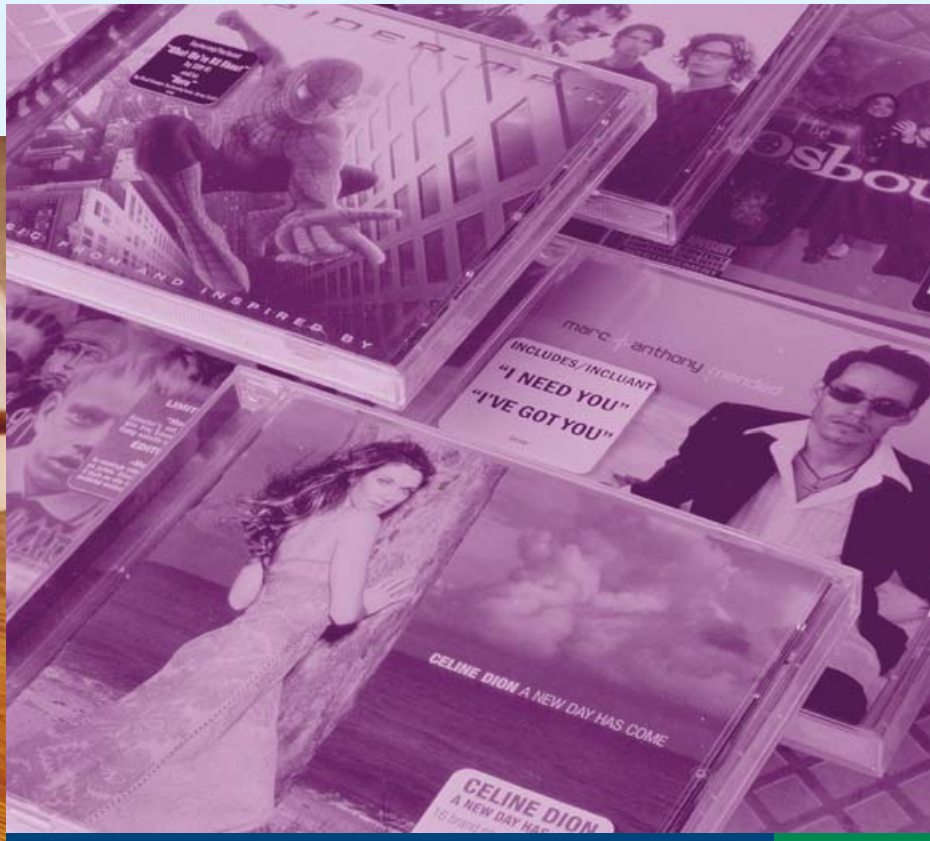
CYTEC



RADCURE™ Energy Curable Resins

PRODUCT GUIDE –
Coatings and Inks
Americas

About Us

Total Solutions Provider

Cytec Industries is one of the world's leading specialty chemicals and materials technology companies. Our focus is on creating advanced technological solutions for global markets, including aerospace, coatings, mining, plastics and water treatment.

We are a total solutions provider with a broad range of products, including eco-friendly technologies. We support our customers worldwide with excellent technical service and applications research.

Innovative Technology

Cytec surface specialty products are innovative and diverse, and can help manufacturers realize the competitive advantages of environmental compliance, while also meeting their needs for:

- Improved performance (scratch/stain/ corrosion resistance, and adhesion)
- Greater ease of application (required cure response)
- Better finishes (gloss/matte, texture, and specialty)

Broad Product Portfolio

We offer an extensive selection of performance-driven products, including low volatile organic compounds (VOC) and hazardous air pollutant substance-free (HAPS) technologies, for existing and emerging markets:

- Industrial
- Architectural/Construction
- Automotive/Transportation
- Wood/Paper
- Plastic
- Opto-electronics
- Graphic Arts
- Packaging/Adhesives

Our surface specialty product portfolio is inclusive:

- UV/EB energy curable resins
- Liquid coating resins
  - Waterborne
  - High solids
  - Solventborne
- Amino crosslinkers
- Powder coating resins
- Coating additives

Global Technical Support

Through our ISO-certified manufacturing facilities, and technology and distribution centers, we are able to provide responsive service on a consistent global basis, and to help our customers identify and profit from emerging opportunities.

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Product Families

Diluting Acrylates	Mono, di, tri and higher functional acrylates act as diluents and contribute physical properties to cured formulations.
Epoxy Acrylates	Epoxy acrylates are used in formulations requiring superior chemical resistance, hardness and fast cure.
Aliphatic Urethane Acrylates	Aliphatic urethane acrylates are the preferred products in non-yellowing applications where toughness, flexibility and good exterior durability are required.
Aromatic Urethane Acrylates	Aromatic urethane acrylates provide toughness and flexibility in applications that do not require yellowing resistance.
Polyester Acrylates and Diluted Polyesters	Polyester acrylates are used in a wide range of applications including flexographic and lithographic inks and coatings for paper and wood. Some specialty polyester oligomers provide good adhesion to various substrates.
Acrylic Acrylates	Acrylic acrylates are used in applications where adhesion to difficult substrates and resistance to yellowing are required.
Cationic Curing Products	Cycloaliphatic epoxide resin undergoes rapid cationic polymerization and offers reduced shrinkage and improved adhesion.
Photoinitiators	Photoinitiators absorb UV light and start the polymerization. Product types are alpha cleavage, hydrogen abstraction, amine synergists and mixtures.
Additives	These additives can assist with adhesion or enhance the wetting, flow or slip characteristics of coatings. All are co-polymerizable.
***RAYLOK®* UV Curable Resins**	Resin products tailored for specific industrial coating applications.
***VIAGRAPH®* UV Curable Ink Vehicles**	Ink vehicles designed to facilitate the use of UV/EB curable inks that address specific ink market needs.
***UCECOAT®* Waterborne UV Curable Resins**	These waterborne resins have low viscosities without the use of diluting acrylates and good physical properties after crosslinking. Several are tack-free after water evaporation.

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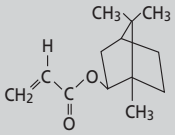
***EBECRYL®** UV curable resins and oligomers
***RAYLOK®** UV curable resins
***UCECOAT®** waterborne UV curable resins
***UVACURE®** cationic UV curable resins
***VIACURE®** photoinitiators
***VIAFLEX®** UV curable ink vehicles
***VIAGRAPH®** UV curable ink vehicles
***VIAJET™** UV curable inkjet vehicles
***VIASCREEN®** UV curable ink vehicles
***VIASET®** UV curable ink vehicles

Diluting Acrylates

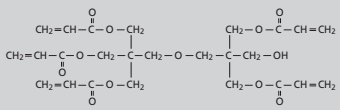
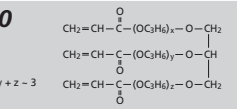
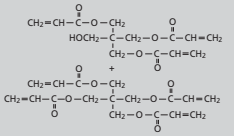
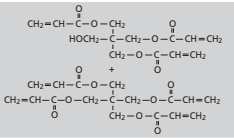
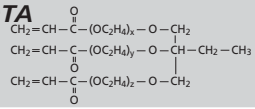
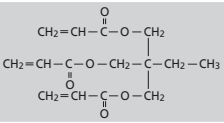
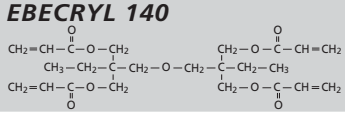
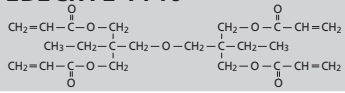
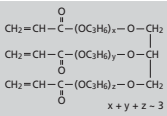
Diluting Acrylates		Typical Properties[1]					
Product **Monofunctional**	Description • Key Features & Performance	Viscosity, 25°C, cP	Ester Rank	Color, Pt-Co (Gardner)	Inhibitor, MEHQ, ppm	Acid Value, mg KOH/g (% Acrylic Acid)	Density g/ml at 25°C
ß-CEA $CH_2{=}CH{-}\underset{\underset{O}{\|}}{C}{-}O{-}(CH_2{-}CH_2{-}\underset{\underset{O}{\|}}{C}{-}O)_n{-}H$ average n = 1	**ß-Carboxyethyl Acrylate** • Predominately acrylic acid dimer • Acrylate and carboxylic acid functionality • Adhesion promoter for glass, metal, paper	75	0.98	45	1000	365	1.21
IBOA 	**Isobornyl Acrylate** • High purity, low color • Flexibility without softening • Increased Tg	9.5	0.98	5	101	(0.025)	0.97
ODA-N $CH_2{=}CH{-}\underset{\underset{O}{\|}}{C}{-}O{-}(CH_2)_n{-}CH_3$ n = 7,9	**Octyl/Decyl Acrylate** • Excellent diluency • Flexibility, low Tg • Hydrophobic	2.5	0.98	5	431	(0.006)	0.88
EBECRYL® 110 $CH_2{=}CH{-}\underset{\underset{O}{\|}}{C}{-}O{-}(CH_2CH_2O)_n{-}$ n ~ 2	**Oxyethylated Phenol Acrylate** • Reduced odor • Good diluency	22		(<1.0)		0.3	1.12
EBECRYL 113 (New Product)	**Aliphatic Acrylate** • Low odor • Good pigment wetting • Good reactivity • Increased flexibility • Improved adhesion	120		(<1.0)		0.1	0.97
EBECRYL 114 (New Product) $CH_2{=}CH{-}\underset{\underset{O}{\|}}{C}{-}O{-}CH_2{-}CH_2{-}O{-}$	**2-Phenoxyethyl Acrylate** • Low viscosity • Good diluency • Good reactivity • Improved adhesion • Beneficial in screen inks	10		31		0.3	1.10
EBECRYL 1040 (New Product)	**Urethane Acrylate** • Mild odor • High reactivity • Excellent flexibility • Very good adhesion	50		90			1.07

