

LOCTITE[®]

Medical Product Selector Guide

Adhesives for Medical Device Assembly



Excellence is our Passion



RESOURCES & CAPABILITIES

TRAINING SERVICES

Henkel offers training programs to device manufacturers around the globe. Additional support continues after the seminar as participants are linked to a network of information sources including adhesive design guides, research data and technical reports.

ON-SITE TECHNOLOGY SEMINAR

A training program customized to your needs. Select from a menu of medical device adhesive topics or request a customized seminar to meet your specific requirements. The course is presented on-site and includes instruction, hands-on demos, samples and technical guides.

CUSTOMER WORKSHOP

These unique, fully integrated programs are taught by Henkel engineering and technical representatives. Presenters review a range of issues specifically related to the medical device industry. Attendees benefit from hands-on demonstrations of adhesives and equipment.



ENGINEERING SERVICES

Our goal is to become your adhesive consultant. Whether you need a quick product recommendation or a full-blown turn-key process, Henkel Engineering Services can provide the right solution. Our skilled engineers have years of combined experience developing hundreds of solutions for medical device manufacturers. Consult with Henkel and gain access to:

- On-site engineering assistance and consultation
- Process improvement tours
- Joint product development programs and custom formulations
- Contract lab services and testing, including environmental conditioning and accelerated aging studies
- Prototype testing and fixture preparation
- Analytical services to determine surface conditions and degree of cure



TECHNICAL DATA SHEETS AND MATERIAL DATA SAFETY SHEETS
ARE AVAILABLE ON THE WEB AT:
www.henkelna.com/medicaladhesives



