

## **DeTERGE LF-531** multifunctional, alkaline stable, *EASY-TO-USE* surfactant

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**DeTERGE LF-531** is a low foam, multifunctional, modified carboxylate recommended for use in formulated products containing a significant amount of caustic, caustic potash, and/or alkaline electrolytes. **DeTERGE LF-531** can be used as the primary surfactant where low foam, excellent wetting, and detergency are required. Due to its exceptional solubility and stability in **both NaOH and KOH**, hydrotropes are not typically required when formulating with **DeTERGE LF-531** in alkaline systems. Additionally, **hot processing and/or lengthy mix times can be completely eliminated.**

### **TYPICAL PROPERTIES & FEATURES**

- Soluble and stable in up to 25% active NaOH and up to 25% KOH
- Easy to formulate with...**no heating or extensive mixing required**
- Excellent caustic & alkaline electrolyte stability
- Excellent surface tension reduction & fast wetting properties
- Good detergency, low foam
- Economical and multifunctional
- High cloud point in KOH and NaOH

### **SPECIFICATIONS**

<b>Appearance @ 25°C</b>	Clear liquid
<b>pH, 5% in DI water</b>	9.0 +/- 1.0
<b>% Solids</b>	54.0 +/- 1.5
<b>Gardner Color</b>	8 max.

### **SUGGESTED APPLICATIONS**

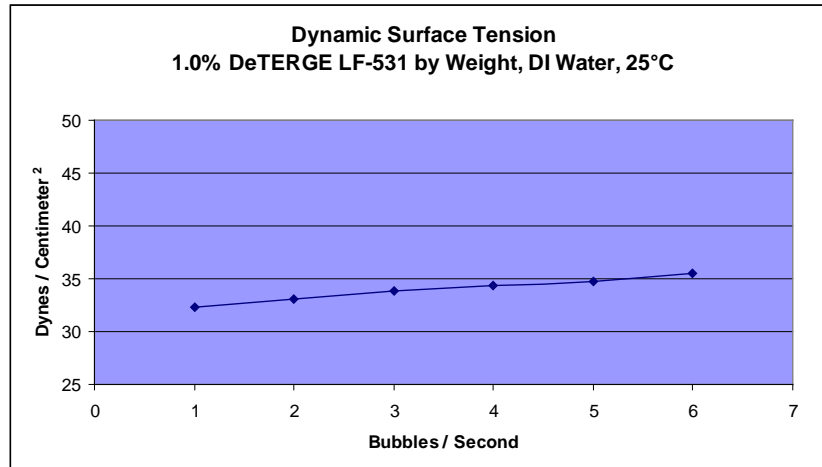
- Low foam, high alkaline metal cleaners
- Alkaline plating baths
- Alkaline paint strippers
- Hard surface cleaners
- Oven cleaners
- CIP cleaners
- Steam cleaners
- Alkaline degreasers
- Heavy duty floor cleaners
- Food plant cleaners

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## APPLICATION DATA

### Dynamic Surface Tension

Dynamic surface tension of DeTERGE LF-531 was determined at 1% by weight in deionized water at ~25°C using a SensaDyne QC6000 Surface Tensiometer.



### Cloud Point

NaOH or KOH Level	Cloud Point
1% by weight <b>DeTERGE LF-531</b> in 10% active NaOH In 20% active NaOH	< 25°C 37°C
5% by weight <b>DeTERGE LF-531</b> in 10% active KOH	66°C

### Stability in Caustic and Electrolytes @ 25°C

The following table shows stability data of solutions of **DeTERGE LF-531** in caustic and alkaline electrolytes. Data reflects the minimum number of days the solutions remained clear and stable.

% ACTIVE	5% by Weight DeTERGE LF-531
10% NaOH	Stable for 90 days.
20% NaOH	Stable for 90 days.
30% NaOH	Not soluble.
30% KOH	Not soluble.
30% TKPP	Stable for 90 days.
10% SMP	Stable for 21 days.
20% Soda Ash	Stable for 90 days.
10% TSP	Stable for 90 days.