[1] Not a specification * ***EBECRYL®*** UV curable resins and oligomers

Diluting Acrylates		Typical Properties[1]					
Product **Difunctional**	Description • Key Features & Performance	Viscosity, 25°C, cP	Ester Rank	Color, Pt-Co (Gardner)	Inhibitor, MEHQ, ppm	Acid Value, mg KOH/g (% Acrylic Acid)	Density g/ml at 25°C
DPGDA $CH_2{=}CH{-}\underset{\underset{O}{\|}}{C}{-}O{-}(C_3H_6O)_2{-}\underset{\underset{O}{\|}}{C}{-}CH{=}CH_2$	**Dipropylene Glycol Diacrylate** • Good diluency • Improved flexibility, adhesion • Reactivity	8.7		25	827	0.2	1.06
HDODA $CH_2{=}CH{-}\underset{\underset{O}{\|}}{C}{-}O{-}(CH_2)_6{-}O{-}\underset{\underset{O}{\|}}{C}{-}CH{=}CH_2$	**1,6-Hexanediol Diacrylate** • Good weatherability • Excellent diluency • Adhesion	6.0	1.93	20	88	(0.008)	1.01
NPG(PO)$_2$DA $CH_2{=}CHC\underset{\underset{O}{\|}}{O}{-}(C_3H_6O)_n{-}CH_2{-}\overset{\overset{CH_3}{\|}}{\underset{\underset{CH_3}{\|}}{C}}{-}CH_2{-}(OC_3H_6)_m{-}O\underset{\underset{O}{\|}}{C}CH{=}CH_2$ n + m ~ 2	**Neopentyl Glycol Propoxylate(2) Diacrylate** • Increased flexibility • Lower surface tension • Improved adhesion	15.1		50	289	0.1	1.007
TRPGDA $CH_2{=}CH{-}\underset{\underset{O}{\|}}{C}{-}O{-}(C_3H_6O)_3{-}\underset{\underset{O}{\|}}{C}{-}CH{=}CH_2$	**Tripropylene Glycol Diacrylate** • Branched alkyl polyether backbone • Combines flexibility, moisture resistance, low viscosity and good reactivity without causing brittleness	12.4	1.89	45	191	(0.013)	1.03
TRPGDA-DEO $CH_2{=}CH{-}\underset{\underset{O}{\|}}{C}{-}O{-}(C_3H_6O)_3{-}\underset{\underset{O}{\|}}{C}{-}CH{=}CH_2$	**Tripropylene Glycol Diacrylate** • Purified grade • Lower residual odor • Reduced residual acrylic acid • Reduced residual solvent	15.3		29		0.1	1.03
EBECRYL® 150 $CH_2{=}CH\overset{\overset{O}{\|}}{C}{-}(OC_2H_4)_n{-}O{-}C_6H_4{-}\overset{\overset{CH_3}{\|}}{\underset{\underset{CH_3}{\|}}{C}}{-}C_6H_4{-}O{-}(OC_2H_4)_m{-}\overset{\overset{O}{\|}}{C}CH{=}CH_2$ n + m ~ 4	**Bisphenol-A Ethoxylate Diacrylate** • High reactivity • Hardness • Chemical resistance	1352		(0.5)		2.2	1.14

[1] Not a specification * ***EBECRYL®*** UV curable resins and oligomers

Diluting Acrylates

Diluting Acrylates		Typical Properties[1]					
Product **Tri- & Higher Functional**	Description • Key Features & Performance	Viscosity, 25°C, cP	Ester Rank	Color, Pt-Co (Gardner)	Inhibitor, MEHQ, ppm	Acid Value, mg KOH/g (% Acrylic Acid)	Density g/ml at 25°C
DPHA 	**Acrylated Dipentaerythritol** • Increased crosslinking • High reactivity • Excellent hardness, scratch resistance • Chemical resistance • Pendant hydroxyl functionality • Mixture of penta- and hexaacrylate	15855	5.1	(0.5)	800	6.4	1.17
OTA-480  x + y + z ~ 3	**Propoxylated Glycerol Triacrylate** • Good reactivity • Crosslinking, hardness, chemical resistance without brittleness • Pigment wetting	84	2.60	20	166	0.16	1.08
PETA-K 	**Pentaerythritol Tri-Tetraacrylate** • Tetra- to Tri- acrylate ester ratio (~3 to 1) • Crystallizes at normal ambient temp. • High reactivity • Excellent hardness, scratch resistance • Pendant hydroxyl functionality	482	3.4	30	219	0.11	1.18
PETIA 	**Pentaerythritol Tri-Tetraacrylate** • Tetra- to Tri- acrylate ester ratio (~1 to 1) • Liquid at normal ambient temp. • High reactivity • Very good hardness, scratch resistance • Pendant hydroxyl functionality	1134	3.0	50	700	7.1	1.18
TMPEOTA  x + y + z ~ 3	**Trimethylolpropane Ethoxy Triacrylate** • Low levels of non-TMP ethoxylate esters • Good diluency • High UV reactivity • Increased flexibility vs. ***TMPTA***	64	2.89	60	167	(0.009)	1.10
TMPTA 	**Trimethylolpropane Triacrylate** • Increases crosslinking • Imparts hardness • Chemical resistance • Good reactivity	104	2.80	20	131	(0.019)	1.10
EBECRYL® 12 (New Product)	**Alkoxylated Triacrylate** • Dilutable by up to 45% by weight with water • Reactive diluent in waterborne UV/EB curable coatings and inks	155		(2)		1.6	1.11
EBECRYL 140 	**Ditrimethylolpropane Tetraacrylate** • High crosslinking • Increased hardness • Good chemical resistance • Improved abrasion/scratch resistance	1073		85		5.7	1.08
EBECRYL 1140 	**Ditrimethylolpropane Tetraacrylate** • Purified version of ***EBECRYL 140*** • Lower residual odor • Reduced residual acrylic acid • Reduced residual solvent	1050		87		5.2	1.10
EBECRYL 40 (New Product)	**Polyether Tetraacrylate** • Good reactivity • Increased hardness without embrittlement • Chemical resistance • Improved abrasion/scratch resistance	165		(0.5)		(0.2)	1.15
EBECRYL 53 	**Propoxylated Glycerol Triacrylate** • Purified version of ***OTA-480*** • Lower residual odor • Reduced residual acrylic acid • Reduced residual solvent	90				0.2	1.08

[1] Not a specification * ***EBECRYL®*** UV curable resins and oligomers

Epoxy Acrylates		Typical Properties[1]							
Product	Description • Key Features & Performance	Functionality	Viscosity cP	Color, Gardner	Acid Value mg KOH/g	Tensile Strength psi	Tensile Elongation %	Tg °C	Density g/ml at 25°C
EBECRYL® 600	**Bisphenol-A Epoxy Diacrylate** • High reactivity • Low color • High gloss • Excellent solvent resistance	2	600000 (25°C) 3543 (60°C)	0.5	1.1	13900	7	67	1.17
EBECRYL 605	**Bisphenol-A Epoxy Diacrylate** • ***EBECRYL 600*** with 25% ***TRPGDA*** • Reduced viscosity • Easier handling	2	7617 (25°C) 248 (60°C)	0.6	0.9	8300	7	92	1.17
EBECRYL 608	**Bisphenol-A Epoxy Diacrylate** • ***EBECRYL 600*** with 25% ***OTA-480*** • Reduced viscosity • Easier handling	2	26043 (25°C) 655 (60°C)	0.5	0.7	8700	6	83	1.15
EBECRYL 645	**Modified Bisphenol-A Epoxy Diacrylate** • Improved pigment wetting • Chemical resistance • High gloss • 25% ***TRPGDA***	2	18667 (25°C) 280 (60°C)	1.0	0.57				1.17
EBECRYL 860	**Epoxidized Soya Oil Tetraacrylate** • Good flow and leveling • Pigment wetting • Adhesion	4	26518 (25°C) 990 (60°C)	6.5	8.3	1000	20	13	1.03
EBECRYL 1608	**Bisphenol-A Epoxy Diacrylate** • Low residual odor • Chemical resistance • High gloss • 15% ***OTA-480***	2	75800 (25°C) 1046 (60°C)	0.6	1.0	15500	4	67	1.17
EBECRYL 3200	**Low Viscosity Epoxy Acrylate** • Handling ease • Flexibility • Pigment wetting	1.6	2235 (25°C)	1.5	0.3	11900	6	48	1.10
EBECRYL 3201	**Aliphatic/Aromatic Epoxy Acrylate** • Low viscosity • Flexibility • Outstanding wetting and flow	1.9	3597 (25°C)	2.0	1.7	2300	20	8	1.13
EBECRYL 3212	**Low Viscosity Epoxy Acrylate** • Vacuum coatings for wood • 100% solids spray • Flow and leveling • Flexibility	1.3	1172 (25°C)	1.5	1.3	250	35	-11	1.10
EBECRYL 3411	**Fatty Acid Modified Epoxy Diacrylate** • Flow and leveling • Pigment wetting • Low viscosity • Flexibility	2	40100 (25°C) 807 (60°C)	4.5	1.1	7100	9		1.13

