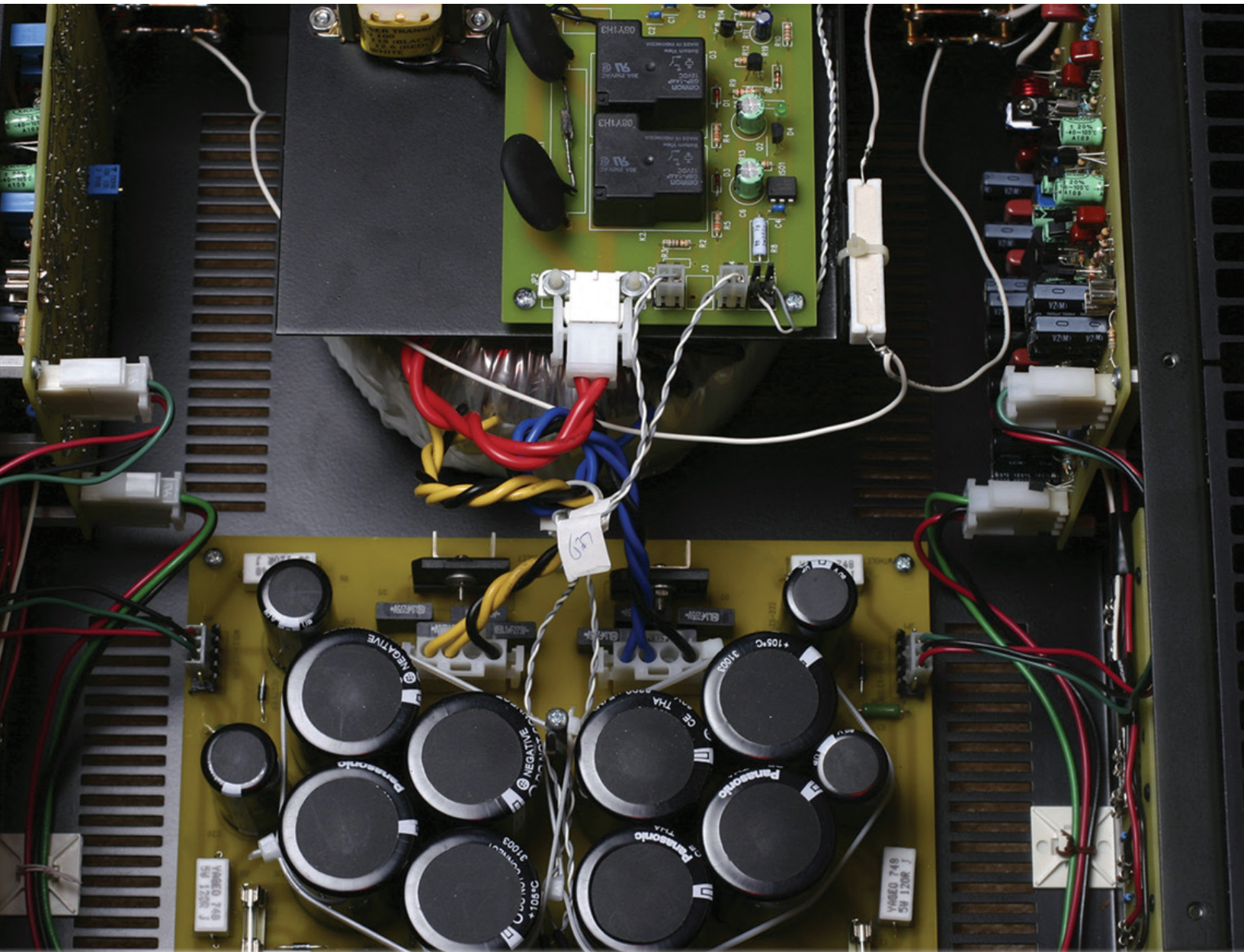




# Potting and Encapsulation Solutions for High Voltage & Electronic Applications





## INSULCAST SOLUTIONS

Highly engineered epoxy and silicone potting compounds

### INTRODUCTION

As assemblies continue to become smaller and more compact, the need to address the heat generated by these devices continues to grow. Dissipating this heat and removing it from the unit is a key factor in the performance and longevity of the device.

