

# RPPL Product Portfolio

## PU & Epoxy Formulations



# COMPOUNDS FOR ELECTRONIC ASSEMBLIES

Safety is of utmost concern for any electrical and electronic device; be it Home, Industrial or Commercial. The safe-working of these devices is essential in ensuring efficient operation of the appliance with a long, optimum lifespan; a necessity in our day to day lives.

RAND has been a pioneer in introducing Potting compounds formulated using a Polyurethane network. Over the years, Rand has added, and expanded, to its portfolio, functional and high-performance systems based on both PU and Epoxy networks, for various Electronic Assemblies.

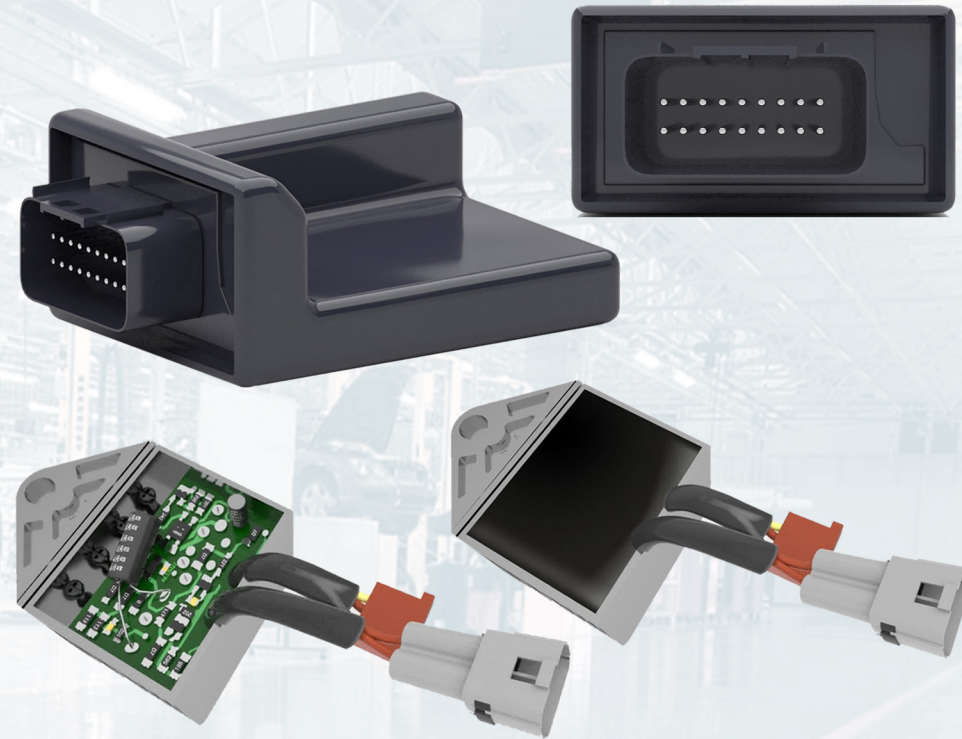
## AUTOMOTIVE COMPONENTS

Automotive components such as ECU's (Engine Control Units), Automotive Flashers etc; are devices placed at the heart of automotive assemblies, providing specifically designed functionalities. Potting serves as a means to

- Protect the devices from shocks, vibrations and moisture
- To ensure the device is tamper-proof and the components cannot be exposed for reverse engineering.
- Provide good thermal conductivity to help dissipate the heat generated during operation.
- Provide excellent thermal cyclic load performance; so that the device performs in varying weather conditions and operational temperature zones

In order to suffice such requirements, Epoxies are preferred due to their ability to resist higher temperatures and cyclic heating loads. The challenges lie in formulating Epoxies to change their inherent brittle nature to a tougher and more flexible network.

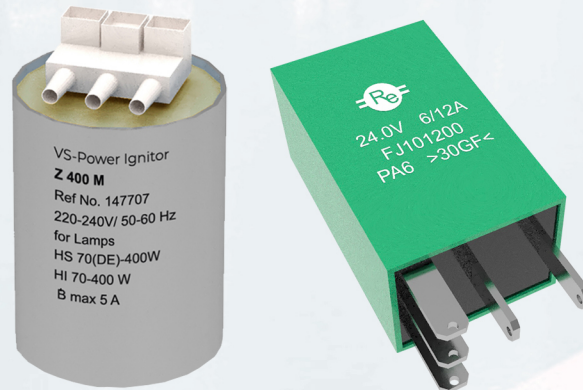
Epoxy systems, designed with the right functional additives and TIM's, provide the most optimum solution to potting of such critical electronic components.