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Epoxy Acrylates

Epoxy Acrylates		Typical Properties[1]							
Product	Description • Key Features & Performance	Functionality	Viscosity cP	Color, Gardner	Acid Value mg KOH/g	Tensile Strength psi	Tensile Elongation %	Tg °C	Density g/ml at 25°C
EBECRYL® 3415	**Modified Epoxy Diacrylate** • Adhesion to plastic substrates • Good pigment milling properties • Very useful in screen inks • 40% ***HDODA***	1.5	17500 (25°C) 1250 (60°C)	0.7	1.1				1.10
EBECRYL 3500	**Modified Epoxy Diacrylate** • Increased toughness • Moderate viscosity • Chemical resistance • High gloss	2	600000 (25°C) 1184 (60°C)	2.5	2.5	6500	43	35	1.18
EBECRYL 3600	**Amine Modified Epoxy Diacrylate** • Exceptional reactivity • Hardness • High gloss • Chemical resistance	2	232000 (25°C) 1334 (65.5°C)	1.5	0.1	12300	8	59	1.17
EBECRYL 3605	**Partially Acrylated Bisphenol-A Epoxy** • Acrylate and epoxy functionality • Dual (UV & thermal) cure • Hybrid (radical & cationic) cure	1 (acrylate) 1 (epoxy)	147200 (25°C) 654 (65.5°C)	2.0	0.1	3800	35	43	1.14
EBECRYL 3700	**Bisphenol-A Epoxy Diacrylate** • High reactivity • Excellent solvent resistance • High gloss	2	800000 (25°C) 2317 (65.5°C)	2.5	0.2	12000	5	65	1.18
EBECRYL 3700-20H	**Bisphenol-A Epoxy Diacrylate** • ***EBECRYL 3700*** with 20% ***HDODA*** • Reduced viscosity • Easier handling	2	7500 (25°C) 217 (65.5°C)	1.6	0.18	17700	3	72	1.17
EBECRYL 3700-20T	**Bisphenol-A Epoxy Diacrylate** • ***EBECRYL 3700*** with 20% ***TMPTA*** • Reduced viscosity • Easier handling	2	59900 (25°C) 577 (65.5°C)	1.7	0.10	14900	4	75	1.17
EBECRYL 3700-25R	**Bisphenol-A Epoxy Diacrylate** • ***EBECRYL 3700*** with 25% ***TRPGDA*** • Reduced viscosity • Easier handling	2	13505 (25°C) 202 (65.5°C)	1.3	0.10	15900	4	71	1.15
EBECRYL 3701	**Modified Bisphenol-A Epoxy Diacrylate** • Improved flexibility • Toughness • Increased adhesion • High reactivity	2	1600000 (25°C) 3996 (65.5°C)	3.0	2.7	11400	7	52	1.19
EBECRYL 3701-20T	**Modified Bisphenol-A Epoxy Diacrylate** • ***EBECRYL 3701*** with 20% ***TMPTA*** • Reduced viscosity • Easier handling	2	89500 (25°C) 925 (65.5°C)	2.5	2.3	14200	7	62	1.18
EBECRYL 3702	**Fatty Acid Modified Epoxy Diacrylate** • Flow and leveling • Pigment wetting • Increased flexibility	2	495000 (25°C) 2249 (65.5°C)	4.0	1.1	9500	10	56	1.14

[1] Not a specification

* ***EBECRYL®*** UV curable resins and oligomers

Epoxy Acrylates		Typical Properties[1]							
Product	Description • Key Features & Performance	Functionality	Viscosity cP	Color, Gardner	Acid Value mg KOH/g	Tensile Strength psi	Tensile Elongation %	Tg °C	Density g/ml at 25°C
EBECRYL® 3703	**Amine Modified Epoxy Diacrylate** • Exceptional reactivity • Increased flexibility • High gloss • Improved adhesion	2	320000 (25°C) 2117 (65.5°C)	2.0	2.5	5900	47	57	1.18
EBECRYL 3708	**Modified Bisphenol-A Epoxy Diacrylate** • Very good flexibility • Impact resistance • Good reactivity	2	190000 (25°C) 3475 (60°C)	1.5	1.7	1094	110		1.16
EBECRYL 3720	**Bisphenol-A Epoxy Diacrylate** • Standard epoxy diacrylate • Light color • High reactivity • Solvent resistance • High gloss	2	750000 (25°C) 1960 (65.5°C)	0.5	0.6	11000	8	67	1.13
EBECRYL 3720-HD20	**Bisphenol-A Epoxy Diacrylate** • ***EBECRYL 3720*** with 20% ***HDODA*** • Reduced viscosity • Easier handling	2	8203 (25°C) 320 (60°C)	0.5	0.7	9900	7	91	1.14
EBECRYL 3720-TM20	**Bisphenol-A Epoxy Diacrylate** • ***EBECRYL 3720*** with 20% ***TMPTA*** • Reduced viscosity • Easier handling	2	44000 (25°C) 759 (60°C)	0.5	1.0	9400	6	101	1.12
EBECRYL 3720-TM40	**Bisphenol-A Epoxy Diacrylate** • ***EBECRYL 3720*** with 40% ***TMPTA*** • Reduced viscosity • Easier handling	2	7085 (25°C) 235 (60°C)	0.5	0.8	8300	4	80	1.15
EBECRYL 3720-TP25	**Bisphenol-A Epoxy Diacrylate** • ***EBECRYL 3720*** with 25% ***TRPGDA*** • Reduced viscosity • Easier handling	2	10962 (25°C) 315 (60°C)	0.5	0.7				1.14
EBECRYL 3720-TP40	**Bisphenol-A Epoxy Diacrylate** • ***EBECRYL 3720*** with 40% ***TRPGDA*** • Reduced viscosity • Easier handling	2	2050 (25°C) 100 (60°C)	0.5	0.6				1.14
EBECRYL 3730-TP20	**Modified Bisphenol-A Epoxy Diacrylate** • Improved pigment wetting • Chemical resistance • High gloss • 20% ***TRPGDA***	2	35500 (25°C) 686 (60°C)	1.2	0.3	9800	3		1.15
EBECRYL 3740	**Bisphenol-A Epoxy Diacrylate** • Light color • High reactivity • Solvent resistance • High gloss	2	1324000 (25°C) 2600 (65.5°C)	0.5	1.0				1.14
EBECRYL 3740-TP20 (New Product)	**Bisphenol-A Epoxy Diacrylate** • ***EBECRYL 3740*** with 20% ***TRPGDA*** • Reduced viscosity • Easier handling	2	606 (60°C)	0.5	0.7				1.16

[1] Not a specification

* ***EBECRYL®*** UV curable resins and oligomers

Aliphatic Urethane Acrylates

Aliphatic Urethane Acrylates		Typical Properties[1]							
Product	Description • Key Features & Performance	Functionality	Diluting Acrylate %	Viscosity cP	Color, Gardner (Pt-Co)	Tensile Strength psi	Tensile Elongation %	Tg °C	Density g/ml at 25°C
EBECRYL® 230	**Aliphatic Urethane Diacrylate** • High molecular weight • Soft • Very flexible • Low Tg	2		44014 (25°C) 3150 (60°C)	(12)	150	83	-55	1.08
EBECRYL 244	**Aliphatic Urethane Diacrylate** • Flexibility • Water resistance • Thermal resistance	2	HDODA 10%	190000 (25°C) 8224 (60°C)	0.5	3700	60		1.12
EBECRYL 264	**Aliphatic Urethane Triacrylate** • Toughness • Very good abrasion resistance • Good stain resistance • Flexible	3	HDODA 15%	44588 (25°C) 1850 (60°C)	0.5	4200	37	42	1.12
EBECRYL 265	**Aliphatic Urethane Triacrylate** • Toughness • Very good abrasion resistance • Good stain resistance • Flexible	3	TRPGDA 25%	36486 (25°C) 1530 (60°C)	0.3	4500	44	38	1.13
EBECRYL 270	**Aliphatic Urethane Diacrylate** • Good flexibility • Relatively soft • Adhesion	2	TRPGDA <10%	132500 (25°C) 3102 (60°C)	0.5	1200	87	-27	1.10
EBECRYL 284–N	**Aliphatic Urethane Diacrylate** • Excellent exterior durability • Tough • Flexible	2	HDODA 12%	64250 (25°C) 2210 (60°C)	0.5	5900	58	50	1.18
EBECRYL 1290	**Aliphatic Urethane Hexaacrylate** • Good reactivity • Excellent hardness • Outstanding scratch resistance	6		85000 (25°C) 1960 (60°C)	0.5	6700	2		1.19
EBECRYL 4830 (New Product)	**Aliphatic Urethane Diacrylate** • Imparts flexibility and toughness • Good adhesion • Exterior durability	2	TTEGDA 10%	220000 (25°C) 4333 (60°C)	0.4	5200	83	42	1.12
EBECRYL 4833	**Aliphatic Urethane Diacrylate** • Good adhesion to various plastics • Very tough and flexible • Exterior durability	2	N-vinyl-2-pyrrolidone 10%	110000 (25°C) 2561 (60°C)	0.5	7800	120	47	1.11