That's where the Insulcast range of potting and encapsulation compounds play a critical role. The Insulcast products are specifically designed to protect components in applications such as heat sink bonding, surface mount and die attach while meeting the challenges of heat dissipation. In addition to providing superior adhesion to a variety of substrates, these compounds also help withstand chemicals and corrosion.

As a result, the Insulcast compounds are widely used in a number of markets including aerospace, automotive both conventional and electric vehicles, electronics, power generation, telecommunications and utilities. These products find extensive application in ignition coils, printed circuit boards, EV batteries, high voltage power supplies, transformers and other critical electronic equipment.

### BENEFITS

**Insulcast Epoxies** are general purpose and thermally conductive compounds. They are formulated to provide superior mechanical strength, excellent moisture resistance and high chemical resistance. They exhibit good adhesion properties.

**Insulcast Silicones** are both general purpose and thermally conductive compounds. They exhibit high flexibility, are easily repairable and have superior performance over a broad temperature range. They have minimal shrinkage during cure. There are two primary types: addition cure and condensation cure.

**Addition Cure** silicones are kit matched products that are often cured at elevated temperature to speed the cure. They are lower in viscosity and available in water clear versions.

**Condensation Cure** products require moisture to cure and are typically cured at room temperature. They are not subject to cure inhibition and are not usually used in deep section cure. The products are not kit matched.

### ESTABLISHED IN 1972

- Part of ITW Performance Polymers
- Long History of Innovation
- Dedicated Sales & Technical Support
- Custom Formulated Solutions
- Global Distribution Network



