




## 2010 GREEN INITIATIVE

DeFOREST Enterprises is so green that even the iguanas outside our development lab are trying to get in!!



We proudly offer the following  cleangredients® listed surfactants:

- **DeTERIC LP & DeTERIC CP-Na-38:** high foaming amphoteric surfactants offering excellent detergency, wetting, & foam stability in the presence of oil & grease. DeTERIC CP-Na-38 affords similar properties to DeTERIC LP with increased alkali & electrolyte tolerance.
- **DeTROPE SA-45:** chlorine stable, anionic hydrotrope offering very low, fast breaking foam.
- **DeSULF GOS-P-60WCG:** versatile nonionic, high foaming, alkyl polyglucoside. Can be used as the primary surfactant in acid or alkaline systems. Good solubilizing properties & excellent caustic stability.
- **DeTERGE LF-2379:** low foaming, modified alcohol ethoxylate offering detergency, wetting, & excellent removal of hydrocarbon based soils in neutral & mildly alkaline formulations.
- **DeTERGE NAS:** low to moderate foaming, anionic surfactant offering detergency, wetting, & solubilizing properties. Stable in caustic, chlorine bleach, & hydrogen peroxide.

➤ **NEW FORMULATIONS** containing these surfactants are available upon request!



While the iguana enjoys the sun outside our Florida research lab window, we are inside, focused on developing **new & innovative readily biodegradable products!**

➤ **STAY TUNED** for new product launches during 2010!!

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## DeTERIC LP

**DeTERIC LP** is a partial sodium salt of N-lauryl B-iminodipropionic acid.

### SPECIFICATIONS:

Appearance @ 25°C	Light yellow liquid
Color (Gardner)	4.0 Max
% Solids	29 – 31
pH (as-is)	7.0+/- 1.0
Type	Amphoteric
Density @ 25°C	1.0 g/ml

Solubility: DeTERIC LP is soluble in water, glycols and alcohols. It is insoluble in oils and solvents.

### TYPICAL PROPERTIES:

- Excellent stability in strong alkali, acid, and high concentrations of electrolytes
- High foaming properties except in the pH range of 2.4 – 4.2 (isoelectric point)
- Excellent detergency
- Compatible with anionic, cationic and nonionic surfactants
- High caustic & alkaline cleaners
- Strong acid cleaners
- Approved for use as inert in non-food pesticide formulations
- Good wetting properties
- Good solubilizing properties
- Exhibits corrosion protection
- Good emulsifier
- Brine stability
- Low skin & eye irritation, Non-toxic
- Readily Biodegradable
- Hard water stability

### APPLICATIONS:

- High foaming food plant cleaners
- Emulsifier for vinyl acetate/ethyl acrylate and vinyl chloride systems
- Leveling Agent
- All purpose cleaners
- Aerosol cleaners
- Foaming agent in oil drilling
- Fire fighting foam
- Solubilizer for quaternary and halogenated germicides
- Hand dishwashing detergents
- Liquid acid bowl cleaners
- High foam car wash products
- Truck wash
- Oven cleaners
- Hard surface cleaners

**DeTERIC LP** is listed in the online CleanGredients® database.

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### DeTERIC CP-Na-38

**DeTERIC CP-Na-38** is a modified C<sub>10-12</sub> sodium salt of a carboxylated propionate.

#### **SPECIFICATIONS:**

Appearance @ 25°C	Clear yellow liquid
Color (Gardner)	4.0 Max
% Activity	38.0 +/- 1.0%
pH (as-is)	7.0+/- 1.0
Type	Amphoteric
Density @ 25°C	1.06 g/ml

Solubility: DeTERIC CP-Na-38 is soluble in water, alcohols and glycols. It is insoluble in oils and solvents.

