TECHNICAL DATA

SPI Supplies
206 Garfield Avenue,
West Chester, PA 19380, USA

Cargille™ Extra High Viscosity Immersion Oils: NVH, OVH

Optical and physical properties

Immersion oils with different viscosities make them easier to use in different applications. Extra high viscosity immersion oils facilitate the following applications:

- Lower viscosity immersion oils when used with inverted or inclined microscope may run out of place and onto surfaces where they are not wanted. The extra high viscosity immersion oils Type NVH and Type OVH will stay in place.
- Extra high viscosity immersion oils will bridge a wide condenser gap better than lower viscosity oils. Extra high viscosity immersion oils will also better bridge the wide gap between objective and slide when using long focus oil immersion objectives. In testing, Cargille Immersion Oils Type A and B were found to bridge a 2.8mm gap, while extra high viscosity immersion oils Type NVH bridged a 3.5mm gap and Type OVH bridged a 4.4mm gap.
- Optical coupling can be done using Type NVH and OVH because of their high viscosities and refractive index. Their refractive index, so much higher than air and close to the refractive indices of common glasses and plastics, reduces interface reflection. Their high viscosity keeps components connected and resists running. The refractive dispersion of Type NVH and Type OVH is closer than most liquids to that of glasses and plastics, resulting in less chromatic aberration.
- As a mounting media for the preparation of microscope slides, extra high viscosity immersion oils will hold the cover glass in place while permitting the cover glass to be removed for retrieval of a specimen. The cover glass can be moved slightly to rotate and orientate particles such as crystals or microfossils. The refractive index of nD = 1.515 is the same as that of the slide and cover glass, thus presenting the specimen as if embedded in a solid piece of glass.
  Note: Cargille Immersion Oil Type NVH has viscosity of 21,000 cSt (centistokes), which is about 1.5 times thicker than honey. Cargille Immersion Oil Type OVH has a viscosity of 46,000 CST, or about 3 times that of honey. The viscosity of Type OVH was chosen to be close to discontinued Cargille Immersion Oil Type VH (46,500 CST) because of the popularity of its viscosity.

  *All value measured at 23°C

Type of Oil:	**Type OVH**	**Type NVH**
SPI #:	**04093-AB**	**04107-AB**
Refractive Index @ 23° C:		
F Line (4861 Å)	1.5230	1.5230
e Line (5461 Å)	1.5178	1.5178
D Line (5893 Å)	1.5150	1.5150
C Line (6563 Å)	1.5118	1.5118
Dispersion:		
n_F-n_C:	0.0111	0.0113
Abbe V_D:	46.3	45.7
Abbe V_e:	46.0	45.4
Temperature Coefficient: (15-35°C)		
dn_D/dt	-0.00034 / +°C	-0.00034 / +°C
Stability: (change in $n_D^{25°C}$ after 24 hrs. @ temp.)		
60°C:	0	0
100°C:	0	0
Fluorescence (1):		
Short Wave:	low	low
(Ultra-Violet)		
Long Wave:	low	low
Color: (Gardner)	<3	1
Viscosity:(centistokes)		
CST ± 10% @ 23°C:	46,000	21,000
Density: @ 23°C		
g/cc:	0.918	0.919
(US) lb/gal:	7.66	7.67
Cloud Point:	<-13°C	<-13°C
Flash Point: (Cleveland Open Cup)	340°F	325°F
Neutralization No.:		
(mg KOH/g)	0.04 max.	0.01 max.

(1) Relative to Cedarwood Oil

Date: 9/22/2015