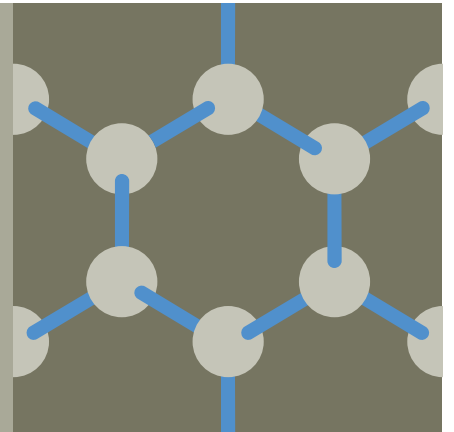




Cardura E10P  
**A Building Block  
for Acrylic Resins**



## Cardura™ Glycidyl Ester E10P

Cardura E10P is the glycidyl ester of Versatic™ acid 10, a highly branched carboxylic acid containing 10 carbon atoms.

Cardura E10P monomer is a bulky and hydrophobic intermediate which is easily incorporated into resins via its reactive epoxy group. It is used in a wide range of applications such as automotive coatings (refinish and OEM topcoats), general metal coatings, and pigment pastes.

### Characteristics:

Carbon Durable Glycidyl Ester with 10 carbon atoms backbone:

- Epoxy equivalent weight approximately: 240 g/mol
- Epoxy group content approximately: 4170 mmol/kg
- Boiling range: 251 – 278 °C (5 – 95 %)
- Low viscosity (23 °C): 7 mPa·s
- High flame / flash point
- Low colour
- Low vapour pressure
- EINECS and TSCA listed

### Structural Features:

- Epoxy group

### Performance Characteristics:

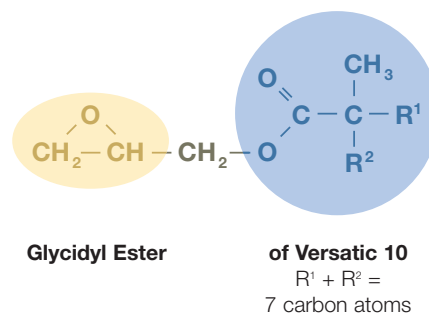
- Highly reactive towards amines, acids, alcohols
- Enhanced metal adhesion

### Structural Features:

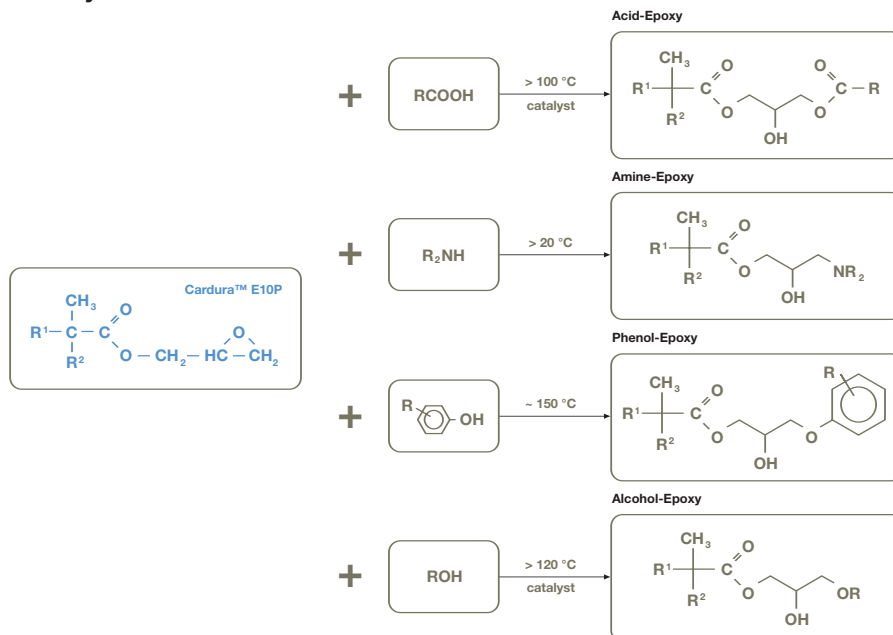
- Sterically protected ester group
- Bulky structure

### Performance Characteristics:

- Excellent compatibility with polar solvents
- Excellent acid and alkali resistance
- Superior outdoor durability
- Improved gloss
- Improved pigment utilization
- Low solution viscosity
- High solid resins
- Improved polar solvent resistance
- Excellent solubility in aliphatic solvents



## Cardura E10P as building block for Polymers



#### Viscosity / co-solvent content:

*Cardura E10P* reduces the resin viscosity as the polymer has a shorter chain length at a same molecular weight. Its bulky structure also limits the chain interactions. Therefore the solvent content of solvent-borne paints or the co-solvent content of water-based paints can be reduced.