#### **TYPICAL PROPERTIES:**

- Excellent stability in strong alkali, acid, and high concentrations of electrolytes
- High foaming properties
- Excellent detergency
- Compatible with anionic, cationic and nonionic surfactants
- Approved for use as inert in non-food pesticide formulations
- Good solubilizing properties
- Good wetting properties
- Brine stability
- Low skin & eye irritation
- Non-toxic
- Readily Biodegradable

#### **APPLICATIONS:**

- High caustic & alkaline cleaners
- Strong acid cleaners
- All purpose cleaners
- Foaming agent in oil drilling
- Fire fighting foam
- Hand dishwashing detergents
- Steam cleaning products
- Laundry detergents
- High foaming food plant cleaners
- Lye peeling
- Aluminum cleaners
- Liquid acid bowl cleaners
- High foam car wash products
- Truck wash
- Oven cleaners
- Hard surface cleaners

**DeTERIC CP-Na-38** is listed in the online CleanGredients® database.

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## DeTROPE SA-45

**DeTROPE SA-45** is a 45% active sodium alkanoate in water.

### SPECIFICATIONS:

Appearance @ 25°C	Clear liquid
Color (Gardner)	1.0 Max
% Activity	45.0 +/- 1.5%
pH (as-is)	10.0+/- 1.0
Type	Anionic
Odor	Slightly Pungent
Density @ 25°C	1.05 g/ml

Solubility: DeTROPE SA-45 is soluble in water, alcohols and glycols. It is soluble in 10% sodium hydroxide, 20% potassium hydroxide and in other electrolytes such as silicates, phosphates and carbonates. It is insoluble or dispersible in oils and solvents.

### TYPICAL PROPERTIES:

- Excellent hydrotrope
- Chlorine stable (up to 5% active NaOCl)
- Excellent solubilizer for nonionics in alkaline and electrolyte systems
- Excellent alkali and electrolyte stability
- Approved for use as inert in non-food pesticide formulations
- Readily Biodegradable
- Non-phenolic
- Practically non-foaming
- Contributes wetting properties

### APPLICATIONS:

- Alkaline cleaners & detergents
- Low foam alkaline systems
- High pressure alkaline spray wash
- Chlorine containing cleaners
- Automatic dishwashing liquids and detergents
- Low foam spray vac detergents
- Low foam metal cleaners
- Textile mercerizing
- Industrial detergents

