SIOResin® H-8141 Castor Oil-Based Polyol

1. Product Description

SIOResin® H-8141 is a **castor oil-based polyol** derived from refined natural castor oil and designed for the manufacture of polyurethane materials. It features a branched polyol structure with relatively low viscosity, making it easy to process and suitable for a wide range of polyurethane applications.

H-8141 provides a balanced combination of **water resistance, hydrolysis stability, acid resistance, solvent resistance and impact resistance**. Its good pigment dispersibility and low foaming tendency make it particularly suitable for polyurethane coatings, cast elastomers, adhesives and sealants.

With its renewable castor oil origin and versatile performance, H-8141 can also be used as a reactive modifier to improve the water resistance and durability of other resin systems.

2. Key Features & Benefits

- Based on refined natural castor oil
- Renewable, bio-based raw material
- Branched polyol structure
- Relatively low viscosity
- Low foaming tendency
- Excellent hydrolysis stability
- Excellent water resistance
- Good acid resistance
- Good solvent resistance
- Good pigment dispersibility
- Good impact resistance
- Excellent electrical insulation properties
- Suitable for solvent-free and high-build polyurethane systems
- Versatile polyol for coatings, elastomers, adhesives and sealants

3. Typical Applications

H-8141 is a versatile castor oil-based polyol suitable for a variety of polyurethane systems.

Typical applications include:

- 2K polyurethane coatings
- Solvent-free polyurethane coatings
- High-build coatings

- Cast polyurethane elastomers
- Floor coatings
- Anticorrosion coatings
- Polyurethane adhesives
- Sealants
- Water-resistant polyurethane systems
- Electrical insulation materials
- Reactive modifier for improving water resistance of other resin systems

H-8141 is particularly suitable for medium-soft polyurethane elastomers requiring a balance of flexibility, toughness and mechanical strength.

4. Typical Properties

Property	Typical Value	Unit
Chemical Nature	Castor Oil-Based Polyol	—
Appearance	Pale yellow to yellow, clear to medium-viscous liquid	—
Hydroxyl Value	155–165	mg KOH/g
Acid Value	≤ 1.0	mg KOH/g
Moisture	≤ 0.03	%
Viscosity, Dynamic (25°C)	660–720	mPa·s
Functionality, Average	2.7	—
Number-Average Molecular Weight	Approx. 950	—
Specific Gravity (25°C)	Approx. 0.96	g/cm³
Color, Gardner	≤ 3	—

Note: The above values are typical values and are not intended to be used as product specifications.

5. Application & Formulation

H-8141 reacts with suitable polyisocyanates to produce polyurethane coatings, elastomers, adhesives and sealants.

For elastomer applications, H-8141 can be combined with **crude MDI or other suitable isocyanates**. The NCO/OH ratio should be adjusted according to the desired hardness, flexibility, curing speed and mechanical properties.

As a reference, when cured with crude MDI at an **NCO index of 1.05**, H-8141 produces a medium-soft polyurethane material with good elongation and tear resistance.

H-8141 may also be combined with other polyols to adjust hardness, flexibility, water resistance and mechanical performance.

6. Typical Performance with Crude MDI

Representative performance data obtained using H-8141 with crude MDI are shown below.

Property	Typical Value
NCO Index	1.05
Shore A Hardness	74
Shore D Hardness	23
Gel Time at 23°C	Approx. 62 min
Tensile Strength	Approx. 8 MPa
Elongation at Break	Approx. 130%
Tear Strength	Approx. 25 N/mm
Volume Resistivity	Approx. 2.0×10^{14} Ω·cm

Note: The above performance data are reference values obtained under specific formulation and curing conditions. Actual performance may vary depending on the isocyanate, NCO/OH ratio, catalyst, additives and processing conditions.

7. Performance Characteristics

H-8141 is designed to provide a balanced combination of processing and final performance properties.

Its relatively low viscosity facilitates **mixing, pumping and application**, while its branched castor oil-based structure contributes to good flexibility, water resistance and hydrolysis stability.

The product also provides:

- Good pigment dispersion
- Low foaming during processing
- Good impact resistance
- Good electrical insulation
- Good resistance to water and hydrolysis
- Good resistance to acids and solvents

These characteristics make H-8141 suitable for both **coating and elastomer applications**, particularly where a medium-soft, tough and water-resistant polyurethane is required.

8. Storage

Store in the original, tightly sealed container under **cool, dry conditions**. Protect from excessive heat and moisture. Partial crystallization may occur at low temperatures; this is reversible by gradual warming before use.

9. Packaging

Standard packaging:

- **16 kg/can**
- **180 kg/drum**

Other packaging options are available upon request.

10. Shelf Life

Recommended shelf life is **24 months** when stored in the original sealed container under recommended storage conditions.