

**CARGILLE
OPTICAL GEL CODE 081160**

Jun. 15, 2004

$n (5893 \text{ \AA}) 25 \text{ }^\circ\text{C} = 1.517$

TYPICAL CHARACTERISTICS

<u>COMPOSITION</u>	Phthalate Esters & Gelling Agents
<u>APPEARANCE</u>	Colorless Translucent Gel
<u>ODOR</u>	Slight Characteristic
<u>COLOR STABILITY</u>	In sun: may slightly discolor in 1 to 8 years
<u>INDEX CHANGE RATE BY EVAPORATION</u>	Very low: - 0.00001 expected:
exposed surface area to volume ratio of 0.2 sq. cm / cc @ 25 °C for 32 days	
<u>FREEZING POINT</u> °C.....	< - 45
<u>BOILING POINT</u> °C @ 760mm Hg.....	> 370
<u>FLASH POINT</u> °C COC.....	> 199
<u>DENSITY</u> g / cc @ 25 °C.....	1.110
<u>DENSITY TEMP. COEF.</u> g / cc / °C.....	-0.0008
<u>COEF. OF THERM. EXP.</u> cc / cc / °C.....	0.0007
<u>VISCOSITY</u> @ 25 °C.....	Soft Gel
<u>PARTLY SOLUBLE:</u> Acetone, Carbon Tetrachloride, Ethanol, Ethyl Ether, Freon TF, Heptane, Methylene Chloride, Naphtha, Toluene, Turpentine, Xylene	
<u>INSOLUBLE:</u> Water	
<u>CLEAN UP:</u> Wipe surfaces clean, then use soap and water.	
<u>COMPATIBLE</u> 10 month immersion @ 25 °C: Acrylic, Cellulose Acetate, Epoxy, Mylar, Nylon, Polycarbonate, Polyethylene, Polypropylene, Phenolic, Silicone and Fluorosilicone Rubber, Aluminum, Copper, Brass, and Steel; (tests done on one example of each)	
<u>INCOMPATIBLE:</u> Polystyrene, Polyurethane, Polyvinyl Chloride, Latex Rubber, Neoprene Rubber, Tygon (Acrylic and Polycarbonate at 55 °C)	
<u>TOXICITY</u>	Practically Non-Toxic (request MSDS)

CAUCHY EQUATION: refractive index as a function of wavelength at 25 °C

W = wavelength in angstroms (Å)

$$n (W) = 1.496135 + (692198.9) / W^2 + (8.070513 \text{ E } +11) / W^4$$

SOURCE OR SPECTRAL LINE	WAVELENGTH (angstroms)	REFRACTIVE INDEX 25 °C	% TRANSMITTANCE 25 °C		
			0.01 mm	0.1 mm	1 mm
near UV cut off	3200	1.571	97	72	4
i (Hg)	3650	1.553	98	82	13
h (Hg)	4047	1.541	99	87	26
F? (Cd)	4800	1.528	99	93	48
F (H)	4861	1.527	99	93	49
e (Hg)	5461	1.520	99	95	60
D (Na D1, D2 mean)	5893	1.517	100	96	68
HeNe laser	6328	1.514	100	97	71
C? (Cd)	6439	1.513	100	97	73
C (H)	6563	1.513	100	97	74
Ruby Laser	6943	1.511	100	98	76
GaAs laser	8400	1.506	100	98	83
Nd: YAG laser	10648	1.502	100	99	86
Diode	13000	1.500	100	99	89
Diode	15500	1.499	100	99	90
$n_F - n_C$	=	0.014			
Abbe $v_D : (n_D - 1) / (n_F - n_C)$	=	36			
Temp. Coef: dn_D / dt 15-35 °C	=	-0.00038			

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