SELECTOR GUIDE

Nagase ChemteX America

PRODUCT CATEGORIES
Adhesives, Inks and Encapsulants

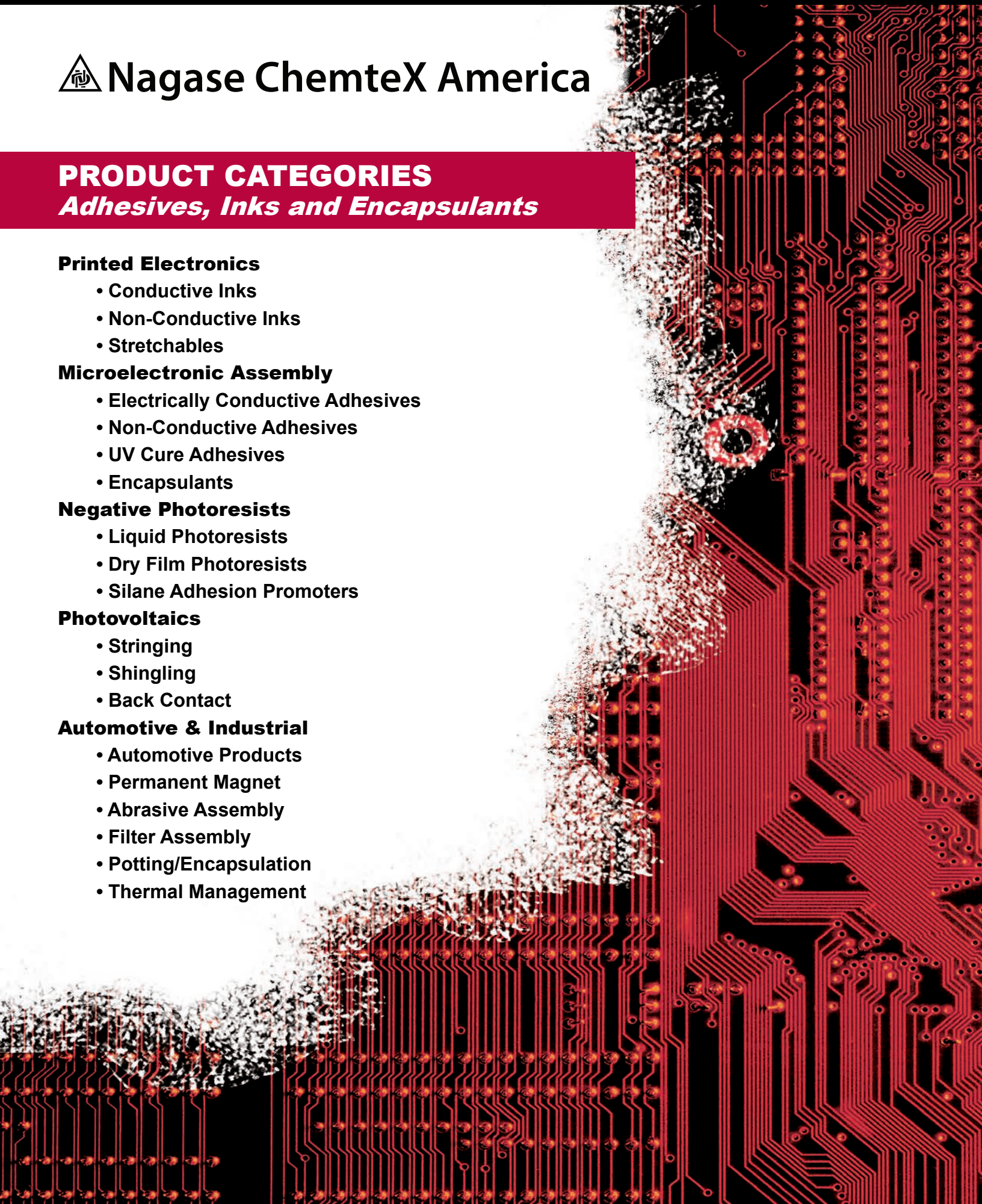
Printed Electronics
- Conductive Inks
- Non-Conductive Inks
- Stretchables

Microelectronic Assembly
- Electrically Conductive Adhesives
- Non-Conductive Adhesives
- UV Cure Adhesives
- Encapsulants

Negative Photoresists
- Liquid Photoresists
- Dry Film Photoresists
- Silane Adhesion Promoters