## FILM CAPACITORS

Film Capacitors form an essential and critical part of everyday appliances and power electronics. Potting serves not only as a dielectric but also protects the assemblies from corrosive agents, shocks/vibrations and gaseous corona discharges in HV applications.

Flame retardancy is also a desired property of the potting compound and the capacitor assembly as a whole.



## POWER FACTOR CORRECTION

Power Factor Correction (PFC) Capacitors are usually installed as banks of capacitors; of either a fixed or adaptive banks. The Potting inside a PFC is critical to avoid failure of the capacitor; since it is a crucial part of the control panel.

Single-component PU systems developed by RPPL are designed such that they are in a partially gelled state at room temperature while being completely flowable at elevated temperatures.

This ensures that when the capacitor banks heat up, any generated gases flow out from the potting matrix and escape to the atmosphere; without causing any damage to the capacitor film.



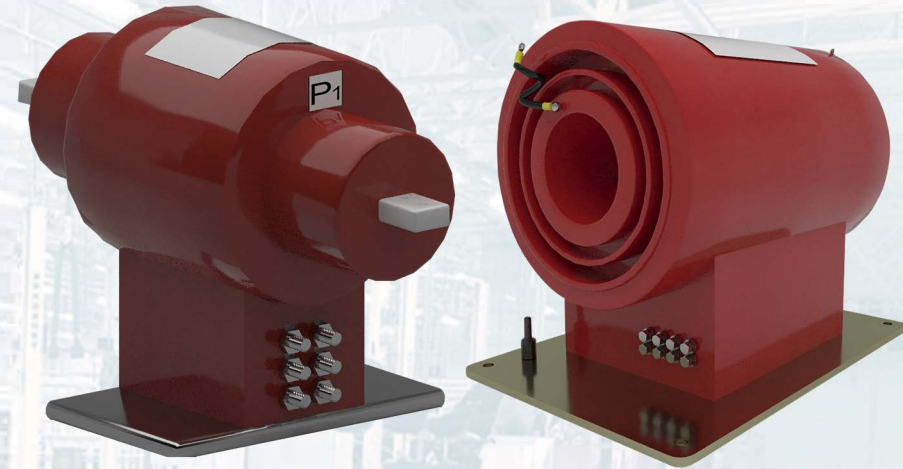


# COMPOUNDS FOR ELECTRICAL CASTINGS

## RESIN CAST LV/ MV TRANSFORMS

Resin Cast LV/MV transformers (voltage rating upto 35KV) are used in a wide range of power supply distribution networks and represent the most reliable answer for distribution systems, power production, rectification, traction and for special requirements. Cast resin transformers use class F 155°C insulating material, allowing for a maximum temperature rise of 100°C.

Due to this specification, Epoxy Resins are traditionally used for Dry Castings. With the availability of functional additives and their compatibility in product formulations, contemporary LV/MV transformers make use of PU Cast Resins, owing to the better mechanical and elongation properties of the PU network.



## CABLE JOINTING KIT-

Cable joints play an essential role in power supply cables, to ensure continual flow of electricity. Cable joints came into existence to maintain the continuity of long length cables. The dielectric shielding or termination of the cable is done using PU or Epoxy casting resins. RPPL's range of PU resins systems for cable jointing and end-termination are formulated to form a semi-rigid and low viscosity material. This is ideal for sensitive components and also provides good protection through thermal cycling. These systems exhibit excellent electrical properties as well as excellent water impermeability. FR grade systems can also be formulated in the same family and all RPPL systems are RoHS compliant.

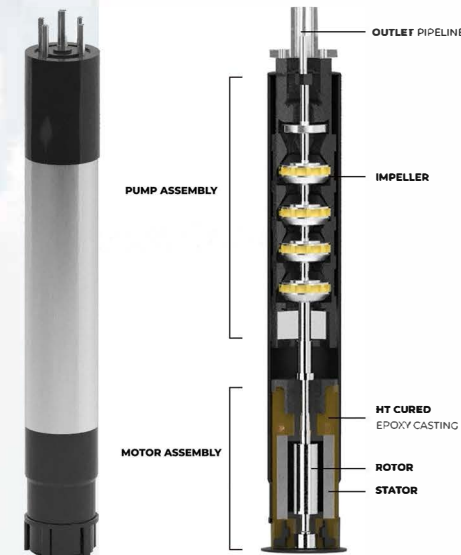


## SUBMERSIBLE PUMPS

Submersible pumps are so named because they are designed to pump liquids while being submerged in the fluid during operation. Since sub. pumps, or ESP's as they are known, as submerged in the fluid, the motor assembly needs to be completely hermetically sealed.

