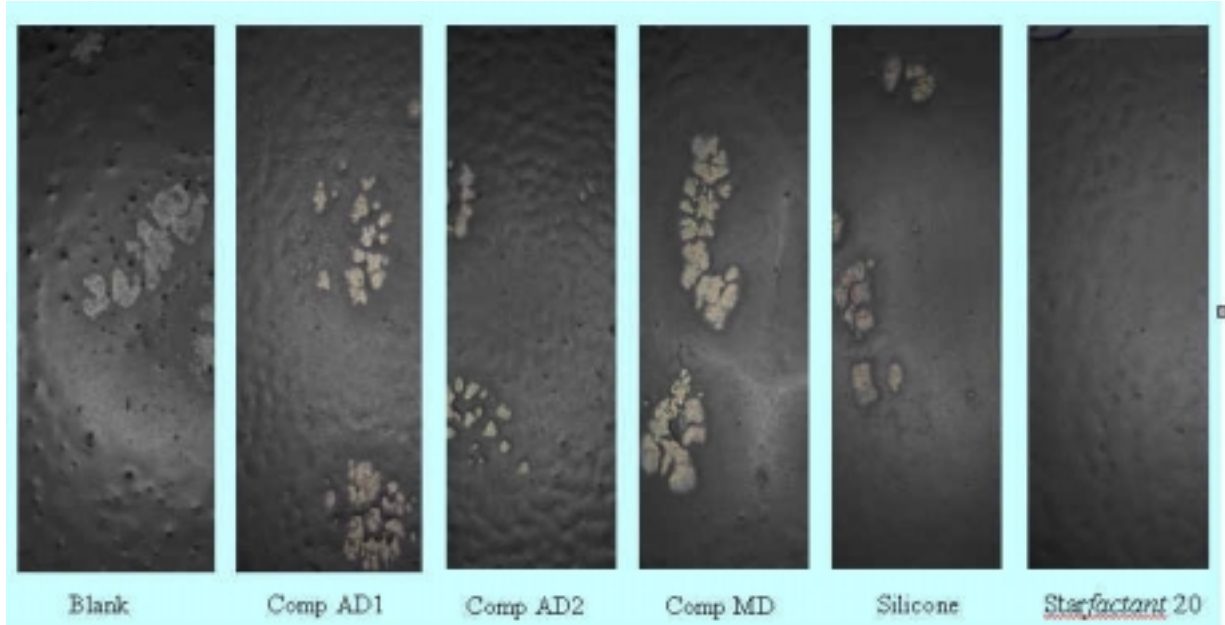
Starfactant™ 20 can be added at any stage of the manufacturing process. When added in the grind the product will aid the pigment wetting process.

Example 1, below, shows the wetting and entrained air results obtained in a black PUD formulation based on Reichhold's Spensol® L52-MPW-30 resin applied to oil contaminated steel. The photos and graph show that only a few wetting agents provide the substrate wetting required to coat the oil contamination steel panels. Only two products, Starfactant 20 and 30 produce a coating with less foam than the blank and have acceptable wetting.

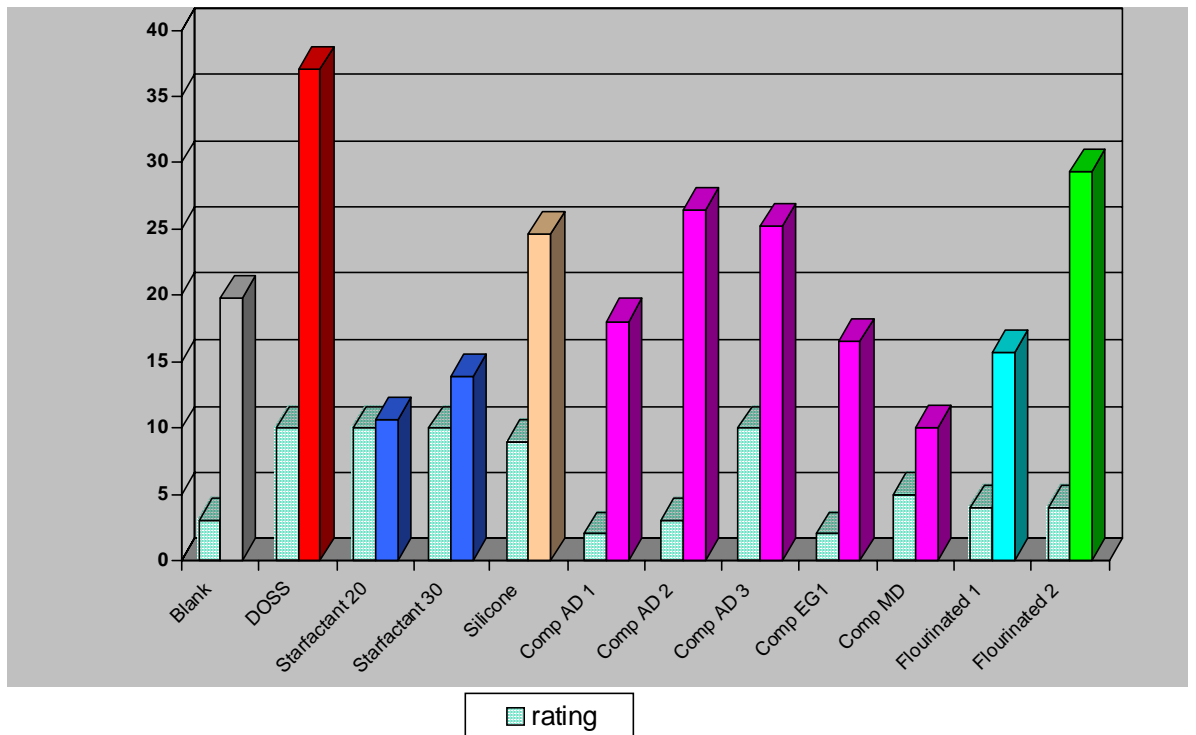
**Formulation 1** WT%

Spensol® L522	18.4
Surfactant	0.2 (active surfactant)
Carbon black	2.2
NH4OH	0.3
Grind to NS 7+	then add
Spensol® L522	54.5
Water	24.4