Photovoltaics
- Stringing
- Shingling
- Back Contact

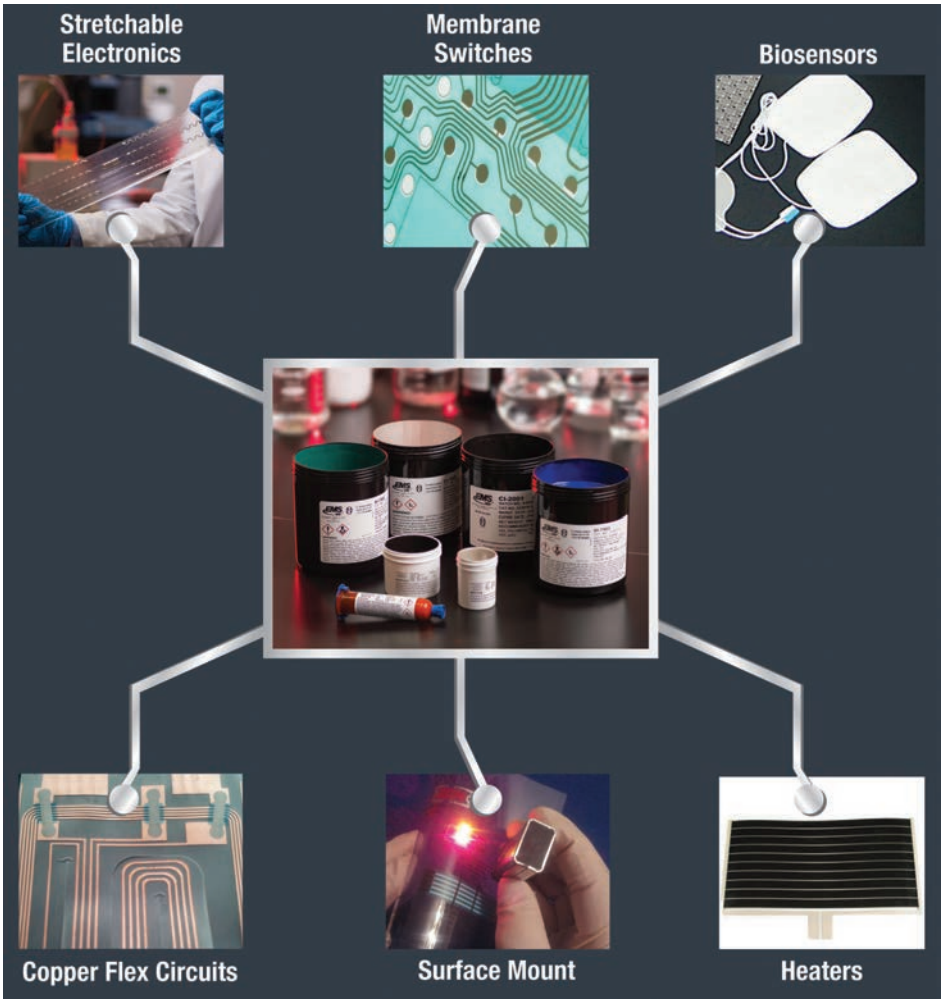
Automotive & Industrial
- Automotive Products
- Permanent Magnet
- Abrasive Assembly
- Filter Assembly
- Potting/Encapsulation
- Thermal Management



PRINTED ELECTRONICS

Inks for Membrane Switches, Sensors, Heaters, etc.

- **Conductive**
- **Flexible**
- **Dielectric**
- **Fine Line**
- **Membrane Switch**
- **Sensors**
- **Heaters**
- **Surface Mounting**
- **EMI/ESD**
- **Capacitive Touch**



TYPICAL APPLICATIONS

PRODUCT	FEATURE	RESISTIVITY (Ω/□/mil)	CUSTOMER BENEFIT
CI-1001	Highly conductive, flexible	<0.015	Low Ω/□, low cost
CI-1028	Fineline, wear resistant, fast dry	<0.020	Low Ω point-point, fine line resolution, low energy processing
CI-1036	Durable, crease resistant, highly conductive	<0.010	Low Ω/□, durable at tail creasing
CI-1091 NEW	Halogen Free, excellent environmental stability, high temperature stable	<0.020	Halogen free, excellent printability
CI-2001	Silver top-coat, mix with CI-1001	<20	Coat over Ag contact area. Ω blend with CI-1001
CI-5001	Wear resistant	<10	Resists ZIF connector wear
DI-7542	Highly moisture resistant, excellent intercoat adhesion with conductive inks	N/A	Prevents failure when used in moisture sensitive applications
DI-7550 NEW	Good adhesion to TPU, good stretch	N/A	Fast processing
DB-1561-A/B	Good flexibility, good pot life	3 x 10^{-3} Ω•cm	Can be cured at 70°C
CA-188-2 NEW	One component, good dispense properties	7 x 10^{-4} Ω•cm	Durable, 80°C cure

Medical Applications

Medical Electrodes

TYPICAL APPLICATIONS

- ECG/EKG/EEG pads
- Glucose sensors
- Drug delivery (iontophoresis) patches
- Cosmetic patches
- TENS
- Sensors – heat, moisture, chemical, etc.

PRODUCT	FEATURE	CUSTOMER BENEFIT
CI-4001	45/55 Ag/AgCl ratio	Use for Iontophoretic or high AgCl content is required
CI-4025	80/20 Ag/AgCl ratio	Use for EKG pads and/ or sensing electrodes
CI-4040 NEW	80/20 Ag/AgCl ratio	General sensing electrodes for wearable applications
CI-4047 NEW	80/20 Ag/AgCl ratio	Excellent for hydrogel resistance
CI-5065	Anode for battery function	Printed-in battery for iontophoretic applications
CI-2057	Carbon Ink For Biosensors	Typically use for Amperometric Glucose Sensors
CI-2058 NEW	Carbon Ink For Biosensors	Typically use for Immunosensors
CI-2077/ CI-2079	Carbon Ink For Biosensors	Typically use for Amperometric Glucose Sensors

Miscellaneous

PRODUCT	FEATURE	CUSTOMER BENEFIT
DI-7506 UV Spacer	Designed for thick deposit and fast UV Cure	Print spacers onto print-treated PET, Kapton and ECM insulators
DI-7801 UV-Cure PSA	Selectively screen print, excellent tack and peel, water clear	Apply PSA only where needed, eliminate die or laser cut PSA laminate
CI-2069 Series Resistor Blends NEW	Stable resistor value, can blend to target resistance from 30 to 100K Ω	Stable resistance, no drift after cure