**DeTROPE SA-45** is listed in the online CleanGredients® database.

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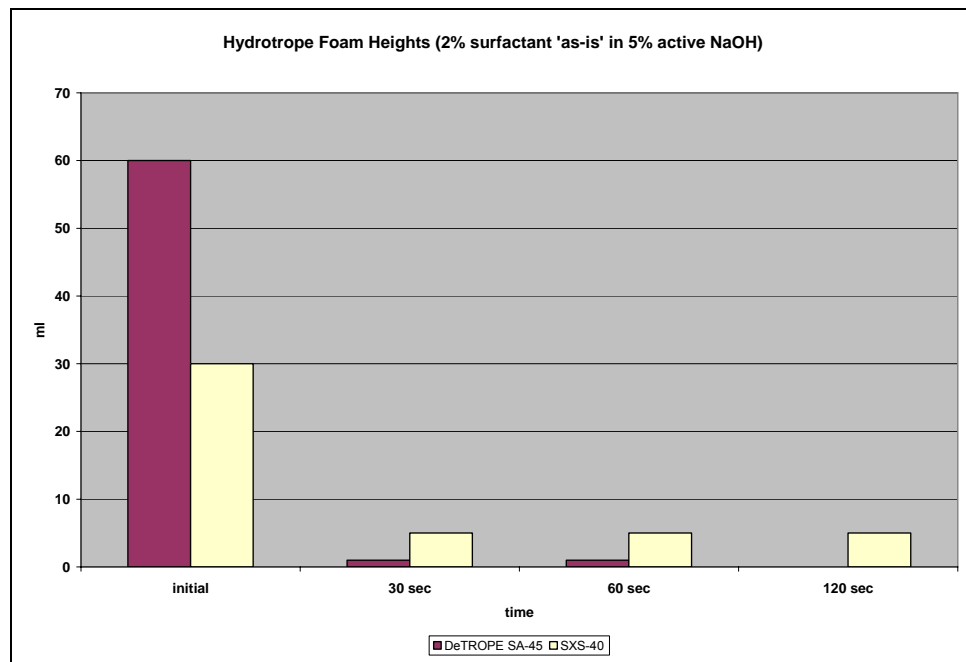
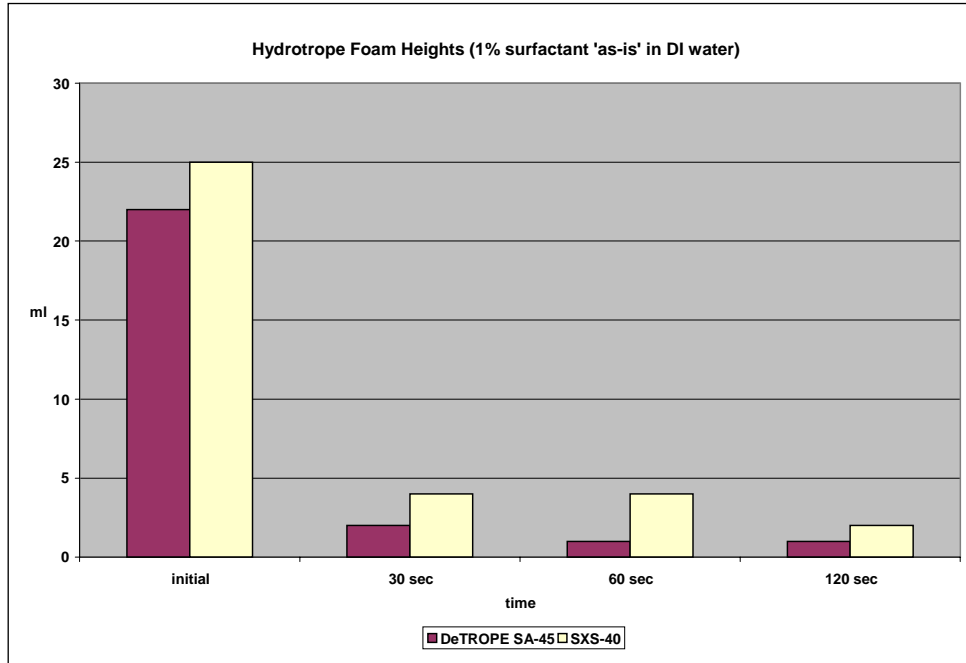
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## Foam Height Properties of DeTROPE SA-45

The foaming properties of DeTROPE SA-45 were determined via modified Ross-Miles, graduated cylinder shake test. The foam heights are presented in the following charts compared to sodium xylene sulfonate (SXS-40) and are reported as millimeters of foam present initially, at 30 seconds, at 60 seconds and after 2 minutes.

