

Product Guide



RAHN | EnergyCuring

Your partner for excellence



Disclaimer

We have obtained this information wholly or partially from suppliers and from other sources. As we have no insight into the manufacturing processes and application procedures, the recommendations and suggestions are offered without obligation or guarantee. The customer must determine and test for himself the suitability of the products for its purpose and the substances present or not present in the goods. The details are thus conveyed with every reservation and shall imply no commitment or liability on our part. There will be no legitimate claim for any processing-/consequential damage nor responsibility regarding patent infringements. If the material is a development product, we cannot guarantee at this stage a continuous commercial supply and/or a consistent quality, unless specially agreed upon.

GENOMER*, GENOCURE*, GENORAD* and GENOPOL* are registered trademarks of RAHN AG.

MIRAMER is a trademark of Miwon Commercial Co., Ltd.

For further information please contact the following offices:

RAHN AG
Dörflistrasse 120 | CH-8050 Zürich
Tel. +41 44 315 42 00
Fax +41 44 315 42 65
EnergyCuring@rahn-group.com
www.rahn-group.com

RAHN GmbH
Hahnstrasse 70 | DE-60528 Frankfurt am Main
Tel. 0800 1 816 015
Fax 0800 1 816 016

RAHN USA Corp.
1005 North Commons Drive
Aurora, Illinois 60504, USA
Tel. +1 630 851 4220
Fax +1 630 851 4863

RAHN Trading (Shanghai) Co. Ltd.
3688 Jin Du Road,
Shanghai 201108, P.R. China

RAHN | EnergyCuring

'Worldwide support for your energy curing systems'

RAHN is a premier worldwide supplier of additives, oligomers, monomers, photo-initiators and other customized specialty chemicals. Our products are used in ultraviolet and electron beam cure technologies and are essential components of high performance inks, coatings, adhesives, medical and other applications.

The range of products are established under the trademarks GENOMER*, GENORAD*, GENOCURE* and GENOPOL* and are widely used industry standards.

RAHN's key offerings are

- Full range of specialized UV/EB curable products
- Consistent product quality available worldwide
- High quality and high purity products
- Customer focused product development
- Technical consulting and support
- Specialized application laboratories
- Worldwide network of partnerships
- Health & safety and logistics support
- Industry expertise, dedicated to energy curing
- Top class customer service

Technical Literature

Additional RAHN-documents are available. For more details click on our web product browser at www.rahn-group.com or contact your local RAHN-sales representative for further information.

Product Brochures

- Asia Pacific Product Guide
- Product Line Presentation Reactive Diluents



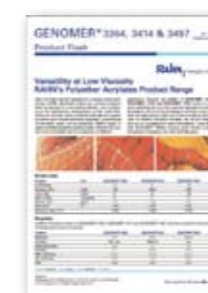
Lab Reports

- UV Curing Flexographic Inks
- UV Inkjet Inks
- UV Offset Inks



Product Flash

- ACMO
- GENOMER* 3364, 3414 & 3497
- GENOMER* 4217 & 4425



Lab Reports

- Adhesion of Oligomers to Glass and Metal Substrates
- Electron Beam Curing Laminating Adhesives
- LA, Laminating Adhesives



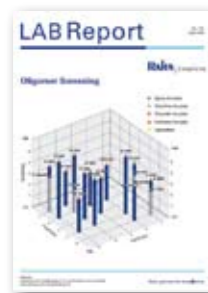
- GENOMER* 7287



- GENORAD* 21



- Oligomer Screening



- PSA, Pressure Sensitive Adhesives



- Taber and Sand Feeder



- GENOPOL Photoinitiators



- Printed Electronics



About RAHN

RAHN is a leading and independent supplier of UV/EB curing raw materials. We develop our own commercial products with a special emphasis on additives, oligomers, photoinitiators and reactive diluents.

Our philosophy

The company's philosophy is based on a high level of customer support with cutting edge technical data combined with up-to-date health, safety and regulatory information. With two laboratories in Switzerland and the USA, RAHN has the ability to provide local customized solutions and expertise in various application fields.

Experience

In the product development and product application area RAHN supports its clients with more than 25 years of experience in radiation curing.

Product development

The product development laboratory identifies new chemistries and solutions for our customers. Customer specific solutions and broader market-driven products are the results of this resource. If you are looking for a special solution or simply help with finishing a formulation, talk to us.



The development of new products and application / startingpoint formulations as well as customized projects are supported by our development company RadLab AG.

Graphic Arts

Our laboratory in Switzerland is focused on graphic arts and offers full support for all the major printing processes utilizing energy curing formulations. The laboratory is well equipped to measure offset transfer properties and water balance behavior as well as all the major physical properties required by printing inks and coatings.

Adhesives

Our laboratory in the USA is specialized for adhesives and is well equipped for all of the relevant testing required for the latest adhesive technologies including shear adhesion failure temperature (SAFT).

You are invited to test our knowledge and specialized skills, please call your local RAHN-sales representative or our offices.



Contents

Products	Page	Products	Page
Technical Literature	4-5	Specialities	16-17
Reactive Diluents	8-9	Additives	16-17
Epoxy Acrylates	10-11	Photoinitiators	18-19
Polyester/Polyether Acrylates	10-11	Synergists	20-21
Urethane Acrylates	12-13	Polymeric Photoinitiators	20-21
Oligoamines	14-15	Dental & Cosmetic Products	22-23
Co-Resins	14-15		

This guide includes our most successfully used and commercially fully supported products. If your requirements cannot be met with any of these products, please contact us directly to help you find a solution.

