

CARGILLE LABORATORIES

55 Commerce Road • Cedar Grove • New Jersey • 07009 – 1289 USA
 Ph: 973-239-6633 • Fax: 973-239-6096 • CargilleLabs@cargille.com • www.Cargille.com

Immersion Oil Type A

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n (589.3nm) 23°C = 1.5150

TYPICAL CHARACTERISTICS

<u>COMPOSITION</u>	Aliphatic and Alicyclic Hydrocarbons, Polybutenes and Hydrogenated Terphenyls
<u>APPEARANCE</u>	Colorless Liquid to slightly yellow
<u>COLOR STABILITY IN DIRECT SUN</u>	In direct sunlight will slightly darken in days, more after 4 months
<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>	Slight, characteristic
<u>FREEZING POINT</u> °C	< -13
<u>BOILING POINT</u> °C @ 760mm Hg	Approx. 340
<u>FLASH POINT</u> °C C.O.C.	Approx. 163
<u>DENSITY</u> g/cc @ 23°C	0.923
<u>COEF. OF THERM. EXP.</u> cc/cc/°C	0.0006
<u>VISCOSITY</u> @ 23°C	150cSt -- 138cP

SOLUBLE: Carbon Tetrachloride, Diethyl Ether, Heptane, Methylene Chloride, Naphtha, Toluene, Turpentine, Xylene
INSOLUBLE: Ethanol, Water (To Clean off Glass: Use wipe and Acetone)

COMPATIBLE: 10-month immersion at 25°C: Acrylic, Cellulose Acetate, Epoxy, Mylar, Nylon, Polycarbonate, Polyester, Polyethylene, Polypropylene, Polyurethane, Polyvinyl Chloride, Phenolic, Teflon, Latex Rubber, Neoprene, Fluorosilicone (Silastic 730 RTV), Silicone (Sylgard 184, 3140 RTV) Rubbers, Tygon F-4040-A, Tygothane, Aluminum, Copper, Brass, Steel; (tests done on one example of each).

INCOMPATIBLE: Polystyrene, Tygon S-50-HL, R-3603, B-44-3

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

W = wavelength (nm)

$$n(W) = 1.49749 + (5.71032E+03) / W^2 + (1.24762E+08) / W^4$$

SOURCE OR SPECTRAL LINE	WAVELENGTH (nm)	REFRACTIVE INDEX 23°C	% TRANSMITTANCE 23°C		
			1 mm	1 cm	10 cm
near UV cut off	350.0	1.552	70	3	0
i (Hg)	365.0	1.547	91	40	0
h (Hg)	404.7	1.5370	98	83	15
F' (Cd)	480.0	1.5246	100	98	78
F (H)	486.1	1.5239	100	98	82
e (Hg)	546.1	1.5180	100	100	98
D (Na D1, D2 mean)	589.3	1.5150	100	100	98
HeNe laser	632.8	1.5125	100	100	99
C' (Cd)	643.9	1.5120	100	100	99
C (H)	656.3	1.5114	100	100	99
Ruby Laser	694.3	1.5099	100	100	99
GaAs laser	840	1.5058	100	100	95
Nd: YAG laser	1064	1.503	100	96	69
Diode	1300	1.501	99	92	43
Diode	1550	1.500	99	87	23
n _F – n _C	=	0.0125			
Abbe v _D : (n _D – 1)/(n _F – n _C)	=	41.2			
Abbe v _e : (n _e – 1)/(n _F – n _C)	=	41.1			
Temp. coef: dn _D /dt 15 - 35°C	=	-0.00033			

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