## EPO-TEK® ED1020

## Epoxy; Epoxide

Epoxy Technology Inc.

## Message:

A single component, silver-filled epoxy designed for low power semiconductor LED die attach applications. Its unique features include excellent adhesion and stress relief through mechanical reliability testing. Other attributes include long pot-life, low viscosity and high thixotropy making it ideal for a wide range of application methods including wafer level stamping and syringe dispensing. Formerly 77-189

General Information			
Filler / Reinforcement	Silver		
Features	Good Adhesion		
	Low Viscosity		
	Thixotropic		
Uses	Adhesives		
	Electrical/Electronic Applications		
	LEDs		
Agency Ratings	EC 1907/2006 (DEACH)		
	EC 1907/2006 (REACH)		
	EU 2003/11/EC		
	EU 2006/122/EC		
RoHS Compliance	RoHS Compliant		
Forms	Paste		
Physical	Nominal Value	Unit	
Ion Type			
CI-	169	ppm	
К+	4	ppm	
Na+	0	ppm	
NH4+	67	ppm	
Particle Size	< 20.0	μm	
Degradation Temperature	333	°C	
Operating Temperature			
Continuous	-55 to 150	°C	
Intermittent	-55 to 250	°C	
Storage Modulus (23°C)	249	MPa	
Thixotropic Index	3.00		
Weight Loss on Heating			
200°C	0.68	%	
250°C	1.2	%	

