



Hexyl CELLOSOLVE Solvent & Hexyl CARBITOL Solvent

Product Description

Hexyl CELLOSOLVE™ solvent and Hexyl CARBITOL™ solvent are high boiling, glycol ether solvents with vapor pressures less than 0.1 mmHg @ 20°C. The hexyl imparts lower water solubility characteristics to these products than is typical with other glycol ether solvents. Both Hexyl CELLOSOLVE and Hexyl CARBITOL solvents are readily biodegradable.

These products are especially useful as coalescing solvents for waterborne coatings, as slow evaporating solvents for high-solids coatings, and as solvents in cleaning applications and inks. Both Hexyl CELLOSOLVE solvent and Hexyl CARBITOL solvent are potential alternatives to halocarbons in non-vapor degreasing applications.

Table 1 • General Solvent Properties

	Hexyl CELLOSOLVE Solvent	Hexyl CARBITOL Solvent
CAS #	112-25-4	112-59-4
Structure	C ₆ H ₁₃ OCH ₂ CH ₂ OH	C ₆ H ₁₃ (OCH ₂ CH ₂) ₂ OH
Molecular Weight	146.2	190.3
Appearance	Transparent colorless	Transparent colorless
Specific Gravity at 20/20°C	0.889	0.935
Density at 20°C, lbs./gal.	7.41	7.79
Relative Evaporation Rate (n-Butyl Acetate = 1)	<0.01	<0.01
Solubility Parameters (Hansen) ¹		
Total	9.6	9.7
Nonpolar	9.2	9.1
Polar	1.5	1.8
Hydrogen Bonding	2.5	3.0

¹ Hoy Solubility Parameters available on request at 1-800-SOLVENT Technical Service Hotline.

Table 2 • General Physical Properties†

	Hexyl CELLOSOLVE Solvent	Hexyl CARBITOL Solvent
Boiling Point, °C	207.8	258.3
Closed Cup Flash Point, °C (°F)	99 (210)	127 (260)
Freezing Point, °C	-45.3	-34.5
Vapor Pressure at 20°C, mmHg	0.05	<0.01
Viscosity at 20°C, cP	5.18	8.45
Surface Tension at 25°C, dyne/cm	27.7	29.8
Solubility at 20°C, % by weight		
In water	0.88	1.37
Water in	18.8	56.3

† The physical property data listed are considered to be typical properties, not specifications.

Waterborne Coatings Applications

Hexyl CELLOSOLVE and Hexyl CARBITOL solvents are excellent coalescing solvents or filming aids with waterborne emulsion or dispersion coatings. Both are slow evaporating solvents that partition primarily into the polymer phase of a waterborne coating. They are effective in reducing Minimum Filming Temperature and can be used with associative thickeners to enhance application properties such as brushability or roll application in high performance coatings.

High-Solids Coatings Applications

Due to their slow evaporation and excellent solvent properties, Hexyl CELLOSOLVE solvent and Hexyl CARBITOL solvent contribute good flow and leveling to high-solids coatings during the drying/curing cycle. It is extremely important that the last solvent to evaporate has good solvency properties for the coating system. This allows uniform diffusion of the solvent through the film and maximizes appearance and film properties by reducing the occurrence of defects due to solvent-pop and air entrapment.

Cleaning Applications

Hexyl CELLOSOLVE solvent and Hexyl CARBITOL solvent have the characteristic structures of glycol ethers and contain ether and alcohol functional groups in the same molecule. As a result, they provide unique cleaning power for removal of both water-soluble and greasy (water-insoluble) soils. Both Hexyl CELLOSOLVE solvent and Hexyl CARBITOL solvent have longer length hydrophobic groups compared to other commercial members of the family and thus give excellent oil-solubility characteristics. They are effective in both consumer and industrial applications.