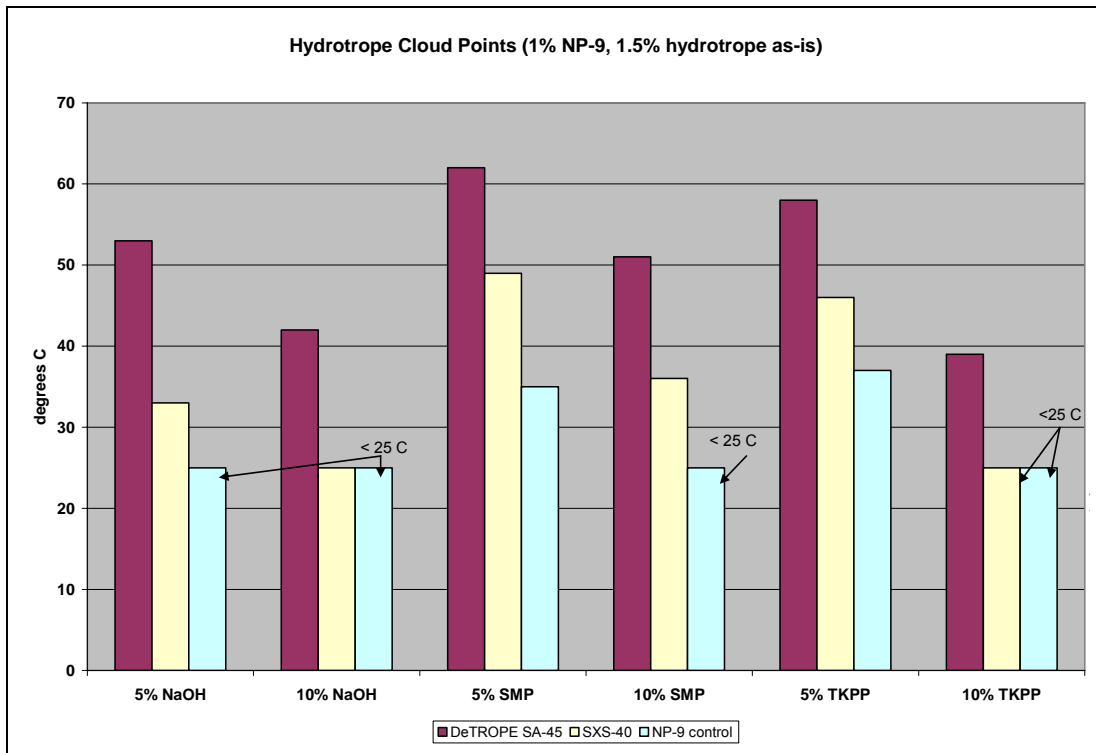


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## Hydrotrope Cloud Point Properties of DeTROPE SA-45

To determine hydrotrope capabilities, a series of cloud point tests were performed. The hydrotrope was solubilized in caustic or alkaline electrolyte solution to which a 9.5 mole nonyl phenol was added. Each sample was heated to the temperature at which the non-ionic clouds out of solution. The cloud point temperatures are reported in the following charts. The higher the cloud point temperature, the more efficient the hydrotrope. The control is a 9.5 nonyl phenol in each caustic and alkaline electrolyte solution with no hydrotrope added. The hydrotrope capabilities of DeTROPE SA-45 at higher levels of NP-9.5 show similar trends (data available on request).



### Key:

NaOH = Sodium Hydroxide  
 SMP = Sodium Metasilicate Pentahydrate  
 TKPP = Tetrapotassium Pyrophosphate  
 SXS-40 = Sodium Xylene Sulfonate 40% active

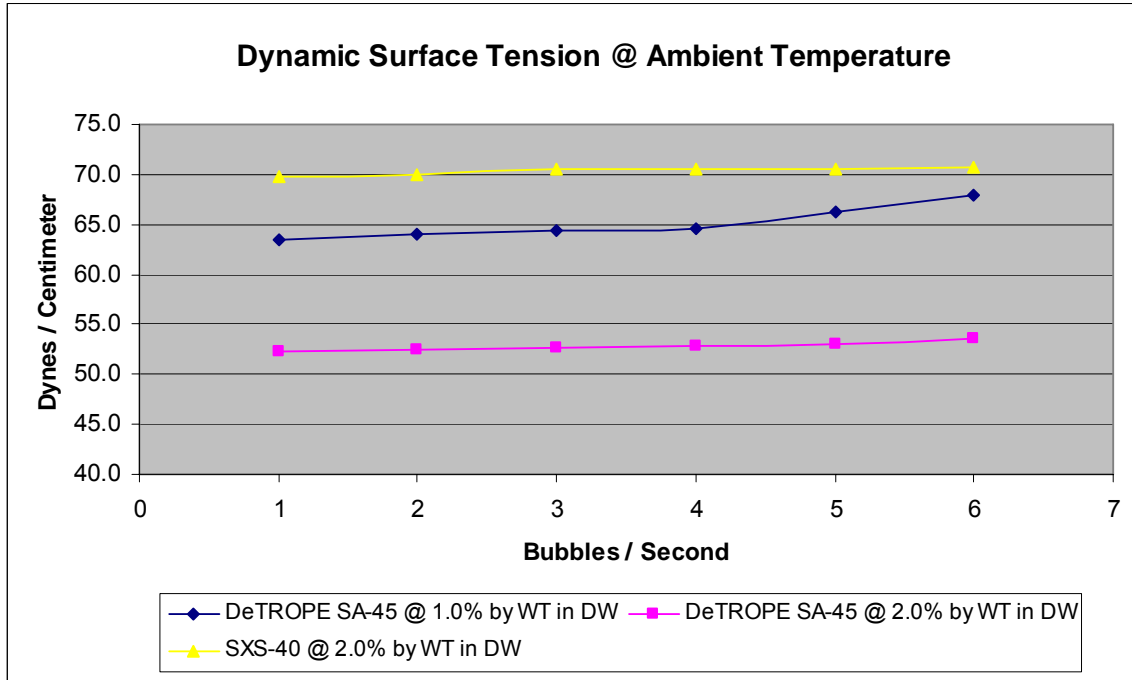
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## Dynamic Surface Tension of DeTROPE SA-45

