

CARGILLE LABORATORIES

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Immersion Oil Type FF

18-April-2018

n (589.3nm) 23°C = 1.4790

TYPICAL CHARACTERISTICS

<u>COMPOSITION</u>	Aliphatic and Alicyclic Hydrocarbons	
<u>APPEARANCE</u>	Colorless Liquid	
<u>COLOR STABILITY IN DIRECT SUN</u>	In direct sunlight: no visible change after 7 years	
<u>INDEX CHANGE RATE BY EVAPORATION</u>	Very Low: 0.00001 expected; exposed surface area to volume ratio of 0.2 cm ² /cc @ 25°C for 32 days	
<u>ODOR</u>	None	
<u>FREEZING POINT</u> °C	< -17	
<u>BOILING POINT</u> °C @ 760mm Hg	> 230	
<u>FLASH POINT</u> °C C.O.C.	> 216	
<u>DENSITY</u> g/cc @ 23°C	0.877	
<u>COEF. OF THERM. EXP.</u> cc/cc/°C	0.0007	
<u>VISCOSITY</u> @ 23°C	170cSt	149cP

SOLUBLE: Carbon Tetrachloride, Diethyl Ether, Heptane, Methylene Chloride, Naphtha, Toluene, Turpentine, Xylene

PARTLY SOLUBLE: Acetone

INSOLUBLE: Ethanol, Water

COMPATIBLE: 10-month immersion at 25°C: Acrylic, Cellulose Acetate, Epoxy, Mylar, Nylon, Polycarbonate, Polyester, Polyethylene, Polypropylene, Polystyrene, Polyurethane, Polyvinyl Chloride, Phenolic, Teflon, Neoprene, Fluorosilicone (Silastic 730 RTV), Silicone (Sylgard 184), Tygon F-4040-A, Tygothane, Aluminum, Copper, Brass, Steel; (tests done on one example of each).

INCOMPATIBLE: Latex Rubber, (Tygon S-50-HL, R-3603, B-44-3) Silicone (3140 RTV) Rubbers

CAUCHY EQUATION: Refractive index as a function of wavelength at 23.0°C

W = wavelength (nm)

$$n(W) = 1.466841 + (4.092393E+03) / W^2 + (4.740570E+07) / W^4$$

SOURCE OR SPECTRAL LINE	WAVELENGTH (nm)	REFRACTIVE INDEX 23°C	% TRANSMITTANCE 23°C		
			1 mm	1 cm	10 cm
near UV cut off	240	1.552	72	4	0
i (Hg)	365	1.500	100	99	90
h (Hg)	404.7	1.4936	100	99	94
F' (Cd)	480	1.4855	100	99	95
F (H)	486.1	1.4850	100	100	96
e (Hg)	546.1	1.4811	100	100	99
D (Na D1, D2 mean)	589.3	1.4790	100	100	99
HeNe laser	632.8	1.4774	100	100	99
C' (Cd)	643.9	1.4770	100	100	99
C (H)	656.3	1.4766	100	100	100
Ruby Laser	694.3	1.4755	100	100	99
GaAs laser	840	1.4727	100	100	95
Nd: YAG laser	1064.8	1.470	99	95	60
Diode	1300	1.469	100	98	78
Diode	1550	1.469	98	81	12
n _F – n _C		=	0.0084		
Abbe v _D : (n _D – 1)/(n _F – n _C)		=	57.0		
Temp. coef: dn _D /dt 15 - 35°C		=	-0.00037		

The above values are typical for this liquid and are calculated from values typical of its components