# INSULCAST EPOXIES

	Description	Color	Pot Life @ 25 °C	Mix Ratio by Weight (with Curing Agent)	Viscosity (Mixed, cP)	Cure Cycle	Shore Hardness	Thermal Conductivity, (W/m °K)	Glass Transition Point, (°C)	Dielectric Constant, (KHz)	Dielectric Strength, (Volts/Mil)	Volume Resistivity, (Ohm-cm)	Coefficient of Thermal Expansion (°C)	Service Temperature, (°C)	UL Flammability Rating
<b>Insulcast 42</b>	Unique low viscosity co-polymer that withstands severe thermal shock, exhibits low moisture absorption & excellent dielectric insulation.	Black	20 - 30 min	100:10	15,000	24hr @ 25°C	75A	0.604	-60	4.00	440	1x10 <sup>15</sup>	45x10 <sup>-6</sup>	-55 to +125	94V-0
<b>Insulcast 101</b>	Has excellent chemical resistance to a broad range of acids, bases and organic solvents.	Black	45 min	1:1	10,000	48hr @ 25°C	80D	0.468	80	4.40	410	1x10 <sup>14</sup>	30x10 <sup>-6</sup>	-55 to +105	
<b>Insulcast 116 FR</b>	Easy-to-use, general purpose potting and casting compound. The convenient 1:1 mix ratio makes it ideal for production line mixing as well as for automatic dispensing.	Black	90 min	1:1	8,100	24hr @ 25°C	75D	0.649	80	4.40	420	1x10 <sup>14</sup>	30x10 <sup>-6</sup>	-40 to +105	94V-0
<b>Insulcast 116 FR FC</b>	Easy-to-use, general purpose, fast set potting and casting compound.	Black	30 - 45 min	1:1	9,800	16hr @ 25°C	75D	0.649	80	4.40	420	1x10 <sup>14</sup>	30x10 <sup>-6</sup>	-40 to +105	94V-0
<b>Insulcast LN 1-05</b>	Non-cracking compound that is suitable for large potting applications.	Black	8 -10 hours	7.2:1	5,000	36hr @ 25°C	85D	0.648	75	5.15	400	6x10 <sup>15</sup>	32x10 <sup>-6</sup>	-40 to +105	Meets 94V-0
<b>Insulcast 987 CM</b>	Semi-flexible potting compound that exhibits excellent electrical & physical properties.	Neutral	>48 hours	2:3	60,000	16hr @ 85°C	65D	0.417	80	4.90	375	1x10 <sup>14</sup>	45x10 <sup>-6</sup>	-55 to +155	
<b>Insulgel 50 FC</b>	Soft gel, fast cure compound that does not normally require vacuum de-gassing to assure void-free castings.	Black	10 min	100:25	500	24hr @ 25°C	50A	0.23	5	3.50	425	1x10 <sup>14</sup>	45x10 <sup>-6</sup>	-40 to +105	
<b>Insulgel 70 CC FR NS</b>	Unique, flexible epoxy compound that exhibits superior thermal shock resistance. It provides reduced shrinkage and low CTE resulting in decreased stress and improved adhesion.	Black	30 - 45 min	100:10-11	3,000	24hr @ 25°C	50D	0.518	4 - 9	4.1	400	7x10 <sup>12</sup>	90x10 <sup>-6</sup>	-40 to +105	94V-0
<b>Insulgel 90</b>	Soft gel, low viscosity compound that does not normally require vacuum de-gassing to assure void-free castings.	Clear	60 - 90	100:25	200	16hr @ 25°C	90A	0.23	5	3.50	375	1x10 <sup>14</sup>	60x10 <sup>-6</sup>	-40 to +105	
<b>Insulcast 125 †</b>	Low viscosity, general purpose, good machinability.	Black	*	100:6-7 (Icure 9)	3,000	24hr @ 25°C**	80D	0.648	80	4.2	415	5x10 <sup>14</sup>	48x10 <sup>-6</sup>	-40 to +105	
<b>Insulcast 136 †</b>	Easy to use, excellent adhesion to metals, ceramics and most plastics.	Black	*	100: 6-7 (Icure 9)	30,000	24hr @ 25°C**	87D	0.72	80	4.80	440	5x10 <sup>16</sup>	40x10 <sup>-6</sup>	-40 to +105	
<b>Insulcast 140 FR †</b>	Very high thermal conductivity.	Black	*	100: 3-4 (Icure 11B)	50,000	2hr @ 120°C**	90-95D	2.3	100	6.30	420	1x10 <sup>15</sup>	26x10 <sup>-6</sup>	-55 to +155	94V-1
<b>Insulcast 333 †</b>	Good thermal conductivity, superior impact resistance with good adhesion to most substrates.	Black / Neutral	*	100:6 (Icure 9)	2,000	12hr @ 25°C**	85D	0.618	80	4.4	410	1x10 <sup>15</sup>	48x10 <sup>-6</sup>	-40 to +105	94V-0
<b>Insulcast 502 †</b>	Unfilled, excellent electrical & physical properties.	Clear	*	100:13 (Icure 9)	200	24hr @ 25°C**	85D	0.23	85	4.0	425	2x10 <sup>15</sup>	75x10 <sup>-6</sup>	-40 to +105	
<b>Insulcast 961 FR †</b>	Low density syntactic foam.	Black	*	100:11-12 (Icure 9)	7,000	24hr @ 25°C**	70D	0.172	80	3.7	375	1x10 <sup>13</sup>	40x10 <sup>-6</sup>	-40 to +105	
<b>Insulcast 3230 LV †</b>	Low viscosity, highly filled formulation that exhibits excellent electrical properties, high thermal conductivity, and low thermal expansion.	Black	*	100: 4-5 (Icure 9)	6,000	24hr @ 25°C**	90D	1.0	80	6.30	475	1.3x10 <sup>16</sup>	28x10 <sup>-6</sup>	-40 to +105	
<b>Insulcast 504 †</b>	Unfilled, excellent electrical & physical properties.	Black	*	100:12 (Icure 9)	200	24hr @ 25°C**	75D	0.23	75	4.0	425	5x10 <sup>15</sup>	61x10 <sup>-6</sup>	-40 to +105	

† See TDS for full results.

\* Value is determined by choice of Insulcure. See values for all Insulcures in the Insulcure property table below.

\*\* Cure Cycle dependent on choice of Insulcure.