#### Resin solubility and pigment dispersion:

*Cardura E10P* is an ambivalent molecule, both hydrophobic and polar. This explains the improved solubility of *Cardura E10P* based resins in both polar and non polar solvents, permitting the use of weaker solvent blends and the ability of improving the pigment dispersion.

#### Introduction of hydroxyl groups:

*Cardura E10P* introduces hydroxyl groups into the resin via reaction with carboxylic acid or an amine. These resins can be used, in combination with other hydroxy-functional intermediates, for reaction with the cross-linker, e.g. melamine formaldehyde and polyisocyanate resins.

#### Chemical Resistance:

*Cardura E10P* improves the chemical resistance of coatings by reducing the permeability to polar and aggressive chemicals and by the steric protection of its own and the adjacent ester bonds.

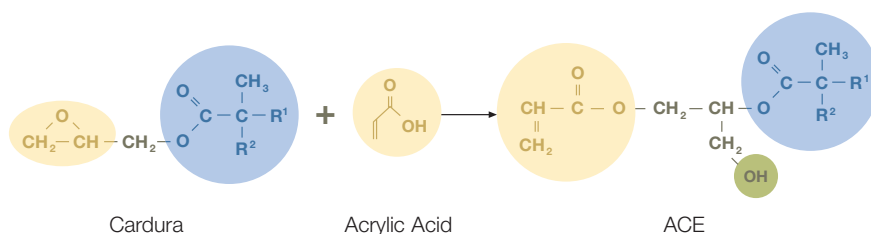
### Cardura E10P in Acrylic Resins

*Cardura E10P* is readily incorporated in acrylic resins via reaction with an unsaturated acid (e.g. Acrylic Acid). Thanks to its low viscosity, *Cardura E10P* can be used in the initial reactor charge as reactive solvent to increase reaction throughput.

The addition of ACE to acrylate resins is comparable to a combination of hydroxy-functional and hydrophobic monomers.

For example:

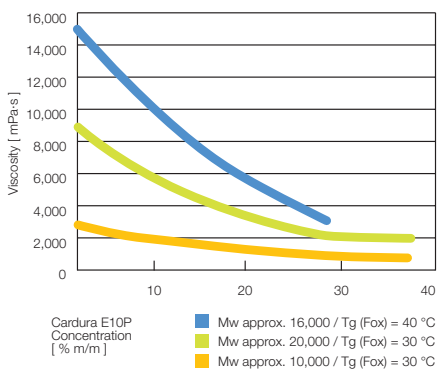
HydroxyEthylAcrylate,  
HydroxyEthylMethacrylate,  
HydroxyPropylMethacrylate,  
EthylHexylAcrylate,  
isoBornylMethacrylate



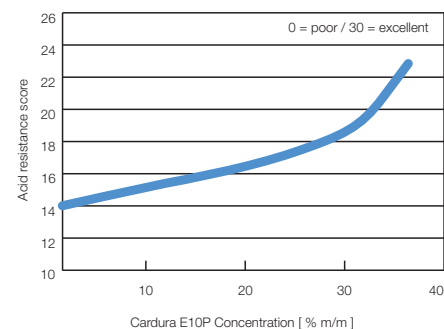
### Effect of Cardura E10P on polymer solution viscosity and acid resistance

*Cardura E10P* leads to lower viscosity acrylic resins which are used for low VOC applications.

The higher the concentration of Cardura E10P, the lower the polymer viscosity:



The higher the level of Cardura E10P, the better the acid resistance of the coating:



## The Global Leader in Thermoset Resins

As the world's largest producer of thermoset resins and the leader in adhesive and structural resins and coatings, Hexion Specialty Chemicals meets customers' specific application needs with a total solutions approach of products and services.

Hexion offers the broadest range of thermoset resin technologies and unmatched technical support – and provides them around the globe.

With our extensive research and development capabilities and applications know-how, we are uniquely able to work in partnership with customers to co-develop better products and systems.

Plus, Hexion's worldwide production network facilitates assured supply and prompt delivery wherever our customers do business.

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