TYPICAL PRODUCT ATTRIBUTES														PRODUCT ORDERING				
Product	Appearance	Fluorescent	Cure Method	Viscosity (cP)	Temp. Range (°F)	Shore Hardness	Modulus (psi)	Elongation (%)	Tensile (psi)	Cure Depth (in.)	Substrates (TP, G, ME, E, C)	Features	Item #	Pkg. Size	Item #	Pkg. Size	Product	
LIGHT CURING																		
UV/Visible Acrylics	3311™	Clear/Pale Straw	N	UV, V	300	-65 to 300	64 (D)	97,000	265	3,300	0.09	TP, G, ME	Flexible, excellent on PVC and most thermoplastics	19736	25 ml	19737	1 liter	3311™
	3341™	Clear/Straw	Y	UV, V	450	-65 to 300	27 (D)	3,600	220	2,200	0.12	TP	Excellent on highly flexible PVC and other difficult-to-bond substrates	23792	25 ml	23440	1 liter	3341™
	3921™	Transparent/Hazy	Y	UV, V	150	-65 to 300	67 (D)	122,750	32	2,830	0.08	TP, G, ME	Highly fluorescent, superior sterilization resistance	36484	25 ml	36485	1 liter	3921™
	3922™	Transparent/Hazy	Y	UV, V	300	-65 to 300	66 (D)	91,500	135	2,600	0.12	TP, G, ME	Superior sterilization resistance, excellent adhesion to PC	32083	25 ml	32047	1 liter	3922™
	3924™	Transparent/Hazy	Y	UV, V	1,100	-65 to 300	60 (D)	41,100	280	2,600	0.10	TP, G, ME	Superior sterilization resistance, excellent adhesion to various thermoplastics	36488	25 ml	36489	1 liter	3924™
	3926™	Transparent/Hazy	Y	UV, V	5,500	-65 to 300	57 (D)	20,700	331	2,740	0.10	TP, G, ME	Highly fluorescent, superior sterilization resistance	36492	25 ml	36493	1 liter	3926™
	3933™	Transparent/Hazy	Y	UV, V	3,250	-65 to 300	57 (D)	47,000	79	1,600	0.04	TP, G, ME	Excellent on PC and other thermoplastics, minimal stress cracking	N/A	N/A	32040	1 liter	3933™
	3936™	Transparent/Hazy	Y	UV, V	10,000	-65 to 300	55 (D)	24,500	300	2,780	0.08	TP, G, ME	Highly flexible, excellent on PC and other thermoplastics, minimal stress cracking	32304	25 ml	32037†	1 liter	3936™
	3942™	Transparent/Hazy	Y	UV, V	1,100	-65 to 300	76 (D)	142,900	15	4,200	0.11	TP, G, ME	High performance, rapid tack-free curing	36483	25 ml	36481	1 liter	3942™
	3943™	Transparent/Hazy	Y	UV, V	6,000	-65 to 300	69 (D)	64,000	271	3,480	0.12	TP, G, ME	Tough, superior tack-free curing	36480	25 ml	36478	1 liter	3943™
	3944™	Pale Yellow	Y	UV, V	5,000	-65 to 300	50 (D)*	57,000	86	3,000	0.15	TP, G, ME	Superior surface curing, very flexible	38210	25 ml	38212	1 liter	3944™
	3971™	Transparent/Hazy	Y	UV, V	300	-65 to 300	66 (D)	95,000	93	3,700	0.16	TP, ME	Superior tack-free curing, low viscosity	36792	25 ml	36805	1 liter	3971™
	3972™	Transparent/Hazy	Y	UV, V	4,500	-65 to 300	68 (D)	66,750	88	3,370	0.25	TP, ME	Superior tack-free curing, moderate viscosity	36294	25 ml	36295	1 liter	3972™
3974™	Translucent/Colorless	Y	UV, V	5,000	-65 to 300	77 (A)	4,800	100	2,280	0.11	TP, G, ME, C	Highly flexible, ideal for joining different substrates that undergo thermocycling	1135733	25 ml	1135732	1 liter	3974™	
3979™	Transparent/Hazy	Y	UV, V	58,000	-65 to 300	56 (D)	54,780	227	2,620	0.08	TP, G, ME	Gel viscosity, fluoresces red, tack-free curing	1402562	25 ml	1402563	300 ml	3979™	
