



PhiChem® · 飞凯材料

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Silicone Resins

Release-Liner Applications



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Silicone Resins

Release-Liner Applications

PhiChem's portfolio of UV and E-beam curable silicone acrylate resins are ideal for use as release-liner coatings. These resins can be used to create formulations that can be coated on paper or polymer film, to introduce release characteristics for pressure-sensitive adhesive (PSA) label, PSA tape and other applications. The table below provides a list of resins that PhiChem has developed, and their current status. We also work closely with customers to develop resins for customized release-liner applications, or for other applications where UV or E-beam curable silicone acrylate materials are desired.



Product Code	Chemical Classification	Basic Chemical/Physical Properties				Features	Status
		Functional Groups (#)	Molecular Weight, Mw	Viscosity cps (25°C)	Refractive Index (25°C)		
MA6330C	Silicone diacrylate	2	4,300-5,300	10-60	1.418	Strong COF reduction & substrate wetting Increased surface slip and tape release at low dosage	Normal Production
MA6340B	Silicone diacrylate	2	11,000-14,000	80-180	1.408	Remarkable surface smoothness Anti-blocking and mar resistance	Normal Production
MA6309	Silicone diacrylate	2	4,200-4,800	400-560	1.443	High compatibility in clear coat, Increased surface slip Strong COF reduction and substrate wetting	Pilot Production
MA6320	Silicone diacrylate	2	2,600-3,200	80-140	1.426	Increased surface slip and tape release	Lab-scale synthesis
MA6350	Silicone acrylate	4	13,000-16,500	300-500	1.411	Excellent release characteristics	Lab-scale synthesis
MA6355	Silicone acrylate	4	22,000-25,000	700-1,100	1.408	Better release characteristics than MA6350	Lab-scale synthesis
MA6900	Multi-functional acrylate	> 4	5,000-6,300	450-750	1.443	High compatibility in clear coat, Strong COF reduction & substrate wetting, Promotes flow at low dosage	Lab-scale synthesis
MA6910	Multi-functional acrylate	> 4	40,000-50,000	500-1,100	1.409	Fast-curing response Increased surface slip and tape release	Lab-scale synthesis



MA6330C

Silicone diacrylate-based surface additive and pre-polymer

Used as an additive for radiation-curable printing inks, coatings and adhesives with a considerable reduction in surface tension and remarkable tape release property;

Used as a pre-polymer to be co-reacted into acrylic polymers for coatings, plastic, resin and other applications to improve the surface and physical properties like mar resistance, flexibility and hydrophobicity.

Product Data

The values indicated in this data sheet describe typical properties and do not constitute specification limits.

Appearance:	Clear to light yellow liquid
Active constituent:	100%
Specific gravity (25 °C):	0.96
Viscosity (25 °C, cps):	10-60
Molecular weight (Mw):	4,300-5,300
Functional group:	2
Refractive index:	1.418

Product Highlights

- * Non-migratory property via its acrylic functionality.
- * Strong COF reduction and substrate wetting.
- * Increased surface slip and tape release at low dosage.
- * Decreased tendency to stabilize foams.

Recommended Use & Levels

- * 0.1-1.5% as an additive (as supplied) based upon total formulation for UV curing systems.
- * 2.0-5.0% as a pre-polymer for polymer modifications.



MA6340B

High molecular weight silicone diacrylate-based surface additive and pre-polymer

Used as an additive for radiation-curable printing inks, coatings and adhesives with permanent slip and remarkable tape release property;

Used as a pre-polymer to be co-reacted into acrylic polymers for coatings, plastic, resin and other applications to improve the surface and physical properties like mar resistance, flexibility and hydrophobicity.

Product Data

The values indicated in this data sheet describe typical properties and do not constitute specification limits.

Appearance:	Colorless to Light yellow clear liquid
Active constituent:	100%
Specific gravity (25 °C):	0.98
Viscosity (25 °C, cps):	80-180
Molecular weight (Mw):	11,000-14,000
Functional group:	2
Refractive index:	1.408

Product Highlights

- * Non-migratory property via its acrylic functionality.
- * Remarkable surface smoothness, anti-blocking and mar resistance properties.
- * Decreased tendency to stabilize foams.

Recommended Use & Levels

- * 0.1-1.5% as an additive (as supplied) based upon total formulation for UV curing systems.
- * 2.0-5.0% as a pre-polymer for coatings, plastic, resin and other applications.

MA6309

Cross-linking, Silicone-containing surface additive

Silicone diacrylate-based additive for radiation-curable printing inks, coatings and adhesives with a considerable reduction in surface tension. Remarkable tape release property, increases the surface slip and leveling performance.

Product Data

The values indicated in this data sheet describe typical properties and do not constitute specification limits.

Appearance:	Lightly yellow to amber clear liquid
Active constituent:	100%
Surface tension (25°C):	20-23 mN/m
Viscosity (25 °C, cps):	400-560
Refractive index(25 °C):	1.443

Product Highlights

- * Strong COF reduction, increased surface slip and tape release with permanent effect.
- * Improves substrate wetting and leveling.
- * Non-migratory.
- * Good Compatibility.

Recommended Use & Levels

- * 0.1-1.0 % additive (as supplied) based upon total formulation for printing inks, varnishes and adhesives. 0.05-2.0% additive for coatings.
- * The additive can be added during any stage of the production process, including post-addition.