Dynamic surface tension for DeTROPE SA-45 was conducted at 1.0% and 2.0% by weight in deionized water at ambient temperature. Compared to SXS-40 at 2.0% by weight, DeTROPE SA-45 provides considerably lower surface tension.



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## DeSULF GOS-P-60WCG

**DeSULF GOS-P-60WCG** is a 60% active, high foaming alkyl polyglucoside which can be used as the primary surfactant in a variety of industrial applications.

### SPECIFICATIONS:

Appearance @ 25°C	Clear, viscous, pale amber liquid
% Activity	60.0% Minimum
pH (10% in 85/15 DW/IPA)	8.0+/- 1.5
Type	Nonionic
Density @ 25°C	1.10 – 1.15 g/ml

Solubility: Soluble in water, alcohols and glycols. Insoluble or dispersible in oils and solvents.

### TYPICAL PROPERTIES:

- High caustic (45% NaOH) and electrolyte stability
- Excellent hydrotrope
- Excellent wetting
- High foaming
- Approved for use as inert in non-food pesticide formulations
- Readily Biodegradable
- Non-toxic
- Compatible with all surfactant types
- Made from natural raw materials
- Acid stable

### APPLICATIONS:

- Caustic and alkaline electrolyte cleaners and detergents
- High foam alkaline or acid systems
- High pressure alkaline spray wash
- Food plant cleaners
- Bottle washing
- Hydrotrope for other surfactants

**DeSULF GOS-P-60WCG** is listed in the online CleanGredients® database.  
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## **DeTERGE LF-2379**

**DeTERGE LF-2379** is a low foaming, modified alcohol ethoxylate which provides detergency, wetting, and excellent removal of hydrocarbon based soils in neutral and mildly alkaline formulations. **DeTERGE LF-2379** exhibits fast wetting properties, even above its cloud point.

### **SPECIFICATIONS:**

Appearance @ 25°C	Clear, almost colorless liquid
% Activity	65% – 69%
pH (10.0% in DI water)	7.5 -9.5
Cloud Point (1% in DI Water)	~25°C
Color (Gardner)	1 max
Type	Nonionic/anionic
Density @ 25°C	~1.01 g/ml

**Solubility:** DeTERGE LF-2379 is dispersible / soluble in water, alcohols and glycols. It is insoluble or dispersible in oils and solvents.

### **TYPICAL PROPERTIES:**

- Low foam
- Good detergency
- Readily Biodegradable
- Low dynamic surface tension, *even above the cloud point*
- Not recommended for acid systems

