



***Shigena-10p***  
*Glycidyl Neodecanoate*

## 新癸酸缩水甘油酯



Hebei Shield Excellence Technology Co., Ltd.  
[www.tjshield.com](http://www.tjshield.com)



# To Be Leading Supplier of Low VOC Solution



## **Tianjin Shield was set up in 1992**

Making a living by selling detergents to restaurants and earning the first bucket of gold by distributing interleukin -2.

## **High purity solvent for HPLC**

The first products developed and produced by Shield, which filled the blanks of China. (1994)

## **Pyridine-free Karl-Fischer reagent**

Environment-friendly and high precision reagents for measuring water content, which was firstly invented in China. (1995)

## **Pivalic acid and pivaloyl chloride**

The first products of thousand tons scale developed and produced by Shield, which filled the blanks of Asia. (1997-2001)

## **National Key Technologies R&D Programme**

The production technology of Shina / Shivena / Shigena was invented and the products were awarded the national new products by central government of China. (1999-2001)

## **Hebei Shield was set up in 2005**

To realize industrialization and commercializes of Shina / Shivena / Shigena.

## **Shina/Shivena/Shigena came out**

Tertiary carboxylic acids and its derivatives' monopoly was broken. (2008)

## **Winning all the IP lawsuits filed by HEXION**

We have spent 20 years to pursue better technology step by step, so don't be surprised at our achievements and try to stop us today! (2011-2017)

## **No price rising during Momenitive's force majeure**

We proved that the world really needs the second responsible supplier of Shina / Shivena / Shigena, just like Shield. (2014-2015)

## **National Science and Technology Major Project**

To find new solutions to reduce VOC from coatings and adhesives by inventing resins and emulsions based on Shina / Shivena / Shigena. (2017-2021)

## **Supplying low VOC solutions in coatings and adhesives**

It is the time that we should do our best to help our country and our

## **Shield's Missions:**

Removing smog to regain green hills and clear waters!

## **Shield's Visions:**

To be the leading supplier of the low VOC solutions in the field of coating, bonding and adhesion, and dedicated to reducing VOC in the products of our customers!

## **Shield's Values:**

To be sincere, strive for excellence and infinite creation!

## **Shield's Products:**

### **Shina-10**

Neodecanoic Acid :  
60,000 metric tons/year

### **Shivena-10**

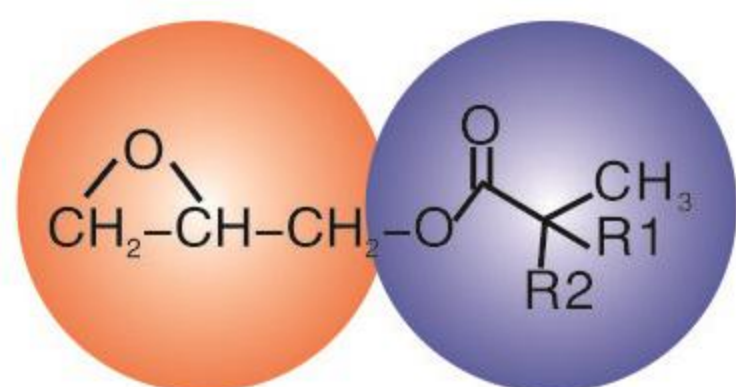
Vinyl Neodecanoate:  
60,000 metric tons/year

### **Shigena-10P**

Glycidyl Neodecanoate:  
10,000 metric tons/year



# Glycidyl Neodecanoate and Applications



Reactive epoxy group	Large steric hindrance
Introduction to resins	Alkali & UV resistance
Reactive diluent	Lowering resin viscosity
Hydroxyl for cross-linking	Wettability & plasticity

**Shigena®**

Glycidyl Esters of Shina



## Shigena®-10p

shigena=shield- glycidyl ester of neo-carboxylic acid

Chemical Name :

Glycidyl Neodecanoate

CAS No. : 26761-45-5

Glycidyl Neodecanoate is the glycidyl ester of shina-10. Its structural formula is as shown above, among which R1 and R2 are alkyl groups with eight carbon atoms. It is one of the glycidyl esters of tertiary carboxylic acid.

Shigena-10P's structure makes it a unique modifier for coating resins. Its epoxy group is highly reactive and it can react with hydroxyl groups, carboxyl groups and amino groups. The reactivity of the epoxy group enables it to be introduced by acrylic resins and polyester alkyd resins at room temperature without any side effects. The polyesters prepared in this way meet the design requirements of narrow molecular distribution and low viscosity. The resins modified by Shigena can significantly improve their chemical tolerance, climate tolerance and ultraviolet resistance. The multi-branched groups of Shigena can also lower the viscosity of the resins modified by it and improve the wettability and the plasticity of its pigment; when it is embedded in the polymer chain, it will produce a hydroxyl group that can be used for cross-linking, which can improve the strength of the resin. It can be used to prepare high-solid paint and reduce the VOC of paint because it can participate in the paint reaction in the form of reactive diluent.

## Applications

### The main applications:

- Synthesis of polyester resins
- Synthesis of acrylic resins
- As a reactive diluent for epoxy resins
- Modification of epoxy esters for low VOC automotive and industrial end-uses

### Additional applications:

- Advanced epoxy resins
- Acid scavenging during polymer and resin
- UV cured systems
- Curing agent synthesis
- Reactive intermediate

### Typical properties of resins/paints:

- Good solubility in aliphatic solvents
- Low solution viscosity
- Good pigment wetting
- Good film flow
- Very high gloss and good build
- Good intercoat adhesion
- Good gloss and colour retention on overbake
- Very high acid-etch resistance
- Long potlife for iso-cyanate based binders



# Sales Specification and Typical Properties

## Sales Specification

Properties	Test method	Unit	Value
Epoxy group content	SYTM 06	mmol/kg	4100 - 4250
Epoxy molar mass	--	g/mol	235 - 244
Colour	ASTM D1209	Pt-Co	≤ 35
Water content	ASTM E203	%m/m	≤ 0.1
Appearance	Visual	--	Clear liquid, free from suspended matter

## Typical Properties

Properties	Test method	Unit	Value
Molecular formula (theoretical)	--	--	$C_{13}H_{24}O_3$
Viscosity at 25°C	ASTM D445	mPa.s	7.13
Viscosity at 100 °C	ASTM D445	mPa.s	1.31
Viscosity at 125°C	ASTM D445	mPa.s	0.94
Viscosity at 150 °C	ASTM D445	mPa.s	0.72
Density at ( 15 °C- 40°C)	ASTM D4052	kg/L	0.95-0.97
Vapour pressure at 37.8°C	ASTM D323	kPa	0.9
Specific heat at 25°C	DSC	kJ/kg °C	1.733
Boiling range 5%-90% (v/v) 101.3 kPa	ASTM D86	°C	251-278
Flash point (PMCC)	ASTM D93	°C	126
Solidification point	ASTM D97	°C	below -60
Solubility of Shigena-10 in water at 20°C	--	%m/m	0.01
Solubility of water in Shigena-10 at 20°C	--	%m/m	0.7
Thermal conductivity at 25°C	--	W/m °C	0.142

## Packaging, transport, storage and handling precautions

Shigena-10P is packed in 200 litre drums and IBC; bulk deliveries are in road tankers.

Information on the safe handling of Shigena-10P is given in the product Safety Data Sheet and the precautions advised therein should be strictly observed.



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