

## Elevance High Functioning Solvents (Elevance HFS®)

### Product Description and Properties

Elevance HFS® are patent-protected unsaturated ester solvents produced from plant oil feedstocks that improve solvency and boosts performance in various oil field applications such as slickwater fracking, cement spacer, and pipeline or rig cleaning.

Typical Elevance HFS® Application Areas	Why Choose Elevance HFS®?
<ul style="list-style-type: none"> <li>Oil field applications targeting replacement of terpenes, BTEX and other polar organic solvents</li> <li>Slickwater Fracking</li> <li>Remediation</li> <li>Drilling mud displacement and cleaning</li> <li>Cement spacer and wellbore cleanout spacers</li> <li>Pipeline Cleangin</li> <li>On and Off-shore Rig cleaning</li> </ul>	<ul style="list-style-type: none"> <li>High solvency compared to d-Limonene and dipentene</li> <li>HFS solvents form stable microemulsions enabling waterborne formulations</li> <li>Improved Environment, Health and Safety (EHS) profile over d-limonene</li> <li>Non flammable</li> <li>VOC exempt in the US</li> <li>Free of Benzene, Toluene, Ethylbenzene, Xylene (BTEX)</li> <li>Readily biodegradable and derived from plant oils</li> <li>Stable pricing and reliable sourcing compared to d-limonene</li> </ul>

### Physical Properties of Elevance HFS® Products

**Table 1.** Typical properties for Elevance HFS® 10, Elevance HFS® 12 and Elevance HFS® 1012 solvents.

Physical Property	Elevance HFS® 10	Elevance HFS® 12	Elevance HFS® 1012
Bio-Based Carbon (>70%)	Yes	Yes	Yes
Melting Point, °C	-28	-35	-50
Boiling Point, °C	233	267	233-267
Vapor Pressure, <sup>b</sup> Pa @ 25°C	13.4	0.99	6.6
Flash Point, <sup>b</sup> °C	102	127	102
Density, g/ml	0.89	0.88	0.89
Surface Tension, dynes/cm	28.8	29.7	28.8
Kauri-butanol Value	97-100	83-87	87-95
Biodegradable	Yes	Yes	Yes
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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Revision Number: 3, Date Revised: 06/1/2019

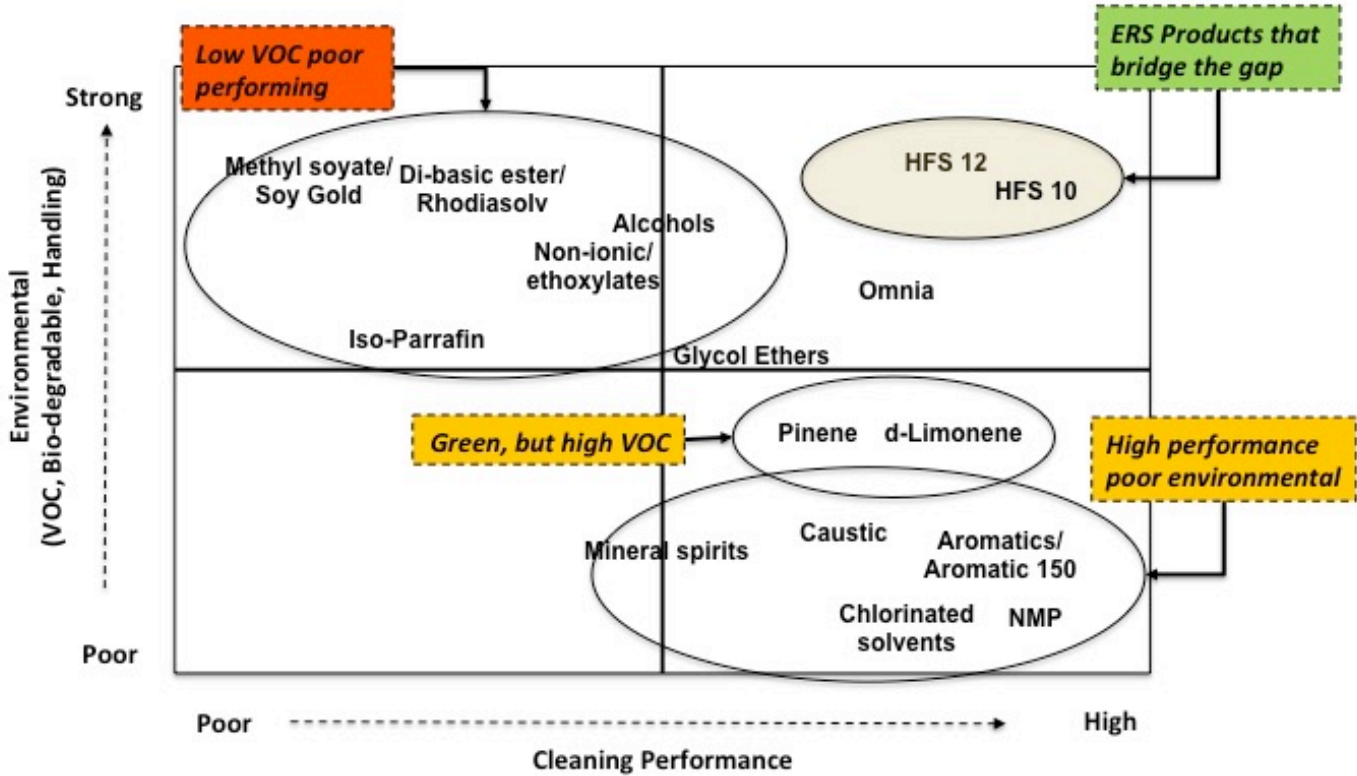
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## Elevance High Functioning Solvents (Elevance HFS®)

Figure 1. Bridging the gap of performance and sustainability









### Health and Worker Safety

Elevance HFS® products exhibit high flash points and low vapor pressures which contribute to improved worker safety versus other solvents, and reduced shipping, handling and storage costs. Elevance HFS® products are not classified as toxic or skin sensitizing. Elevance HFS® 10 is label free. All Elevance HFS® products are readily biodegradable.

## Elevance High Functioning Solvents (Elevance HFS®)

**Table 2.** 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>c</sup>H315 Causes skin irritation

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

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

<sup>b</sup>Non-flammable

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

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

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

### Handling Precautions

Product safety information required for this product is not included herein. Before handling, read material safety data sheet and container label for safe use, physical and health hazard information. The material safety data sheet is available from your local Elevance HFS® distributor.

### How to Use

Elevance HFS® is a renewably sourced plant-based material that can be used in its pure form as a solvent replacement where VOC is a concern, blended with other solvents or emulsified with addition of surfactants for the preparation of aqueous systems for a variety of applications. It is compatible with a wide range of ingredients that are commonly used today in industrial degreasing products. See your local Elevance HFS® distributor.

### Product Shelf-Life

Elevance HFS® has an indefinite shelf-life if stored in the original container, under inert atmosphere, in the absence of water and oxygen, at temperatures less than 40°C.

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