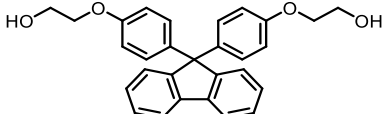
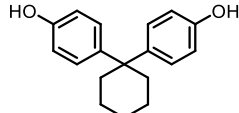
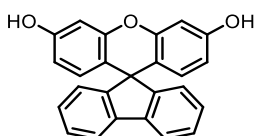
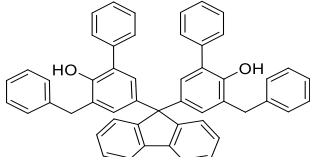


# TBIS<sup>®</sup> series Products List

## Bis-phenol Derivatives

Reflecting the market needs for high functional products, Taoka is developing various bis-phenol derivatives which is called "TBIS<sup>®</sup>".

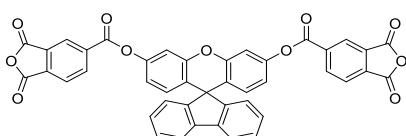
TBIS<sup>®</sup> products is an excellent raw material for optical plastics which require high transparency and heat-resistance. Especially, Fluorene-type products have a high refractive index and low birefringent due to its "Cardo Structure".

Product Name Chemical Name	Chemical Structure	Property etc.	Stage
<b>TBIS<sup>®</sup> -G</b>		CAS No. 117344-32-8 Appearance White Crystalline Solid Melting Point 164°C Refractive Index 1.62	Commercial
<b>CHBP-F</b>		CAS No. 843-55-0 Appearance White Crystalline Solid Melting Point 194°C Refractive Index 1.59	Commercial
<b>TBIS<sup>®</sup> -RX</b>		CAS No. 4081-00-9 Appearance White Crystalline Solid Melting Point 270°C Refractive Index 1.65	Pilot
<b>TBIS<sup>®</sup> -ZP</b>		CAS No. 2115022-46-1 Appearance White Crystalline Solid Melting Point 203°C Refractive Index 1.67	Pilot

【Application】 Raw Monomer or Modifier for Optical Resin or Electronic Materials.

## Acid Dianhydrides

This product has a high refractive index, transparency and heat-resistance due to its unique structure containing a fluorene skeleton. It is expected to be used as a raw material for polyimide and polyamide, a curing agent for epoxy resins, a cross-linking agent for urethanes, and many other applications.

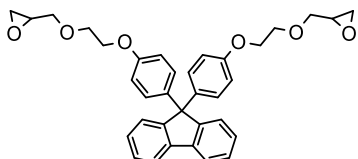
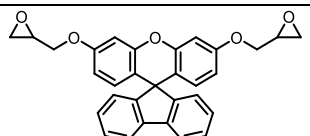
Product Name Chemical Name	Chemical Structure	Property etc.	Stage
<b>TBIS<sup>®</sup> -RXN</b>		CAS No. 1830316-18-1 Appearance White Crystalline Solid Melting Point 332°C Refractive Index 1.63	Laboratory

【Application】 Raw Material for Polyimide or Polyamide, Curing Agent for Epoxy Resin or Urethane.

## Epoxy resin

This product has a high refractive index, transparency and heat-resistance due to its unique structure containing a fluorene skeleton.

Compared to existing bisphenol fluorene epoxy resins, these compounds have a high refractive index, high solvent solubility, and excellent handling characteristics.

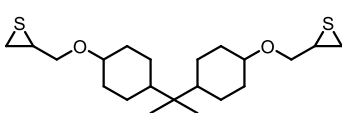
Product Name Chemical Name	Chemical Structure	Property etc.	Stage
<b>TBIS® -GG</b>		CAS No. 259881-39-5 Appearance Light Yellow Sticky Solid 5% Weight Loss Temp. 363.4°C Viscosity(150°C) 52.5mPa·s Refractive Index 1.60	Pilot
<b>TBIS® -RXG</b>		CAS No. 47769-72-2 5% Weight Loss Temp. 342°C Viscosity(150°C) 374mPa·s Refractive Index 1.62	Laboratory

**[Application]** Electronic Materials (Photoresist, Mounting Agent), Optical Materials, Adhesive, Coating Materials, Laminating Agent, Additives etc.

## Episulfide resin

Below episulfides have excellent in low-temperature curability.

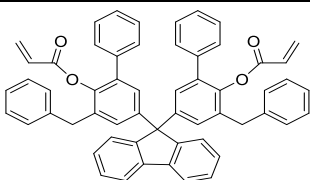
The cured product show low dielectric constant, low water absorption and high transparency.

Product Name Chemical Name	Chemical Structure	Property etc.	Stage
<b>TBIS® -AHSP</b>		CAS No. 2489336-20-9 Appearance viscous liquid Viscosity(25°C) 30Pa·s Refractive Index 1.53	Pilot

**[Application]** Adhesives, Additive of epoxy-resin etc.

## Acrylate

TBIS®-ZPC is an acrylic monomer with a fluorene skeleton, and has high solvent solubility while achieving a high refractive index. It also has excellent storage stability at room temperature and can be stably handled without crystallizing in solution.

Product Name Chemical Name	Chemical Structure	Property etc.	Stage
<b>TBIS® -ZPC</b>		CAS No. 2115022-49-4 Appearance viscous solid Transparency T <sub>400</sub> 90.4% Refractive Index 1.63	Pilot

**[Application]** Electronic Materials, Optical Materials, Additives etc.

※ We can also develop various diol, diamine, epoxy compound and acid dianhydrides which are not listed above.