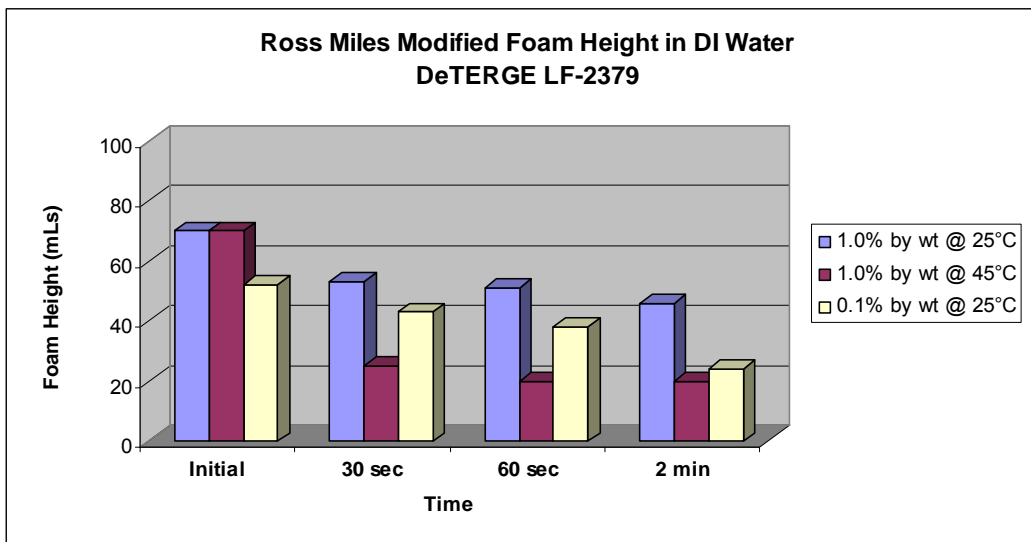
### **APPLICATIONS:**

- Low foam degreasers
- General purpose cleaners
- Light duty alkaline cleaners
- Laundry detergents
- Wall & floor care products
- Scrub vac cleaners
- All purpose hard surface cleaners
- Metal cleaners
- Vehicle cleaners

**DeTERGE LF-2379** is listed in the online CleanGredients® database.  
<http://cleangredients.org/>

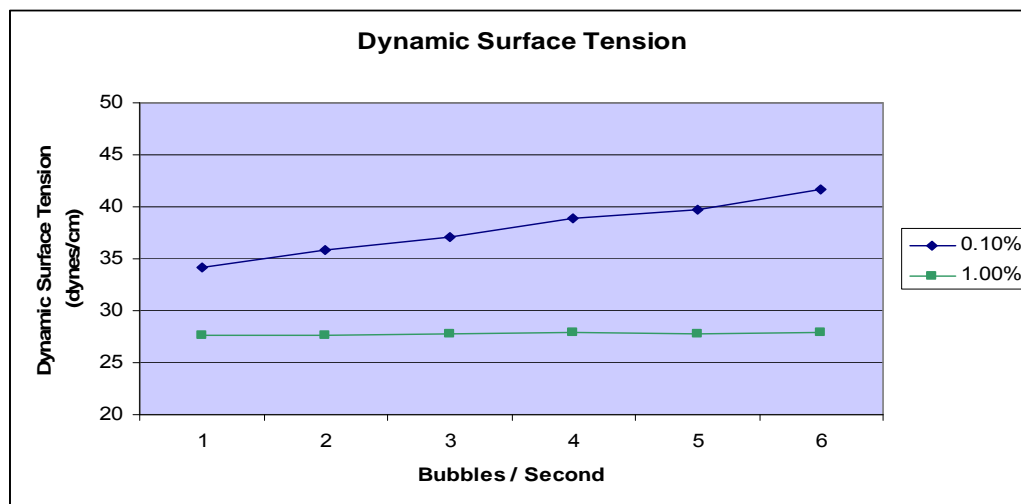
## Modified Ross-Miles Foam Height (graduated cylinder shake test)

The foam height of **DeTERGE LF-2379** was determined in deionized water at 1.0% and 0.1% by weight. At elevated temperature, **DeTERGE LF-2379** exhibits low, quick breaking foam. Note: all solutions were cloudy.



## Dynamic Surface Tension of DeTERGE LF-2379

The dynamic surface tension of **DeTERGE LF-2379** was determined at 0.1% and 1.0% by weight in deionized water at ambient temperature. Both solutions tested were cloudy in appearance indicating **low dynamic surface tension even above the cloud point**.