Indigo® Visible Acrylics	3554™	Clear/Light Yellow	Y	Indigo®	300	-65 to 300	75 (D)	220,000	6.3	6,150	0.35	TP, G, ME	Low viscosity, visible-only curing, ideal for select translucent materials	1072199	25 ml	1072198	1 liter	3554™
	3555™	Clear/Light Yellow	Y	Indigo®	1,000	-65 to 300	77 (D)	203,000	11.2	5,850	0.40	TP, G, ME	Medium viscosity, visible-only curing, ideal for select translucent materials	1072221	25 ml	1072200	1 liter	3555™
	3556™	Clear/Light Yellow	Y	Indigo®	4,850	-65 to 300	68 (D)	154,000	33	4,320	0.40	TP, G, ME	Medium viscosity, visible-only curing, ideal for select translucent materials	1072223	25 ml	1072222	1 liter	3556™
Flashcure® Cyanoacrylates	4306™	Clear/Pale Green	Y	UV, V, M	20	-65 to 180	82 (D)	250,700	2.2	4,720	0.15	TP, ME, E	Rapid tack-free surface and shadow curing, low viscosity	37439	1 oz.	37442†	1 lb.	4306™
	4307™	Clear/Pale Green	Y	UV, V, M	900	-65 to 180	82 (D)	262,900	2.2	4,840	0.17	TP, ME, E	Rapid tack-free surface and shadow curing, high viscosity	37441	1 oz.	37443	1 lb.	4307™
	4310™	Transparent/Light Yellow-Green	Y	UV, V, M	175	-65 to 240	84 (D)	283,000	7.3	7,250	0.08	TP, ME, E	Toughened, rapid tack-free surface and shadow curing	1401792	1 oz.	1401790	1 lb.	4310™
	4311™	Transparent/Light Yellow-Green	Y	UV, V, M	1,050	-65 to 240	84 (D)	270,000	5.2	7,250	0.16	TP, ME, E	Toughened, rapid tack-free surface and shadow curing	1401791	1 oz.	1401789	1 lb.	4311™
Nuva-Sil® Silicones	5240™	Translucent/White	N	UV, V, M	25,000	-65 to 200	45 (A)	145	350	435	0.35	TP, G, ME, E	High viscosity, high tear strength, cures in shadowed areas	1010341	25 ml	1010320	300 ml	5240™
	5055™	Transparent/Light Yellow	N	UV, V	525	-65 to 300	55 (A)	650*	80	870	0.22	TP, G, ME, E	Low viscosity, high adhesion to silicone and polycarbonate	1212167	25 ml	1214246	1 liter	5055™
	5056™	Transparent/Light Yellow	N	UV, V	2,200	-65 to 300	43 (A)	195*	170	765	0.25	TP, G, ME, E	Medium viscosity, superior heat and humidity resistance	1214249	25 ml	1214250	1 liter	5056™
CYANOACRYLATES																		
Surface Insensitive	431™	Clear	N	M	900	-65 to 180	80 (D)*	200,000*	2*	4,000*	0.008	TP, ME, E	Medium viscosity, ideal for acidic substrates and in dry environments	41255	20 g	41256	1 lb.	431™
	4011™	Clear	N	M	100	-65 to 180	80 (D)*	200,000*	2*	4,000*	0.005	TP, ME, E	Low viscosity, ideal for acidic substrates and in dry environments	18680	20 g	18681	1 lb.	4011™
	4061™	Clear	N	M	20	-65 to 180	80 (D)*	200,000*	2*	4,000*	0.004	TP, ME, E	Wicking viscosity, ideal for acidic substrates and in dry environments	18686	20 g	18687	1 lb.	4061™
	4541™	Clear	N	M	Gel	-65 to 180	80 (D)*	200,000*	2*	4,000*	0.010	TP, ME, E, C	High viscosity, ideal for acidic substrates and in dry environments	18690	20 g	18691	200 g	4541™
Low Odor/ Low Bloom	4031™	Clear	N	M	1,300	-65 to 160	80 (D)*	200,000*	2*	4,000*	0.008	TP, ME	Medium viscosity, minimizes need for ventilation, reduces frosted residue	18682	20 g	18683	1 lb.	4031™
	4081™	Clear	N	M	5	-65 to 160	80 (D)*	200,000*	2*	4,000*	0.002	TP, ME	Wicking viscosity, minimizes need for ventilation, reduces frosted residue	18688	20 g	18689	1 lb.	4081™