Identification Code

Dilutions	GENOMER* Product-Code
M22 = GENOMER* 1122	1 st number: Product Group
PP = PPTTA	2 nd number: Functionality
EHA = 2-Ethylhexyl-Acrylate	3 rd and 4 th number: Product reference
ETM = TMP(EO) ₃ TA	
HD = HDDA	
TM = TMPTA	
TP = TPGDA	
GP = GPTA	
NP = NPG(PO) ₂ DA	
Ask for other available dilutions	
Product Data	Properties
Color A = APHA	++++ = excellent
Color G = Gardner	+++ = good
2 = Literature Value	++ = moderate
	+ = low
HS & Registration Status	
Classification and labelling according to 1272/2008/EC. For up-to-date classification data please always refer to the corresponding MSDS	GHS05 = Corrosion
	GHS06 = Skull and crossbones
	GHS07 = Exclamation mark
	GHS08 = Health hazard
	GHS09 = Environment
L = Listed	H301 = Toxic if swallowed
∅ = Not listed	H302 = Harmful if swallowed
S = SNUR	H312 = Harmful in contact with skin
D = DSL	H314 = Causes severe skin burns and eye damage
N = NDSL	H315 = Causes skin irritation
NN = Notified	H317 = May cause an allergic skin reaction
U = Under Investigation	H318 = Causes serious eye damage
LVE = Low Volume Exemption (< 1MT/y)	H319 = Causes serious eye irritation
P = Pre-Registered	H335 = May cause respiratory irritation
E = Exempt	H361 = Suspected of damaging fertility or the unborn child
R = Registered	H372 = Causes damage to organs through prolonged or repeated exposure
- = not classified as hazardous	H400 = Very toxic to aquatic life
REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals (EU)	H410 = Very toxic to aquatic life with long lasting effects
TSCA = Toxic Substances Control Act (USA)	H411 = Toxic to aquatic life with long lasting effects
CEPA = Canadian Environmental Protection Act	H412 = Harmful to aquatic life with long lasting effects
IECSC = Inventory of Existing Chemical Substances (China)	
METI = Ministry of Economy, Trade and Industry (Japan)	
ECL = Korean Existing Chemicals List (Korea)	

Reactive Diluents

Product	Product Data (Typical Values)								HS & Registration					Properties					Applications							Key Features								
	Description	Functionality	Color	Acid Value (mg KOH/g)	Viscosity (mPa.s at 25 °C) (cps at 77 °F)	Tg (°C)	Surface Tension Dynes/cm	Molecular Weight	CLP Hazard Symbol	CLP Hazard Statement	REACH-Status	TSCA-Status	CEPA-Status	IECSC	METI	ECL	Reactivity	Gloss	Flexibility	Hardness	Chemical Resistance	Adhesion	Offset Inks	Flexo Inks	Screen Inks		Overprint Varnishes	Wood Coatings	Composites	Electronics	Adhesives	Coatings on Plastics		
Monofunctionals																																		
GENOMER* 1121	IBOA	1	10 A	0.1	10	80	31.7	208	GHS07 GHS09	H315, H319, H335, H411	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	High Tg but also good flexibility, good cutting power, good adhesion and moisture resistance
GENOMER* 1122	Aliph. Ureth. Acryl.	1	50 A	1.0	30	-3	33.3	215	GHS07	H315, H319	P	L	N/NN	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	High flexibility and low odor, excellent adhesion on plastics
MIRAMER M120	LA	1	150 A	0.5	15	-30 ²	30	240	GHS07 GHS09	H315, H319, H335, H411	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Hydrophobic, flexibility, low volatility and good adhesion	
MIRAMER M130	IDA	1	100 A	0.2	7	-60 ²	24.3	212	GHS07 GHS09	H315, H319, H335, H411	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Hydrophobic, flexibility and adhesion, low Tg and surface tension	
MIRAMER M140	PH(EO)A	1	100 A	0.1	13	5	40.1	192	-	-	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Good cutting power, good adhesion on plastics	
MIRAMER M164	NP(EO)4A	1	200 A	0.3	100	-28	34.3	450	GHS07	H315, H319	E	L	N	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Low volatility and low odor, good adhesion	
MIRAMER M166	NP(EO)8A	1	150 A	0.5	130	-41	34.9	626	GHS07	H315, H319	E	L	N	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	High flexibility and low odor, low volatility	
MIRAMER M170	EOEOEA	1	150 A	0.3	10	-53	29.7	188	GHS05 GHS07	H314, H302, H317, H412	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	High flexibility and low shrinkage, low Tg, excellent cutting power	
Difunctionals																																		
MIRAMER M200	HDDA	2	50 A	0.2	10	43 ²	35.9	226	GHS07	H315, H319, H317	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Excellent cutting power, outstanding adhesion on plastics, weatherability	
MIRAMER M210	HPNDA	2	100 A	0.3	30	115	33.2	312	GHS07	H319, H317	P	L	N	L		L	∅	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Low viscosity, good hardness and adhesion	
MIRAMER M216	NPG(PO)2DA	2	35 A	0.1	15	32	30.6	328	-	-	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Low viscosity, good flexibility	
MIRAMER M220	TPGDA	2	100 A	0.2	18	62 ²	33.3	300	GHS07 GHS09	H315, H319, H317, H335, H411	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Low volatility, good cutting power	
MIRAMER M222	DPGDA	2	100 A	0.3	15	104 ²	33.5	242	GHS05 GHS07	H318, H317, H315	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Low volatility, good cutting power, high Tg	
MIRAMER M240	BPA(EO)4DA	2	3 G	0.2	1200	60 ²	42.1	512	GHS07	H315, H319	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Good hydrophobic and hydrophilic balance, good heat resistance	
MIRAMER M280	PEG400DA	2	100 A	0.3	70	-22	42.6	508	GHS07	H319	E	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Water soluble, high flexibility, low shrinkage and low odor	
MIRAMER M282	PEG200DA	2	100 A	0.5	25	-	40.1	308	GHS07	H315, H319	E	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Soft and flexible	
MIRAMER M284	PEG300DA	2	150 A	0.5	50	-8	41.6	408	GHS07	H319	E	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Water soluble, high flexibility and low shrinkage	
MIRAMER M286	PEG600DA	2	150 A	0.5	85	-36	42.3	708	GHS07	H319	E	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Water soluble, high flexibility and low shrinkage	
MIRAMER M2101	BPA(EO)10DMA	2	200 A	0.2	500	-1 ²	42.6	798	-	-	E	L	D	L		L	∅	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Balance of hydrophobic/hydrophilic properties, low odor	
MIRAMER M2301	BPA(EO)30DMA	2	250 A	0.2	700	-43 ²	44	1678	-	-	E	L	D	L		L	∅	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Low odor, hydrophilic backbone	
Tri- and Poly-Functionals																																		
MIRAMER M300	TMPTA	3	50 A	0.2	110	62 ²	36.6	296	GHS07	H315, H319, H317	R	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Excellent reactivity, good offset properties, chemical resistance, low volatility
MIRAMER M320	GPTA	3	150 A	1.0	110	33	36	428	GHS07	H319, H317	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	High reactivity, pigment wetting, good hardness and litho properties
MIRAMER M340	PETA	3	200 A	2.0	1800	103 ²	40.6	298	GHS05 GHS07 GHS09	H318, H302, H317, H315, H411	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	High reactivity and hardness with pendant OH groups, chemical resistance and low vapor pressure	
MIRAMER M360	TMP(PO)3TA	3	150 A	0.3	110	-15 ²	34	470	GHS07	H319, H317	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	High reactivity, good flexibility	
MIRAMER M410	DiTMPTA	4	150 A	0.1	600	98 ²	36.8	467	-	-	P	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Excellent reactivity and cross-linking	
MIRAMER M600	DPHA	6	150 A	0.2	7000	35	41.1	578	GHS07	H319	P	L	N	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Very high reactivity and surface hardness	
MIRAMER M3130	TMP(EO)3TA	3	15 A	0.1	60	37	38.1	428	GHS07	H319, H317	R	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Higher reactivity, flexibility and viscosity reduction compared to TMPTA	
MIRAMER M3190	TMP(EO)9TA	3	140 A	0.3	130	-19 ²	40.2	692	-	-	E	L	D	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Fast surface cure, low shrinkage, partially water soluble	
MIRAMER M4004	PPTTA	4	100 A	0.1	150	33	40.9	572	GHS07	H319	P	L	N	L		L	L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	High reactivity, excellent scratch resistance	