Glass Transition Temperature 1> 46.0"CCLTE - Flow 2ASE-5cm/cm/"C 31.8E-4cm/cm/"CThemal Conductivity1.9W/m/KThemosetNominal ValueUnitShelf Life (-40°C)52wkColorSilverUnitColorSilvergr/cm <sup>3</sup> ZasC 41.5gr/cm <sup>3</sup> 23°C 59.6pa-'s23°C 59.6pa-'sCuring Time (150°C)1.0hrPot Life40000minCure PropertiesVoluma NatureVoluma Resistivity (23°C)4.0ohms:cm1.Constructive 20-200°C//ISO 251.Sprainic Cure 20-200°C//ISO 251.Showe Tg2.Below Tg2.Below Tg2.Above Tg3.Above Tg4.100 rpm5.10 rpm	300°C	1.7	%	
CLTE - Flow24.5E-5cm/cm/*C31.8E-4cm/cm/*CThemal Conductivity1.9W/m/kThemosetNominal ValueUnitShelf Life (-40*C)52wkColorSilverUnitColorSilverg/cm³2a3°C <sup>5</sup> 9.6pars23°C <sup>6</sup> 9.6pars23°C <sup>6</sup> 9.6pars23°C <sup>6</sup> 9.6parsCuring Time (150°C)1.0hrPot-Life4000minCuring Time (150°C)40jonShore Hardness (Shore D)40ohms cmVolume Resistivity (23°C)4.0ohms cmNominal ValueUnitcmNominal ValueJonjonShore Hardness (Shore D)6.0jons cm1.Self Shore D)4.0jons cm1.Self Shore D)9.0jons cm1.Self Shore D)9.0jons cm2.Below Tg	Thermal	Nominal Value	Unit	
	Glass Transition Temperature <sup>1</sup>	> 46.0	°C	
3     1.8E-4     cm/cm/°C       Thermal Conductivity     1.9     W/m/K       Thermoset     Nominal Value     Unit       Shelf Life (-40°C)     52     wk       Locured Properties     Nominal Value     Unit       Color     Silver     g/cm³       Pensity     Sa8     g/cm³       Viscosity     J     Pa ·s       23°C <sup>4</sup> 1.5     Pa ·s       23°C <sup>5</sup> 9.6     Pa ·s       23°C <sup>6</sup> 9.6     Pa ·s       Curing Time (150°C)     1.0     hr       Pot Life     40000     min       Curing Time (150°C)     1.0     hr       Volume Resistivity (23°C)     <40E-4	CLTE - Flow			
Inc. i     Buy or i       Thermal Conductivity     1.9     W/m/K       Thermoset     Nominal Value     Unit       Shef Life (40°C)     52     wk       Color     Nominal Value     Unit       Color     Silver     Unit       Color     Silver     g/cm³       Pensity     2.88     g/cm³       23°C <sup>4</sup> 1.5     g/cm³       23°C <sup>5</sup> 9.6     Pars       23°C <sup>6</sup> 9.6     Pars       Curing Time (150°C)     1.0     hr       Pot Life     40000     min       Curing Time (150°C)     1.0     hr       Pot Life     40000     min       Curing Time (150°C)     4.0     Unit       Shore Hardness (Shore D)     40     Unit       Volume Resistivity (23°C)     < 4.0E-4	<sup>2</sup>	4.5E-5	cm/cm/°C	
ThermosetNominal ValueUnitShef Life (-40°C)52wkUncured PropertiesNominal ValueUnitColorSilverg/cm³Density2.88 Ag/cm³23°C 41.5Pa·s23°C 59.6Pa·s23°C 69.9Pa·sCuring Time (150°C)1.0hrPot Life4000minCured PropertiesVolume Resistivity (23°C)40Volume Resistivity (23°C)4.0E-4ohms·cmNOTE1.1Sinser Hardness (Shore D)1Dynamic Cure 20-200°C/ISO 25 Mir, Ramp -10-200°C/B 25°CSinser Hardness (Shore D)2.Below Tg-2.Below Tg-2.Above Tg-3.Above Tg-4.100 rpm-5.10 rpm-	<sup>3</sup>	1.8E-4	cm/cm/°C	
Shell Life (-40°C)52wkUncured PropertiesNominal ValueUnitColorSilverg/cm³Density2.88g/cm³23°C 41.5Pa ·s23°C 59.6Pa ·s23°C 62.9Pa ·s23°C 70.0Pa ·s23°C 62.9Nominal ValueCuring Time (150°C)1.0hrPt Life4000minNominal ValueUnitVolume Resistivity (23°C)4.0Nominal Valueohms ·cmNominal Cure PropertiesSome Time (Cure 20-200°C/SO 25 Mir, Ramp -10-200°C @ 20°C/Min1Dynamic Cure 20-200°C/SO 25 Mir, Ramp -10-200°C @ 20°C/Min2Below Tg3Above Tg4100 rpm5.10 rpm	Thermal Conductivity	1.9	W/m/K	
Uncurred Properties     Nominal Value     Unit       Color     Silver     Silver       Density     2.88     g/cm³       Viscosity     I.5     Pars       23°C <sup>6</sup> 9.6     Pars       23°C <sup>6</sup> 29     Pars       Curing Time (150°C)     1.0     hr       Pt Life     4000     min       Cured Properties     Nominal Value     Unit       Shore Hardness (Shore D)     40     Hardness       Volume Resistivity (23°C)     < 4.0E-4	Thermoset	Nominal Value	Unit	
Color   Silver     Density   2.88   g/cm³     Viscosity   .     23°C <sup>4</sup> 1.5   Pa ·s     23°C <sup>5</sup> 9.6   Pa ·s     23°C <sup>6</sup> 29   Pa ·s     Curing Time (150°C)   1.0   hr     Pot Life   40000   min     Cured Properties   Nominal Value   Unit     Volume Resistivity (23°C)   < 4.0E-4	Shelf Life (-40°C)	52	wk	
Denisty2.88g/cm³Viscosity23°C 41.5Pa • s23°C 59.6Pa • s23°C 629Pa • s23°C 629Pa • sCuring Time (150°C)1.0InfCured Properties40000minCured Properties40000Moins · cured PropertiesNominal ValueUnitVolume Resistivity (23°C)< 4.0E-4	Uncured Properties	Nominal Value	Unit	
Viscolity     Paris       23°C 4     1.5     Paris       23°C 5     9.6     Paris       23°C 6     29     Paris       Curing Time (150°C)     1.0     hr       Pot Life     40000     min       Cured Properties     Nominal Value     Unit       Shore Hardness (Shore D)     40	Color	Silver		
23°C 41.5Pa·s23°C 59.6Pa·s23°C 629Pa·sCuring Time (150°C)1.0hrPot Life4000minCured PropertiesNominal ValueUnitShore Hardness (Shore D)40	Density	2.88	g/cm³	
23°C 59.6Pa·s23°C 629Pa·sCuring Time (150°C)1.0hrPot Life40000minCured PropertiesNominal ValueUnitShore Hardness (Shore D)40	Viscosity			
23°C 629Pa · sCuring Time (150°C)1.0hrPot Life40000minCured PropertiesNominal ValueUnitShore Hardness (Shore D)40	23°C <sup>4</sup>	1.5	Pars	
Curing Time (150°C)1.0hrPot Life40000minCured PropertiesNominal ValueUnitShore Hardness (Shore D)40ohms · cmVolume Resistivity (23°C)< 4.0E-4	23°C <sup>5</sup>	9.6	Pa·s	
Pot Life4000minCured PropertiesNominal ValueUnitShore Hardness (Shore D)40ohms · cmVolume Resistivity (23°C)< 4.0E 4	23°C <sup>6</sup>	29	Pa·s	
Cured PropertiesNominal ValueUnitShore Hardness (Shore D)40ohms · cmVolume Resistivity (23°C)< 4.0E-4	Curing Time (150°C)	1.0	hr	
Shore Hardness (Shore D)   40     Volume Resistivity (23°C)   < 4.0E-4	Pot Life	40000	min	
Volume Resistivity (23°C)< 4.0E-4ohms·cmNOTE1.Dynamic Cure 20-200°C/ISO 25 Min; Ramp -10-200°C @ 20°C/Min2.Below Tg3.Above Tg4.100 rpm5.10 rpm	Cured Properties	Nominal Value	Unit	
NOTE       1.     Dynamic Cure 20-200°C/ISO 25 Min; Ramp -10-200°C @ 20°C/Min       2.     Below Tg       3.     Above Tg       4.     100 rpm       5.     10 rpm	Shore Hardness (Shore D)	40		
Dynamic Cure 20-200°C/ISO 25       1.     Dynamic Cure 20-200°C @ 20°C/Min       2.     Min; Ramp -10-200°C @ 20°C/Min       3.     Below Tg       4.     100 rpm       5.     10 rpm	Volume Resistivity (23°C)	< 4.0E-4	ohms·cm	
1.   Min; Ramp -10-200°C @ 20°C/Min     2.   Below Tg     3.   Above Tg     4.   100 rpm     5.   10 rpm	NOTE			
3. Above Tg   4. 100 rpm   5. 10 rpm	1.			
4.     100 rpm       5.     10 rpm	2.	Below Tg		
5. 10 rpm	3.	Above Tg		
	4.	100 rpm		
6. 1 rpm	5.	10 rpm		
	6.	1 rpm		

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