	4601™	Clear	N	M	50	-65 to 160	80 (D)*	200,000*	2*	4,000*	0.004	TP, ME	Low viscosity, minimizes need for ventilation, reduces frosted residue	18692	20 g	18693	1 lb.	4601™
Toughened/ Flexible	435™	Clear	N	M	175	-65 to 250	80 (D)*	120,000*	15*	3,600	0.005	TP, ME, E	Low viscosity, toughened and surface insensitive	40994	20 g	40995	1 lb.	435™
	4206™	Clear	N	M	375	-65 to 250	80 (D)*	120,200	18	3,664	0.005	TP, ME, E	Impact resistant, withstands 250°F continuous for 2,000 hours	28628	20 g	N/A	N/A	4206™
	4861™	Clear	N	M	4,000	-65 to 125	80 (A)*	63,250	4*	1,800*	0.008	TP, ME, E	High viscosity, gap filling	37708	20 g	37711	1 lb.	4861™
	★ 4902™	Clear	N	M	200	-65 to 220	65 (D)	57,900	155	2,085	0.004	TP, ME, E	Very high flexibility, low modulus	1875841	20 g	1875842	1 lb.	4902™ ★
	★ 4903™	Clear	N	M	200	-65 to 220	66 (D)	78,100	85	2,040	0.004	TP, ME, E	High flexibility, medium modulus	1875847	20 g	1875840	1 lb.	4903™ ★
General Purpose	4013™	Clear	N	M	500	-65 to 180	65 (Barcol)	200,000*	2	4,000*	0.010	TP, ME, E	General purpose, gap filling	20268	20 g	18013	1 lb.	4013™
	4014™	Clear	N	M	3	-65 to 220	65 (Barcol)	200,000*	2	4,000*	0.003	TP, ME, E	General purpose for metal and plastic bonding	20269	20 g	18014	1 lb.	4014™
Primers/ Accelerators	713™	Clear	N	N/A	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Speeds fixture time for cyanoacrylates, 10-minute worklife	19889	1.75 fl. oz.	N/A	N/A	713™
	7701™	Clear	N	N/A	3	N/A	N/A	N/A	N/A	N/A	N/A	TP, E	Adhesion promoter for cyanoacrylates, for use on low-energy plastics	19886	1.75 fl. oz.	19887	16 fl. oz.	7701™
EPOXIES & URETHANES																		
Hysol® One-Part Heat Cure Epoxies	3981™	Transparent/Yellow	Y	H	5,300	-65 to 300	84 (D)	345,000	3.0	8,970	>0.50	TP, G, ME, C	Superior thermal, chemical and sterilization resistance; moderate viscosity	36766	30 ml	37297	1 liter	3981™
	3984™	Light Grey	Y	H	25,500	-65 to 300	75 (D)	566,000	1.1	5,540	>0.50	TP, G, ME, C	Superior thermal, chemical and sterilization resistance; highest modulus	36768	30 ml	37299†	1 liter	3984™
Hysol® Two-Part RT Cure Epoxies & Urethanes	M-21 HP™	Off-White	N	RT	37,000 (mixed)	-65 to 300	80 (D)	226,000*	8	5,700	>0.50	TP, G, ME, E, C	Epoxy offering high peel and shear strength, 20-minute worklife	30671	50 ml dual	N/A	N/A	M-21 HP™
	M-31 CL™	Ultra-Clear	N	RT	6,000 (mixed)	-65 to 300	85 (D)	362,000*	8	8,000	>0.50	TP, G, ME, C	Epoxy offering excellent impact resistance, 30-minute worklife	30673	50 ml dual	30674	200 ml	M-31 CL™
	M-121 HP™	Amber	N	RT	11,000 (mixed)	-65 to 300	85 (D)	216,000*	10	5,910	>0.50	TP, G, ME, C	Ultra-strength epoxy, excellent thermal shock resistance, 120-minute worklife	30680	50 ml dual	N/A	N/A	M-121 HP™
	M-06 FL™	Off-White	N	RT	38,000 (mixed)	-65 to 250	45 (D)	15,000*	74	1,300	>0.50	TP, G, ME, E, C	Highly flexible; excellent peel and shear strength, 5-minute worklife	30676	50 ml dual	N/A	N/A	M-06 FL™
	M-11 FL™	Clear	N	RT	3,800 (mixed)	-65 to 250	45 (D)	1,860*	170	490	>0.50	TP, G, ME, E, C	Urethane offering highly flexible bondlines, 10-minute worklife	30678	50 ml dual	N/A	N/A	M-11 FL™