Epoxy Acrylates

Product	Product Data (Typical Values)						HS & Registration						Properties					Applications						Key Features							
	Description	Functionality	Color	Acid Value (mg KOH/g)	Viscosity (mPa.s at 25 °C) (cps at 77 °F)	Tg (°C)	CLP Hazard Symbol	CLP Hazard Statement	REACH-Status	TSCA-Status	CEPA-Status	IECSC	METI	ECL	Reactivity	Pigment Wetting	Flexibility	Hardness	Chemical Resistance	Adhesion	Offset Inks	Flexo Inks	Screen Inks	Overprint Varnishes	Wood Coatings	Composites	Electronics	Adhesives	Coatings on Plastics		
GENOMER* 2235	Aliphatic Epoxy Acrylate	2	3 G	7	1 100	-	GHS07 GHS05	H302, H318, H317	P	L	D	L	◇	L	****	**	+++	**	****	+++		•	•	•	•				•	•	High reactivity, very low viscosity, excellent chemical and stain resistance
GENOMER* 2253	Modified Epoxy Acrylate	2	1 G	1	30 000	0	GHS07	H315, H319, H317	P	L	D	L	L	L	****	**	****	+	****	****		•	•	•	•				•	•	High reactivity, high flexibility, medium viscosity, good adhesion on plastics
GENOMER* 2255	Modified Epoxy Acrylate	2	2 G	1	45 000	35	GHS07	H317	P	L	D	L	◇	L	****	+++	**	****	****	+	•	•	•	•				•	•	Good pigment wetting and offset properties, good reactivity, good viscosity	
GENOMER* 2259	Modified Epoxy Acrylate	2	2 G	1	25 000	40	GHS07	H317	P	L	D	L	L	L	****	****	**	****	****	++	•	•	•	•				•	•	Good pigment wetting and offset properties, medium viscosity, good reactivity	
GENOMER* 2263	Epoxy Acrylate	2	1 G	4	4 000 (60°C/140°F)	47	-	-	P	L	D	L	L	L	****	+	**	****	****	+	•	•	•	•	•	•			•	•	Excellent reactivity, high scratch and chemical resistance
GENOMER* 2280	Modified Epoxy Acrylate	2	2 G	4	5 000 (60°C/140°F)	47	GHS07	H315, H319, H317	P	L	D	L	◇	L	****	+++	**	****	****	++	•	•	•	•	•	•			•	•	Excellent balance of properties, high reactivity, hardness, flexibility and toughness
GENOMER* 2281	Modified Epoxy Acrylate	2	1 G	1	4 500 (60°C/140°F)	47	GHS07	H315, H319, H317	P	L	D	L	◇	L	****	+++	**	****	****	+++	•	•	•	•	•	•			•	•	Excellent balance of properties, high reactivity, hardness, flexibility, toughness and adhesion
EPOXY ACRYLATE 10-620	Epoxy Acrylate	2	1 G	1	5 400 (60°C/140°F)	47	GHS07	H317	P	L	D	L	L	L	****	+	**	****	****	+	•	•	•	•	•	•			•	•	Excellent reactivity, high scratch and chemical resistance