Solvent Degreasing Efficiency

SOLVENT	Light-Wt. Oil Rust-ban® 343 % Removed (20 sec.)	Medium-Wt. Oil Valvoline® Motor Oil % Removed (60 sec.)	Heavy Grease Ronex® MP % Removed (40 min.)
Hexyl CELLOSOLVE Solvent	100	100	100
Hexyl CARBITOL Solvent	98	93	96
1,1,1-Trichloroethane	100	100	99

Printing Inks

Hexyl CELLOSOLVE solvent and Hexyl CARBITOL solvent play an important role in specialty printing inks. Because of their limited water-solubility and slow evaporation, these solvents are especially effective in printing ink formulations for the silk-screen process, by preventing premature setting of the ink. Hexyl CARBITOL solvent is also popular in metal-deco inks as a slow evaporating solvent, providing good flow and leveling.

Biodegradation

Hexyl CELLOSOLVE solvent and Hexyl CARBITOL solvent offer excellent biodegradability when tested under Organization for Economic Cooperation and Development (OECD) methods and classifications (Table 3). These materials can be handled in conventional wastewater-treatment processes at normally expected concentrations.

Table 3 • OECD 301-B CO₂ Evaluation Biodegradation Testing¹

	Hexyl CELLOSOLVE Solvent	Hexyl CARBITOL Solvent
28-Day Biodegradable	97%	100%
Meets >60% Biodegradable	Yes	Yes
Meets 10-Day Window Criteria	Yes	Yes
Biodegradability Classification	Readily	Readily

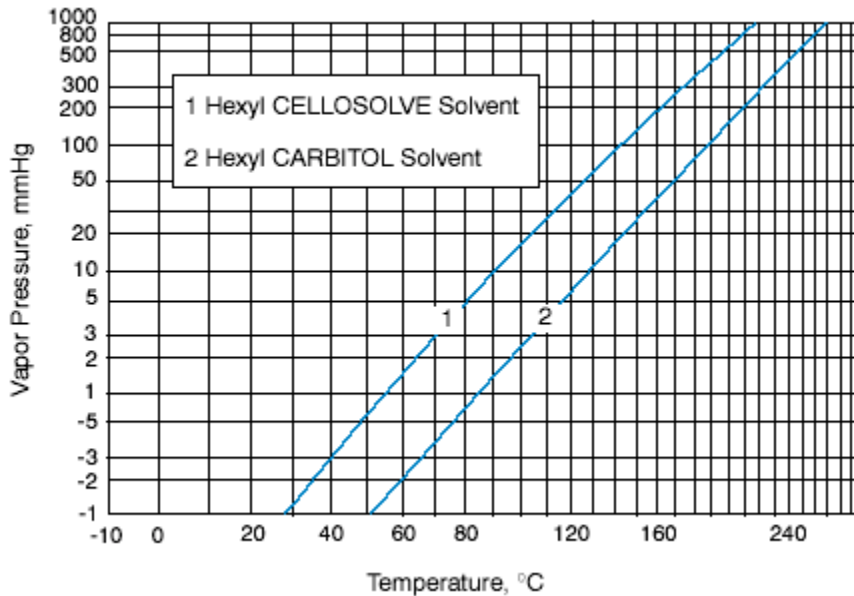
¹ This test method monitors carbon dioxide produced from the biooxidation of molecular carbon in the test substance. Biodegradation is the percent ratio of evolved CO₂ to maximum theoretical CO₂. Based on organic carbon content of the test substance. The material meets the criteria if it passes from 10% biodegradable to 60% biodegradable within a 10-day period.

Regulations

Hexyl CELLOSOLVE solvent and Hexyl CARBITOL solvent have vapor pressures of less than 0.1 mmHg at 20°C (Figure 1), which classifies them, under certain governmental regulations, as Low Vapor Pressure (LVP) solvents. LVP classification may exempt these products from being considered Volatile Organic Compounds (VOCs) in certain applications such as consumer products.

Note: Regulations, whether federal or local, are subject to change. It is the user's responsibility to determine compliance with regulatory agencies.

Figure 1 • Vapor Pressures



Product Safety

When considering the use of any DOW products in a particular application, you should review our latest Material Safety Data Sheets and ensure that the use you intend can be accomplished safely. For Material Safety Data Sheets and other product safety information, contact Dow at the numbers listed on the back of this brochure. Before handling any other products mentioned in the text, you should obtain available product safety information and take necessary steps to ensure safety of use.

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