

# ICYNENE LD-R-50™

## Fact Sheet: Castor Oil

Castor oil was selected as the natural oil polyol (NOP) for ICYNENE LD-R-50™ because it helps reduce reliance on petroleum-based polyols without compromising product performance (in terms of adhesion, yield, air-sealing, and moisture management).

Unlike other NOPs such as soybean oil, castor oil's chemical make-up is extremely consistent year over year and from location to location. In addition to the performance benefits delivered by castor oil, this NOP offers numerous environmental advantages:

### Castor Oil: Environmental Overview

- For every kilogram of castor oil produced in place of a petroleum-based polyol, there is a reduction of nearly 3.5 kilograms of Carbon Dioxide (CO<sub>2</sub>) from the atmosphere.
- Castor oil is 100% naturally filtered, with no chemical additives required.
- The estimated carbon dioxide absorption level of castor bean plants is 34.6 tonnes per hectare, with two growing cycles per year (source: [www.DoveBiotech.com](http://www.DoveBiotech.com))
- The castor oil used for ICYNENE LD-R-50™ has a yield (by weight) of ~40% vs. ~17% yield with soya oil.
- The castor oil used for ICYNENE LD-R-50™ is processed under the guidelines of the Responsible Care® Initiative ([www.responsiblecare.org](http://www.responsiblecare.org)).
- The production process of the castor polyol has low energy dependence, consisting simply of de-husking and pressing. Harvesting can be done manually.
- Castor crops are non-irrigated (relying only on natural rainfall), saving scarce water supplies.
- Castor crops do not require treatment with pesticides or fungicides.
- Castor crops do not compete with food crops, as they can be grown on marginal lands not competitive with food production lands.
- Castor beans are a rapidly renewable material, as per the U.S. Green Building Council's (USGBC) definition, which requires a 10-year or shorter re-growth time frame.
- A cradle-to-gate study commissioned by the Department of Energy (DOE) reported that there are essentially zero net greenhouse gas emissions from the production of the castor oil.