Available dilutions: EPOXY ACRYLATE 10-620 in HD20, TP20, TP40, TM20 and TM40

Polyester/Polyether Acrylates

Product	Product Data (Typical Values)						HS & Registration						Properties					Applications						Key Features							
	Description	Functionality	Color	Acid Value (mg KOH/g)	Viscosity (mPa.s at 25 °C) (cps at 77 °F)	Tg (°C)	CLP Hazard Symbol	CLP Hazard Statement	REACH-Status	TSCA-Status	CEPA-Status	IECSC	METI	ECL	Reactivity	Pigment Wetting	Flexibility	Hardness	Chemical Resistance	Adhesion	Offset Inks	Flexo Inks	Screen Inks	Overprint Varnishes	Wood Coatings	Composites	Electronics	Adhesives	Coatings on Plastics		
GENOMER* 3364	Polyether Acrylate	3	15 A	0.5	130	32	-	-	E	L	NN	L	L	L	+++	**	**	+++	****	++		•	•	•	•				•	•	High reactivity, low viscosity, good solvent resistance
GENOMER* 3414	Polyether Acrylate	4	50 A	0.5	4 500	-17	-	-	E	L	NN	L	L	L	****	**	****	**	****	+++		•	•	•	•				•	•	High reactivity, low viscosity, good solvent and scratch resistance, flexibility and adhesion, low Tg
GENOMER* 3485	Polyester Acrylate	4	3 G	8	500	41	GHS07	H315, H319, H317	P	L	D	L	◇	L	**	**	**	+++	****	+++		•	•	•	•				•	•	low viscosity, good surface hardness, chemical resistance and adhesion
GENOMER* 3497	Polyether Acrylate	4	40 A	0.5	600	30	-	-	E	L	NN	L	L	L	+++	**	+++	**	****	++		•	•	•	•				•	•	High reactivity, low viscosity, good solvent resistance
GENOMER* 3611	Polyester Acrylate	6	10 G	8	8 000	35	GHS05 GHS07	H318, H317, H315, H412	E	L	NN	◇	◇	◇	+++	****	+	****	**	+++	•	•	•								High reactivity, very good pigment wetting and lithographic behavior
POLYESTER ACRYLATE 03-849	Polyester Acrylate	3	3 G	8	20 000	28	GHS05 GHS07	H314, H317	E	L	◇	L	L	L	+++	+++	****	**	+++	++		•	•	•	•				•	•	Good reactivity, good abrasion and chemical resistance

Urethane Acrylates

Product	Product Data (Typical Values)						HS & Registration						Properties						Applications						Key Features						
	Description	Functionality	Color	Acid Value (mg KOH/g)	Viscosity (mPa.s at 25 °C) (cps at 77 °F)	Tg (°C)	CLP Hazard Symbol	CLP Hazard Statement	REACH-Status	TSCA-Status	CEPA-Status	IECSC	MIETI	ECL	Reactivity	Pigment Wetting	Flexibility	Hardness	Chemical Resistance	Adhesion	Offset Inks	Flexo Inks	Screen Inks	Overprint Varnishes		Wood Coatings	Composites	Electronics	Adhesives	Coatings on Plastics	
GENOMER* 4188/EHA	Aliphatic UA	1	1 G	5	120 000	-16	GHS07	H315, H317, H335	P	L	D	L	L	L	+	++	++++	+	+	++++										•	High tack, high elongation and excellent adhesion
GENOMER* 4215	Aliphatic UA	2	2 G	1	20 000 (60°C/140°F)	-24	-	-	E	L	D	L	◇	◇	+++	+++	++++	+	+++	++++	•		•		•	•		•	•	•	Good adhesion to PVC and other plastics
GENOMER* 4217	Aromatic UA	2	1 G	3	100 000	-35	GHS07	H315, H319	E	L	D	L	◇	L	++	+++	++++	+	++	+++	•	•	•						•	•	Excellent flexibility, good adhesion to difficult substrates
GENOMER* 4267	Aliphatic UA	2	1 G	4	16 000 (60°C/140°F)	-11	-	-	E	L	N/NN	L	L	L	++	+++	++++	++	+++	++++	•		•		•	•	•	•	•	•	Excellent flexibility and toughness, good adhesion
GENOMER* 4269/M22	Aliphatic UA	2	1 G	3	55 000	-15	GHS07	H315, H319	P	L	NN	L	L	L	+	+++	++++	+	+	++++			•		•	•	•	•	•	•	Flexibilizer resin, good toughness, high flexibility, excellent adhesion
GENOMER* 4302	Isocyanurate	3	80 A	1	10 000 (60°C/140°F)	40	GHS07	H315, H319	P	L	N/NN	L	L	L	+++	++	++++	++++	++++	+++					•	•	•	•	•	•	Fast, hard and excellent chemical resistance, non yellowing, high E-modulus
GENOMER* 4312	Aliphatic UA	3	1 G	1	60 000	31	-	-	P	L	D	L	L	L	+++	+++	++++	++	+++	+++	•	•	•	•	•	•			•	High reactivity and good flexibility, good adhesion, abrasion and scratch resistance	
GENOMER* 4316	Aliphatic UA	3	1 G	1	58 000	4	-	-	E	L	D	L	L	L	+++	+++	++++	++	++	+++	•	•	•	•	•				•	High reactivity and good flexibility, good adhesion, abrasion and scratch resistance	
GENOMER* 4425	Aliphatic UA	4	1 G	5	4 500	33	GHS07	H319, H317	E	L	LVE	◇	◇	◇	+++	++	++	+++	++++	+++			•	•	•	•			•	High reactivity, low viscosity, balance of flexibility and good hardness	
GENOMER* 4590/PP	Aliphatic UA	5	2 G	1	11 000	30	GHS07	H315, H319	P	L	◇	◇	L	L	+++	+++	+	++++	++++	++	•	•	•		•				•	Low viscosity, excellent reactivity and hardness	
GENOMER* 4622	Aromatic UA	6	2 G	3	30 000	48	GHS05 GHS07 GHS09	H318, H302, H317, H411	P	L	D	L	◇	L	++++	+++	+	++++	++++	++	•				•				•	Very fast with good hardness and chemical resistance	
GENOMER* 4690	Aliphatic UA	6	1 G		80 000	48	GHS05 GHS07 GHS09	H302, H315, H318, H317, H411	P	L	◇	L	L	◇	+++	+++	+	++++	++++	++	•	•	•		•				•	Outstanding hardness, scratch and abrasion resistance and low yellowing	
URETHANE ACRYLATE 98-283/W	Aliphatic UA Dispersion	3	-	1	30	46	-	-	P	L	D	◇	◇	◇	++	+	++	+++	++	+++			•		•					Water-based dispersion, sandable after physical drying	
URETHANE ACRYLATE 00-022	Aliphatic UA hydroxy functional	3	1 G	1	50 000	33	GHS07	H315, H319	E	L	◇	◇	◇	◇	+++	++	++	++++	++++	++					•	•	•	•	•	Dual curable OH and acrylate groups with outstanding chemical resistance and hardness	