Stretchable/Smart Fabric

TYPICAL APPLICATIONS

- Wearable technology
- Soft, pliable electronic interface
- Capacitive sensing
- TPU film compatible

PRODUCT	FEATURE	CUSTOMER BENEFIT
CI-1036	Durable, stretchable, low Ω	Integrate electronics into user-friendly fabrics
CI-2051	Durable, compatible with CI-1036	Use with CI-1036 for improved washability
DI-7548	Durable, stretchable, compatible with Ag inks and many TPU films	Protect silver circuitry while maintaining stretch properties
DI-7550	Durable, stretchable, compatible with Ag inks and many TPU films	Apply R2R to process quickly
CI-4040	80/20 Ag/AgCl ratio	General sensing electrodes for wearable applications

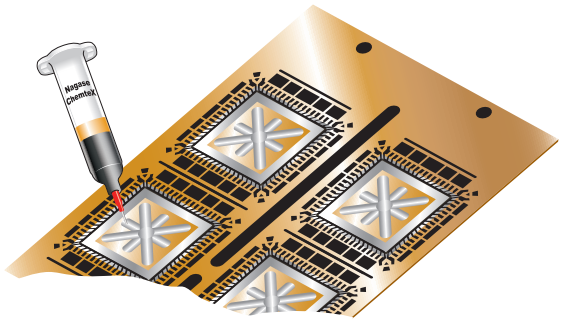
Low Temp Cure Inks

TYPICAL APPLICATIONS

- Consumer Electronics, Sensors

PRODUCT	FEATURE	CUSTOMER BENEFIT
CI-1095	Excellent Resistivity (<0.020 Ω/□/mil) when processed as low as 80ºC!	Can be used on substrates that can't be processed at conventional PTF temperatures
CI-2062	Carbon ink that can be cured as low as 80ºC!	Carbon option when resistivity of Ag is not required

Electrically Conductive Die Attach



- **Rigid (small die)**
- **Flexible (large die)**
- **Low Cost**
- **Low Temp Cure**

PRODUCT	DESCRIPTION	RESISTIVITY (Ω•cm)	T_g TAN δ (ºC)	VISCOSITY 19 s^{-1} (cP)	THERMAL CONDUCTIVITY (W/m•K)	APPLICATION METHOD
Electrically Conductive Die and Component Attach Adhesives						
561-147-1	Low cost, moderate T_g, snap cure	4.0 x 10^{-4}	90	11,000	N/A	Needle & Jet dispense, Screen print
CA-152	Low cost, flexible ECA, acrylate	4.0 x 10^{-4}	14	18,000	N/A	Needle & Jet dispense, Screen print
CA-183	Low cost, Low temperature cure (80ºC) flexible ECA	9.0 x 10^{-3}	20	17,000	N/A	Needle & Jet dispense
CA-178	Electrically conductive die attach adhesive	1.5 x 10^{-4}	97	13,000	N/A	Needle dispense
High Thermal Conductivity, Electrically Conductive Die and Component Attach Adhesives						
CA-293	High thermal conductivity, extremely flexible die attach for power devices, large die	5.0 x 10^{-5}	-30	13,000	7	Pin transfer, Needle dispense
CA-188-2	High thermal conductivity, low temperature cure (80ºC), low stress solution	7.0 x 10^{-4}	62	17,000	5	Needle & Jet dispense
CA-196	High thermal conductivity, power devices, small die, LED's, long stage time	2.0 x 10^{-5}	135	11,000	13	Pin transfer, Needle dispense
DA-5990-1	High thermal conductivity die attach for power devices and LED's	5.0 x 10^{-4}	140	10,000	20	Pin transfer, Needle dispense
DB-1588-7	High thermal conductivity, flexible, low cost	4.0 x 10^{-4}	7	35,000	6	Stencil print

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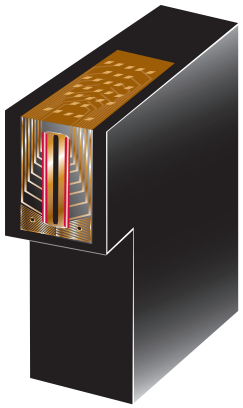
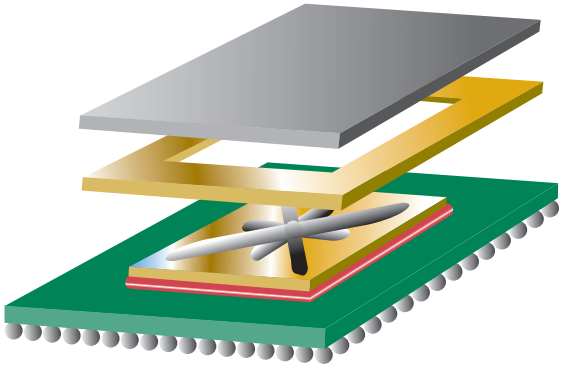
Circuit Assembly – Non-Conductive



