H-8916 Castor Oil-Based Branched Polyether/Polyester Polyol

1. Product Description

SIOResin® H-8916 is a **castor oil-based branched polyether/polyester polyol** designed for the manufacture of high-performance polyurethane materials. It is a versatile polyol suitable for 2K polyurethane coatings, casting materials, crack-bridging coatings, flooring systems and adhesives.

H-8916 combines a high renewable raw material content with **excellent impact resistance, chemical resistance and water-repellent properties**. It develops high hardness after curing while maintaining good elongation and toughness, making it suitable for polyurethane systems requiring a balance of hardness, flexibility and durability.

The product may appear **slightly cloudy or hazy**, which does not negatively affect its processing or final performance.

2. Key Features & Benefits

- **Castor oil-based** and derived from renewable resources
- **High renewable raw material content**
- Branched **polyether/polyester polyol**
- Versatile, general-purpose polyurethane polyol
- High final hardness, typically around **Shore D 70**
- **Excellent impact resistance**
- **Excellent chemical resistance**
- Good **water-repellent properties**
- Reduced sensitivity to moisture during curing
- Good balance of hardness, strength and elongation
- Suitable for **crack-bridging coatings**
- Suitable for solvent-free 2K polyurethane systems

3. Typical Applications

H-8916 is a versatile polyol for two-component polyurethane systems and can be used in combination with various isocyanate components.

Typical applications include:

- **2K polyurethane coatings**
- **Polyurethane casting materials**
- **Crack-bridging coatings**
- **Flooring systems**
- **Polyurethane adhesives**

- **Protective coatings**
- **Water-resistant polyurethane materials**
- **High-hardness polyurethane elastomers**

Its water-repellent characteristics make H-8916 particularly suitable for applications where reduced moisture sensitivity during curing and good water resistance of the final material are required.

4. Typical Properties

Property	Typical Value	Test Method
Chemical Nature	Branched Polyether/Polyester Polyol	—
Appearance	Yellow to light brown, medium-viscosity liquid	—
Water Content	< 0.03%	DGF C-III 13 A
Acid Number	< 3.0 mg KOH/g	DGF C-V 2
Hydroxyl Value	165–176 mg KOH/g	ISO 4326
Viscosity, Dynamic (25°C)	2,800–3,500 mPa·s	ISO 2555 (MOD.)
Density (20°C)	0.98–1.02 g/cm³	DGF C-IV 2B (52)

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

5. Application & Formulation

H-8916 can be reacted with polymeric MDI, carbodiimide-modified MDI or aliphatic polyisocyanates to produce high-performance polyurethane coatings, elastomers, casting materials and adhesives.

The required isocyanate level should be calculated based on the hydroxyl value of H-8916 and adjusted according to the desired hardness, flexibility, curing speed and mechanical properties.

As a general reference, a formulation containing **100 parts H-8916 and approximately 42–50 parts isocyanate**, together with a suitable moisture scavenger, can be used for polyurethane coating and casting applications.

The final formulation should be optimized according to the selected isocyanate, NCO content, NCO/OH ratio, catalyst, additives and processing conditions.

6. Typical Performance with Polymeric MDI

Representative performance data obtained using H-8916 with Polymeric MDI are shown below.

Property	Typical Value	Test Method
Mixing Ratio	100 : 42	—
Gel Time at 23°C	Approx. 47 min	Coesfeld

Property	Typical Value	Test Method
Shore A, after 1 day	75	ISO 868
Shore D, after 1 day	30	ISO 868
Shore A, after 2 days	86	ISO 868
Shore D, after 2 days	42	ISO 868
Shore A, after 14 days	98	ISO 868
Shore D, after 14 days	64	ISO 868
Shore A, after 28 days	98	ISO 868
Shore D, after 28 days	69	ISO 868
Tensile Strength	17 MPa	ISO 527-3
Elongation at Break	65%	ISO 527-3
Tear Resistance	88 N/mm	ISO 34-1
Bending Strength	8 MPa	DIN EN ISO 178
Impact Resistance	121 mJ/mm²	DIN 53453

Note: The above values are reference performance data obtained under specific formulation and curing conditions.

7. Typical Performance with Carbodiimide-Modified MDI

H-8916 can also be combined with carbodiimide-modified MDI to achieve higher hardness and improved mechanical performance.

Property	Typical Value	Test Method
Mixing Ratio	100 : 47	—
Gel Time	Approx. 39 min	Coesfeld
Shore D, after 1 day	52	ISO 868
Shore D, after 2 days	61	ISO 868
Shore D, after 3 days	64	ISO 868
Shore D, after 7 days	68	ISO 868
Shore D, after 14 days	71	ISO 868
Shore D, after 28 days	72	ISO 868
Tensile Strength	16 MPa	ISO 527-3
Elongation at Break	81%	ISO 527-3
Tear Resistance	95 N/mm	ISO 34-1
Bending Strength	8 MPa	DIN EN ISO 178
Impact Resistance	165 mJ/mm²	DIN 53453

8. Typical Performance with Aliphatic Polyisocyanate

H-8916 is also suitable for use with **HDI-based aliphatic polyisocyanates** to produce polyurethane coatings with good mechanical performance and abrasion resistance.

Property	Typical Value	Test Method
Mixing Ratio	100 : 50	—
Shore D Hardness, 2 days at 80°C	65	ISO 868
Tensile Strength	12 MPa	ISO 527-3
Elongation at Break	110%	ISO 527-3
Tear Resistance	42 N/mm	ISO 34-1
Taber Abrasion, 120 µm	18 mg/1000 rev.	CS-17
Taber Abrasion, 1 mm	95 mg/1000 rev.	CS-17

9. Storage

Store in the original, tightly sealed container in a **cool, dry and well-ventilated area**. Protect from moisture, direct sunlight and excessive heat. Reseal promptly after use.

10. Packaging

Standard packaging:

- **25 kg/drum**
- **200 kg/drum**

Other packaging options are available upon request.

11. Shelf Life

Recommended shelf life is **12 months** when stored unopened in the original sealed container under recommended storage conditions.

Disclaimer

The information provided in this TDS is based on our current technical knowledge and is intended for general guidance only. Actual performance depends on formulation and processing conditions. Users should conduct appropriate testing to confirm suitability for their specific application.