NO. RRM03-020-E1

Introduction of KURARITY™ as modifier of UV cured adhesive

KURARITY business promotion dept.
Elastomer Division

kuraray

Advantages of KURARITY™ as a modifier of UV cured adhesive

PMMA-*b*-PnBA-*b*-PMMA

KURARITY™ as “MAM” structure
-> Made by controlled living anionic polymerization

Features of “MAM”	Advantages as modifier
Narrow molecular weight distribution Block co-polymer	Rework ability
No functional group	Low shrinkage after curing
Softness	Good tensile elongation

UV cured adhesive with KURARITY™

				Ref.	Ex. 1	Ex. 2	Ex. 3
Acrylate Monomer	Isobornyl acrylate (IBXA)			43	43	43	43
	Lauryl acrylate (LA)			43	43	43	43
Diacrylate	1,9-Nonanediol diacrylate (NDDA)			8	8	8	8
Modifier	KURARITY™ LA2250				10	20	
	KURARITY™ LA3320						10
Initiator	Irgacure™ 184			6	6	6	6
Items	**Methods**	**Conditions**	**Units**				
Solution viscosity	In-house Method	B type viscometer, 23 deg.C	mPa・sec	5.9	59	1500	140
Rework ability	In-house Method	Removed at 23 deg.C*	-	-	+	+	+

*Irgacure™ is a registered trademark of BASF SE.

*Peeling at 23 deg.C after UV curing at 1,000 mJ / cm^2 .
+: Easy to rework -: Difficult to rework due to tearing up easily

KURARITY™ can adjust UV curing solution viscosity.
Thanks to physical cross-linking structure, KURARITY™ can improve rework ability.

UV cured adhesive with KURARITY™

				Ref.	Ex. 1	Ex. 2	Ex. 3
Acrylate Monomer	Isobornyl acrylate (IBXA)			43	43	43	43
	Lauryl acrylate (LA)			43	43	43	43
Diacrylate	1,9-Nonanediol diacrylate (NDDA)			8	8	8	8
Modifier	KURARITY™ LA2250				10	20	
	KURARITY™ LA3320						10
Initiator	Irgacure™ 184			6	6	6	6
Items	**Methods**	**Conditions**	**Units**				
Hardness type A	ISO 7619-1	After 15 sec	-	47	43	42	44
Haze	ISO14782	1 mmt	%	19	40	39	36
Curing shrinkage	ISO2811-1	23 deg.C	%	7.9	7.3	6.7	7.2
Tensile strength at break	ISO37	1 mmt	MPa	1.1	1.4	1.9	1.6
Tensile elongation at break			%	31	42	57	48
Tensile shear bond strength	ISO4587	PET / Fe (SPCC)	MPa	0.4	0.4	0.7	0.4

*All samples were cured at 6,000 mJ / cm^2

KURARITY™ can improve curing shrinkage and tensile elongation.

Solubility of KURARITY™ with Acrylic Monomers

	KURARITY™ LA2250	KURARITY™ LA3320
Butyl acrylate (nBA)	++	++
2-Ethylhexyl acrylate (2EHA)	++	++
Isostearyl acrylate (ISTA)	-	-
Isobornyl acrylate (IBXA)	+	+
Lauryl acrylate (LA)	+-	+-
Dicyclopentanyl acrylate (DCPA)	+	+
Phenoxyethyl acrylate (PEA)	+	++
Tricyclodecanedimethanol diacrylate (TCDDA)	++	++
1,6-Hexanediol diacrylate (HDDA)	++	+
1,9-Nonanediol diacrylate (NDDA)	+	++
Trimethylolpropane triacrylate (TMPTA)	++	+

Concentration: 10 wt%, ++: Soluble (at room temp.) , +: Soluble (with heat (about 40deg.C and stir), +-: Swelling, -: Not soluble

KURARITY™ shows good solubility with acrylic monomers

Kuraray Co., Ltd.
Elastomer Division
Tokiwabashi Tower
2-6-4, Otemachi
Chiyoda-ku, Tokyo, 100-0004, Japan

elastomer@kuraray.com

→ www.kuraray.com
→ www.elastomer.kuraray.com

Precautions should be taken in handling and storage. Please refer to the appropriate Safety Data Sheet for further safety information. In using SEPTON™, HYBRAR™ and KURARITY™, please confirm related laws and regulations, and examine its safety and suitability for the application.
For medical, health care and food contact applications, please contact your Kuraray representative for specific recommendations. Even so, users must conduct their own assessment, revisions, registrations as well rely in their own technical and legal judgment to establish the safety and efficacy of their compound and/or end product with SEPTON™, HYBRAR™ and KURARITY™ for any application. SEPTON™, HYBRAR™ and KURARITY™ should not be used in any devices or materials intended for implantation in the human body. Nothing contained herein constitutes a license to practice under any patent and it should not be construed as an inducement to infringe any patent and the user is advised to take appropriate steps to be sure that any proposed use of the product will not result in patent infringement.

kuraray