[1] Not a specification

* ***EBECRYL®*** UV curable resins and oligomers

Aliphatic Urethane Acrylates		Typical Properties[1]							
Product	Description • Key Features & Performance	Functionality	Diluting Acrylate %	Viscosity cP	Color, Gardner (Pt-Co)	Tensile Strength psi	Tensile Elongation %	Tg °C	Density g/ml at 25°C
EBECRYL® 4866	**Aliphatic Urethane Triacrylate** • Excellent abrasion resistance • Outstanding stain resistance • Tough and non-yellowing	3	TRPGDA 30%	180000 (25°C) 3201 (60°C)	0.5	7900	7	72	1.12
EBECRYL 4883	**Aliphatic Urethane Diacrylate** • Good flexibility • Abrasion resistance • Exterior durability • Adhesion	2	TRPGDA 15%	161000 (25°C) 4385 (60°C)	0.5	2900	83	4	1.10
EBECRYL 8210	**Aliphatic Urethane Acrylate** • Dual functionality, reactive with NCO • Primary hydroxyl groups • Good scratch and abrasion resistance • Excellent reactivity	3.5		3681 (25°C)	0.5	6400	2	68	
EBECRYL 8301	**Aliphatic Urethane Hexaacrylate** • Good reactivity • Excellent hardness • Outstanding scratch resistance • Exterior durability	6		24600 (25°C) 211 (65.5°C)	0.5	7750	3		1.16
EBECRYL 8402	**Aliphatic Urethane Diacrylate** • Relatively low viscosity • Good adhesion • Outstanding exterior durability	2		14830 (25°C) 494 (60°C)	0.5	3350	50	14	1.12
EBECRYL 8405	**Aliphatic Urethane Tetraacrylate** • Outstanding exterior durability • Excellent abrasion resistance • Good flexibility	4	HDODA 20%	85000 (25°C) 5500 (60°C)	0.5	4000	29	30	1.13
EBECRYL 8411	**Aliphatic Urethane Diacrylate** • Outstanding extensibility and flexibility • Useful in screen inks • Good abrasion resistance • Good exterior durability	2	IBOA 20%	149500 (25°C) 6296 (60°C)	0.5	1170	320		1.13

[1] Not a specification * ***EBECRYL®*** UV curable resins and oligomers

Aliphatic and Aromatic Urethane Acrylates

Aliphatic Urethane Acrylates		Typical Properties[1]							
Product	Description • Key Features & Performance	Functionality	Diluting Acrylate %	Viscosity cP	Color, Gardner (Pt-Co)	Tensile Strength psi	Tensile Elongation %	Tg °C	Density g/ml at 25°C
EBECRYL® 8800	**Aliphatic Urethane Acrylate** • Excellent abrasion resistance • Toughness • Exterior durability	2.5	EOEOEA 10%	2900000 (25°C) 7944 (65.5°C)	0.5	3150	83	48	1.05
EBECRYL 8800–20R	**Aliphatic Urethane Acrylate** • Abrasion resistance • Toughness • Exterior durability	2.5	TRPGDA 20% EOEOEA 8%	44588 (25°C) 1414 (65.5°C)	0.5	3400	45	59	1.01
EBECRYL 8804	**Aliphatic Urethane Diaacrylate** • Extremely tough • Flexible • Abrasion resistance	2		3200000 (25°C) 13439 (65.5°C)	0.5	3000	103	24	1.14
EBECRYL 8807	**Aliphatic Urethane Diaacrylate** • Very good surface reactivity • Good flexibility • Tough	2		258600 (25°C) 7003 (60°C)	0.5	1950	54	32	1.05

Aromatic Urethane Acrylates		Typical Properties[1]							
Product	Description • Key Features & Performance	Functionality	Diluting Acrylate %	Viscosity cP	Color, Gardner (Pt-Co)	Tensile Strength psi	Tensile Elongation %	Tg °C	Density g/ml at 25°C
EBECRYL 220	**Aromatic Urethane Hexaacrylate** • High reactivity • Outstanding hardness • Excellent scratch resistance • Chemical resistance	6		28268 (25°C) 660 (60°C)	0.5	8000	3	49	1.22
EBECRYL 4827	**Aromatic Urethane Diacrylate** • Flexibility • Impact resistance • Adhesion	2		238000 (25°C) 4291 (60°C)	0.5	900	78	-6	1.10
EBECRYL 4849	**Aromatic Urethane Diacrylate** • Very good abrasion resistance • Toughness • Flexibility	2	HDODA 15%	74170 (25°C) 3146 (60°C)	0.5	2700	51	29	1.14

[1] Not a specification

* ***EBECRYL®*** UV curable resins and oligomers

Polyester Acrylates & Diluted Polyesters		Typical Properties[1]							
Product	Description • Key Features & Performance	Functionality	Viscosity cP	Color, Gardner (Pt-Co)	Acid Value mg KOH/g	Tensile Strength psi	Tensile Elongation %	Tg °C	Density g/ml at 25°C
EBECRYL® 80	**Amine Modified Polyester Tetraacrylate** • Outstanding reactivity • Moderate viscosity • High gloss • Good chemical resistance	4	2822 (25°C)	(90)		6800	7	50	1.04
EBECRYL 81	**Amine Modified Polyester Acrylate** • Good reactivity • Very low viscosity • High gloss	2.5	92 (25°C)	0.5		790	8	-18	1.08
EBECRYL 83	**Amine Modified Polyester Tetraacrylate** • Very good reactivity • Low viscosity • High gloss • Chemical resistance	3.5	515 (25°C)	0.5		2000	13	6	1.08
EBECRYL 436	**Diluted Chlorinated Polyester** • 40% ***TMPTA*** • Good adhesion • Fast UV cure response • Good lithographic behavior	3	100000 (25°C) 1503 (60°C)	1.0	19.4				
EBECRYL 438	**Diluted Chlorinated Polyester** • 40% ***OTA-480*** • Good adhesion • Fast UV cure response • Good lithographic behavior	3	85600 (25°C) 1499 (60°C)	1.2	19.4				
EBECRYL 450	**Fatty Acid Modified Polyester Hexaacrylate** • Good pigment wetting • Good reactivity • Good lithographic behavior	6	8278 (25°C) 420 (60°C)		11.8	4300	4	17	1.12
EBECRYL 524	**Diluted Acidic Polyester** • 30% ***HDODA*** • Good adhesion • Moderate flexibility	2	61234 (25°C) 2000 (60°C)	(45)	33.9	1000	30		1.22
EBECRYL 525	**Diluted Acidic Polyester** • 40% ***TRPGDA*** • Good adhesion • Moderate flexibility	2	40514 (25°C) 1180 (60°C)	(75)	28.2	1300	59		1.21
EBECRYL 586	**Diluted Chlorinated Polyester** • 40% ***TMPTA*** • Good adhesion • Good flexibility	3	45029 (25°C) 1000 (60°C)	0.9	16.5	7000	1	32	1.35
EBECRYL 657	**Polyester Tetraacrylate** • Good pigment wetting • Excellent lithographic behavior • Good anti-misting properties	4	103500 (25°C) 3585 (60°C)		12.6	4300	23	33	1.03

[1] Not a specification * ***EBECRYL®*** UV curable resins and oligomers

Polyester Acrylates and Diluted Polyesters

Polyester Acrylates & Diluted Polyesters		Typical Properties[1]							
Product	Description • Key Features & Performance	Functionality	Viscosity cP	Color, Gardner (Pt-Co)	Acid Value mg KOH/g	Tensile Strength psi	Tensile Elongation %	Tg °C	Density g/ml at 25°C
EBECRYL® 809	**Modified Polyester Acrylate** • Moderate viscosity • Good flexibility • Surface hardness • Toughness	3.5	36000 (25°C) 1276 (60°C)	0.6	7.4	3500	18	54	1.14
EBECRYL 810	**Polyester Tetraacrylate** • Low viscosity • Hardness • Chemical resistance • Adhesion	4	453 (25°C)	0.5	12.5	6000	6	31	1.09
EBECRYL 811	**Lithographic Ink Varnish** • Wet or dry offset for plastic substrates • Very low misting • Excellent water balance	3	9000 (25°C) 2003 (60°C)		5.0				1.14
EBECRYL 812	**Polyester Acrylate** • Pigment grind vehicle for flexo inks • Outstanding color development • Good adhesion to plastics and papers	3.5	9320 (25°C) 340 (60°C)	1.5	8				1.14
EBECRYL 830	**Polyester Hexaacrylate** • Hardness • Abrasion/scratch resistance • Chemical resistance	6	48119 (25°C) 1450 (60°C)	0.5	21.6	12500	5	60	1.18
EBECRYL 870	**Fatty Acid Modified Polyester Hexaacrylate** • Rheology suited for lithographic inks • Good pigment wetting • High reactivity • Good solvent resistance	6	43070 (25°C) 2340 (60°C)		11.3	4500	5	41	1.08
EBECRYL 871	**Lithographic Ink Varnish** • Excellent pigment wetting • Good water balance • Good reactivity • Low misting • Excellent printability	6	47450 (25°C)	5.5	7.3				1.1
EBECRYL 890 (New Product)	**Fatty Acid Modified Polyester Tetraacrylate** • Relatively low color • Purer, brighter, light-colored and white inks • Excellent lithographic behavior • Good water balance • Good pigment wetting	4	208000 (25°C) 5000 (60°C)	10	15				1.1
EBECRYL 1657	**Polyester Tetraacrylate** • Purified version of ***EBECRYL 657*** • Low residual odor • Reduced potential extractables	4	124800 (25°C) 3600 (60°C)		11.8	4300	23		1.03
EBECRYL 2870	**Fatty Acid Modified Polyester Hexaacrylate** • Rheology suited for lithographic inks • Low misting • Good pigment wetting • High reactivity	6	62691 (25°C) 4100 (60°C)		12.0				1.10

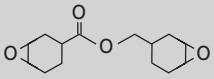
[1] Not a specification

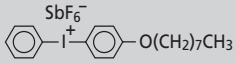
* ***EBECRYL®*** UV curable resins and oligomers