For this, the shielding of the pump motor assembly is done by using Epoxy compounds as castings for the motor. High Temp. cured epoxies that provide excellent thermal and electrical properties are ideal for such castings.

RPPL's range of Epoxy Casting Resins provide extremely low water absorption, good chemical resistance and excellent thermal resistance to high working temperatures; along with the possibility of having systems that are UL FR V0 certified.



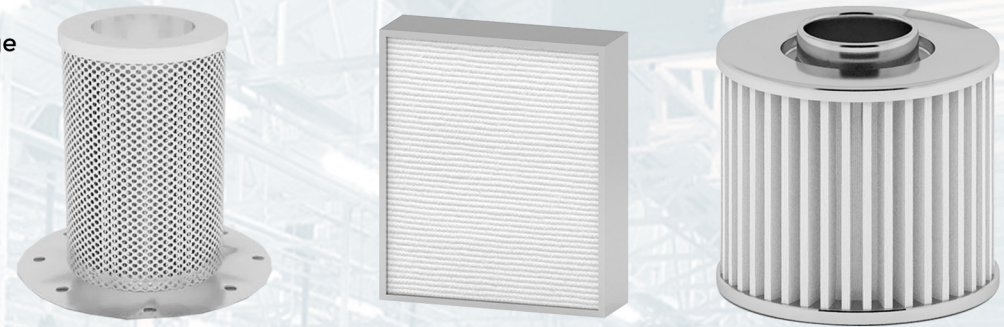


# ADHESIVES & SEALANTS

Be it general purpose usage or specific bonding requirements for Industrial products, 2-component PU and Epoxy adhesives are used as sealants or casting compounds in a wide range of end-product applications.

## AIR , HEPA & AIR-OIL SEPARATORS

Air, HEPA and Air-oil Separators use adhesives that serve the dual purpose of adhesion to the filter media as well as the end-cap, usually made of Aluminium. The advent of PU networks that can be designed to form excellent bonds with different substrates has enabled use of PU in place of PVC-plastisol as an adhesive for a variety of such Industrial filters.



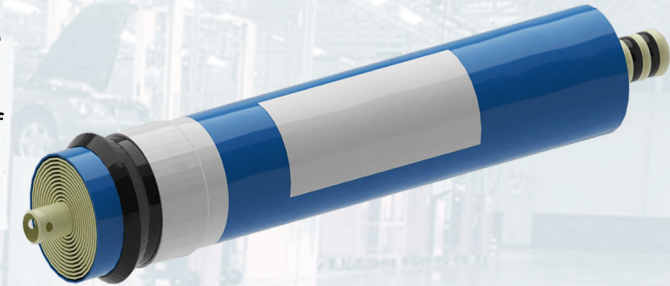
## UF WATER FILTRATION SYSTEMS

UF water filtration systems and water purifiers widely make use of hollow fibre membranes due to their superior performance benefits. The hollow fibre membranes are assembled together in a cartridge and need a strong adhesive to glue the bundle at the ends in a casing.

2-component Epoxy adhesives are used since they offer an almost water-white transparency to the adhesive. A critical part of the curing process is a controlled exotherm during the reaction, which is critical to ensure that the fibres are not distorted; which could lead to problems in-field.

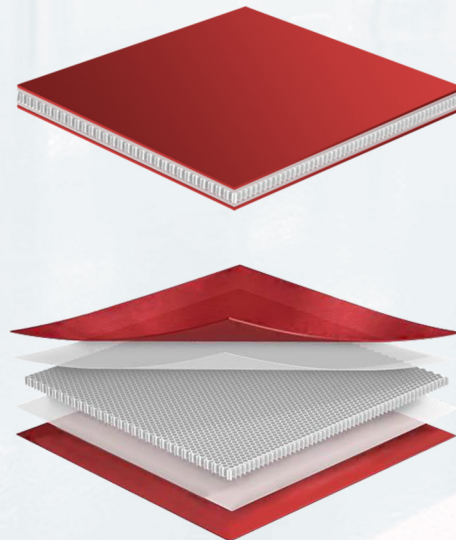
RPPL's ENBOND range of products include a host of such tailor-made PU and Epoxy formulations for specific end-use applications as Industrial adhesives and sealants. The specially formulated 2K adhesives form a structure that needs to be mechanically tough and resilient, having the ability to counter dynamic shear-forces as well as providing excellent bonding to a variety of substrates. The formulations are so designed that the product mix-viscosity, pot-life and curing exotherm is optimised for its end application.