- **Flex Circuits**
- **Camera Modules**
- **Printer Heads**
- **Smart Cards**

PRODUCT	DESCRIPTION	VISCOSITY 19 s^{-1} (cP)	T_g, TAN δ (ºC)	CURE SCHEDULE	POT LIFE @ 25ºC (hr)
Chip on Board Encapsulants					
EN-7826	Glob top encapsulant. User friendly pot life (> 2 days), superior environmental protection with enhanced moisture resistance and internal stress relief. CTE α_1 (<T_g) ≈ 18ppm/ºC	65,000	140	30 min @ 150ºC	>48
DE-7826	Dam fill material. Matches cavity properties. User friendly pot life (>2 days), superior environmental protection with enhanced moisture resistance and internal stress relief. CTE α_1 (<T_g) ≈ 18ppm/ºC	200,000	140	30 min @ 150ºC	>48
CE-7826	Cavity fill material. Matches dam properties. Excellent flow properties, user friendly pot life (> 2 days), superior environmental protection with enhan ced moisture resistance and internal stress relief. CTE α_1 (<T_g) ≈ 18ppm/ºC	40,000	140	30 min @ 150ºC	>48
UV Cure Chip Encapsulants					
DC-4261	Material for chip encapsulation. Good for smart cards and general circuit assembly applications	10,000	112	UV and/or 30 min @ 150ºC	72
Flex Circuit / Printer Head Assembly Adhesives and non-conductive die attach					
DA-5801	White, low viscosity adhesive, encapsulant, bonding FR4 to kapton, high fracture toughness, high ink and moisture resistance	20,000	60	60 min @ 80ºC 3 min @ 150ºC	72
357-284	White, high thixotropy adhesive, encapsulant, bonding FR4 to kapton and stainless steel high fracture toughness, high ink and moisture resistance	110,000	65	40 min @ 80ºC 1 min @ 150ºC	72
357-348	White, low viscosity adhesive, encapsulant, bonding FR4 to kapton, high fracture toughness, high ink and moisture resistance	9,500	50	60 min @ 80ºC 5 min @ 150ºC	72
332-5-122	Moderate T_g, hydrophobic, high strength adhesive for circuit assembly and printer head assemblies. Can withstand harsh environments, solvent resistant	25,000	106	30 min @ 120ºC	72
EN-7930	Low viscosity, electrically insulating die attach adhesive	3,500	50	60 min @ 80ºC 15 min @ 120ºC	48
DA-5310 R&D	Screen printable B stage adhesive for die/component attach. Tack-free after B-stage. Die/component can be staked & cured simultaneously	16,000	132	60 min @ 160°C	24
Camera Module Assembly Adhesives for Lens Holder Assembly					
631-188-3	High T_g, low CTE α_1 (<T_g) ≈ 18ppm/ºC, dimensionally stable dual cure for photonic, camera module and general electronics assembly applications	48,000	150	UV and/or 60 min @ 120ºC	24

Thermally Conductive



- **Power**
- **LED**
- **Thermal Interface**
- **Laser**

PRODUCT	DESCRIPTION	RESISTIVITY (Ω•cm)	T_g TAN δ (°C)	VISCOSITY 19 s^{-1} (cP)	THERMAL CONDUCTIVITY (W/m•K)	APPLICATION METHOD
Thermally Conductive / Electrically Insulating						
TM-6162	Electrically insulating, low outgassing die attach with good viscosity stability	N/A	75	25,000	2.2	Needle dispense
TM-6700	High thermal conductivity silicone thermal grease	N/A	N/A	106,000	4.5	Needle dispense
High Thermal Conductivity, Electrically Conductive Die and Component Attach Adhesives						
CA-293	High thermal conductivity, extremely flexible die attach for power devices, large die	5.0×10^{-5}	-30	13,000	7	Pin transfer, Needle dispense
CA-188-2	High thermal conductivity, low temperature cure (80°C), low stress solution	7.0×10^{-4}	62	17,000	5	Needle & Jet dispense
CA-196	High thermal conductivity, power devices, small die, LED's, Long stage time	2.0×10^{-4}	135	11,000	13	Pin transfer, Needle dispense
DA-5990-1	High thermal conductivity die attach for power devices and LED's	5.0×10^{-4}	140	10,000	20	Pin transfer, Needle dispense
DB-1588-7	High thermal conductivity, flexible, low cost	4.0×10^{-4}	7	35,000	6	Stencil print

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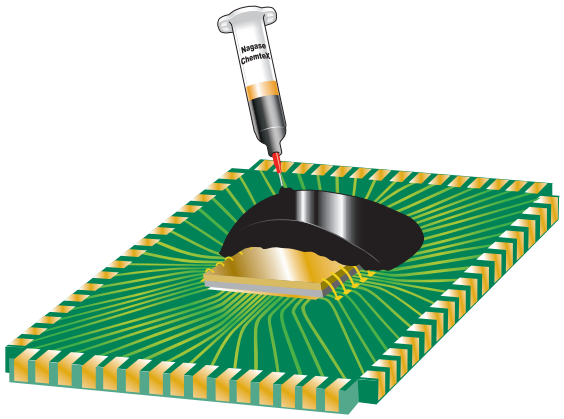
Chip Encapsulants



- **Glob Top**
- **Cavity Fill**
- **Dam and Fill**
- **MCM Encapsulation**

PRODUCT	DESCRIPTION	VISCOSITY 19 s^{-1} (cP)	T_g TAN δ (ºC)	CURE SCHEDULE	POT LIFE @ 25ºC (hr)
Chip on Board Encapsulants					
EN-7826	Glob top encapsulant. User friendly pot life (> 2 days), superior environmental protection with enhanced moisture resistance and internal stress relief. CTE α_1 (<T_g) ≈ 18ppm/ºC	65,000	140	30 min @ 150ºC	>48
DE-7826	Dam fill material. Matches cavity properties. User friendly pot life (>2 days), superior environmental protection with enhanced moisture resistance and internal stress relief. CTE α_1 (<T_g) ≈ 18ppm/ºC	200,000	140	30 min @ 150ºC	>48
CE-7826	Cavity fill material. Matches dam properties. Excellent flow properties, user friendly pot life (> 2 days), superior environmental protection with enhanced moisture resistance and internal stress relief. CTE α_1 (<T_g) ≈ 18ppm/ºC	40,000	140	30 min @ 150ºC	>48
UV Cure Chip Encapsulants					
DC-4261	Dam material for dam and fill chip encapsulation. Good for smart cards and general circuit assembly applications	10,000	112	UV and/or 30 min @ 150ºC	72
DC-4262	Fill material for dam and fill chip encapsulation. Good for smart cards and general circuit assembly applications	2,000	72	UV and/or 30 min @ 150ºC	72