**Example 1A. Wetting in Black PUD**



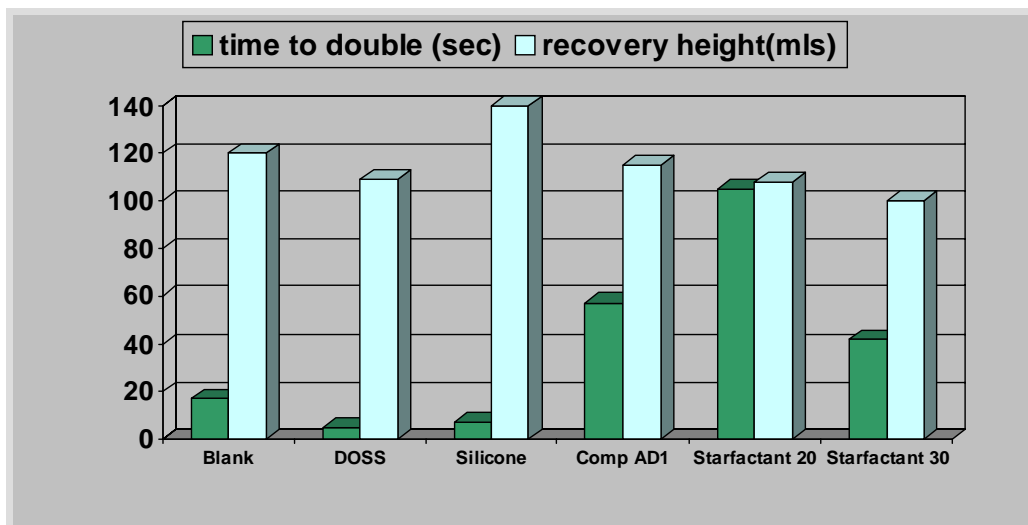
**Example 1B. Defoaming in a Black PUD**



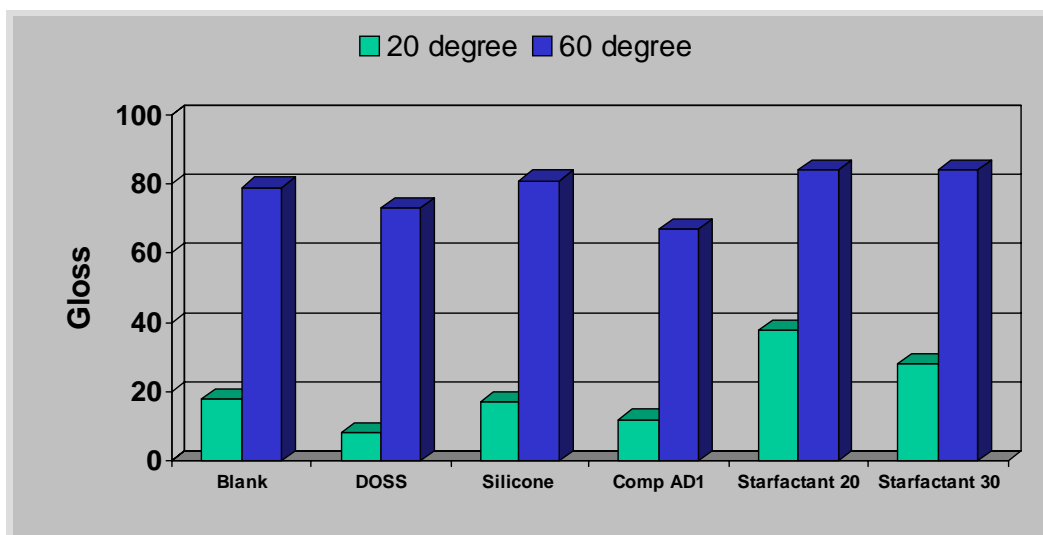
Example 2 shows the performance of Starfactant™ 20 in an OPV based on two Lucidiene® emulsions. The first graph, Example 2A, shows foam test results. The tests were conducted by measuring the time required for the OPV to double in height as air was bubbled through the OPV through a glass frit at 1M/min. The longer the dark green bar the less tendency for the particular wetting agent to stabilize foam. The light blue bar indicates the height of the foam after five minutes of recovery time. The closer the light blue bar to 100 the better as this was the original starting height of the OPV. Graph 2B shows the gloss of the OPV over printed stock. Starfactant™ 20 and 30 both improve the gloss when compared to the blank and other competitive wetting agents.

<u>Formulation 2</u>	<u>WT%</u>
Lucidiene® 614	67.7
Lucidiene® 605	20.8
DBP	2.1
Surfactant	2.3 (active surfactant)
Water	7.1

**Example 2A – Entrained Air in an OPV**



**Example 2B – Gloss development in an OPV**



**Approvals**

FDA 21 CFR §§ 176.170; 176.180;  
176.200;176.210; 176.300;175.105;175.105

**Revision-No.**

6-07.2006 Effective July 21, 2006

Subject to appropriate storage under the usual storage and temperature conditions, our products are durable for at least 1 year.

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Suggestions of processing and using our products are given with best knowledge and information but without obligation. COGNIS does not accept any guarantee to the suitability of a product for the user's specific purpose. Furtheron the user himself assumes a liability to follow all legal regulations by using our products. The user can only pass on our sample to third parties with previous assent of COGNIS.

