

Medium-RI Optical Coating IOC-114-SF06

IOC optical materials are UV-curable, organo-siloxane resins with multi-functional crosslinking reactivity, which provide high refractive index and transmittance. Retention of transparency over time and high thermal stability makes them excellent candidates to consider for high reliability applications.

Liquid material

Property	General Description	Result
Appearance		Clear, yellowish
Viscosity	Rheometer (25 1/s)	650 mPas
Solvent	No non-reactive solvents	

Cured film

Property	General Description	Result
Thickness	Spin 1000rpm	25µm
Index of refraction	at 589nm ¹⁾	1.55
ABBE number	-	40
Transmittance	at 450nm ²⁾	> 99.2%
L*, a*, b*	D65 ²⁾	99.9, -0.03, 0.06
Haze	ASTM D1003-97 (Pros.B/A) ²⁾	<0.1
Hardness	ShoreD	D43

- 1) Diluted to PGME; spin-coated, SB 80C/30s, BB cure 1J/cm²
 2) 25µm film on glass, LED-365nm curing 20J/cm²

PRODUCT INFORMATION

Benefits

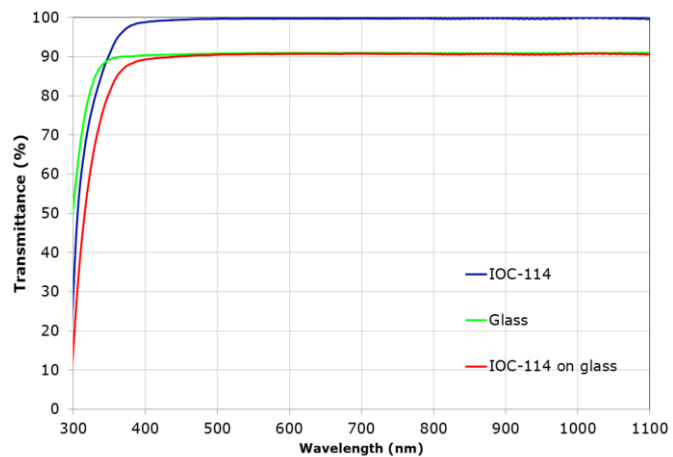
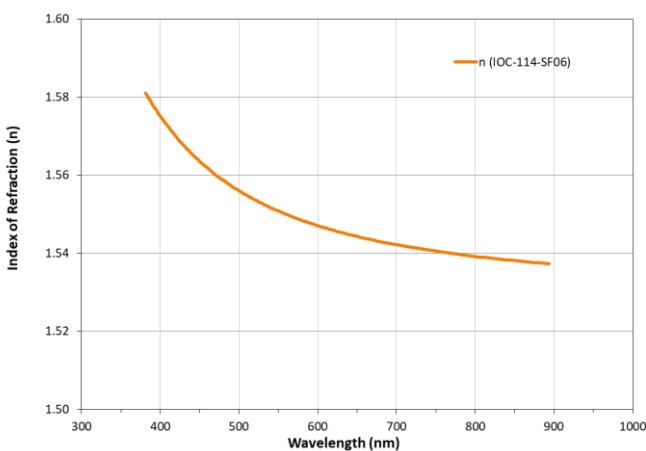
- UV curable
- Solvent-free
- One-component system, no mixing required

Key Features

- High light transmittance
- High refractive index 1.55
- Excellent UV and thermal stability
- Fast curing at ambient temperature
- Dielectric properties expected from a siloxane polymers
- No corrosive by-products

Applications

- Optical coatings
- Wafer level optics
- UV embossing and nanoimprinting



Inkron is a developer and manufacturer of next-generation optical coatings and conductive inks and metallization materials for the optical, semiconductor, printed electronics, touch sensors OLED/LED lighting, and energy storage industries. Our novel cost effective manufacturing process for nano materials, along with our advanced, next-generation polymer chemistry platforms enable the development of a wide range of customized material properties with superior performance advantages in several high-tech applications. Copyright: Inkron 2020. Reference version 1.0.

IOC-114 Processing guidelines (IOC-114-SF06)

Process steps

Pre Clean	Substrate dependent (e.g. corona treatment may improve adhesion properties)	-
Coating	Various, e.g. spin coating	1000rpm (~25µm)
(Nanoimprinting)		
UV exposure	Broadband LED-365nm	2J (20s x 100mW/cm ²) 20J (50s x 400mW/cm ²)
Cleaning solvent	IPA, PGMEA	-

- IOC resins are compatible with commercially available equipment and industry standard processes. Therefore, a resin adapts itself to use with a variety of automated or manual dispensing systems.
- During different process steps, such as warming, mixing, transfer, and dispensing steps, it is essential to protect UV-curable resins from exposure to light and possible contaminants.
- All surfaces in contact with the resin should be clean and dry. Surfaces must be free of moisture, dirt, wax, oil, grease, and all other contaminants prior dispensing material.
- IOC resins are formulated to cure when exposed to ultraviolet light of the proper wavelength to activate the curing mechanism. This can be done with broadband mercury or LED lamps. The rate of cure, depth of cure and surface tack of the cured material will depend on the intensity of the UV light, exposure time, spectral output of the UV light source, and light transmittance of the substrates. To achieve a fast, controlled, reproducible cure performance, the use of high quality UV lamps is recommended.
- As a general guideline for UV-curing, lamp input power settings should be at the highest level, and the belt speed (or time) should be adjusted until a reading of stated in above table is obtained on the radiometer. Some systems may require values outside of this range in order to achieve completely curing. It is recommended to verify completeness of curing of UV materials with a process capability study, and then use the obtained energy readings that provide this optimal curing as a set up parameter each time the UV line is set up to run production. Material is fully cured when more light exposure no longer improves cured properties. It is highly recommended that a radiometer be used to verify energy levels in any UV curing system.
- Oxygen in the atmosphere may inhibit surface cure. Surfaces exposed to air may require high-intensity UV light to obtain a dry, non-sticky surface. Using inert gas, such as nitrogen, can reduce the effects of oxygen inhibition.
- To flush equipment and clean uncured material common solvents, such as isopropanol and PGMEA, can be used. The cured material has a high degree of environmental and chemical resistance and will be more difficult to remove.

Storage

Protect from light and heat, and store in sealed original containers in a cool, dark place when not in use. Do not expose to the light. If improperly stored viscosity will increase and eventually a gelled product will be obtained. The material has 6 month shelf life when stored in tightly closed original containers at temperatures recommended on the product label.

Health and Environmental Information

Before using this product, consult the material Safety Data Sheet (SDS) for details on product hazards, recommended handling precautions and product storage. Use personal equipment (chemical gloves, chemical goggles, and suitable protective clothing). Avoid contact with the skin and eyes. Handle with care and in a ventilated area to avoid breathing vapors. Exhaust system is recommended to dissipate any vapors formed during handling and the curing process.

Customer Support

Inkron has a dedicated team of R&D specialists developing tailored solutions for our customers. Get in touch with us and we will customize a product for you.

General Information

Typical property values shown in product information sheet should not be used as a basis for preparing specifications. Please contact us for assistance and recommendations in establishing particular specifications. Products are for industrial use only. Not for medical, drug, household, or other use.

The information is based on our experience and is believed to be reliable, but may not be complete. We make no warranty, expressed or implied, regarding the information, use, handling, storage, or possession of these products, or the application of any process described herein or the results desired, since the conditions of use and handling of these products are beyond our control.

IOC-114-SF06 Additional data: Spin curve