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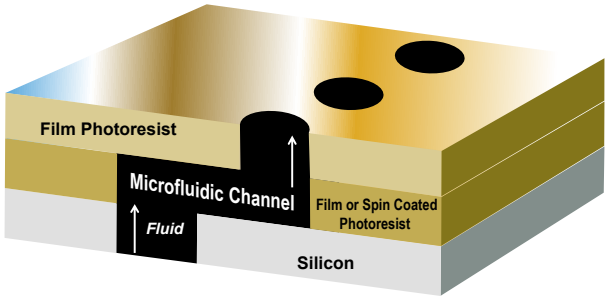
UV Cure Adhesives and Encapsulants

- **Transceivers**
- **Camera Modules**
- **Circuit Boards**
- **Disk Drive**
- **Flex Circuits**

PRODUCT	DESCRIPTION	VISCOSITY 19 s^{-1} (cP)	T_g TAN δ (ºC)	CURE SCHEDULE	POT LIFE @ 25ºC (hr)
UV Cure Adhesives and Chip Encapsulants					
535-10M-1	High viscosity elastomeric adhesive for applications requiring extremely low warpage and stress	80,000	5	UV and/or 30 min @ 120ºC	72
DC-4261	Dam material for dam & fill chip encapsulation. Good for smart cards and general circuit assembly applications	10,000	112	UV and/or 30 min @ 150ºC	72
DC-4262	Fill material for dam & fill chip encapsulation. Good for smart cards and general circuit assembly applications	3,500	72	UV and/or 30 min @ 150ºC	73
EC-9519	Clear flexible UV cure encapsulant / adhesive	4,000	NT	UV	0.3
Photonic Active Alignment and Camera Module Assembly Adhesives					
631-188-3	High T_g, low CTE (α_1 ($<T_g$) ≈ 14ppm/ºC), dimensionally stable dual cure for Active alignment, camera module and general electronics assembly applications	50,000	150	UV and/or 60 min @ 120ºC	24
631-184-26 R&D	Low CTE (α_1 ($<T_g$) ≈ 15ppm/ºC), dimensionally stable dual cure for photonic active alignment and camera module. Improved adhesion and depth of cure	50,000	136	UV and/or 60 min @ 120ºC	24
631-184-32 R&D	High T_g, low CTE (α_1 ($<T_g$) ≈ 15ppm/ºC), dimensionally stable dual cure for photonic active alignment and camera module	35,000	185	UV and/or 60 min @ 120ºC	24

Nagase ChemteX America

Liquid and Dry Film Resists, Adhesion Promoters



- **Microfluidics**
- **Via Sealing**
- **Metalization**
- **IC Cooling**

Liquid Photoresists for Spin Coating

Material	Standard Thickness?	Achievable Thickness (µ)	Storage Modulus @ 25ºC (GPa)	T_g TAN δ (ºC)	Operating Temperature (ºC)	Target Energy (mJ/cm²)	Maximum Aspect Ratio
NR-2500	Yes	12-25	4.5	165	-60 to 200	160	8:01
NR-2300	No	8-14	4.5	165	-60 to 200	120	6:01
NR-2200	No	5-10	4.5	165	-60 to 200	80	4:01
NR-2050	No	2-4	4.5	165	-60 to 200	60	1:01

Nagase ChemteX Dry Films exhibit high hydrophobicity and chemical resistance, excellent tenting properties, exceptional resolution, and good adhesion to a variety of substrates. They find use in permanent MEMS applications and some etch applications where high aspect ratio/resolutions is required.

Dry Film Negative Tone Photoresist

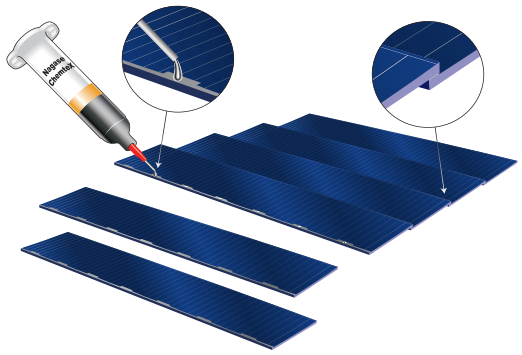
Material	Chemistry	T_g TAN δ (ºC)	H_2O Contact Angle θ_C (°)	Color	Minimum Resolution 20u film (µ)	Aspect Ratio, Max with 20µ film	Available Thickness ** (µ)	Image, I-Line, 365nm, 20µ film (mJ/cm²)
DF-1000 Series	Epoxy/Sb catalyst	180	75	Clear	3	8:01	5-100	175
DF-2000 Series Consistent Photospeed	Epoxy/Sb catalyst	180	73	Green	3	8:01	5-75	90
DF-3000 Series Sb free, Low stress	Epoxy/non-Sb catalyst	130	74	Tan	4-5	5:01	5-75	120
DF-3500 Series Sb-free (Similar to 2000 series)	Epoxy/non-Sb catalyst	180	74	Green	4	8:01	5-75	150
DF-4000 Series, Extremely hydrophobic dual layer film	Epoxy/Sb catalyst	180	95	Green	3	8:01	5-75	90