Modern structural adhesives also need to be designed to exhibit flame-retardant properties.



## HONEYCOMB PANELS

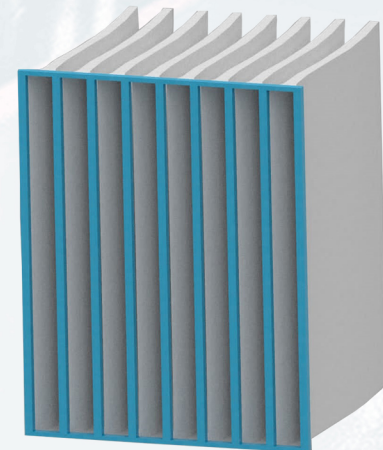
Honeycomb Panels use the geometric structural advantages provided by a hexagonal honeycomb structure. The Honeycomb core is sandwiched between two thin face layers; the resulting high moment of inertia enables the panels to withstand very high out-of-plane compression and shear forces. Depending on the end use, the honeycomb structure is made of paper, aluminium or polypropylene. To prevent the two face layers from slipping, They need to be structurally bonded to the honeycomb. The adhesive must be able to counter the external bending force with a counteracting shear force; hence the adhesive must be able to transfer shear loads effectively. Along with excellent lap shear and peel-off strength, modern honeycomb panel adhesives also need to be Flame Retardant at very low thicknesses.



## POCKET FILTERS

Pocket filters are used in HVAC applications for removal of dust from ambient air. They either form the pre filter for Pharma-HVAC systems or final filters in applications like Paint rooms. The filter MOC is usually synthetic filter media, glass fibres or nano fibre. To make the entire unit cost effective and extend its service life, traditional metal frames are replaced by using rigid-structural foams.

The foam carries out a dual function of ensuring proper adhesion of the filter media as well as providing structural integrity to the whole unit. To design must ensure the foam is mechanically tough, resilient and provides good adhesion