Insulcure Properties	Insulcure 9	Insulcure 11B	Insulcure 20	Insulcure 24	Insulcure 26	Insulcure 27
Pot Life (Minutes)	45	300	60	80	120	240

## INSULCAST SILICONES: ADDITION CURE

	Description	Color	Pot Life @ 25 °C	Mix Ratio by Weight	Viscosity (mixed, cP)	Cure Cycle	Shore Hardness	Thermal Conductivity (W/m °K)	Dielectric Constant (KHz)	Dielectric Strength (Volts/Mil)	Volume Resistivity (Ohm-cm)	Coefficient of Thermal Expansion (°C)	Service Temperature, (°C)	UL Flammability Rating
RTVS 27	Low viscosity, general purpose compound. RTVS 27 exhibits low temperature flexibility, excellent electrical properties, high temperature resistance and easy removal for component replacement or repair.	Black	60 - 90 min	1:1	2,900	24hr @ 25°C	60A	0.31	3.00	500	1x10 <sup>15</sup>	22x10 <sup>-5</sup>	-55 to +204	94V-0
RTVS 27 FC	Low viscosity, fast cure compound that has excellent electrical properties. Suitable for Electric Vehicle applications.	Black	<5 min	1:1	2,900	1 hr @ 25°C	60A	0.31	3.00	550	1x10 <sup>15</sup>	22x10 <sup>-5</sup>	-55 to +204	94V-0
RTVS 27 HTC	Low viscosity compound with high thermal conductivity. This combination makes it ideal for potting dense component packages requiring heat dissipation. Suitable for Electric Vehicle applications.	Black	60 min	1:1	6,000	24hr @ 25°C	60A	1.0	4.00	500	1x10 <sup>15</sup>	17x10 <sup>-5</sup>	-55 to +232	94V-0
RTVS 27 LV	General purpose compound.	Dark Gray	120 min	1:1	1,200	24hr @ 25°C	60A	0.31	3.40	500	3x10 <sup>14</sup>	22x10 <sup>-5</sup>	-55 to +204	94V-0
RTVS 42 Curtis II	This unique silicone-epoxy copolymer withstands severe thermal shock and eliminates cracking during thermal stress, provides low moisture absorption and has excellent dielectric insulation. It contains silane adhesion promoters that enable it to bond well to most metals and plastics.	Black	<20	100:4.8	16,000	24hr @ 25°C	75A	0.58	4.00	500	1x10 <sup>15</sup>	45x10 <sup>-6</sup>	-55 to +125	94V-0
RTVS 61M	Low viscosity, self-extinguishing compound.	Water clear	120 min	10:1	4,500	24hr @ 25°C	35A	0.19	2.70	500	1x10 <sup>15</sup>	27x10 <sup>-5</sup>	-55 to +204	
RTVS 8127	Flame retardent compound. The low viscosity and high thermal conductivity make it ideal for potting dense component packages requiring heat dissipation. Suitable for Electric Vehicle applications.	Gray	160 - 220 min	1:1	4,000	24hr @ 25°C	55A	0.75	4.00	500	1x10 <sup>15</sup>	18x10 <sup>-5</sup>	-55 to +204	94V-0
RTVS 8128	Great for high voltage applications.	Dark Gray	60 - 90 min	1:1	2,200	24hr @ 25°C	50A	0.31	3.00	550	1.5x10 <sup>15</sup>	22x10 <sup>-5</sup>	-55 to +204	Meets 94V-0
RTVS 3-95-1	High thermal conductivity, high temperature compound.	Red	90 min	100:5	10,000	24hr @ 25°C	65A	1.25	5.00	500	5x10 <sup>14</sup>	18x10 <sup>-5</sup>	-55 to +260	94V-0
RTVS 3-95-2	High temperature with very high thermal conductivity potting compound. Suitable for Electric Vehicle applications.	Red	90 min	1:1	35,000	24hr @ 25°C	85A	1.44	5.00	425	1x10 <sup>14</sup>	15x10 <sup>-5</sup>	-55 to +260	94V-0