Acrylic Acrylates

Product	Description • Key Features & Performance	Typical Properties[1] Functionality	Diluting Acrylate %	Viscosity cP	Color, Gardner (Pt-Co)	Tensile Strength psi	Tensile Elongation %	Tg °C	Density g/ml at 25°C
EBECRYL® 745	**Diluted Acrylic Oligomer** • Excellent substrate adhesion • Intercoat adhesion • Flexibility	2	HDODA 23% TRPGDA 23%	22479 (25°C) 1900 (60°C)	1.5	1900	52	30	1.05
EBECRYL 1710	**Diluted Acrylic Oligomer** • Improved adhesion • Film formation • Exterior durability	2	HDODA 60%	24480 (25°C) 2300 (60°C)	0.5				1.07

Cationic Curing

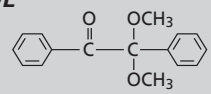
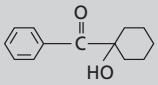
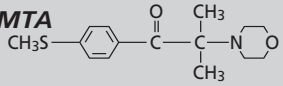
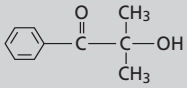
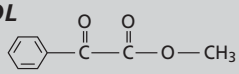
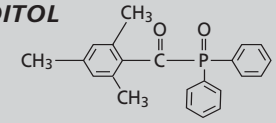
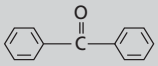
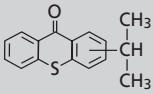
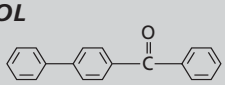
Product	Description • Key Features & Performance	Typical Properties[1] Viscosity cP	Color, Gardner (Pt-Co)	Weight per Epoxide	Tensile Strength psi	Tensile Elongation %	Tg °C	Density g/ml at 25°C
Cycloaliphatic Epoxides								
UVACURE® 1500 	**Cycloaliphatic Diepoxide** • Excellent adhesion • Chemical resistance • High purity • Low yellowing • Good hardness	239 (25°C)	15	132	6000	7	77	1.17

Cationic Initiators		Appearance	Antimony, %	Melting Point, 25°C
UVACURE 1600 	**Cationic Initiator** • Phenyl-p-octyloxyphenyl-iodonium hexafluoroantimonate • Excellent solubility in epoxy resin systems • Good thermal stability • Useful in EB cationic curing	White to tan powder	18.7	57.5

[1] Not a specification

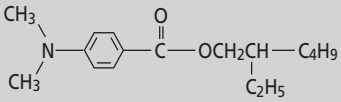
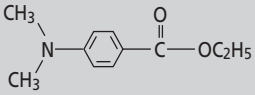
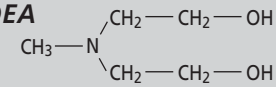
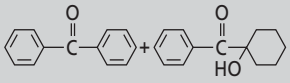
* ***EBECRYL®*** UV curable resins and oligomers
* ***UVACURE®*** cationic UV curable resins

Photoinitiators

Photoinitiators		Typical Properties[1]				
Product	Description	Viscosity cP at 25°C	Appearance (Color, Gardner)	Melting Point, °C	Molecular Weight	Density g/ml at 25°C
Alpha Cleavage	• Key Features & Performance					
ADDITOL® BDK 	**2,2-Dimethoxy-1,2-diphenyl-ethan-1-one** • Multipurpose photoinitiator • Good solubility • Used alone or combined with other photoinitiators	Solid	White crystalline powder	64-67	256	
ADDITOL CPK 	**1-Hydroxy-cyclohexylphenyl-ketone** • Imparts very little yellowing to films on UV cure and outdoor exposure • Good solubility	Solid	White crystalline powder	46-50	204	1.17
ADDITOL DMMTA 	**2-Methyl-1-[4-(methylthio)phenyl]-2-morpholino-propan-1-one** • Suited to non-white pigmented systems • Enhanced performance when combined with ***ADDITOL ITX***	Solid	White to pale yellow crystalline powder	72-76	279	1.21
ADDITOL HDMAP 	**2-Hydroxy-2-methyl-1-phenyl-propanone** • Low viscosity liquid • Good solvency of solid photoinitiators	23	Slightly yellow clear liquid		164	1.07
ADDITOL MBF 	**Methyl benzoylformate** • Low viscosity liquid • Very good surface cure • Limited yellowing	5	Clear yellow liquid		164	1.16
ADDITOL TPO 	**2,4,6-Trimethylbenzoyl diphenyl phosphine oxide** • Low yellowing in white pigmented systems • Efficient cure of thick clear coatings	Solid	Pale yellow powder	88-93	348	
Hydrogen Abstraction						
ADDITOL BP 	**Benzophenone** • High purity • Good solubility • Excellent surface cure when combined with amine synergists	Solid	White crystalline flakes	47-49	182	1.11
ADDITOL ITX 	**Isopropyl thioxanthone** • Suited to non-white pigmented systems • Mixture of 2- and 4-isomers • Excellent reactivity when combined with amine synergists	Solid	Pale yellow powder	56-72	254	
ADDITOL PBZ 	**4-Phenyl-benzophenone** • High reactivity • Low odor coatings and inks • Excellent surface cure when combined with amine synergists	Solid	Crystalline white powder	99-101	258	
EBECRYL® P 36	**Acrylated Benzophenone Derivative** • Copolymerizable • Low odor coatings • Reduced volatiles • Excellent surface cure	3900	(5)			1.25
EBECRYL P 37	**Benzophenone Derivative** • Low odor coatings • Excellent surface cure • Good solubility	Solid	White powder	48-54		1.19

[1] Not a specification

* ***ADDITOL®*** photoinitiators
* ***EBECRYL®*** UV curable resins and oligomers

Photoinitiators		Typical Properties[1]				
Product	Description	Viscosity cP at 25°C	Appearance (Color, Gardner) {Color, Pt-Co}	Melting Point (Boiling Point) °C	Weight per Amine (Molecular Wt.)	Density g/ml at 25°C
Amine Synergists	• Key Features & Performance					
ADDITOL® EHA 	**2-Ethylhexyl-4-dimethylaminobenzoate** • Suited to non-white pigmented systems • Low viscosity liquid • Good solvency of solid photoinitiators, i.e. ***ADDITOL ITX***		Pale yellow liquid	(325)	277	0.99
ADDITOL EPD 	**Ethyl-4-(dimethylamino) benzoate** • Good surface cure in inks and coatings • Good solubility	solid	White crystals	62-68	193	
EBECRYL® P 104	**Acrylated Amine** • Improved stability • Reduced odor • Decreased moisture sensitivity	10	(0.5)		300	1.01
EBECRYL P 115	**Copolymerizable Amine** • Improved stability • Reduced odor • Decreased moisture sensitivity	22	(0.5)		223	0.99
EBECRYL 7100	**Acrylated Amine** • Improved stability • Reduced odor • Decreased moisture sensitivity • Adhesion	1074	(0.5)		400	1.10
MDEA 	**N-Methyldiethanolamine** • Promotes rapid UV cure • Very low color • Low volatility	100	{50}	(247)	119	1.04
Mixtures						
ADDITOL BCPK (New Product) 	**Benzophenone + 1-Hydroxy-cyclohexylphenylketone** • Eutectic liquid (1 to 1 ratio) • Easily incorporated • Good combination of surface and through cure			<25	(193)	1.12
VIACURE® DX	**Liquid photoinitiator** • Effective in colored inks at 5-10% levels • Pourable liquid • Useful in flexo, litho and screen inks	95	(8)	<25		1.10
VIACURE LX	**Liquid photoinitiator** • Effective in white inks at 5-10% levels • Photobleaches • Also useful in yellow inks • Useful in flexo, litho and screen inks • Pourable liquid	120	(6.5)	<25		1.10

[1] Not a specification

* ***ADDITOL®*** photoinitiators
* ***EBECRYL®*** UV curable resins and oligomers
* ***VIACURE®*** photoinitiators

Additives and *RAYLOK®*

Additives		Typical Properties[1]				
Product	Description • Key Features & Performance	Functionality	Viscosity cP at 25°C	Color, Gardner (iodine)	Acid Value mg KOH/g	Density g/ml at 25°C
EBECRYL® 168	**Acidic Methacrylate** • Excellent adhesion promotion on metal • Increased compatibility compared to ***EBECRYL 170*** and ***171***	2	1466	0.5	282	1.29
EBECRYL 170	**Acidic Acrylate** • Excellent adhesion promotion on metal • Increased reactivity compared to ***EBECRYL 168*** and ***171***	2	3245	3	288	1.33
EBECRYL 171	**Acidic Methacrylate** • Best overall adhesion promotion on metal	2	1400	(15)	320	1.27
EBECRYL 350	**Silicone Diacrylate** • COF reduction, increased slip • Improved substrate wetting • Non-migratory	2	288	7.5	2.4	1.05
EBECRYL 381 (New Product)	**Fluorocarbon Acrylate** • Excellent substrate wetting • Improved flow and leveling • Good compatibility with other acrylates • Non-migratory	3	525	<1		1.10
EBECRYL 1360	**Silicone Hexaacrylate** • COF reduction, increased slip • Improved substrate wetting • Non-migratory • Especially effective in electron beam	6	1600	8	20	1.11
		Appearance	Viscosity cP at 25°C (60°C)			
ADDITOL® S 100	**Stabilizer** • Recommended for pigment systems, especially for whites and light colors • Very good stability performance for a variety of formulations and pigments • Stabilization of high levels of pigmentation • Compatible with most UV/EB systems	Yellow paste	45000			
ADDITOL S 110	**Stabilizer** • Recommended for pigment systems • Very good stability performance for a variety of formulations and pigments • Stabilization of high levels of pigmentation • Compatible with most UV/EB systems	Dark brown semi-crystalline paste	(450)			
ADDITOL S 120	**Stabilizer** • Recommended for pigment systems, even those based on unstable pigments • Very good stability performance for a variety of formulations and pigments • Stabilization of high levels of pigmentation • Compatible with most UV/EB systems	Pale colored liquid	90			

