SIOResin® H-8941 Castor Oil-Based Soft-Grade Polyol

1. Product Description

SIOResin® H-8941 is a **castor oil-based polyol with low hydroxyl value and medium functionality**, designed for the production of soft and flexible polyurethane materials.

With an average functionality of approximately 2.3 and a relatively low hydroxyl value, H-8941 provides a lower crosslink density and lower hardness contribution compared with higher-hydroxyl castor oil polyols. It is particularly suitable for polyurethane systems requiring **low modulus, high flexibility and high elongation**.

H-8941 also provides the inherent advantages of castor oil-based polyurethane chemistry, including good **hydrolysis resistance, moisture resistance, thermal stability, acid resistance and solvent resistance**.

2. Key Features & Benefits

- Based on natural castor oil
- Low hydroxyl value
- Medium functionality, approximately 2.3
- Soft-grade polyurethane polyol
- Helps achieve low hardness and low modulus
- Suitable for high-flexibility polyurethane systems
- Supports high elongation
- Good humidity resistance
- Good heat resistance
- Good hydrolysis resistance
- Good acid and solvent resistance
- Good electrical insulation
- Good mechanical stress resistance
- Suitable for soft elastomers, sealants and protective coatings

3. Typical Applications

H-8941 is designed for polyurethane systems requiring softness, flexibility and resistance to humid or thermal aging.

Typical applications include:

- Soft polyurethane elastomers
- Flexible polyurethane coatings
- Concrete protective coatings

- Polyurethane sealants
- Flexible adhesives
- Moisture-resistant PU systems
- Low-modulus polyurethane materials
- High-elongation polyurethane systems
- Softening modifier for higher-hardness polyols

H-8941 can be used alone in suitable polyurethane formulations or blended with higher-functionality polyols to precisely adjust hardness, modulus and elongation.

4. Typical Properties

Property	Typical Value	Unit
Chemical Nature	Castor Oil-Based Polyol	—
Appearance	Pale yellow, medium-viscosity liquid	—
Hydroxyl Value	72–100	mg KOH/g
Acid Value	≤ 4.0	mg KOH/g
Moisture	≤ 0.05	%
Functionality, Average	2.3	—
Viscosity, Dynamic (25°C)	700–1,600	mPa·s
Non-Volatile Content	100	%
Number-Average Molecular Weight*	Approx. 1,600	—
Gardner Color*	≤ 5	—

*Reference values; not intended as product specifications.

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

5. Application & Formulation

H-8941 reacts with suitable polyisocyanates to form polyurethane networks. Due to its relatively low hydroxyl value, it contributes to a **lower crosslink density and softer final polyurethane structure**.

It can be used with polymeric MDI, MDI prepolymers and aliphatic HDI-based polyisocyanates.

For flexible and weather-resistant coating systems, H-8941 can be combined with **HDI-based aliphatic polyisocyanates**. For sealants and soft elastomers, it can be blended with other polyols and suitable isocyanates to obtain the desired balance of hardness, elongation and mechanical strength.

The optimum NCO/OH ratio should be determined according to the required hardness, modulus, elongation and curing characteristics.

6. Performance Characteristics

H-8941 is particularly suitable for formulations requiring a **soft and flexible polyurethane structure**.

Compared with higher-hydroxyl castor oil polyols, H-8941 generally provides:

- Lower hardness
- Lower modulus
- Higher flexibility
- Higher potential elongation
- Reduced crosslink density
- Improved soft-touch characteristics

Its castor oil-based structure also contributes to good resistance against **moisture, hydrolysis and thermal aging**, making it suitable for demanding flexible polyurethane applications.

7. Recommended Formulation Direction

H-8941 can be used as either a soft-grade primary polyol or as a **flexibility modifier** in combination with higher-hydroxyl polyols. For example:

Formulation Strategy	Expected Effect
H-8941 + Aliphatic Polyisocyanate	Flexible / weather-resistant PU
H-8941 + MDI Prepolymer	Soft elastomer / sealant
H-8941 + Higher-OH Castor Polyol	Adjustable hardness and modulus
H-8941 + Multifunctional Polyol	Improved balance of flexibility and mechanical strength

For concrete-protective polyurethane coatings, H-8941 can be combined with suitable HDI-based polyisocyanates to obtain flexible coatings with good resistance to humidity and thermal aging.

8. Storage

Store in the original, tightly sealed container under **dry, normal-temperature conditions**. Protect from excessive moisture, heat and direct sunlight.

9. Packaging

Standard packaging: **16 kg/180 kg.** 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.