

# Optical adhesive OPTODYNE

 TECHNICAL  
DATASHEET

**OPTODYNE is a reliable UV curable optical adhesive with controlled refractive index.**

## Introduction

- **Transparent ultraviolet (UV) curing type optical adhesive** based on fluorinated epoxy and fluorinated acrylate resin.
- It is used for connection of optical fibers requiring **optically optimal refractive index matching** as well as adhesion fixing function.
- **Highly reliable adhesive** with excellent adhesion and workability.

## General physical properties-1

Item		UV-1000	UV-3000	Reference
Main constituents		Epoxy	Acryl	
Before-curing characteristics				
	Appearance	Light yellow transparent liquid		Visual check
	Viscosity (mPa · s)	210	1400	25°C
	Specific gravity	1.36	1.07	25°C
	Refractive index 589nm	1.430	1.475	23°C
	Flash point (°C)	132	132	
Post-curing characteristics				
	Appearance	Light yellow transparent		Visual check
	Specific gravity	1.42	1.14	
	Hardness	–	57	Shore D
	Glass transition temperature	57	100	Dynamic viscoelasticity (tanδ)
	Refractive index 589nm	1.453	1.498	23°C
		1320nm	1.489	1.482
	Transmittance 1300nm (%) 500~1600nm	93.3	92.5	Thickness 0.1mm
		> 90	> 90	
	Water absorption (%)	1.5	0.5	Thickness 0.1mm, 23°C
		0.21	0.11	Thickness 3.0mm, 23°C×24h
	Saturated moisture absorption (%)	0.7	0.5	Thickness 3mm, 85°C/85%RH
	Mass decrease onset temperature (°C)	160	226	TGA
Temperature of 5% weight loss (°C)	212	328	TGA	
Coefficient of thermal expansion (1/°C)	7.9×10 <sup>-5</sup>	6.2×10 <sup>-5</sup>	Average ; 25°C~80°C	

	Curing shrinkage rate (%)	4~5	5~7	
	Young modulus (Pa)	7.2×10 <sup>8</sup>	3.8×10 <sup>8</sup>	Dynamic viscoelasticity, 30°C
Bonding capacity				
Bonding strength change [moisture resistance] (MPa)	initial	7.9	7.8	Pyrex glass 85°C/85%RH
	after 2 weeks	12.3	9.2	
	after 4 weeks	11.4	6.5	
	after 6 weeks	7.4	5.2	
Bonding strength change [heat cycle] (MPa)	initial	11.5	7.3	Pyrex glass -40°C~85°C/90%RH 6 hour/1cycle
	after 100 cycle	10.5	10.7	
	after 300 cycle	5.0	10.1	
	after 500 cycle	5.3	8.7	

Curing conditions: UV light of 5 J /cm<sup>2</sup> or 10 J /cm<sup>2</sup> was irradiated with a high pressure mercury lamp

Fracture mode with bonding strength change is due to glass breakage

\* The above numeric values are representative and not guaranteed.

## General physical properties-2

Item		UV-1100	UV-2100	UV-3100	Reference
Main constituents		Epoxy			
Before-curing characteristics					
Appearance		Light yellow transparent liquid			Visual check
Viscosity (mPa · s)		230	230	460	25°C
Specific gravity		1.36	1.31	1.33	25°C
Refractive index 589nm		1.435	1.453	1.471	23°C
Flash point (°C)		118	128	127	
Post-curing characteristics					
Appearance		Light yellow transparent			Visual check
Specific gravity		1.42	1.38	1.38	
Hardness		82	80	80	Shore D
Glass transition temperature (°C)		145	129	130	Dynamic viscoelasticity (tanδ)
Refractive index 589nm		1.457	1.477	1.493	23°C
		1320nm	1.449	1.467	1.481
Transmittance (%) 1300nm 500~1600nm		93.4	92.9	92.6	Thickness 0.1mm
		>90	>90	>90	
Water absorption (%)		1.3	1.2	1.4	Thickness 0.1mm, 23°C
		0.13	0.15	0.15	Thickness 3.0mm, 23°C ×24h
Saturated moisture absorption (%)		2.4	1.7	2.0	Thickness 3mm, 85°C/85%RH
Mass decrease onset temperature (°C)		145	145	155	TGA

Temperature of 5% weight loss (°C)	313	305	312	TGA	
Coefficient of thermal expansion (1/°C)	—	10.7×10 <sup>-5</sup>	9.0×10 <sup>-5</sup>	Average ; 25°C~80°C	
Curing contraction rate (%)	4~5	4~5	3~4		
Young modulus (Pa)	2.7×10 <sup>9</sup>	2.4×10 <sup>9</sup>	2.5×10 <sup>9</sup>	Dynamic viscoelasticity, 30°C	
Bonding capacity					
Bonding strength change [moisture resistance] (MPa)	initial	6.6	8.6	12.3	Pyrex glass 85°C/85%RH
	after 2 weeks	—	9.3	12.0	
	after 4 weeks	7.5	7.2	13.7	
	after 6 weeks	7.4	13.6	11.1	
Bonding strength change [heat cycle] (MPa)	initial	6.6	8.6	12.3	Pyrex glass -40°C~85°C/90%RH 6 hour/1cycle
	after 100 cycle	6.4	12.6	9.1	
	after 300 cycle	8.7	7.5	8.7	
	after 500 cycle	7.5	11.9	10.4	

Curing conditions: UV light of 5 J/cm<sup>2</sup> or 10 J/cm<sup>2</sup> was irradiated with a high pressure mercury lamp

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\* OPTODYNE UV-1100, UV-2100, UV-3100 contains about 2% antimony compound.

### Handling method/Safety information

- Be sure to read the notes on SDS and labels before use.
- This product is intended for general industry, and therefore its adequacy and safety as a raw material for medical purposes cannot be guaranteed.

### Packing specification

- 5g (tube)
- 50g (tube)

For more information, visit our website.

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