Available dilutions: GENOMER* 4188/M22, GENOMER* 4215/M22.

Oligoamines

Product	Product Data (Typical Values)						HS & Registration						Properties					Applications						Key Features							
	Description	Functionality	Color	Amine Value (mg KOH/g)	Viscosity (mPa.s at 25 °C) (cps at 77 °F)	Tg (°C)	CLP Hazard Symbol	CLP Hazard Statement	REACH-Status	TSCA-Status	CEPA-Status	IECSC	METI	ECL	Reactivity	Pigment Wetting	Flexibility	Hardness	Chemical Resistance	Adhesion	Offset Inks	Flexo Inks	Screen Inks	Overprint Varnishes	Wood Coatings	Composites	Electronics	Adhesives	Coatings on Plastics		
GENOMER* 5142	Acrylated Amine Synergist	<1	2 G	220	20	-	GHS07	H319, H317	P	L	D	L	◇	U	n/a	n/a	n/a	n/a	n/a	n/a		•	•	•	•				•	•	Improves cure speed and surface cure. Low viscosity, high amine number, excellent compatibility
GENOMER* 5161	Acrylated Amine Synergist	<1	2 G	230	80	-	GHS07	H319, H317	P	L	N	◇	◇	U	n/a	n/a	n/a	n/a	n/a	n/a		•	•	•	•				•	•	Improves cure speed and surface cure. Low viscosity, high amine number, excellent compatibility
GENOMER* 5275	Amine Acrylate	2	1 G	150	3700	-45	GHS07	H315, H319, H317	E	L	D	L	L	L	++++	n/a	++++	++	+	++++		•	•	•	•				•	•	Fast surface cure rate, low odor and good adhesion, low Tg flexibilizer

Co-Resins

Product	Product Data (Typical Values)						HS & Registration						Properties					Applications						Key Features							
	Description	Functionality	Color	Acid Value (mg KOH/g)	Viscosity (mPa.s at 25 °C) (cps at 77 °F)	Tg (°C)	CLP Hazard Symbol	CLP Hazard Statement	REACH-Status	TSCA-Status	CEPA-Status	IECSC	METI	ECL	Reactivity	Pigment Wetting	Flexibility	Hardness	Chemical Resistance	Adhesion	Offset Inks	Flexo Inks	Screen Inks	Overprint Varnishes	Wood Coatings	Composites	Electronics	Adhesives	Coatings on Plastics		
GENOMER* 6043/M22	Modified Polyester Resin	n/a	1 G	5	30 000	-18	GHS07	H315, H319	P	L	D/NN	L	L	L	+	++	++++	+	+	++++			•						•		Flexibilizer resin for PSA, low yellowing, excellent adhesion
GENOMER* 6050/TM	Modified Polyester Resin	n/a	2 G	4	125 000	15	GHS07	H315, H319, H317	P	L	D	L	L	L	++	++++	++++	++	+	++++	•	•	•	•				•	•	Excellent adhesion on plastics, good offset behavior	
GENOMER* 6052/TM	Modified Polyester Resin	n/a	3 G	5	125 000	35	GHS07	H315, H319, H317	P	L	D/LVE	◇	◇	◇	++	++++	++++	++	+	++++	•	•	•	•				•	•	Excellent adhesion on plastics, good offset behavior	
GENOMER* 6054/NP	Modified Polyester Resin	n/a	3 G	1	12 000	-7	-	-	P	L	D/LVE	◇	L	◇	+	+++	+++	++	+	++++		•	•	•				•	•	Excellent adhesion on various substrates, low viscosity for flexo inks and overprint varnishes	
GENOMER* 6058	Sucrose Benzoate	n/a	30 A	0.3	-	68	-	-	P	L	D	L	L	L	+	++	+	+++	+	++	•	•	•	•	•			•	•	Maintains gloss compared with inorganic fillers, good adhesion on plastics	
GENOMER* 6083/HD	Inert Resin	n/a	2 G	2	110 000	41	GHS07	H315, H319, H317	P	L	D	L	L	L	+	++++	++	+++	++	++++			•	•	•			•	•	Excellent adhesion on plastics, pigment wetting, high Tg	
GENOMER* 6085/NP	Inert Resin	n/a	3 G	1	9 000	37	-	-	P	L	D	L	L	L	+	+++	+++	++	+	++++		•	•	•				•	•	Good adhesion and hardness, low viscosity for flexo inks and overprint varnishes	
GENOMER* 6086/HD	Acrylic Resin	n/a	4 G	15	125 000	58	GHS07	H315, H319, H317	P	L	D/LVE	◇	L	L	+	++	++	+++	+	++++			•	•				•	•	Good hardness and adhesion on various substrates	
CO-RESIN 02-819/M22	Modified Polyester Resin	n/a	4 G	6	100 000	12	GHS07	H315, H319	P	L	D/NN	L	L	L	+	++++	++++	+	+	++++								•		Good balance of cohesion and loop-tack, good adhesive properties, improves SAFT	

