



## Glycol Ethers for Wood Coatings

Wood coatings may be either water-based or solvent-based systems. Typically, fast dry, high gloss finishes are required.

Problems encountered with wood finishes such as moisture blush and resin blush can be addressed through the use of DOW glycol ethers. (See Below). Adding a slow-evaporating "tailing" solvent, such as DOWANOL\* DPM, helps to eliminate extreme temperature drop during curing of the coating, decreasing the tendency toward moisture blush. The dull finish of resin blush and possible pinholes can be eliminated by DOW glycol ethers, because exceptional solvency of these products prevents the precipitation of nitrocellulose or resinous components of the lacquer. DOW glycol ethers also improve the bonding of lacquers to wood substrates. While fast evaporating solvents are escaping from the drying lacquer, the slower evaporating glycol ether lingers in the coating providing sufficient open time for the film to yield optimum film properties. This also allows the glycol ether to aid in the "wetting" of the substrate or to soften portions of the primer, enabling resins to penetrate the cell structure of the wood. The result is a tighter, more durable bond and film.

DOW glycol ether products used in lacquers for wood finishes include DOWANOL PM, DPM, PnP, DPnP, TPM, Butyl CELLOSOLVE™, Butyl CARBITOL™, and Methyl CARBITOL™.

### Properties and Performance of DOW Glycol Ethers in Lacquers

DOWANOL	Viscosity of 8% nitrocellulose solutions in DOW glycol ethers centistokes at 77°F	Blush Conditions <sup>1</sup>				Dilution Ratios <sup>2</sup>		Kauri <sup>3</sup> Butanol Number
		Blush Conditions		No Blush Conditions		Toluene	Naphtha	
		% Relative Humidity	Temperature °F	% Relative Humidity	Temperature °F			
PM	74.18	61	82	56	82	5.2	0.9	Above 500
DPM	158.76	90	82	85	82	4.2	0.8	Above 500
TPM	407.16	95	82	90	82	3.1	0.7	Above 500
BuCs	160.92	95	82	90	82	5.2	2.2	Above 500
BuCb	229.32	No blush at 95% rel hum. And 84°F after one hour				6.5	1.9	Above 500
MeCb	149.05	614	82	564	82	4.6	Immiscible	Above 500

<sup>1</sup> Blush resistance tests were carried out by spraying a solution of 92% DOW glycol ether and 8% nitrocellulose on a 6" x 24" glass plate from a distance of eight inches, 30-40 pounds air pressure was used and 30 minutes drying time allowed.

<sup>2</sup> Dilution ratios were determined by dissolving 2 g of dried nitrocellulose in 20 ml of DOW glycol ether and adding toluene or naphtha until the nitrocellulose precipitated. The volume of toluene or naphtha required divided by 20 was taken as the dilution ratio.

<sup>3</sup> Kauri Butanol numbers are determined by adding the material being checked to 20 ml of Kauri Butanol reagent until 10 point type can no longer be read through the solution. The number of ml of material required to reach the endpoint is recorded as the Kauri Butanol number. With all DOW glycol ether products tested, 500 ml were added to the reagent without the endpoint being reached.

<sup>4</sup> Methyl CARBITOL™ glycol ether seemed to be quite deliquescent.