



# Technical Data Sheet

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(New: 05/2005)

**Product Name: Spider Ester ESO**

**INCI: Sorbeth-2 hexaoleate**

**Chemical Description** Spider Ester ESO is a polar, water insoluble product that functions as an emollient oil with an affinity for polar ingredients. The structure of the product limits the ability of the short polyoxyalkylene chains to rotate, and consequently limits water solubility despite the presence of a relatively large percentage of water soluble groups. “Spider esters” are multi-legged molecules that are anchored to a “body”, thereby restricting the rotation of the molecule. Additionally, the legs of the spider contain polyoxyalkylene groups closest to the body and oil soluble at the extremities. This arrangement blocks the water soluble group in small discrete positions so that rotation is significantly limited.

**Typical Properties**

**Spider Ester<sup>tm</sup> ESO**

<b>Appearance Liquid</b>	<b>Straw Colored</b>
<b>Foreign Matter</b>	<b>Free of</b>
<b>Water Solubility (5% weight)</b>	<b>Insoluble</b>
<b>Color (Gardner)</b>	<b>2</b>

**Applications:** This product is not surfactants despite the fact it contain water soluble groups and oil soluble groups. A molecule acts like a surfactant because it assumes the lowest free energy in the system in part by being free to rotate its appendages. Molecules in which the rotation is blocked have little or no surface tension reduction and remain water insoluble at levels of alkoxylation that one would predict were water soluble. Spider Ester ESO is recommended for applications where it is desirable to incorporate polar materials into an oil phase. Included in the class of materials that may be added are sunscreens, antioxidants, and water soluble vitamins.

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