Available dilutions: GENOMER* 6050/GP, GENOMER* 6083/M22, GENOMER* 6083/TP, GENOMER* 6083/ETM

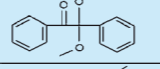
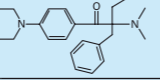
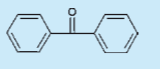
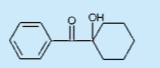
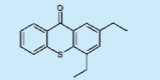
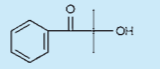
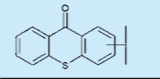
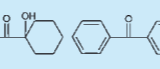
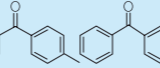
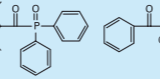
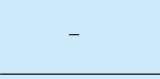
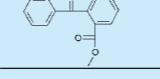
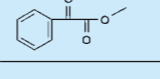
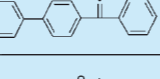
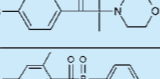
Specialities

Product	Product Data (Typical Values)						HS & Registration						Properties						Applications						Key Features					
	Description	Functionality	Color	Acid Value (mg KOH/g)	Viscosity (mPa.s at 25 °C) (cps at 77 °F)	Tg (°C)	CLP Hazard Symbol	CLP Hazard Statement	REACH-Status	TSCA-Status	CEPA-Status	IECSC	METI	ECL	Reactivity	Pigment Wetting	Flexibility	Hardness	Chemical Resistance	Adhesion	Offset Inks	Flexo Inks	Screen Inks	Overprint Varnishes		Wood Coatings	Composites	Electronics	Adhesives	Coatings on Plastics
ACMO	Acryloyl Morpholine	n/a	10 A	-	12	88	GHS08 GHS05 GHS07	H372, H318, H302, H317	R	S	N	L	L	L	n/a	n/a	n/a	n/a	n/a	++++		•	•	•			•	•	•	Very high Tg, water-soluble, good thermal stability, good adhesion
GENOMER* 7151	Carboxyfunctional Polyester Acrylate	1	2 G	210	7 000	39	GHS07	H312, H315, H319, H317	P	L	D	L	L	◇	++	n/a	+	+++	+	++++				•	•		•	•	Good adhesion on metal and glass	
GENOMER* 7210	Cycloaliphatic Epoxide	n/a	30 A	-	400	-	GHS07	H315, H319, H317	P	L	D	L	L	L	-	-	++++	-	-	++++		•		•					•	Base epoxide for UV curing cationic systems, outstanding adhesion and flexibility on metal substrates
GENOMER* 7287	Speciality Resin	2	40 A	2	12	-33	GHS07	H315, H319, H335	P	L	N	L	L	L	++	++	+++	++	++++	+++		•	•	•	•				•	Provides superior matting properties, low viscosity and reasonable reactivity, easy incorporating of matting agent

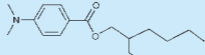
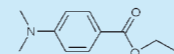
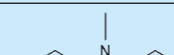
Additives

Product	Product Data (Typical Values)				HS & Registration						Properties						Applications						Key Features				
	Description	Color	Acid Value (mg KOH/g)	Viscosity (mPa.s at 25 °C) (cps at 77 °F)	CLP Hazard Symbol	CLP Hazard Statement	REACH-Status	TSCA-Status	CEPA-Status	IECSC	METI	ECL	Retain Reactivity	Retain Color	Retain Viscosity	Adhesion	Pigment Wetting	Offset Inks	Flexo Inks	Screen Inks	Overprint Varnishes	Wood Coatings		Composites	Electronics	Adhesives	Coatings on Plastics
GENORAD* 10	Surface-active Additive	2 G	150	300	GHS07	H315, H319	P	L	NN	◇	◇	◇				•	•	•	•	•	•				•	•	Improves flow properties of inks and coatings, can improve gloss and adhesion, silicon free
GENORAD* 16	In-can Stabilizer	3 G	15	1 200	GHS07	H319, H317	P	L	D	L	L	L	•		•		•	•	•		•			•			Highest performance stabilizer for grinding and storage, works anaerobically, no effect on reactivity
GENORAD* 18	In-can Stabilizer	4 G	7	2 000	GHS07 GHS09	H319, H317, H411	P	L	D	L	L	L	•		•		•	•	•		•			•			High performance stabilizer for grinding and storage, works anaerobically, no effect on reactivity
GENORAD* 20	In-can Stabilizer	1 G	2	1 000	GHS07 GHS09	H319, H317, H411	P	L	D	L	L	L	•	•	•						•	•	•	•	•	•	Excellent stabilizer in clear coatings
GENORAD* 21	In-can Stabilizer	10 G	-	2 000	GHS07	H319, H317	P	L	D/LVE	L	L	L	•		•		•	•	•					•			In-can stabilizer for UV-curable metallic inks
GENORAD* 22	In-can Stabilizer	2 G	30	20	-	-	P	L	D	L	L	L	•		•		•	•	•		•			•			Premium stabilizer for grinding and storage, works anaerobically, no effect on reactivity, especially suitable for UV inkjet inks
GENORAD* 40	Adhesion Promoter	200 A	340	2 000	GHS07	H315, H319	P	L	D/N	L	L	L			•						•	•	•	•	•	•	Adhesion promoter on metal, glass and plastics
GENORAD* 50	Dispersing Aid	2 G	-	1 500	-	-	P	L	LVE	◇	◇	◇				•	•	•	•								Primarily recommended as dispersing aid for organic pigments
GENORAD* 51	Dispersing Aid	2 G	-	1 500	-	-	P	L	LVE	◇	◇	◇				•	•	•	•								Primarily recommended as dispersing aid for carbon blacks