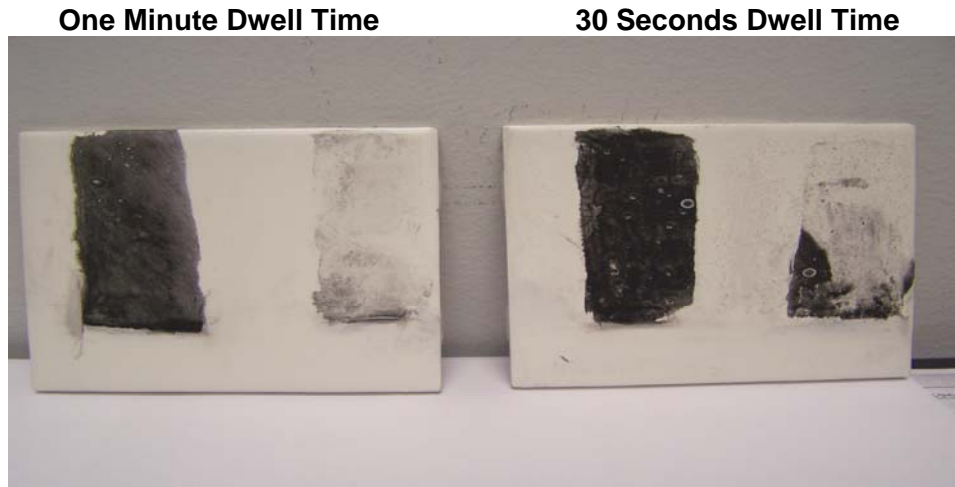
## Draves Wetting of DeTERGE LF-2379

Draves Wetting was determined to be **8 seconds** at 1.0% by weight, in deionized water at ambient temperature. The 1% aqueous solution tested was cloudy in appearance, **indicating fast wetting properties above the cloud point**.

## Drop Method Cleaning Test\*

This method shows the cleaning ability of degreaser formulations without the aid of mechanical action. It can be used to compare efficacy of hard surface cleaners and degreasers on soiled ceramic tile.

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.



Degreaser Formulation Tested	Weight %
Water	QS
Metso Beads, Granular	3.0
Sodium Gluconate	2.0
EDTA, 40%	1.0
KOH, 45%	1.0
<b>DeTERGE LF-2379</b>	<b>5.0</b>

\* DeFOREST Drop Method Cleaning Test available on request.

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

## Additional Solubility Data

The following table shows solubility and cloud point data for **DeTERGE LF-2379** when used at 5% and 10% by weight in various alkaline builders.

2.5% Builder	5% DeTERGE LF-2379	10% DeTERGE LF-2379
SMP	Hazy	Clear; cloud point ~53°C
TKPP	Hazy	Very slight haze, cloud point ~46°C
Soda Ash	Hazy	Very slight haze, cloud point ~38°C
TSP	Hazy	Very slight haze, cloud point ~53°C
Sodium Bicarbonate	Hazy	Slight haze, cloud point ~44°C

**Note: DeTERGE LF-2379** is dispersible in water (hazy), up to ~12-13% by weight, at which point a clear solution results. At 13% by weight in DI water, the cloud point is ~84°C.

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## **DeTERGE NAS**

**DeTERGE NAS** is a low to moderate foaming, anionic surfactant having detergency, wetting and solubilizing properties.

### **SPECIFICATIONS:**

Appearance @ 25°C	Clear, colorless to pale yellow liquid
% Activity	33.0 +/- 1.0%
pH (10% in DI water)	7.0 - 9.0
Density @ 25°C	~1.06 g/ml

**Solubility:** DeTERGE NAS is soluble in water, alcohols and glycols. It is insoluble in most solvents and oils.

### **TYPICAL PROPERTIES:**

- Low to moderate foam
- Good alkali stability
- Wetting agent
- Approved for use as inert in non-food pesticide formulations
- Readily biodegradable
- Peroxide and chlorine stable
- Stable in mild acid systems

### **APPLICATIONS:**

- Degreasers
- Alkaline or mild acid cleaners
- Cleaners containing chlorine or peroxide
- All purpose cleaners
- Glass cleaners
- High pressure spray detergents
- Metal cleaners
- Carpet extraction cleaners

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