



UNOXOL™ DIOL
1,3/1,4-Cyclohexanedimethanol (CHDM)

CAS Reg. No. 3971-28-6

CAS Reg. No. 105-08-8

Chemical Structure



(cis,trans)-1,4-Cyclohexane dimethanol

(cis,trans)-1,3-Cyclohexane dimethanol

Description

Unoxol™ Diol is a cycloaliphatic diol that is composed of approximately a 1:1 ratio of (cis, trans)-1,3-cyclohexanedimethanol and (cis, trans)-1,4-cyclohexanedimethanol. It contains two primary hydroxyl groups that have excellent reactivity.

Features/
Advantages

Unoxol™ Diol is a liquid at room temperature. The diol reacts to produce polyester resins that:

- are non-crystalline
- have excellent solvent solubility
- have low solution viscosity
- provide high reactivity with aminoplast and polyisocyanate crosslinkers.

Thermoset coatings prepared from these resins have an excellent balance of hardness and flexibility, good chemical resistance and uv stability.

Unoxol™ Diol offers the following performance advantages in coatings.

<u>Powder Coatings</u>	<u>Solvent Borne Coatings</u>	<u>Refinish Coatings</u>
Lower Melting Point	Higher Solids / Lower VOC	Faster Dry Time
Lower Melt Viscosity	Excellent Solvent Solubility	Better Hardness Development
Improved Appearance		Improved Properties
Lower Film Thickness		

Physical Properties ⁽¹⁾

Molecular Weight	144.21
Empirical Formula	C ₈ H ₁₆ O ₂
Density (g/ml 20°)	1.046 g/ml
Hydroxyl Number (calculated, 100% solids)	778
Physical State	Clear and Colorless Liquid
Vapor Pressure (20°C)	<0.01 mmHg
Color Pt-Co	10
Flash Point (closed cup)	118°C
Solubility in Water	100%
Boiling Point (760 mmHg)	275.6°C
Viscosity (23°C)	10,000 cp
Odor	Sweet

(1)These data are typical values and cannot be construed as specifications. For product handling and safety aspects please refer to the Material Safety Data Sheet.

Applications

Unoxol™ Diol can be used in

- automotive coatings
- appliance coatings
- coil coatings
- powder coatings
- Cosmetic polymer intermediates
- Solvents for cosmetics and personal care
- other general industrial coating applications.

Coating Properties

Diol	NPG	NPG and 1,3/1,4-CHDM (1:1)	1,3/1,4-CHDM
Acid Etch Resistance Severe Defect (°C)	71	73	73
Sward Hardness	31	33	38
Pendulum Hardness (Konig, seconds)	153	168	196
Impact Resistance			
Direct (in.-lb.)	160	160	160
Indirect (in.-lb.)	140	140	140
Gloss at 60°	94	94	96

The Coating Properties table shows the properties of Neopentyl Glycol (NPG), NPG and 1,3/1,4-CHDM (1:1) and 1,3/1,4-CHDM based polyester coatings. The polyester resins were reduced with solvent to 60 weight percent solids and mixed with a melamine crosslinker at a ratio of 3:1 polyester to melamine. The formulations were cast on steel panels using a drawbar and then baked at 140°C for 20 minutes using an amine blocked dodecylbenzene sulfonic acid as catalyst. The data shows that coatings based on 1,3/1,4 CHDM have the best overall balance of hardness and flexibility when compared to NPG, along with better acid etch resistance.

Environmental Health & Safety

All components of this product are on the Toxic Substances Control Act (TSCA) Inventory or are exempt from TSCA Inventory requirements. This product contains a substance subject to an order under TSCA 5(e) and export notification under TSCA Section 12(b). Polymers produced from this monomer that contain residual 1,3 isomer content >2% may require a TSCA Polymer PMN. Contact Dow for additional details and requirements. In addition, all components of this product are listed on EINECS (Europe), ENCS, and ENCS (Japan). ASIA-PAC listings.

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