MA6320

Silicone diacrylate-based surface additive

Radiation-curable defoaming additive which improves mechanical resistance and reduces friction. Especially suitable for pigmented formulations.

Product Data

The values indicated in this data sheet describe typical properties and do not constitute specification limits.

Appearance:	Light yellow to amber clear liquid
Active constituent:	100%
Specific gravity (25 °C):	0.97
Viscosity (25 °C, cps):	80-140
Molecular weight (Mw):	2,600-3,200
Functional group:	2
Refractive index:	1.426

Product Highlights

- * Non-migratory property via its acrylic functionality.
- * Increased surface slip and tape release.
- * Decreased tendency to stabilize foams.

Recommended Use & Levels

- * Limited compatibility in clear coat, highly recommended in topcoat rather than in primer/basecoat.
- * 0.1-1.0% as an additive (as supplied) based upon total formulation for radiation-curable systems.
- * Addition to the coating as supplied or as a predilution is possible, and predilution in a suitable solvent simplifies dosage and incorporation.



MA6350

Silicone acrylate for paper and film release coatings
This product is used to achieve easy/premium release properties.

Product Data

The values indicated in this data sheet describe typical properties and do not constitute specification limits.

Appearance:	Light yellow to amber clear liquid
Active constituent:	100%
Specific gravity (25 °C):	0.98
Viscosity (25 °C, cps):	300-500
Molecular weight (Mw):	13,000-16,500
Functional group:	4
Refractive index:	1.411

Product Highlights

- * Excellent release characteristics, even with aggressive self-crossing-linking adhesives.
- * Decreased tendency to stabilize foams.

Recommended Use & Levels

- * Used for the manufacturing of release coatings for easy adhesive products, like self-adhesives labels, self-adhesive tapes, hygiene products and many more.
- * UV curing requires inerting by nitrogen to less than 50ppm residual oxygen in the curing chamber.
- * If combined with other silicone acrylates, stirring is necessary prior to application.
- * Aging and release tests at both low and high temperatures are highly recommended before using any new silicone formulation.



MA6355

Silicone acrylate for paper and film release coatings
This product is used to achieve easy/premium release properties.

Product Data

The values indicated in this data sheet describe typical properties and do not constitute specification limits.

Appearance:	Light yellow to amber clear liquid
Active constituent:	100%
Specific gravity (25 °C):	0.98
Viscosity (25 °C, cps):	700-1,100
Molecular weight (Mw):	22,000-25,000
Functional group:	4
Refractive index:	1.408

Product Highlights

- * Excellent release characteristics, even with aggressive self-crossing-linking adhesives and adhesives with low cohesion strength.
- * Decreased tendency to stabilize foams.

Recommended Use & Levels

- * Used for the manufacturing of release coatings for easy adhesive products, like self-adhesives labels, self-adhesive tapes, hygiene products and many more.
- * UV curing requires inerting by nitrogen to less than 50ppm residual oxygen in the curing chamber.
- * If combined with other silicone acrylates, stirring is necessary prior to application.
- * Aging and release tests at both low and high temperatures are highly recommended before using any new silicone formulation.
- * Typical addition level is 20%, such formulations provide a premium release against normal PSAs.

MA6900

Multi-acrylate modified polysiloxane for surface additive

Radiation-curable substrate wetting and flow additive which could be overprintable. Especially suitable for paints and lacquers.

Product Data

The values indicated in this data sheet describe typical properties and do not constitute specification limits.

Appearance:	Light yellow to amber clear liquid
Active constituent:	100%
Specific gravity (25 °C):	0.99
Viscosity (25 °C, cps):	450-750
Molecular weight (Mw):	5,000-6,300
Refractive index:	1.443

Product Highlights

- * Non-migratory property via its acrylic functionality.
- * Strong COF reduction and substrate wetting, flow promoting at low dosage.
- * High compatibility in clear coat.

Recommended Use & Levels

- * Suitable for both topcoat and primer/basecoat.
- * 0.05-1.0% as an additive (as supplied) based upon total formulation for radiation-curable systems.
- * Addition to the coating as supplied or as a predilution is possible, and predilution in a suitable solvent simplifies dosage and incorporation.

MA6910

Multi-acrylate modified polysiloxane for surface additive and pre-polymer

Used as an additive for radiation-curable printing inks, coatings and adhesives with a considerable improvement in leveling and remarkable tape release property;

Used as a pre-polymer to be co-reacted into acrylic polymers for coatings, plastic, resin and other applications to improve the surface and physical properties like mar resistance, flexibility and hydrophobicity.

Product Data

The values indicated in this data sheet describe typical properties and do not constitute specification limits.

Appearance:	Clear to light yellow liquid
Active constituent:	100%
Specific gravity (25 °C):	0.96
Viscosity (25 °C, cps):	500-1,100
Molecular weight (Mw):	40,000-50,000
Refractive index:	1.408-1.410

Product Highlights

- * Non-migratory property via its acrylic functionality.
- * Decreased tendency to stabilize foams.
- * Fast-curing response.
- * Increased surface slip and tape release at low dosage.

Recommended Use & Levels

- * 0.1-1.5% as an additive (as supplied) based upon total formulation for UV curing systems.
- * 2.0-5.0% as a pre-polymer for polymer modifications.