RAYLOK® Performance Products		Typical Properties[1]							
Product	Description • Key Features & Performance	Functionality	Viscosity cP	Color, Gardner	Tensile Strength psi	Tensile Elongation %	Young's Modulus psi	Tg °C	Density g/ml at 25°C
RAYLOK® 1122	**UV Wood Flooring** • Sanding sealers and topcoats • High abrasion and scratch resistance • High gloss • Chemical resistance	2.2	6350 (25°C) 440 (60°C)	< 4	1170	14	31000		1.12
RAYLOK 1123	**UV Wood Flooring** • Abrasion and scratch resistant topcoats • Surface hardness • High gloss • Chemical resistance	3.5	3500 (25°C) 200 (60°C)	< 4	3700	1.9	229000		1.12
RAYLOK 1221	**UV Vacuum Coating** • Pigmented vacuum coatings for wood • Good pigment wetting • Good reactivity • Hardness and adhesion	4.2	1650 (25°C) 140 (60°C)		2000	2.2	110000	70	1.09
RAYLOK WF21	**UV Wood Flooring** • High hardness and scratch resistance • Hardness • Chemical resistance • Adhesion	2.2	9000 (25°C) 355 (60°C)	< 2	3800	4.5			1.12

[1] Not a specification

* ***EBECRYL®*** UV curable resins and oligomers
* ***ADDITOL®*** photoinitiators
* ***RAYLOK®*** UV curable resins

VIAGRAPH®		Typical Properties[1]							
Product	Description • Key Features & Performance	Appearance	Viscosity cP at 25°C	Viscosity Poise at 25°C	Color, Gardner	Surface Tension, mN/m	Tack, g-m at 90°F	Yield Value, dynes/cm² at 25°C	Density g/ml at 25°C
VIACURE® DX	**Liquid Photoinitiator** • Effective in colored inks at 3-5% levels • Pourable liquid • Useful in flexo, litho and screen inks	Clear amber liquid	95		8				1.10
VIACURE LX	**Liquid Photoinitiator** • Effective in white inks at 3-5% levels • Photobleaches • Also useful in yellow inks • Pourable liquid • Useful in flexo, litho and screen inks	Clear yellow liquid	120		6.5				1.10
VIAFLEX® 100	**Pigment Dispersing Vehicle** • Produces low viscosity flexographic inks • Excellent pigment dispersing and flow characteristics • Good reactivity • Good adhesion to various substrates	Clear amber liquid	4500		4				1.10
VIAFLEX 110	**Pigment Grinding Vehicle** • Designed for dispersing rubine pigments • Produces strong, clean, transparent colors • Produces low viscosity flexographic inks • Good adhesion to various substrates • Good reactivity	Clear light colored liquid	800		2				1.10
VIAFLEX 111 (New Product)	**Pigment Grinding Vehicle** • Designed for dispersing diarylide yellow pigments • Produces strong, clean, transparent colors • Produces low viscosity flexographic inks • Good adhesion to various substrates	Clear liquid	370		7				1.10
VIAFLEX 165	**Pigment Grinding Vehicle** • Produces low viscosity flexographic inks • Designed for use with ***VIAFLEX 100*** • Gives strong, clean, transparent colors • Good reactivity	Clear light colored liquid	2000		2				1.20
VIAFLEX 406	**Flexographic Letdown Vehicle** • Develops excellent color strength in all process colors • Promotes Newtonian flow • Provides good transfer with high count anilox rolls • Non-initiated	Clear light colored liquid	70		2				1.10
VIAJET™ 100	**Grinding Vehicle for UV Inkjet** • Produces low viscosity dispersions using a bead mill • Low odor • High reactivity • Inks are stable and jettable, and have no satellite formation or dot gain	Clear light colored liquid	110		5	38.6			1.10
VIAJET 400	**Letdown Vehicle for UV Inkjet** • Produces low viscosity inks • Low odor • High reactivity • Inks are stable and jettable, and have no satellite formation or dot gain	Clear light colored liquid	20		2	35.9			1.10
VIASCREEN® 501	**Screen Printing Vehicle** • Excellent adhesion to untreated plastics • Good milling properties • Good cure response	Clear to hazy	24000		2				1.05

[1] Not a specification

* ***VIAGRAPH®*** UV curable ink vehicles
* ***VIACURE®*** photoinitiators
* ***VIAFLEX®*** UV curable ink vehicles
* ***VIAJET™*** UV curable inkjet vehicles
* ***VIASCREEN®*** UV curable ink vehicles

VIAGRAPH®		Typical Properties[1]							
Product	Description • Key Features & Performance	Appearance	Viscosity cP at 25°C	Viscosity Poise at 25°C	Color, Gardner	Surface Tension, mN/m	Tack, g-m at 90°F	Yield Value, dynes/cm² at 25°C	Density g/ml at 25°C
VIASCREEN® 515	**Screen Printing Vehicle** • Excellent adhesion to a variety of plastics • Good milling properties • Very good cure response • Useful in rotary screen inks	Clear liquid	23000		2				1.05
VIASCREEN 520	**Screen Printing Vehicle** • Pigment grind vehicle for thermoformable inks • Designed for use with ***VIASCREEN 521*** • High elongation (550% at break) • Inks are non-blocking • Good adhesion to a variety of plastics	Light colored opaque liquid	35000 (60°C)		2				1.04
VIASCREEN 521	**Screen Printing Vehicle** • Letdown vehicle for thermoformable inks • Designed for use with ***VIASCREEN 520*** • Good adhesion promoting properties • Excellent flexibility • High gloss	Light colored clear liquid	10000		1				1.03
VIASET® 210	**Lithographic Ink Vehicle** • Suitable for use in both the grind and letdown portions of an ink • Excellent pigment wetting • Increases ink tack • Reduces misting and dot gain • Enhances ink rheology • For porous substrates	Clear amber liquid		875			15	1850	1.10
VIASET 211 (New Product)	**Lithographic Ink Vehicle System** • For use in combination with ***VIASET 212*** • Excellent adhesion to a wide variety of non-porous substrates • Improved film integrity, scratch resistance • Good printability • Enhanced cure response (reactivity)	Clear liquid	51200		5				1.10
VIASET 212 (New Product)	**Lithographic Ink Vehicle System** • For use in combination with ***VIASET 211*** • Excellent adhesion to a wide variety of non-porous substrates • Improved film integrity, scratch resistance • Good printability • Enhanced cure response (reactivity)	Clear liquid	47900		0.2				1.02
VIASET 402	**Free Flow Letdown Vehicle** • For use in polyester acrylate-based lithographic inks for paper and board • Reduces ink tack and body • Increases ink flow	Clear amber liquid	48000		13		14	1000	1.10
VIASET 403	**Free Flow Letdown Vehicle** • For use in polyester acrylate-based lithographic inks for plastics • Reduces ink tack and body • Increases ink flow • Provides adhesion to various plastics	Clear amber liquid	46000		7		14	800	1.10
VIASET 420	**Gelled Letdown Vehicle** • For use in epoxy acrylate-based lithographic inks • Increases ink tack • Reduces misting and dot gain • Improves gel and tack stability	Opaque gel		1618			48	9963	1.10
VIASET 421	**Free Flow Letdown Vehicle** • For use in epoxy acrylate-based lithographic inks for paper and board • Reduces ink tack and body • Increases ink flow	Clear amber liquid	9000		7		4	175	1.10

[1] Not a specification

* ***VIAGRAPH®*** UV curable ink vehicles
* ***VIASCREEN®*** UV curable ink vehicles
* ***VIASET®*** UV curable ink vehicles

UCECOAT®		Typical Properties[1]						
Product	Description • Key Features & Performance	Appearance	Viscosity cP at 25°C	Solid Content,%	pH	Particle size,nm	MFFT, °C	Density g/ml at 25°C
UCECOAT® 6558 (New Product)	**Aliphatic Urethane Acrylate Solution** • Moderate viscosity • Good adhesion • Excellent flexibility • Resistance to yellowing • 50% water • Useful in waterborne screen inks	Clear to clouded liquid	3700	50				1.09
UCECOAT 7177 (New Product)	**Acrylated Polyurethane Dispersion** • Very low viscosity • Excellent adhesion on wood • Excellent flexibility • High hardness • Very low yellowing	White liquid	45	40	7	<150	<0	1.05
UCECOAT 7571 (New Product)	**Acrylated Polyurethane Dispersion** • Low viscosity • Tack free after water evaporation • Excellent stain resistance • Good adhesion to wood • Good flexibility and hardness	Translucent liquid	<200	35	7.5	<100	<0	1.00
UCECOAT 7772 (New Product)	**Acrylated Polyurethane Dispersion** • Very low viscosity • Tack free after water evaporation • Excellent adhesion • Good chemical and stain resistance • High hardness	Translucent product	40	40	7.2	100	<0	1.06
UCECOAT 7849 (New Product)	**Acrylated Polyurethane Dispersion** • Low-viscosity • Tack free after water evaporation • Good flexibility • Good chemical and stain resistance • High hardness	Clear to slightly opalescent liquid	54	35	7.6	46	<0	1.02

[1] Not a specification * ***UCECOAT®*** waterborne UV curable resins

Selection Guide

Resins and Diluting Acrylates

The following tables provide a comparison of select performance properties for the resin and diluent products. Each product family is assigned a relative ranking for each performance property represented by the numeral just below the column heading. The higher numeral indicates increased performance for that family. The number of bullets in each performance property column represents a relative ranking for that product within its product family. Better performance is indicated by more bullets. To compare the performance of products from different product families, multiply the number of bullets by the numeral.

