

# Technical Data Sheet

## Elevance HFS™ 10, Elevance HFS™ 12 and Elevance HFS™ 1012

### Product Description

Elevance HFS™ 10, 12, and 1012 are high performance solvents used in various oilfield applications. Elevance HFS™ 10 and 12, when used in a microemulsion formulations, have shown increased flowrate enhancement compared to d-limonene based micro-emulsions in laboratory studies which attempt to simulate slickwater fracking operations. The HFS solvents are patented biodegradable olefinic esters produced from plant oil feedstocks. These oilfield additives are nonhazardous, biodegradable, and have a favorable worker safety profile compared to solvents such as d-limonene and petrochemical based aromatic solvents.

### Applications

Oilfield chemical applications to replace d-limonene, terpenes, BTEX and other solvents

- Hydraulic fracturing microemulsion solvents
- Slickwater fracking stimulation
- Remediation
- Drilling mud cleaning
- Production

### Physical Properties of Elevance HFS™ Products

Physical Property	Elevance HFS™ 10	Elevance HFS™ 12	Elevance HFS™ 1012
Kauri-butanol Value	97-100	83-87	87-95
Surface Tension, dynes/cm	28.8	29.7	28.8
Flash Point, <sup>b</sup> °C/°F	102/215	127/260	102/215
Vapor Pressure, <sup>b</sup> Pa @ 25°C	13	0.99	6.6
Melting Point, °C/°F	-28/-18.4	-35/-31	-50/-58
Boiling Point, <sup>a</sup> °C/°F	233/451	267/512	233-267/451-512
Density, g/ml	0.89	0.88	0.89
Static Sheen Test	Pass	Pass	Pass

<sup>a</sup>ASTM D2887 | Boiling Range Distribution of Petroleum Fractions by Gas Chromatography

<sup>b</sup>ASTM D93 | Flash Point by Pensky-Martens Closed Cup Tester

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## Elevance HFS™ 10, Elevance HFS™ 12 and Elevance HFS™ 1012

### Hazard Classification Comparison Between Elevance HFS™ Products and d-Limonene

Hazard Classification	d-Limonene	Elevance HFS™ 10	Elevance HFS™ 12	Elevance HFS™ 1012
Flammable Liquid	 Category 3 <sup>a</sup>	None <sup>b</sup>	None <sup>b</sup>	None <sup>b</sup>
Skin Irritation	 Category 2 <sup>c</sup>	None <sup>d</sup>	None <sup>d</sup>	None <sup>d</sup>
Skin Sensitizer	 Category 1 <sup>e</sup>	None <sup>d</sup>	None <sup>d</sup>	None <sup>d</sup>
Aquatic Toxicity	 Acute – Category 1 <sup>f</sup>	None <sup>g</sup>	 Acute – Category 1 <sup>h</sup>	 Acute – Category 1 <sup>h</sup>

<sup>a</sup>H226 Flammable liquid and vapor

<sup>b</sup>Non-flammable

<sup>c</sup>H315 Causes skin irritation

<sup>d</sup>Not classified as a skin irritant or sensitizer

<sup>e</sup>H317 May cause an allergic skin reaction

<sup>f</sup>H410 Very toxic to aquatic life with long lasting effects

<sup>g</sup>Not classified as hazardous

<sup>h</sup>H400 Very toxic to aquatic life