** Not all film thicknesses within the range are available. Please inquire on current standard thickness; we can make other thicknesses within range if volume justifies

Adhesion Promoters

412-17	Silane based Adhesion Promoter distilled to high purity at Nagase ChemteX to enable higher adhesion of the Photoresists to themselves and other substrates

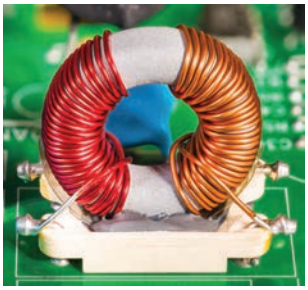
Stringing, Shingling and Back Contact



- **Stringing**
- **Back Contact**
- **Shingling**
- **Concentrated PV**

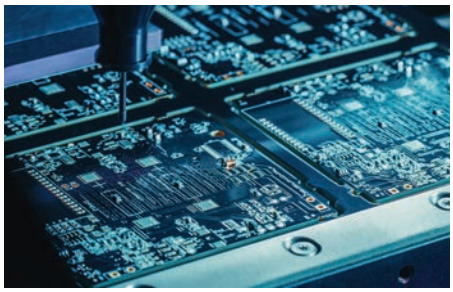
PRODUCT	DESCRIPTION	RESISTIVITY (Ω•cm)	T_g, TAN δ (ºC)	VISCOSITY 19 s^{-1} (cP)	APPLICATION METHOD
Conductive Adhesives for Shingling					
CA-178	Pure Ag filled shingling ECA	2.0 x 10^{-4}	102	20,000	Needle dispense
Low Ag/Low Cost/Low Density/Cu free Conductive Adhesives for Shingling					
561-147-1	Low cost, Moderate T_g, snap cure, low bleed on cell surfaces. Recommended for shingling	4.0 x 10^{-4}	90	11,000	Needle & Jet dispense, Screen print
CA-151	Low cost, low T_g, snap cure, low bleed on cell surfaces. Recommended for stringing or shingling	5.0 x 10^{-4}	-10	10,000	Needle & Jet dispense, Screen print
CA-152	Low cost, low T_g, snap cure, low bleed on cell surfaces. Recommended for stringing or shingling. Acrylate chemistry	5.0 x 10^{-4}	14	16,000	Needle & Jet dispense, Screen print
CA-260 R&D	Low Ag, Cu-free, Low cost, low density, snap cure, low bleed on cell surfaces. Recommended for shingling crystalline silicon high current G12 cells	1.5 x 10^{-4}	80	18,000	Needle & Jet dispense, Stencil print
CA-271 R&D	Reduced Ag, Low cost, low density, moderate T_g, snap cure and low bleed for shingling high current G12 cells	9.0 x 10^{-5}	77	15,000	Needle & Jet dispense, Screen print
Low Ag/Low Cost/Low Density/Cu free Conductive Adhesives for Stringing					
CA-261 R&D	Low cost, low T_g, snap cure, low bleed on cell surfaces. Recommended for stringing HJT modules	1.0 x 10^{-4}	42	17,000	Needle & Jet dispense, Screen print
Low Temperature Cure Conductive Adhesives					
CA-183	Low temperature cure (as low as 80ºC), flexible for perovskite, organic PV and other temperature sensitive modules	9.0 x 10^{-4}	21	26,000	Stencil print, Needle & Jet dispense
CA-188-2	Low temperature cure (as low as 80ºC), medium modulus for perovskite, organic PV and other temperature sensitive modules	7.0 x 10^{-4}	62	17,000	Needle & Jet dispense
Low Ag Content Conductive Adhesives for Back Contact Applications					
DB-1588-4	Low cost. Faster cure for fast cure EVA encapsulants. Excellent damp heat performance on OSP treated copper	2.0 x 10^{-4}	0	35,000	Stencil print
DB-1588-7	Lowest cost, flexible, excellent damp heat performance on OSP treated copper. Lower cost version of DB-1588-4	4.0 x 10^{-4}	7	35,000	Stencil print