For example, comparing the UV/EB reactivity of the epoxy acrylate ***EBECRYL® 3700*** (•••• x 5 = 20) to that of the aliphatic urethane acrylate ***EBECRYL 1290*** (••••• x 3 = 15) indicates that ***EBECRYL 3700*** has the superior reactivity.

Note: For the performance category of viscosity, increased performance equals lower viscosity.

Resins

	UV/EB Reactivity	Viscosity	Adhesion	Hardness	Flexibility	Weatherability	Chemical Resistance	Moisture Resistance	Abrasion Resistance	Scratch Resistance
Epoxy Acrylates	**5**	**3**	**3**	**4**	**2**	**1**	**5**	**3**	**2**	**3**
EBECRYL® 600	••••	•	•••	•••••	•	•	•••••	••••	•••	•••••
EBECRYL 605	•••	••••	•••	•••	••	••	••••	•••	••	•••
EBECRYL 608	••••	•••	•••	••••	•	••	••••	••••	•••	•••
EBECRYL 645	•••	••••	•••	•••	••	••	••••	••••	•••	•••
EBECRYL 860	•	•••	••	•	•••	•••••	•	••••	•	•
EBECRYL 1608	••••	•••	•••	••••	•	••	••••	••••	•••	•••
EBECRYL 3200	••	•••••	•••	••	•••	•••	••	•••	•••	•
EBECRYL 3201	••	•••••	••	•	•••	•••	•	••	••	•
EBECRYL 3212	•••	•••••	•••	•	••••	••	•	•••	••	•
EBECRYL 3411	•••	•••	•••	••••	•••	••	•••	•••	•••	••
EBECRYL 3415	••	••••	•••••	••	••	••	•••	••••	•••	••
EBECRYL 3500	•••	•••	•••••	•••	•••	••	•••	•••	•••••	•••
EBECRYL 3600	•••••	••	••••	•••••	•	•	••••	•••	••	••••
EBECRYL 3605	•••	••	•••	•••	••	•	••••	••	••	••
EBECRYL 3700	••••	•	•••	•••••	•	•	•••••	••••	•••	•••••
EBECRYL 3700–20H	•••	••••	•••	••••	••	••	••••	•••	•••	•••
EBECRYL 3700–20T	••••	•••	•••	•••••	•	••	•••••	•••	••	•••
EBECRYL 3700–25R	•••	••••	•••	•••	••	••	••••	•••	••	•••
EBECRYL 3701	••••	•	••••	••••	•••	••	••••	•••••	••••	•••
EBECRYL 3701–20T	••••	••	•••	••••	••	••	••••	•••••	•••	•••
EBECRYL 3702	•••	••	••••	•••	•••	••	••••	•••	••••	••
EBECRYL 3703	•••••	••	••••	••••	••	•	••••	•••	•••	•••
EBECRYL 3708	•••	••	••••	••	•••••	••	•••	•••	••••	••
EBECRYL 3720	••••	•	•••	•••••	•	•	•••••	••••	•••	•••••
EBECRYL 3720–HD20	•••	••••	•••	••••	••	••	••••	•••	•••	•••
EBECRYL 3720–TM20	••••	•••	•••	•••••	•	••	•••••	•••	••	•••
EBECRYL 3720–TM40	••••	••••	••	•••••	•	••	•••••	•••	••	••••
EBECRYL 3720–TP25	•••	••••	•••	•••	••	••	••••	•••	••	•••
EBECRYL 3720–TP40	•••	•••••	•••	•••	••	••	•••	•••	••	•••
EBECRYL 3730–TP20	•••	•••••	•••	•••	••	••	•••	•••	••	•••
EBECRYL 3740	••••	•	•••	•••••	•	•	•••••	••••	•••	•••••
EBECRYL 3740–TP20	•••	••••	•••	•••	••	••	••••	•••	••	•••
Aliphatic Urethane Acrylates	**3**	**2**	**3**	**3**	**5**	**5**	**2**	**4**	**5**	**5**
EBECRYL 230	•	•••	•••	•	•••••	••	•	••	•	•
EBECRYL 244	•••	••	•••	•••	•••	•••	•••	•••••	•••	••
EBECRYL 264	•••	•••	••	••••	••	•••	••••	•••	•••••	•••
EBECRYL 265	•••	•••	•••	••••	••	••	••••	•••	•••••	•••
EBECRYL 270	••	••	•••	•	•••••	•••	••	••	••	•
EBECRYL 284–N	•••	•••	•••	•••	•••	•••••	•••	•••	•••	••
EBECRYL 1290	•••••	•••	••	•••••	•	•••	•••••	•••	••••	•••••
EBECRYL 4830	•••	••	•••	••	•••	•••	•••	•••	•••	••
EBECRYL 4833	•••	••	•••••	•••	•••	•••••	•••	•••	•••	••
EBECRYL 4866	•••	••	••	••••	••	••••	•••••	••••	•••••	•••
EBECRYL 4883	•••	••	•••	••	•••	•••	•••	•••	•••	••
EBECRYL 8210	•••••	•••••	••	•••••	•	•••	•••••	•••	••••	•••••
EBECRYL 8301	•••••	••••	••	•••••	•	•••	•••••	•••	••••	•••••
EBECRYL 8302	••••	••••	•••	••••	••	•••	••••	•••	••••	••••
EBECRYL 8402	•••	•••••	••••	•••	•••	•••••	•••	•••	•••	••
EBECRYL 8405	•••	•••	•••	•••	•••	•••••	•••	•••	•••	••
EBECRYL 8411	••	•••	•••	•	•••••	•••	••	••	••	••
EBECRYL 8500	••	•••	•••	•	•••••	•••	••	••	••	••
EBECRYL 8800	••••	•	•••	•••	•••	••••	•••	••••	•••	••
EBECRYL 8800–20R	••••	•••	•••	•••	•••	•••	•••	••••	•••	••
EBECRYL 8804	•••	•	•••	•••	•••	•••	•••	•••	••••	••
EBECRYL 8807	•••••	••	•••	•••	•••	•••	•••	••••	•••	••

* ***EBECRYL®*** UV curable resins and oligomers

Selection Guide

Resins and Diluting Acrylates

	UV/EB Reactivity	Viscosity	Adhesion	Hardness	Flexibility	Weatherability	Chemical Resistance	Moisture Resistance	Abrasion Resistance	Scratch Resistance
Aromatic Urethane Acrylates	**3**	**2**	**3**	**3**	**5**	**2**	**3**	**4**	**5**	**5**
EBECRYL® 220	•••••	••••	•	•••••	•	•	•••••	••••	••••	•••••
EBECRYL 4827	•	••	•••	•	•••••	••••	•	•••	••	••
EBECRYL 4849	••	•••	••••	••	••••	•••••	•••	•••	•••	••
EBECRYL 6602–20T	•••	•••	••	•••	••	••	••••	••••	•••	•••
Polyester Acrylates & Diluted Polyesters	**4**	**5**	**3**	**3**	**2**	**3**	**3**	**2**	**3**	**4**
EBECRYL 80	•••••	•••	•••	••••	•	••	••••	••	•••••	•••
EBECRYL 81	•••	•••••	•••	••	•••	••	••	•	•	•
EBECRYL 83	••••	••••	•••	•••	••	••	•••	••	••••	••
EBECRYL 436	••••	•	•••••	•••	•	••	•••	••	••	••
EBECRYL 438	••••	••	•••••	•••	•	••	•••	••	••	••
EBECRYL 450	•••	•••	•••	•••	••	•••	••••	•••	••••	•••
EBECRYL 524	•	••	•••••	••	•••	••	•	••	••	•
EBECRYL 525	•	••	•••••	••	•••	••	•	••	••	•
EBECRYL 586	••••	••	••••	•••	••	•	••	••	••	••
EBECRYL 657	•••	•	•••	•••	••	••	•••	•••	•••	••
EBECRYL 809	••	•••	••	••	•••••	•••	••	•••	••••	••
EBECRYL 810	•••	••••	•••	•••	••	••••	••••	••••	••••	•••
EBECRYL 811	••	••	•••	•••	••	•••	•••	••	•••	••
EBECRYL 812	•••	•••	•••	•••	••••	•	••••	•••	••••	••
EBECRYL 830	•••	••	••	•••••	•	•••••	•••••	•••••	•••••	•••••
EBECRYL 870	••••	••	•••	•••	••	••	•••	•••	•••	••
EBECRYL 871	••••	••	•••	•••	••	••	•••	•••	•••	••
EBECRYL 890	•••	•	•••	•••	••	••	•••	•••	•••	••
EBECRYL 1657	•••	••	•••	•••	••	••	•••	•••	•••	••
EBECRYL 2870	••••	••	•••	•••	••	••	•••	•••	•••	••
Acrylic Acrylates	**2**	**1**	**5**	**2**	**3**	**4**	**2**	**4**	**2**	**1**
EBECRYL 745	•••	••••	•••••	•••	•••	••••	••	••••	•••	••
EBECRYL 1710	••	••••	••••	•••	••	••••	••	••••	••	••••
Cycloaliphatic Epoxides	**3**	**4**	**5**	**3**	**3**	**4**	**3**	**3**	**3**	**2**
UVACURE® 1500	•••	•••••	•••••	••••	••	•••••	•••	••••	•••	•••

