

DeTERGE LF Series

DeTERGE LF surfactants are a series of modified carboxylates recommended for use in formulated products containing caustic and alkaline electrolytes. They are not recommended for use in acid systems, with the exception of DeTERGE LF-7315.

Each **DeTERGE LF** product has been designed for use in systems containing specific concentrations of caustic and alkaline electrolytes.

The **DeTERGE LF** series of products are low foaming and may be used as the primary surfactant where excellent wetting and detergency are required. Their exceptional stability in highly alkaline systems may eliminate the need for a hydrotrope. They are biodegradable, non-phenolic, and phosphate free.

| SPECIFICATIONS | DeTERGE LF-28 | DeTERGE LF-531 | DeTERGE LF-7315 |
|--------------------|---------------|----------------|-----------------|
| Appearance @ 25°C | Clear | Clear | Clear |
| pH, 5% in DI water | 8.0 +/- 1.0 | 9.0 +/- 1.0 | 8.5 +/- 1.5 |
| % Solids | 50.0 +/- 1.5 | 54.0 +/- 1.5 | 54.0 +/- 1.5 |
| Gardner Color | 1 max. | 8 max. | 10 max. |
| Density @ 25°C | ~1.06 g/ml | ~1.08 g/ml | ~1.10 g/ml |
| Type | Anionic | Anionic | Anionic |

SOLUBILITY: The **DeTERGE LF** surfactants are soluble in water, alcohols and glycols. They are dispersible or insoluble in solvents and oils.

TYPICAL PROPERTIES

- Excellent caustic and alkaline electrolyte stability
- Low foam
- Excellent surface tension reduction and fast wetting properties
- Hydrotrope for nonionics in highly alkaline systems
- May eliminate the need for hydrotropes or other surfactants in alkaline systems
- Good detergency
- All are approved for use as Inerts in non-food pesticide formulations

APPLICATIONS

- Low foam caustic and/or alkaline cleaners
- Mechanical dishwashing detergents
- Metal cleaners
- Alkaline plating baths
- Laundry detergents
- Steam cleaners
- Food plant cleaners
- Hard surface cleaners
- Paints and coatings
- Acid cleaners (DeTERGE LF-7315 only)
- Textile scouring
- Oven cleaners
- CIP cleaners
- Synthetic coolants

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APPLICATION DATA - DeTERGE LF SERIES @ 25°C

Table 1 shows the stability of DeTERGE LF surfactants at 3 – 5% by weight after storage in caustic and alkaline electrolyte solutions. The data reflects the minimum number of days that the products remained clear and stable.

Table 1. Days Stable in Caustic and Electrolytes @ 25°C

| % ACTIVE | DeTERGE LF-28 5% by weight | DeTERGE LF-531 5% by weight | DeTERGE LF-7315* 3% by weight |
|---------------------|---------------------------------------|--|--|
| 10% NaOH | 90 | 90 | 90 |
| 20% NaOH | 0 | 90 | 90 |
| 30% NaOH | 0 | 0 | 90 |
| 30% KOH | 0 | 0 | 90 |
| 30% TKPP | 77 | 90 | 90 |
| 10% SMP | 42 | 21 | 21 |
| 20% Soda Ash | 42 | 90 | 42 |
| 10% TSP | 28 | 90 | 28 |

*Stability data for DeTERGE LF-7315 in a variety of acids is available on request.

Table 2. Cloud Points at 1% by Weight in °C

| % ACTIVE | DeTERGE LF-28 | DeTERGE LF-531 | DeTERGE LF-7315 |
|-----------------|----------------------|-----------------------|------------------------|
| 10% NaOH | <25 | <25 | 70 |
| 20% NaOH | NS | 37 | 75 |
| 30% NaOH | NS | NS | 70 |

Table 3. Draves Wetting @ 25°C (in seconds) at 1% by Weight

| % ACTIVE | DeTERGE LF-28 | DeTERGE LF-531 | DeTERGE LF-7315 |
|-----------------|----------------------|-----------------------|------------------------|
| 10% NaOH | 20 | 15 | 4 |
| 20% NaOH | NS | Instant | 21 |
| 30% NaOH | NS | NS | 57 |

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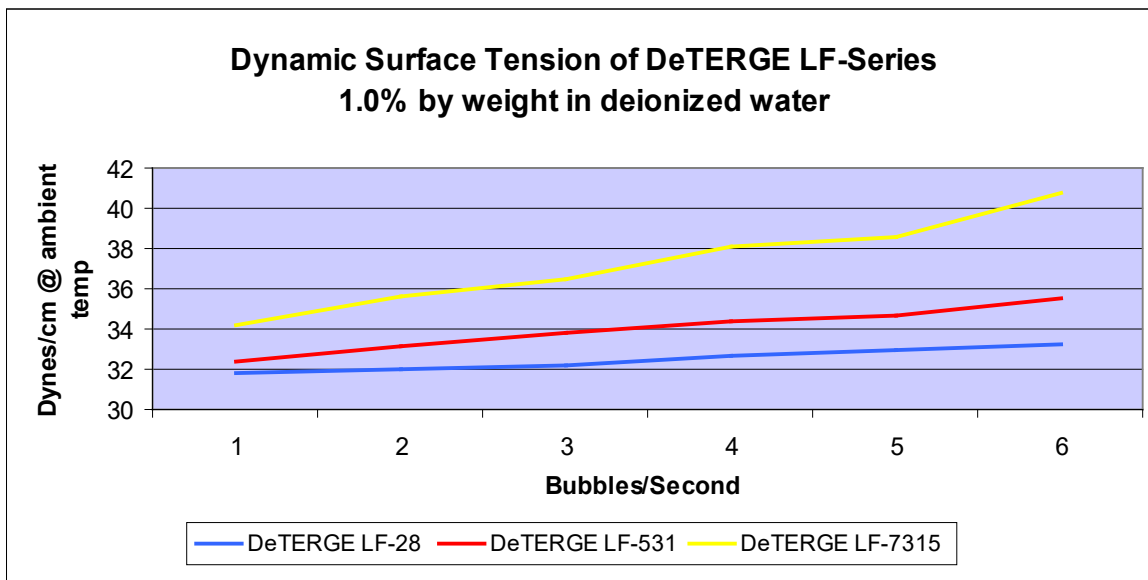
APPLICATION DATA - DeTERGE LF SERIES @ 25°C (continued)**Table 4. Foam Heights* (in mls) at 1% by Weight**

| % ACTIVE | DeTERGE LF-28 | DeTERGE LF-531 | DeTERGE LF-7315 |
|-----------|---------------|----------------|-----------------|
| 10% NaOH | | | |
| Initial | 0 | 0 | 91 |
| 2 minutes | 0 | 0 | 48 |
| 20% NaOH | | | |
| Initial | NS | 73 | 90 |
| 2 minutes | | 2 | 45 |
| 30% NaOH | | | |
| Initial | NS | NS | 70 |
| 2 minutes | | | 46 |

* Determined via modified Ross-Miles graduated cylinder shake test.

Dynamic Surface Tension

Dynamic surface tension of the DeTERGE LF series was determined with a SensaDyne QC6000 Surface Tensiometer. The products were tested at 1% by weight in deionized water at ambient temperature.



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