**SOLIP Hybrimer Products** are the most advanced polymer coating materials available. SOLIP, created from the Sol-Gel Innovation Project Study in developing Siloxene Hybrid Materials, was founded in 2012 by Professor Byeong-Soo Bae of the KAIST school’s Department of Materials Science and Engineering in South Korea. SOLIP’s exclusively licensed Hybrimer Materials Technology allows polymer coatings to create Glass-like Surface Hardness, but with the Flexibility and Unbreakability of plastic-like substances.

SOLIP’s technology also offers Thermal Resistance up to 350ºC. Allowing the products to be used on opto-electronic devices and products that require high temperature environments. SOLIP’s hybrimers also allow for 100% Moisture Resistance, giving products the ability to withstand harsh weather conditions. The High Refracture Index of >1.56 and Thermal Stability give the products High Optical Transmittance as well as Low Gas Permeability.

This feature set creates a wide production application environment, giving consumer goods extra protection and extending the life of products that may be exposed to harsh conditions, require flexible, scratch-resistant applications or provide alternatives to glass. From electronics to optics to wearables, SOLIP’s Hybrid Materials enhance products and provide new features that create value and superiority over competing brands. SOLIP’s technology spawns endless advancements for your future product designs.

*Inspire, Innovate, Advance*
SOLIP Hybrimer Technology
Sol-Gel Siloxene Hybrid Materials (Hybrimers)

- Silica: Strong
- Silicone: Flexible
- Sol-gel Reaction
- Polymerization
- Ductility
Applications of SOLIP Hybrimers

SOLIP Mission:
To imagine, develop, enhance and promote products that will serve as the catalyst for excellence in innovations that have global appeal and can be applied to a wide range of industries.
Unlimited Possibilities

Coating Resin
- Clear Hard Coating
- Clear AF/AR Coating
- Barrier Coating

Photonic Devices
- Optical Waveguides (Optical PCB)
- Micro-Lens/Array
- Nano Photonic Devices

Displays
- Flexible Film Substrates
- Reinforced Plastics
- Barrier Encapsulant Coating/Films
- Dielectric/Passivation Coating

LED
- LED Encapsulant
- LED Packaging

New Thermally Resistant Transparent Optical Resin

solip
SOLIP Flex9H®
Flexible Hard Coating Resin
Glass-like Hardness + Plastic-Like Flexibility & Unbreakability

Features

- **High surface hardness**: Pencil hardness (ASTM D3363) > 9H
- **High scratch resistance**: Steel-wool test (1 kgf, 0000 grade) > 10,000 times
- **Excellent flexibility**: Film folding test (Radius 1mm) > 100,000 times
- **High impact resistance**: Ball-drop test (128g steel ball) > 1.5m Height
- **High transparency**: Optical transmittance > 90%, Yellow index < 1.00
- **High UV and heat/moisture resistance**: Yellow index change < 1.00

※ Coating on PET, PI, PC, PMMA films or sheets

Applications

- Cover window films for foldable smartphone
- Cover window plastics for unbreakable and shaped smartphone
- Plastic glazing for automobile and building
SOLIP ClearFRP®
Transparent Glass-Fabric Reinforced Plastic Film
Low CTE and Thermally Resistant (350°C) Transparent FRP Film

Features

- Glass fabric impregnated by siloxane hybrid resin
- High transparency:
  Optical transmittance ~90%, Retardation ~6nm

- Low thermal expansion (CTE):
  12~15ppm/°C
- Thermal Stability:
  Almost T<sub>g</sub>-less,
  Thermal decomposition (5%) temp. ~400°C
- Flexibility:
  Film folding test (Radius 3mm) >1,000 times
- Glass-fabric Reinforced Coating films on Surface-treated Substrate (GReCoSS) Process

Applications

- Substrate films for flexible displays and opto-electronic devices (350°C process)
- Cover window films for flexible smartphone GReCoSS process/ Flexible oxide TFT
SOLIP LumiHybrix®
Siloxone Hybrid Luminous QD Resin
Perfect Heat (>85°C) and Moisture (100% RH) Resistance

Features

- Homogeneous and stable dispersion
  ※ QD : Ecoflux (Korea) Nanodot-HE® Series (CdSe/ZnS)

- UV cured coating films and photoluminescence

- High temperature (85°C) and moisture (85°C/85% RH) stability for 1,000hrs

- WLED spectrum (Photostability, 10mA)

Applications

- Barrier-less QD films for SUHD (High color gamut) TV
- QD encapsulant for display LED (High color gamut)
SOLIP EncapHybrix®
Siloxone Hybrid LED Encapsulant
High Refractive Index (>1.56) and Thermal Stability (>180°C)

**Features**

- High refractive index: > 1.56
- High optical transmittance: > 89%
- High thermal stability (Aging test for 1,157hrs)
- Low gas permeability: WVTR ~3.4 gm²/day
- LED packaging reliability test

**Specification**

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<tr>
<th>Properties</th>
<th>Unit</th>
<th>TH4030</th>
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