



## DeIONIC LF-EP Series

**DeIONIC LF-EP** surfactants are low-to-moderate foaming, nonionic alkoxyated alcohols with cloud points in water ranging from ~15°C to ~61°C.

### Specifications

|                    | DeIONIC LF-EP-15                                       | DeIONIC LF-EP-25 | DeIONIC LF-EP-40 | DeIONIC LF-EP-61 |
|--------------------|--|------------------|------------------|------------------|
| Cloud Point*       | 13° - 18°C   | 23° - 27°C       | 38° - 42°C       | 56° - 63°C       |
| Appearance, 25°C   | All products: Almost colorless, clear to hazy liquids. |                  |                  |                  |
| pH, 5% in DI water | All products: pH range 5.0 – 9.0.                      |                  |                  |                  |
| Color, Gardner     | All products: 1 max.                                   |                  |                  |                  |
| % Moisture         | All products: 1.0% max.                                |                  |                  |                  |

\*1% by weight in DI water

### Solubility & Typical Properties

|                  | DeIONIC LF-EP-15       | DeIONIC LF-EP-25    | DeIONIC LF-EP-40       | DeIONIC LF-EP-61    |
|------------------|------------------------|---------------------|------------------------|---------------------|
| Water            | soluble up to ~15°C    | soluble up to ~25°C | soluble up to ~40°C    | soluble up to ~61°C |
| Alcohols         | soluble                | soluble             | soluble                | soluble             |
| Glycols          | soluble                | soluble             | soluble                | soluble             |
| Solvents         | soluble                | soluble             | soluble                | insoluble           |
| Oils             | insoluble              | insoluble           | insoluble              | insoluble           |
| Foam Profile     | very low               | low – moderate      | moderate-fast breaking | moderate            |
| % Activity       | All products: 99% min. |                     |                        |                     |
| Density @ 25°C   | ~0.98 g/ml             | ~0.99 g/ml          | ~1.01 g/ml             | ~1.01 g/ml          |
| HLB (calculated) | ~6                     | ~7                  | ~8.5                   | ~11.7               |
| VOC*             |                        | 4.6 grams/liter     |                        |                     |

\*ASTM E1868-10 / SCAQMD RULE 1144

### Additional Properties

- All products are acid and alkaline stable and will contribute fast wetting properties, detergency, and surface tension reduction.
- All products are stable in alkaline and acid systems. A hydrotrope will be required for low cloud point materials depending on the formulation and intended end-use temperature.
- Easy-to-handle and non-gelling when added to water.
- Inherently biodegradable, approved for use as an inert in non-food pesticide applications under 40CFR180.910 & 180.930.
- DeIONIC LF-EP-15 may contribute defoaming properties due to its low cloud point.

*Continued*

6501 Congress Avenue, Suite 100 • Boca Raton, FL 33487 • (561) 994-9696 • FAX (561) 994-9995

[www.DeForestEnterprises.com](http://www.DeForestEnterprises.com) • [info@DeForestent.com](mailto:info@DeForestent.com)

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## APPLICATIONS

- Mechanical dishwashing detergents
- High pressure spray cleaners
- Acid & alkaline cleaners
- Dry caustic and electrolyte cleaners
- Pesticide formulations
- Industrial metal cleaning
- Bottle washing
- Textile wetting and scouring
- Rinse-aid formulations
- Agricultural sprays

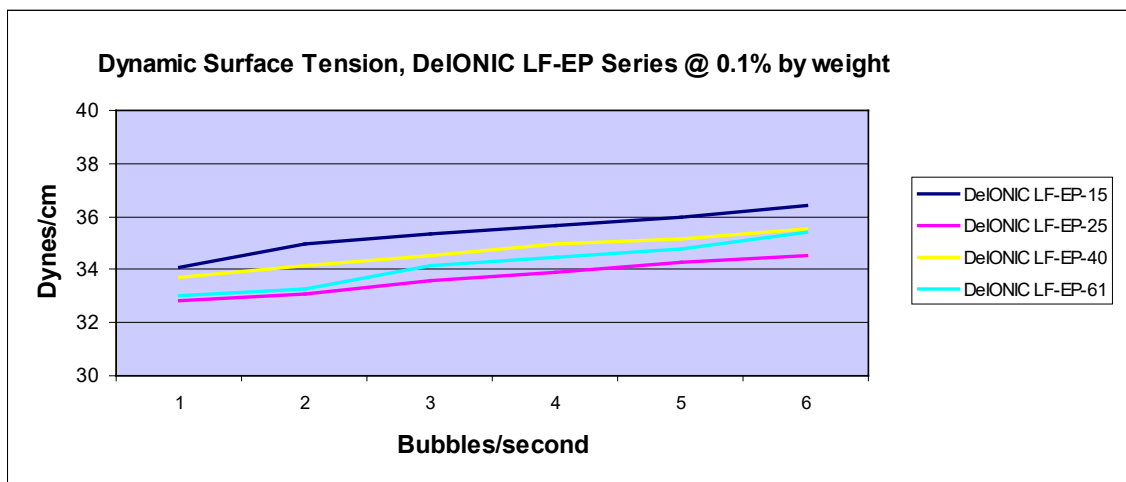
## Modified Ross-Miles Foam Height

Foam height was determined at ambient temperature at 0.1% by weight in deionized water using a modified Ross-Miles graduated cylinder shake test.

|            | DeIIONIC LF-EP-15 | DeIIONIC LF-EP-25 | DeIIONIC LF-EP-40 | DeIIONIC LF-EP-61 |
|------------|-------------------|-------------------|-------------------|-------------------|
| Initial    | 10 mls            | 15 mls            | 86 mls            | 90 mls            |
| 30 seconds | 0 mls             | 1 mls             | 43 mls            | 55 mls            |
| 60 seconds | 0 mls             | 0 mls             | 15 mls            | 45 mls            |
| 2 minutes  | 0 mls             | 0 mls             | 7 mls             | 40 mls            |

## Dynamic Surface Tension

The dynamic surface tension of the DeIIONIC LF-EP series of products was determined at 0.1% by weight in deionized water at ambient temperature.



## Draves Wetting of DeIIONIC LF-EP Series

Draves Wetting was determined at 0.1% by weight in deionized water at ambient temperature.

|         | DeIIONIC LF-EP-15 | DeIIONIC LF-EP-25 | DeIIONIC LF-EP-40 | DeIIONIC LF-EP-61 |
|---------|-------------------|-------------------|-------------------|-------------------|
| Seconds | 5                 | 7                 | 8                 | 7                 |

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