

Fleuron™ WISE (Water-Invisible-Soft- Elastomer)

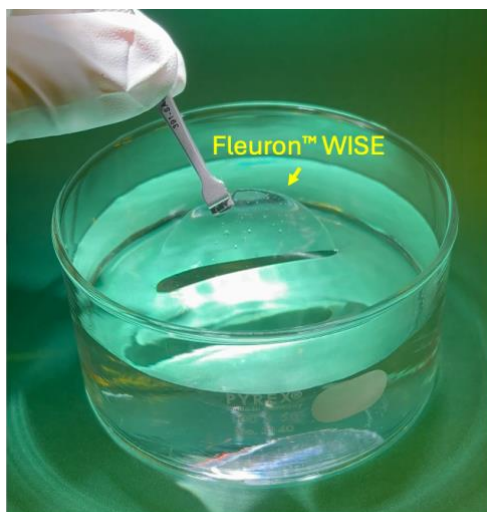
DESCRIPTION

Fleuron WISE is a UV-curable, water-index-matched soft elastomer designed for optical clarity in aqueous imaging environments. With a refractive index closely matched to water (1.33), WISE minimizes refractive-index mismatch at the sample–material interface, reducing optical distortion and supporting high-resolution visualization of aqueous and biological samples.

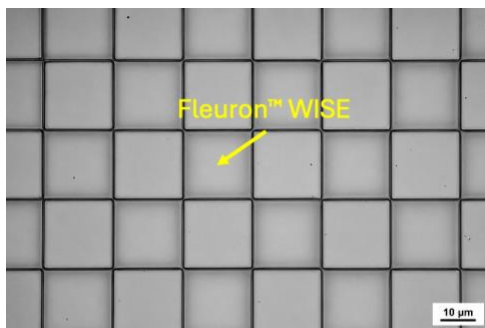
Supplied as a liquid resin and cured under UV light (i-line), WISE can be cast and molded into micron-scale features, making it suitable for micron-scale devices, custom sample chambers, optical interfaces, and precision imaging workflows. Its water-like refractive index makes it particularly useful for visible-light microscopy and super-resolution imaging applications where refractive-index mismatch can limit image quality.

In addition to its optical performance, WISE is designed to be inert in aqueous environments, compatible with a range of solvents, and resistant to small-molecule sorption. Its O_2/CO_2 permeability also supports live-sample and cell-based imaging applications where gas exchange is required.

WISE combines optical clarity, soft-elastomer moldability, and aqueous-environment compatibility for applications requiring high-resolution imaging through water-matched device materials.



Invisible (Index-Matched) in Water



Micro Structured Moldability

KEY FEATURES

- Refractive indexed matched to water- 1.33.
- Castable for molding applications with micron-scale resolution.
- UV-curable in an inert environment.
- Gas permeable.
- Biocompatible.
- Negligible sorption of small molecules.
- Compatible with most harsh organic solvents.
- Low-k dielectric.
- Excellent chemical and thermal stability.



COMPOSITION

- One-part liquid form prior to curing.
- Proprietary perfluoropolyether polymer.

CURING PROTOCOL

The following conditions represent Axoft's recommendation for a baseline sample preparation. It is expected that a certain amount of process optimization be conducted based on user needs. For any technical assistance please reach out to our team via email at materials@axoft.us.

Fleuron WISE is supplied as a liquid and can be cast onto various substrates, including glass, silicon, SU-8, and PDMS. After curing, it can be easily removed from the substrate.

The steps below outline Axoft's baseline procedure for curing WISE.

• Substrate/Mold Preparation.

To achieve optimal performance, surfaces should be thoroughly cleaned before depositing WISE resin.

• Cast uncured WISE onto the substrate.

Place the substrate/mold onto a level hotplate and set it to 80°C. Carefully add the uncured solution over the desired region. Let the sample cure on the hotplate for at least 30 minutes. Desired heights for the cured polymer can be achieved using frame cutouts made from materials such as PDMS.

Air bubbles can form during this step. Either allow them to dissipate naturally or gently remove them manually. Once removed, let the sample sit for a short period of time. Switch off the hotplate and remove the sample once it has reached room temperature.



IMPORTANT: *An inert local atmosphere (e.g., N₂) around the sample is required during UV exposure.*

• UV Exposure.

Cure WISE using a UV light source, such as an Everbeam 50W, 365 nm system, housed in a sealed chamber connected to the main N₂ line.

A saturated N₂ environment is critical. Please contact us if you have any questions regarding this step.

Place the sample into a sealed UV chamber. Attach the N₂ line and purge the chamber for at least 2 minutes to ensure saturation.

Once purged, UV-cure for 2 minutes (intensity ~7 mW/cm²).

Switch off the UV and N₂ sources. Remove the sample and manually check whether WISE is cured.

If tacky, repeat step 3.



Note: Tackiness can also indicate that the environment was not completely free of O₂.

To remove this tacky layer, perform a simple wash in Dev-10 for 30 seconds, followed by IPA and N₂ drying.

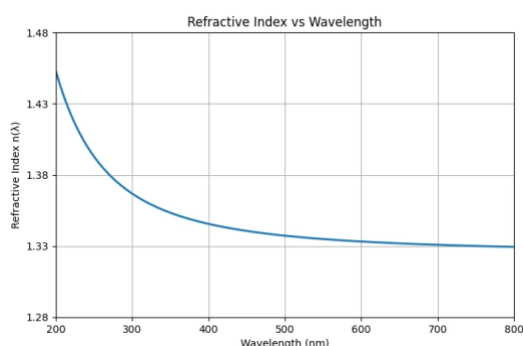
- **Remove cured WISE from the substrate/mold.**

Place samples into an IPA bath for 1 minute.

Gently remove cured WISE with the assistance of a razor blade if needed.

Air-dry with N₂.

OPTICAL PROPERTIES (REFRACTIVE INDEX)



RI @589 nm = 1.333

PHYSICAL PROPERTIES (TYPICAL VALUES)

Young's Modulus	7.5 MPa
Elongation	40 %
TGA (N ₂ , 5% weight loss)	300 °C
Dielectric constant (1 kHz)	2.48

STORAGE

Store FLEURON™ WISE upright in tightly closed containers in a cool, dry environment away from direct sunlight at 10–25°C. Store away from light, acids, and heat. Shelf life is 6 months from the shipping date.

HANDLING

Refer to the Safety Data Sheet (SDS) for details on handling procedures and product hazards prior to use.

DISPOSAL

FLEURON™ WISE may be included with other waste streams containing organic solvents designated for hazardous waste, in accordance with local, state, and federal regulations. It is the customer's responsibility to ensure proper disposal of FLEURON™ WISE, developer, and residues in accordance with all federal, state, and local environmental regulations.

DISCLAIMER

Information in Axoft product literature reflects our current knowledge of the material. It is offered as a suggested starting point for customer experimentation and is not a substitute for customer testing to determine product suitability for each application. Axoft assumes no obligation to update or revise previously furnished data. Customers needing updates should contact Axoft at info@axoft.us. Axoft makes no express or implied claims, representations, or warranties, including merchantability or fitness for a particular purpose, and customers waive any such claims. Axoft disclaims responsibility or liability for any use of this information, including product



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