Photoinitiators

Product	Product Data (Typical Values)					Structure	HS & Registration							Applications							Key Features				
	Description	Purity (%)	Melting Point °C (Viscosity [mPa.s at 25 °C])	Melting Point °F (Viscosity [cps at 77 °F])	Absorption (nm)		CLP Hazard Symbol	CLP Hazard Statement	REACH-Status	TSCA-Status	CEPA-Status	IECSC	METI	ECL	Offset Inks	Flexo Inks	Screen Inks	Overprint Varnishes	Wood Coatings	Composites		Electronics	Adhesives	Coatings on Plastics	
GENOCURE* BDK	Benzildimethylketal	> 99.5	66	151	252		GHS09	H411	P	L	D	L	L	L	•	•	•	•	•	•	•	•	•	General purpose where non yellowing not essential	
GENOCURE* BDMM	2-Benzyl-2-dimethylamino-1-(4-morpholinophenyl)-butanone-1	> 98.5	110-118	230-244	230/325		GHS09	H400, H410	R	L	D	L	L	L	•	•	•	•	•	•	•	•	•	Excellent through cure in dark color pigmented systems. Combinations with other photoinitiators	
GENOCURE* BP	Benzophenone	> 99.0	47-49	117-120	254		GHS07	H315, H319, H412	P	L	D	L	L	L	•	•	•	•	•	•	•	•	•	General purpose, low cost	
GENOCURE* CPK	1-Hydroxycyclohexylphenylketone	> 99.0	48	118	247		-	-	P	L	D	L	L	L	•	•	•	•	•	•	•	•	•	Low yellowing	
GENOCURE* DETX	2,4 Diethylthioxanthone	> 98.0	72	162	261/384		-	-	P	L	N	L	L	L	•	•	•	•	•	•	•	•	•	Pigmented systems in combination with amines and e.g. GENOCURE* BDMM	
GENOCURE* DMHA	Dimethylhydroxyacetophenone	> 98.0	4	39	247/277		GHS07	H302, H412	P	L	D	L	L	L	•	•	•	•	•	•	•	•	•	Low yellowing, liquid	
GENOCURE* ITX	Isopropylthioxanthone	> 98.0	74-76	165-169	259/383		-	-	P	L	D	◇	L	L	•	•	•	•	•	•	•	•	•	Pigmented systems in combination with amines and e.g. GENOCURE* BDMM	
GENOCURE* LBC	1-Hydroxycyclohexylphenylketone and Benzophenone	> 98.0	-	-	250/330		GHS07	H315, H319, H412	P	L	D	L	L	L	•	•	•	•	•	•	•	•	•	•	Liquid with good balance of surface and through cure for clear coatings
GENOCURE* LBP	4-Methylbenzophenone and Benzophenone	> 99.0	(~90)	(~90)	257		GHS07	H315, H319, H412	P	L	D	L	L	L	•	•	•	•	•	•	•	•	•	•	General purpose, liquid
GENOCURE* LTD	2,4,6 Trimethylbenzoyldiphenylphosphine oxide Dimethylhydroxyacetophenone	> 98.0	-	-	240/272/367		GHS08	H361, H412	P	L	D	L	L	L	•	•	•	•	•	•	•	•	•	Liquid photoinitiator for non yellowing clear and white pigmented systems	
GENOCURE* LTM	Liquid Photoinitiatorblend	> 97.0	(~20)	(~20)	253/368	-	GHS08	H361	P	L	N	L	L	L	•	•	•	•	•	•	•	•	•	•	White and thick coatings, liquid with good balance of surface and through cure, non yellowing
GENOCURE* MBB	Methyl-o-benzoyl-benzoate	> 99.0	50-52	122-126	246		-	-	P	L	N	L	L	L	•	•	•	•	•	•	•	•	•	•	Good surface cure
GENOCURE* MBF	Methylbenzoylformate	> 97.0	(~5)	(~5)	257		-	-	P	L	N/NN	L	L	L	•	•	•	•	•	•	•	•	•	•	Clear coatings, excellent surface curing photoinitiator especially in amine-free systems, low odor
GENOCURE* PBZ	4-Phenylbenzophenone	> 99.0	99-103	210-217	295		-	-	P	L	N	L	◇	◇	•	•	•	•	•	•	•	•	•	•	High reactivity, low migration and odor
GENOCURE* PMP	2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	> 99.0	74-76	165-169	307		GHS07 GHS09	H302, H411	R	L	D	L	L	L	•	•	•	•	•	•	•	•	•	•	Pigmented systems in combination with other photoinitiators
GENOCURE* TPO	2,4,6-Trimethylbenzoyldiphenylphosphine oxide	> 99.0	92-94	198-201	380		GHS08	H361, H412	P	L	D	L	L	L	•	•	•	•	•	•	•	•	•	•	White and thick coatings, non yellowing