Automotive Products



• Low Stress

• Structural Adhesives

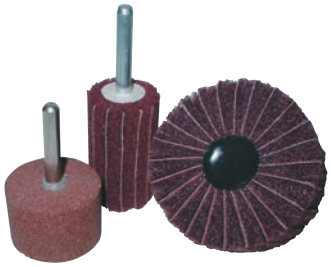


• Electronic Assembly

PRODUCT	DESCRIPTION	VISCOSITY HIGH SHEAR RATE (cP)	CURE SCHEDULE
Low Stress			
703-60	Designed as a high flexibility adhesive and sealant. It was designed for glass-to-glass, metal, and ceramic bonding where flexibility at -40ºF temperature are critical	Paste	6 min @ 177ºC
769-6HF R&D	Meets IEC 61249-2-21 as a Halogen-Free material. Similar properties to 703-60, designed for European automotive standards	21,000	20 min @ 150ºC
Structural			
400-76-1	Heat curable epoxy adhesive. Outstanding thermal shock resistance and extremely high adhesion. Exceptional thermal stability and resistance to water, humidity and solvents	80,000	20 min @ 150ºC
502-09	High performance adhesive with exceptional high temperature properties. Induction curable or standard convection cure oven resulting in a very high glass transition temperature	Paste	30 min @ 160ºC
505-96	A high performance paste adhesive with exceptional high temperature properties. Cures rapidly in a standard convection cure oven resulting in a very high glass transition temperature	170,000	20 min @ 135ºC
NEW **506-12**	Heat curable non-sag epoxy adhesive. Excellent adhesion strength to metals (up to 5,000+ PSI) and strong bonds to ceramics. Exceptional thermal stability and resistance to water, humidity and solvents	Paste	15 min @ 160ºC
702-98	Heat curable non-sag epoxy adhesive. Strong bonds to metals and ceramics. Exceptional thermal stability and resistance to water, humidity and solvents	Paste	15 min @ 150ºC
Electronic			
505-62	Heat curable epoxy, which forms strong bonds to metals and ceramics. Upon cure has exceptional thermal stability and resistance to water, humidity and solvents	50,000	10 min @ 140ºC
505-88	Heat curable epoxy, which forms strong bonds to metals and ceramics. Upon cure has exceptional thermal stability and resistance to water, humidity and solvents	45,000	10 min @ 140ºC
629-3A/B	Black, epoxy/acid anhydride encapsulating compound. Upon cure develops excellent adhesion to a variety of substrates with a low coefficient of thermal expansion (CTE)	2,500	60 min @ 150ºC
XNR3625(D)	Heat curable epoxy adhesive, which forms strong bonds to metals, ceramics, and some plastics. Upon cure has exceptional thermal stability and resistance to water, humidity and solvents	70,000	60 min @ 120ºC

Industrial Products

• **Permanent Magnet**

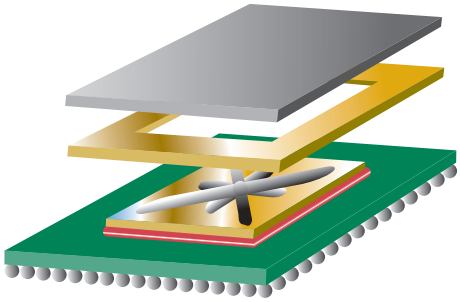


• **Abrasive Assembly**

• **Filter Assembly**

PRODUCT	DESCRIPTION	VISCOSITY HIGH SHEAR RATE (cP)	CURE SCHEDULE
	Permanent Magnet		
400-76-1	Heat curable epoxy adhesive. Outstanding thermal shock resistance and extremely high adhesion. Exceptional thermal stability and resistance to water, humidity and solvents	80,000	15 min @ 150°C
502-09	High performance adhesive with exceptional high temperature properties. Induction curable or standard convection cure oven resulting in a very high glass transition temperature	Paste	30 min @ 160°C
NEW 502-61	Heat curable flexible epoxy adhesive. Designed to offer the user outstanding flexibility, elongation and peel adhesive strength, while delivering extremely high adhesion. Exceptional thermal stability and resistance to water, humidity and solvents. Superior thermal shock resistance	65,000	12 min @ 150°C
NEW 504-07	Heat curable low-sag epoxy adhesive. Forms strong bonds to metals & ceramics. Exceptional thermal stability and resistance to water, humidity and solvents. This product offers high heat resistance and cures in less than 42 seconds via induction or infrared heating	100,000	20 min @ 130°C
NEW 506-12	Heat curable non-sag epoxy adhesive. Designed for Ni-Cu-Ni plated & Neodymium magnets. Excellent adhesion strength to metals and strong bonds to ceramics. Exceptional thermal stability and resistance to water, humidity and solvents	Paste	15 min @ 160°C
702-98	Heat curable non-sag epoxy adhesive. Strong bonds to metals and ceramics. Exceptional thermal stability and resistance to water, humidity and solvents	Paste	15 min @ 150°C
	Gel Banding		
505-96	A high performance paste adhesive with exceptional high temperature properties. Cures rapidly in a standard convection cure oven resulting in a very high glass transition temperature	Paste	15 min @ 150°C
702-80	Non-sag epoxy. Thermal stability over a broad temperature spectrum. Resistance to solvents, water, and salt. Unique attributes include low thermal conductivity and electrical properties	Paste	10 min @ 150°C
702-80-140K	Non-sag epoxy. Thermal stability over a broad temperature spectrum. Resistance to solvents, water, and salt. Unique attributes include low thermal conductivity and electrical properties	140,000	20 min @ 150°C
	Abrasive Assembly		
502-04A/B	100% solid, two-part epoxy encapsulating compound. Material exhibits medium viscosity and low exotherm while incorporating a convenient volumetric mix ratio of 1:1	25,000	25 min @ 25°C (Gel)
505-78	Heat curable epoxy adhesive with outstanding mechanical properties and high adhesion. Exceptional thermal stability and resistance to water, humidity and solvents	3,000	30 min @ 160°C
702-98	Heat curable non-sag epoxy adhesive. Strong bonds to metals and ceramics. Exceptional thermal stability and resistance to water, humidity and solvents	Paste	15 min @ 150°C
	Filter Assembly		
200-26-2	Heat cured epoxy adhesive designed to adhere filter end caps. The material will exhibit outstanding adhesive properties and good chemical resistance	50,000	30 min @ 120°C
503-80	Heat curable non-sag epoxy adhesive. Excellent adhesion strength to metals and strong bonds to ceramics. Exceptional thermal stability and resistance to a variety of chemicals	Paste	15 min @ 150°C
702-97	Self leveling, heat cured epoxy adhesive and sealing compound. Rapid cure at moderate temperatures. Yields high heat and chemical resistant. Resistance to water, solvents, skydrol, and other harsh chemicals	25,000	20 min @ 120°C
703-25	Heat cured epoxy that is highly filled to produce excellent heat resistance. Resistance to strong solvents, gasoline, Freon, salt water, mild acids, and continuous high temperatures	60,000	30 min @ 150°C