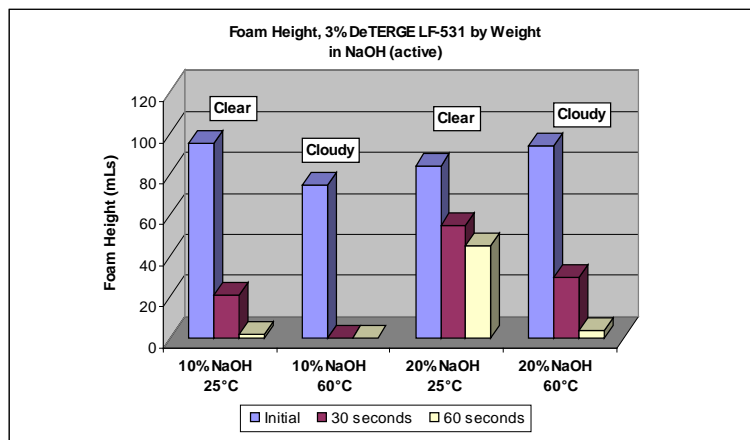
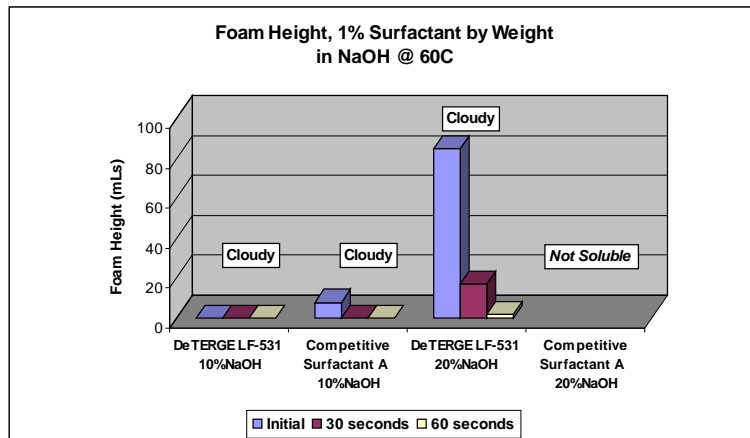
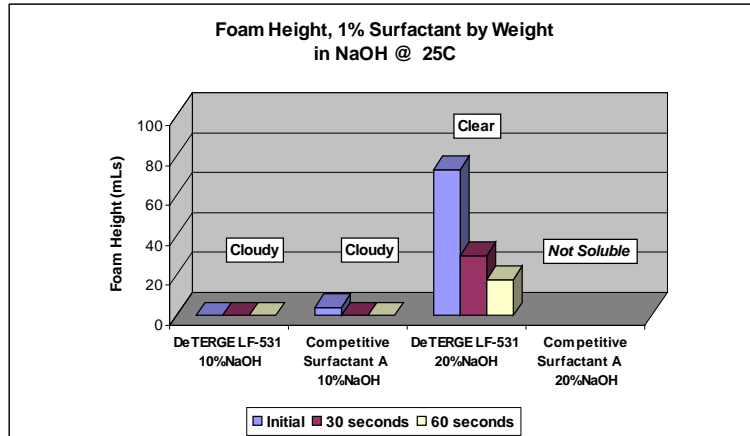
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**Foam Height in NaOH** (Graduated Cylinder Shake Test)

The foam height of **DeTERGE LF-531** was determined in 10% and 20% active NaOH and compared to Competitive Surfactant A, a mixture of >35% anionic surfactant blend and <63% octenylsuccinic acid. **DeTERGE LF-531 has excellent solubility in 10% and 20% NaOH** forming clear solutions at 3% by weight. Competitive Surfactant A is not soluble in NaOH.



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## Formulary, Alkaline Formulations

### Heavy Duty Metal Cleaner

**ALK-71**

DeTERGE LF-531 provides detergency and wetting to this alkaline cleaner and is **very easy to use**. It has low flash foam and is equally efficient at removing greasy soils when compared to using Octeynlsuccinic Acid/Anionic Surfactant Blend, **even at lower surfactant solids**.

Ingredient	% by Weight	Function
1. DI water	38.0	Diluent
2. TKPP	20.0	Alkalinity, Builder
3. KOH (45%)	27.0	Alkalinity
4. Sodium Silicate D	13.0	Builder, Corrosion Protection
5. DeTERGE LF-531	2.0	Detergency, Wetting
OR		
6. Octeynlsuccinic Acid/Anionic Surfactant Blend	2.0	Detergency, Wetting

#### EASY, COLD MIX Process using DeTERGE LF-531

1. Add ingredients in order listed, completely solubilizing each before addition of next.

#### HOT MIX Process required if using Octeynlsuccinic Acid/Anionic Surfactant Blend

1. Add surfactant directly to KOH.
2. Heat mixture to 50°C and continue mixing for at least 15 minutes maintaining temperature.
3. Add TKPP and sodium silicate; mix until uniform.
4. Add water and continue mixing until homogenous.

Formulation Properties @ 2 oz. / gallon	Made with DeTERGE LF-531	Made with Octeynlsuccinic Acid/Anionic Surfactant Blend
Appearance	Clear	Hazy
Draves Wetting @ 25°C	~80 seconds	~60 seconds
Foam Height, (Initial, 1 minute)	19 mLs, 1 mLs	14 mLs, 7 mLs

#### Drop Method Cleaning Test Results using ALK-71

Three drops of cleaning solution were applied to the right side strip of soil\* on each tile and allowed to dwell for one minute and 30 seconds. The left side strip of soil on each tile is the cleaning solution without surfactant (control). After dwell time, the tiles were rinsed gently under running tap water.

**DeTERGE LF-531 had equal performance to Octeynlsuccinic Acid/Anionic Surfactant Blend and is *easier to use*.**



\*Soil: 3.3% Carbon Black, 32.3% WD-40®, 32.3% AW-32 hydraulic oil, 32.1%SAE 140 gear oil

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