Synergists

Product	Product Data (Typical Values)						HS & Registration							Applications							Key Features			
Description	Purity (%)	Melting Point °C (Viscosity [mPa.s at 25 °C])	Melting Point °F (Viscosity [cps at 77 °F])	Absorption (nm)	Structure	CLP Hazard Symbol	CLP Hazard Statement	REACH-Status	TSCA-Status	CEPA-Status	IECSC	METI	ECL	Offset Inks	Flexo Inks	Screen Inks	Overprint Varnishes	Wood Coatings	Composites	Electronics	Adhesives	Coatings on Plastics		
GENOCURE* EHA	2-Ethylhexyl-4-dimethylaminobenzoate	> 99.0	(~80)	(~80)	228/311		GHS07	H319	P	L	D	L	L	L	•	•	•			•	•	•	Water insoluble synergist suited for litho systems, liquid	
GENOCURE* EPD	Ethyl-4-dimethylaminobenzoate	> 99.0	63	142	228/310		-	-	P	L	D	L	L	L	•	•	•			•	•	•	Water insoluble synergist suited for litho systems	
GENOCURE* MDEA ¹⁾	N-Methyldiethanolamine	> 99.0	(~100)	(~100)	220		GHS07	H319	P	L	D	L	L	L	•	•	•	•	•	•	•	•	•	Low cost amine synergist

1) GENOCURE* MDEA - subject to chemical weapons convention

Polymeric Photoinitiators

Product	Product Data (Typical Values)				HS & Registration							Applications							Key Features			
Description	Viscosity (mPa.s at 25 °C) (cps at 77 °F)	Molecular Weight	Absorption (nm)	CLP Hazard Symbol	CLP Hazard Statement	REACH-Status	TSCA-Status	CEPA-Status	IECSC	METI	ECL	Offset Inks	Flexo Inks	Screen Inks	Overprint Varnishes	Wood Coatings	Composites	Electronics	Adhesives	Coatings on Plastics		
GENOPOL* AB-1	Polymeric Aminobenzoate Derivative	15 000	860	228, 310	-	-	E L	LVE	L	L	◇	•	•	•			•	•	•		Low migration and odor, excellent compatibility in UV formulations	
GENOPOL* BP-1	Polymeric Benzophenone Derivative	160 000	960	245, 325	-	-	E L	LVE	L	L	◇	•	•	•	•	•	•	•	•	•	•	Low migration and odor, excellent compatibility in UV formulations
GENOPOL* TX-1	Polymeric Thioxanthone Derivative	160 000	820	225, 310, 375	-	-	E L	LVE	L	◇	◇	•	•	•			•	•			Low migration and odor, excellent compatibility in UV formulations	


We are promoting these products for use in energy curable medical application formulations. It is the responsibility of the formulator to check the suitability of these products for the intended medical application, including but not limited to, all relevant restrictions and approvals of the local governing bodies for the intended medical application. RAHN in no way warrants that these products have any approvals for use in any of the possible medical applications that might be considered.

Methacrylates

Product	Product Data (Typical Values)					HS & Registration							Properties					Key Features		
Description	Functionality	Color	Viscosity (mPas at 25 °C) (cps at 77 °F)	Tg (°C)	CLP Hazard Symbol	CLP Hazard Statement	REACH-Status	TSCA-Status	CEPA-Status	IECSC	METI	ECL	Reactivity	Pigment Wetting	Flexibility	Hardness	Chemical Resistance	Adhesion		
EPOXY METHACRYLATES																				
EPOXY METHACRYLATE 97-053	Epoxy Methacrylate	2	< 2 G	4 500 (60°C/140°F)	48	-	-	P	L	D	L	L	L	+	+	+	++++	++++	+++	Very low shrinkage, provides excellent hardness as well as abrasion and scratch resistance
URETHANE METHACRYLATES																				
GENOMER* 4205	Aliphatic Urethane Methacrylate	2	< 100 A	9 000	39	GHS07	H315, H319	P	L	N	L	L	◇	+	++	+	++++	++++	++	High E-modulus and good tensile strength, other characteristics are its light stability, abrasion and chemical resistance
GENOMER* 4256	Aliphatic Urethane Methacrylate	2	< 3 G	2) 15 000	-24	-	-	E	L	N/NN	◇	◇	◇	+	++	++++	+	+	+++	Excellent elasticity and elongation, improves light stability and chemical resistance
GENOMER* 4297	Aliphatic Urethane Methacrylate	2	< 200 A	8 700	43	-	-	P	L	N	L	L	◇	+	++	+	++++	++++	++	Good stain and chemical resistance as well as high tensile strength and E-modulus, good abrasion resistance and very low yellowing

2) in 20% Toluene

Initiators

Product	Product Data (Typical Values)						HS & Registration							Key Features		
Description	Purity (%)	Melting Point (°C)	Melting Point (°F)	Molecular Weight	Absorption (nm)	Structure	CLP Hazard Symbol	CLP Hazard Statement	REACH-Status	TSCA-Status	CEPA-Status	IECSC	METI	ECL		
GENOCURE* CQ	Camphorquinone	> 99.0	198-202	388-396	166	470		GHS07	H315, H319, H335	E	L	D	L	◇	◇	Produced with the Selenium-free method, provides good through cure in long wavelength (visible) UV light, soluble in alcohol, ketones, acrylates and methacrylates



RAHN AG
Dörflistrasse 120 | CH-8050 Zürich
Tel. +41 44 315 42 00
Fax +41 44 315 42 65
EnergyCuring@rahn-group.com
www.rahn-group.com

RAHN GmbH
Hahnstrasse 70 | DE-60528 Frankfurt am Main
Tel. 0800 1 816 015
Fax 0800 1 816 016

RAHN USA Corp.
1005 North Commons Drive
Aurora, Illinois 60504, USA
Tel. +1 630 851 4220
Fax +1 630 851 4863

RAHN Trading (Shanghai) Co. Ltd.
3688 Jin Du Road,
Shanghai 201108, P.R. China

07 / 2011