Industrial Products Continued



• Potting and Encapsulants • Thermal Greases • Thermal Management

PRODUCT	DESCRIPTION	VISCOSITY HIGH SHEAR RATE (cP)	CURE SCHEDULE
Potting and Encapsulants			
465-17A/B NEW	Two component, 100% solids, epoxy adhesive with a convenient volumetric mix ratio of 1:1. Developed to connect and encapsulate battery packs used in Electric Vehicles. Excellent adhesion strength to a variety of substrates	12,000	60 min @ 60ºC
505-62	Heat curable epoxy, which forms strong bonds to metals and ceramics. Upon cure has exceptional thermal stability and resistance to water/humidity and solvents	50,000	10 min @ 140ºC
505-88	Black heat curable epoxy (toughened version of 505-62). Strong bonds to metals and ceramics. Exceptional thermal stability and resistance to water/humidity and solvents	45,000	10 min @ 140ºC
629-3A/B NEW	Two component, black, epoxy/acid anhydride encapsulating compound. Excellent adhesion to a variety of substrates with a low coefficient of thermal expansion (α_1 (<T_g) ≈ 23ppm/ºC)	3,000	60 min @ 150ºC
UL94 Rated Potting and Encapsulants			
400-64-1A FR NEW	Two component, flame retardant, thermally conductive epoxy potting/encapsulating compound that can be cured with five different hardeners. Low coefficient of thermal expansion (CTE) and excellent electrical properties. UL94 V0 with 600-09B	Hardener Dependent	Hardener Dependent
505-82A/B	A general two component epoxy systems designed for the encapsulation of electronic assemblies. UL94 V-0 rated	7,500	24 hr @ 25ºC
702-96A/ 600-80B	A general purpose epoxy encapsulating compound with low viscosity upon mixing. UL94 V-0 rated	1,200	24 hr @ 25ºC
2059A/ 600-80B	Flame retardant epoxy-potting compound designed to cure to a glossy white surface. Can be used for potting transformers and power supplies, capacitors and PC board components. UL94 V-0 rated	5,000	24 hr @ 25ºC
Thermal Management (Greases)			
104-25 (Silicone based)	Heat sink compound recommended for high-temperature heat transfer. Offers high thermal conductivity (0.95 W/m•K) and virtually no bleed, separation or evaporation over a wide operation temperature range	Paste	Grease
Thermal Management (Epoxy)			
400-64-1A/ 601-17B	Thermally conductive epoxy potting/encapsulating compound. It features low coefficient of thermal expansion (α_1 (<T_g) ≈ 34ppm/ºC) and excellent electrical properties. Thermal conductivity ~1.25 W/m•K	15,000	24 hr @ 25ºC
504-10-2A/B	Epoxy/acid anhydride compound designed for maximum thermal dissipation at elevated temperature. Develops outstanding electrical properties as well as excellent chemical resistance. Thermal conductivity ~1.94 W/m•K	35,000	Step cure 2 hr @90ºC + 4 hr @180ºC
505-91-1 NEW	Single component, highly filled epoxy encapsulant designed to be cured at temperatures as low as 100ºC within a few hours. Exhibits high thermal conductivity and low coefficient of thermal expansion (α_1 (<T_g) ≈ 29ppm/ºC)	85,000	30 min @ 150ºC
514-105A/B	Epoxy/acid anhydride compound develops excellent adhesion to a variety of substrates and offers low coefficient of thermal expansion (α_1 (<T_g) ≈ 18ppm/ºC). Thermal conductivity ~0.75 W/m•K	30,000	60 min @140ºC
557-90A/ 557-88B NEW	Two component, black, epoxy/acid anhydride encapsulating compound. Excellent adhesion to a variety of substrates with a high thermal conductivity ~0.75 W/m•K. (α_1 (<T_g) ≈ 17ppm/ºC)	36,000	Step cure 60 min @90ºC + 60 min @140ºC

NOTES

Nagase ChemteX – Custom Formulated Electronic Materials

What We Do:

- Our sales and technical team works with you to understand the application requirements
- We recommend the best solution from our comprehensive product line or react quickly with custom formulations
- Our products are manufactured and quality tested under ISO/IATF 16949
- Our product line is focused on Printed Electronics, Microelectronics, Photovoltaics, Industrial and Permanent Resist applications

How We Do It:

- Seasoned field engineers and a seasoned technical team provide thorough understanding of these applications
- Field application engineering service to work on your production line
- Teamwork and direct communication with our customers
- Making sure we build solid relationships with our customers and their manufacturing sites

Nagase ChemteX America Manufacturing and R&D Center in Delaware, Ohio

Services Provided:

We have a seasoned staff of polymer chemists, formulators and applications engineers to assist with your most difficult application problems.

Nagase ChemteX has a full compliment of laboratory and analytical equipment for developing electronic materials and supporting customers.

Nagase ChemteX America

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ISO 9001:2015 Certified
IATF 16949:2016 Certified

April 2024