Diluting Acrylates

	UV/EB Reactivity	Diluency	Adhesion	Hardness	Flexibility	Weatherability	Chemical Resistance	Moisture Resistance	Abrasion Resistance	Scratch Resistance
Diluting Acrylates Monofunctional	**2**	**5**	**4**	**1**	**5**	**3**	**2**	**3**	**2**	**1**
B-CEA	•••••	•	•••••	••••	••	••	••••	••	•••	••
IBOA	••	••	•••	•••••	••	•••••	•••••	•••	•••••	•••••
ODA-N	•	•••••	•	•	•••••	•••	•	•••••	••	•
EBECRYL 110	••••	•••	••	••	•••	••	••	••	•••	•••
EBECRYL 113	•••	•	••••	••	•••	•••	•••	•••	••	••
EBECRYL 114	••••	••••	••••	•••	•••	••	•••	•••	•••	•••
EBECRYL 1040	••	••	•••••	••	••••	•••	••	••	••	••
Diluting Acrylates Difunctional	**3**	**4**	**3**	**3**	**2**	**4**	**2**	**3**	**3**	**3**
DPGDA	•••	•••	•••	•••	•••	••••	••••	•••	•••	••••
HDODA	•••	•••••	•••••	••	•••••	•••••	•••	•••••	•••••	•••
NPG(PO)$_2$DA	•	•••	••••	•	•••••	•••	••	•••	••••	••
TRPGDA	••	•••	••••	•••	••••	•••	••••	••••	••••	•••
TRPGDA-DEO	••	•••	••••	•••	••••	•••	••••	••••	••••	•••
EBECRYL 150	••••	•	••	•••••	••	•	•••••	•••••	•••	•••••

* ***EBECRYL®*** UV curable resins and oligomers
* ***UVACURE®*** cationic UV curable resins

Selection Guide

Diluting Acrylates and Photoinitiators

Diluting Acrylates *(Continued)*

	UV/EB Reactivity	Diluency	Adhesion	Hardness	Flexibility	Weatherability	Chemical Resistance	Moisture Resistance	Abrasion Resistance	Scratch Resistance
Diluting Acrylates Trifunctional & >	**4**	**3**	**2**	**5**	**1**	**3**	**4**	**3**	**3**	**4**
DPHA	••••	•	•	•••••	•	•	•••••	•••	••	•••••
OTA–480	••	•••	•••••	••	••••	••••	•••	••••	••••	••
PETA–K	•••••	••	•	•••••	•	••	•••••	••	••	•••••
PETIA	•••••	••	••	••••	•	••	••••	••	••	••••
TMPEOTA	•••	•••••	•••	•••	•••••	•••	•••	•••	•••••	•••
TMPTA	••••	•••	••	••••	•	•••••	••••	•••••	•••	••••
EBECRYL® 12	•	••	••••	•	•••••	•	•	•	••	•
EBECRYL 140	••••	••	••	••••	•	•••	••••	••••	•••	•••
EBECRYL 1140	••••	••	••	••••	•	•••	••••	••••	•••	•••
EBECRYL 40	•••	•••	•••	•••	•••	•••	••••	••••	••••	•••
EBECRYL 53	••	•••	•••••	••	••••	••••	•••	••••	••••	••

Photoinitiators

Photoinitiators		State (Solid/Liquid)	Clear–Wood	Pigmented–Wood	Clear–Plastics/Metal	Pigmented–Plastics/Metal	Overprint Varnish	Inks	Non-Yellowing	Synergist Needed	
ADDITOL® BP	Benzophenone	S	X	C	X	C	X	C		X	Multipurpose photoinitiator; good surface cure with amine synergist
ADDITOL BCPK	Benzophenone/1-Hydroxy-cyclohexylphenyl-ketone (1/1 ratio)	L	X	C	X	C	X	C		X	Liquid photoinitiator blend (1 to 1) of ***ADDITOL BP*** and ***ADDITOL CPK***; good surface cure with amine synergist
ADDITOL BDK	2,2-Dimethoxy-1,2-diphenylethan-1-one	S	X	C	X	C	C	C			Multipurpose photoinitiator
ADDITOL HDMAP	2-Hydroxy-2-methyl-1-phenylpropanone	L	X	C	X	C	C	C	C		Multipurpose photoinitiator
ADDITOL CPK	1-Hydroxy-cyclohexylphenyl-ketone	S	X	C	X	C	X		X		Non-yellowing systems
ADDITOL TPO	2,4,6-Trimethylbenzoyl diphenyl phosphine oxide	S		X	X	X		C	X		Efficient cure of white pigmented & thick clear coatings
ADDITOL ITX	Isopropyl thioxanthone (2- and 4-isomer mixture)	S		X		X		X		X	Curing of pigmented systems (other than white)
ADDITOL DMMTA	2-Methyl-1-[4-(methylthio)phenyl]-2-morpholino-propan-1-one	S		X		X		X			Curing of pigmented systems (other than white)
ADDITOL EHA	2-Ethylhexyl-4-(dimethylamino)benzoate	L		C		C		X			Amine synergist, mainly for inks
ADDITOL EPD	Ethyl-4-(dimethylamino)benzoate	S		C		C		X			Amine synergist, mainly for inks
EBECRYL® P 36	Acrylated benzophenone derivative	L					X	X		X	Inks and coatings with lowest residual odor Copolymerizable • Use in place of benzophenone
EBECRYL P 37	Benzophenone derivative	S					X	X		X	Inks and coatings with lowest residual odor Copolymerizable • Use in place of benzophenone
EBECRYL P 104	Acrylated amine synergist	L	C		C	C	X	C			Improved stability, reduced odor, low viscosity
EBECRYL P 115	Copolymerizable amine synergist	L	C		C	C	X	C			Improved stability, reduced odor, increased reactivity
EBECRYL 7100	Acrylated amine synergist	L	C		C	C	X	C			Improved stability, reduced odor, increased adhesion
MDEA	Methyldiethanolamine	L	C	C	C	C	X	C			In combination with ***ADDITOL BP***, provides good surface cure
VIACURE® DX	Liquid photoinitiator blend	L		C		C		X			Effective in flexo, litho and screen inks, especially darker colored inks
VIACURE LX	Liquid photoinitiator blend	L		C		C		X	X		Effective in flexo, litho and screen inks, especially lighter colored inks

X = Highly recommended
C = Used in combination
S = Solid
L = Liquid

* ***EBECRYL®*** UV curable resins and oligomers
* ***ADDITOL®*** photoinitiators
* ***VIACURE®*** photoinitiators

Acid value Expressed in mg KOH per gram. For some materials, acid value is reported as weight % acrylic acid. Note:
acid value x 0.128 = % acrylic acid
acid value x 0.1497 = % methacrylic acid

Color Average values in Gardner, Pt-Co (APHA), or iodine scales.
- Gardner - range from light yellow to red defined by the chromaticities of glass standards numbered from 1 for the lightest to 18 for the darkest.
- Pt-Co - defined by specified dilutions of a platinum-cobalt stock solution, ranging from 0 at the light end of the scale to 500 at the darkest.
- Iodine - ranges from yellow to brown defined by specified dilutions of an iodine solution, ranging from 1 for the lightest color to 500 for the darkest. For colors registering 1 or less on the Iodine scale, the Platinum-Cobalt Units are applicable.

Density Mass per unit of volume at 25°C, expressed in grams per milliliter.

Elongation Average elongation (strain) at break expressed as the percent change in the gage length; measured on the UV cured homopolymer of the product.

Ester Rank Ester rank is indicative of the number of moles of acrylate or methacrylate groups (double bonds) per molecule of product. It is a calculated value based upon the saponification number of a product. Saponification number is the number of milligrams of KOH required to cleave (saponify) the ester groups in a one-gram sample of material (after accounting for any initial acidity which may be present).

Functionality Theoretical number of acrylate double bonds per molecule.

Inhibitor The amount of hydroquinone monomethyl ether (MEHQ) present in the finished product; measured in parts per million. Note that inhibitor level typically decreases as product ages. Measured by HPLC.

MFFT Minimum film formation temperature. The temperature at which a continuous film is formed after the evaporation of volatile materials from a dispersion or emulsion.

Molecular Weight The calculated weight based on the theoretical chemical composition.

Particle Size The mean size of the particles in dispersion, reported in microns.

pH The measure of the acidity or alkalinity of an aqueous product. Numerically equal to 7 for neutral solutions; pH increases with alkalinity and decreases with acidity over a range of 0-14.

Solids The amount, expressed in percent, of the non-volatile material remaining from a solution or dispersion after heating at a specified time and temperature.

Surface Tension The force, measured in mN/m, required to break the interface between the liquid and air using a Du Noüy ring method. mN/m = dynes/cm

Tack A function of the force required to split a thin fluid film of a printing ink or vehicle between two rapidly separating surfaces; it is a rheological parameter indicative of internal cohesion of the fluid.

Tensile Strength Average stress in pounds per square inch at break; measured on the UV cured homopolymer of the product.

Tg Glass transition temperature in °C of the UV cured homopolymer of the product as measured by dynamic mechanical analysis (DMA).

Viscosity Viscosity in centipoise (cP) or poise (P) measured at 25°C and at the sales specification temperature if other than 25°C. cP = mPa.s.

Weight per Amine Average molecular weight per amine group.

Weight per Epoxide Average molecular weight per epoxide group. Also referred to as epoxy equivalent weight.

Yield Value Also known as yield stress; the minimum shear stress required to initiate motion or flow in a non-Newtonian liquid.

Young's Modulus Also known as elastic modulus; the force required to elongate a material, and calculated from the ratio of stress to strain. It is indicative of the stiffness or rigidity of a material. Measured on the UV cured homopolymer of the product.

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