## INSULCAST SILICONES: CONDENSATION CURE

	Description	Color	Pot Life @ 25 °C	Mix Ratio by Weight	Viscosity, (cP)	Shore Hardness	Thermal Conductivity, (W/m °K)	Dielectric Constant, (KHz)	Dielectric Strength, (Volts/Mil)	Volume Resistivity, (Ohm-cm)	Coefficient of Thermal Expansion (°C)	Service Temperature, (°C)	UL Flammability Rating
RTVS 11	Low viscosity, multi-purpose product.	White	15 - 120 min***	0.1 - 0.5% (w)	12,000	45A	0.31	3.40	500	9x10 <sup>14</sup>	25x10 <sup>-5</sup>	-55 to +204	-
RTVS 46	Cures to a flexible syntactic foam.	White	2 - 3 min	100:5 (w)	40,000	30A	0.26	2.60	250	1x10 <sup>14</sup>	20x10 <sup>-5</sup>	-50 to +204	-
RTVS 51	Low temperature flexible, easily pourable.	White	15 - 120 min***	0.1 - 0.5% (w)	12,000	50A	0.31	3.60	520	2x10 <sup>14</sup>	22x10 <sup>-5</sup>	-115 to +232	-

\*\*\* Varies with % of CAT-2

## SILICONE GREASES

	Description	Color	Dielectric Constant, (KHz)	Dielectric Strength, (Volts/Mil)	Volume Resistivity, (Ohm-cm)	Service Temperature, (°C)
SG 146 LV	Offers excellent lubrication on plastic and rubber surfaces. With its high dielectric strength and good hydrolytic stability, it is also water-repellent and radiation resistant. Complies with the ASNI/NSF Standard 61 for drinking water system components and FDA requirements for food contact under 21 CFR 175.300.	Semi-transparent	2.90	450	1x10 <sup>14</sup>	-40 to +450

**RTVS PRIMERS** are used to strengthen adhesion of our two component addition cure RTV silicones, one component condensation cure RTV silicones, and mold-making compounds.. These primers may be used on metal, wood, glass, ceramics and many plastics. There are 3 primers available: RTVS 44 (Clear), RTVS 41 (Blue), RTVS 40 (Pink-Red). These primers have a mixed viscosity of 1 cP and a flash point of 84 °F.

# GLOBAL OPERATIONS

## North America

### ITW Performance Polymers

30 Endicott Street  
Danvers, MA 01923  
T: +1 855-489-7262  
info@itwpp.com  
www.itwpp.com

### ITW Performance Polymers

130 Commerce Drive  
Montgomeryville, PA 18936  
T: +1 215-855-8450  
customerservice.na@itwpp.com  
www.itwpp.com

## South America

### ITW PP&F

Rua Antonio Felamingo, 430  
Macuco, Valinhos, SP 13279-452  
T: +55 19 2138-7600  
www.itwppf.com.br

## Europe

### ITW Performance Polymers

Bay 150  
Shannon Industrial Estate  
Shannon, County Clare  
Ireland  
T: +353 61 771 500  
E: customerservice.shannon@itwpp.com  
www.itwpp.com

## Asia Pacific

### ITW PP&F China

2703, Xingyuan Building  
No. 418, Guiping Rd.  
Cao He Jing Hi-Tech Park  
Shanghai  
China 200233  
T: +86-21-5426-1212  
www.itwppfchina.com

### ITW PP&F Japan

30-32 Enoki-cho,  
Suita, Osaka 564-0053  
Japan  
T: +81-6-6330-7118  
www.itwppfjapan.com

### ITW PP&F Korea

13th floor, PAX Tower, Unit B  
231-13, Nonhyeon-Dong, Gangnam-Gu  
Seoul, Korea 135-010  
T: +82-2-2088-3560  
www.itwppfkorea.com

### ITW P & F – Polymers Australia

100 Hassall Street, Wetherill Park  
NSW 2164  
Tel: +800 063 511  
www.itwppf.com.au

### ITW India Limited

Plot no: 34 to 37, Phase-2,  
IDA, APIIC, Pashamylaram,  
Medak Dist-502307  
Andhra Pradesh, India  
Tel: +08455-224700,224701  
www.itwchemin.com

Insulcast is a registered trademark of Illinois Tool Works, Inc.  
© 2018, Insulcast  
© 2018 ITW Performance Polymers, August 2018

The technical information, recommendations, and other statements contained in this brochure are based upon tests or experience that ITW Performance Polymers believes are reliable, but the accuracy or completeness of such information is not guaranteed. The information provided is not intended to substitute for the customers own testing.



**INSULCAST®**

+1 215-855-8450

www.insulcast.com  
www.itwpp.com