KEY:

*Estimated
† Made-to-order items

Cure Method:

H = Heat Cure
Indigo® = High Wavelength Visible
M = Moisture
RT = Room Temperature
UV = Ultraviolet
V = Visible

Cure Depth Conditions:

UV/V Acrylics: 100 mW/cm², 10 secs.
"D" bulb
Indigo®: 200 mW/cm², 10 secs.
Indigo® Cure Jet™
Nuva-Sil®: 70 mW/cm², 30 secs.
Med Pressure Hg Arc

Substrates:

TP = Thermoplastic
G = Glass
ME = Metal
E = Elastomers
C = Ceramics

Best In Class:



The data provided represent typical properties.

Please consult Henkel's Technical Data Sheets for more detailed data and test methods.

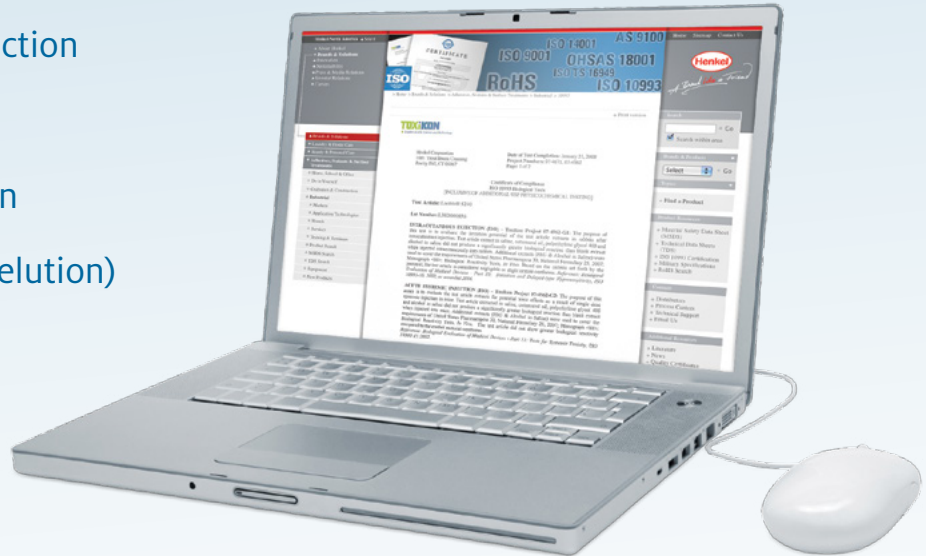
BIOCOMPATIBILITY



All LOCTITE® brand Medical Device Adhesives are tested to the industry's most comprehensive ISO 10993 biocompatibility standards. In addition, Henkel employs strict manufacturing and quality controls to ensure continuity of compliance.

Tests include:

- Intracutaneous injection
- Systemic injection
- Muscle implantation
- Cytotoxicity (MEM elution)
- Hemocompatibility
- Physicochemical



FREQUENTLY ASKED QUESTIONS & ANSWERS:

What is ISO 10993?

ISO 10993 is an international standard created to facilitate international harmonization of test methods for biological evaluation of medical devices.

Why did Henkel move from a USP Class VI to ISO 10993 test program?

ISO 10993 standards offer compliance at a global level. Therefore, device manufacturers outside the U.S. have globally accepted standards, as opposed to the USP Program used in the U.S.

Is there a regulation requiring Henkel to revalidate its medical device adhesives to ISO 10993 on a regular basis?

There is no specific regulatory requirement regarding revalidation of our medical device adhesives. Henkel, as the industry leader, believes the revalidation is an important service to our customers in assuring continuity of compliance.

What controls does Henkel have in place after the product has been tested to ISO 10993?

While Henkel has no specific regulatory obligations under ISO 10993, we perform the following:

- Each batch of LOCTITE® medical device adhesive is validated by Henkel's Quality Control Department to include all raw material inputs, intermediates and raw material manufacturers, as well as compliance to the product formulation.
- Ensure that no changes will be made to composition materials, nor significant changes to our processes, without notifying customers who have a specification on file requesting such notification.



CERTIFICATES OF COMPLIANCE ARE AVAILABLE ON THE WEB AT:
www.henkelna.com/medicaladhesives



USA

For your local LOCTITE® Adhesive and Sealants Specialist, for your nearest authorized LOCTITE® product distributor, to place an order, to arrange an in-plant seminar, or for technical product assistance, call: 1.800.LOCTITE (562.8483)

Henkel Corporation

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FAX: 860.571.5465
www.henkelna.com/industrial
www.henkelna.com/loctite

CANADA

To arrange an in-plant seminar, or for technical product assistance, call: 1.800.263.5043 (within Canada)

Henkel Canada Corporation

2515 Meadowpine Blvd.
Mississauga, Ontario, Canada L5N 6C3
TEL: 1.800.263.5043 (within Canada)
TEL: 905.814.6511
FAX: 905.814.5391
www.loctite.ca

MEXICO

For your local LOCTITE® Adhesive and Sealant Specialist, for your nearest authorized LOCTITE® product distributor, to arrange an in-plant seminar, or for technical product assistance, call: 52.55.3300.3669 (within Mexico)

To place an order,
52.55.3300.3644 (within Mexico)

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CENTRAL AMERICA

For your local LOCTITE® Adhesive and Sealants Specialist, for your nearest authorized LOCTITE® product distributor, to place an order, to arrange an in-plant seminar, or for technical product assistance, call: 506.277.4868 (within Costa Rica)

Henkel Costa Rica Ltda.

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de Celebrity Lovable
101-3007 San Joaquin de Flores
Heredía, Costa Rica
TEL: 506.277.4800
FAX: 506.277.4883
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SOUTH AMERICA

For your local LOCTITE® Adhesive and Sealant Specialist, for your nearest authorized LOCTITE® product distributor, to place an order, to arrange an in-plant seminar, or for technical product assistance, contact:

Henkel Diadema

Rua Karl Hüller, 136
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São Paulo, Brazil
TEL: 0800.704.2334 (within Brazil)
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FAX: 55.11.3205.8766
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Henkel Argentina S.A.

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B1642EYA San Isidro,
Buenos Aires, Argentina
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FAX: 54.11.4001.0158
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