# MATERIALS FOR ELECTRONIC PROTECTION

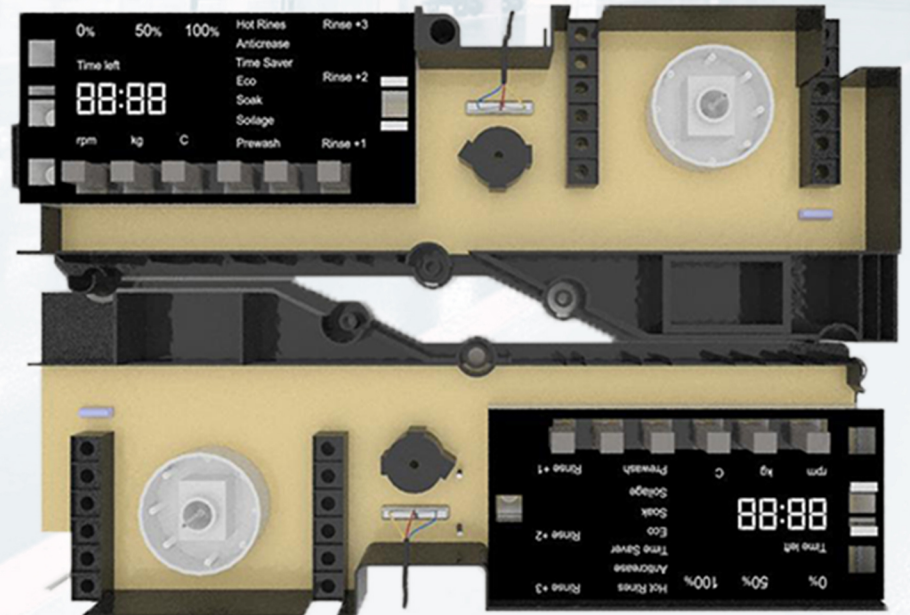
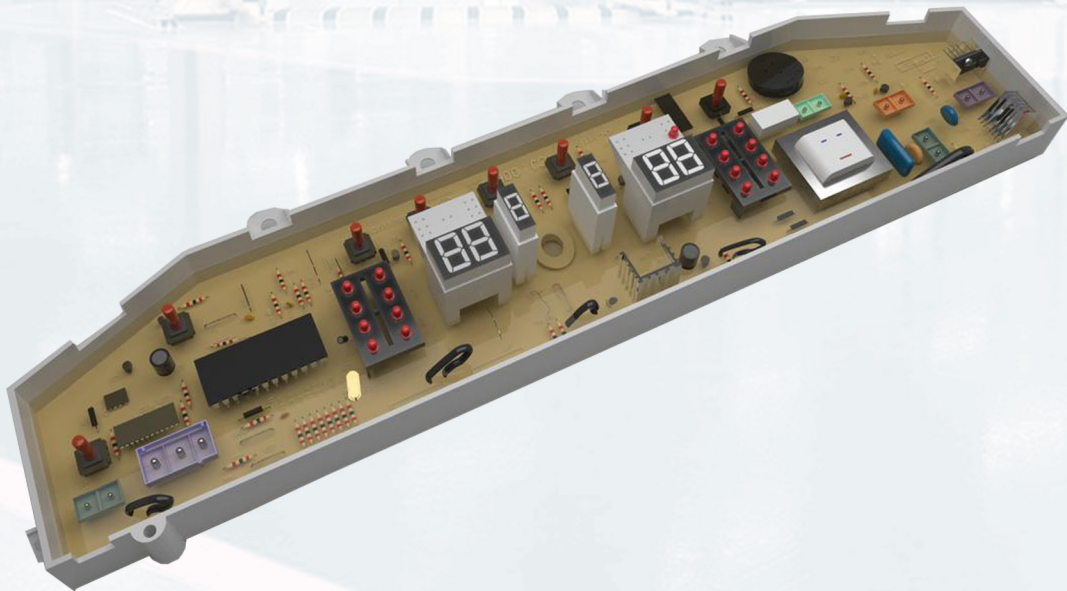
## MATERIALS FOR ELECTRONIC PROTECTION

Electronic products have a widespread influence and command in the modern day-to-day life.

PCB's and LED's form the heart of most new age electronic assemblies; and their reliability is essential to make our daily lives functional.

The PCB is subject to exposure to moisture and vibrational shocks, which can cause permanent damage to the components and circuit as a whole. Protection from such factors and an encapsulant that is soft, in case of rework; is a critical need for all PCB manufacturers.

RPPL's range of formulated PU encapsulation systems provide the necessary protection from all elements and stresses, providing a soft and transparent film with good electrical resistance at the same time. The systems are flame retardant; starting at a minimum thickness of 0.5mm.





# COMPREHENSIVE TABLE OF KEY PRODUCT SYSTEMS

TYPE	RESIN	HARDENER	FR	DESCRIPTION	CAP	ELEC CAST	AUTO- ELEC	ELEC/LED DRIVERS	FILTERS	Cured System Hardness
EPOXY	EPOCAST®3146	EP 46	✓	FR UL 94 V-0 System 1.6mm Black	✓	✓				85D
	EPOCAST®3129	EP 32	✓	FR UL 94 V-0 System 5mm all colours	✓			✓		80D
	EPOCAST®3150	EP 49	✓	FR UL 94 V-0 System 5mm all colours				✓		80D
	EPOCAST®3150	EP 50	✓	[HT] UL 94 V-0 System 3mm NC, WT, BK	✓	✓				80D
	EPOCAST®3123	EP 22		General Purpose Epoxy Resin System	✓		✓	✓		80D
	EPOCAST®3128	EP 28		Low Cost GP Epoxy Resin System		✓	✓			80D
	EPOCAST®3117	MX		Casting Resin System		✓	✓	✓		80D
POLYURETHANE	ENCAST®100	PU 10		FR UL 94 V-0 System 3mm all colours	✓			✓		85A
	ENFIL®	RP		General Purpose Potting Resin	✓			✓		85A
	ENFIL®LF	RP		Cost Effective GP Potting Resin	✓					80A
	ENCAST®1147	RP		Medium Viscosity Low Cost Potting Resin	✓					85A
	ENCAST®H1136	RP		Hard System for Electrical Castings	✓	✓				85D
	ENCAST®825	RP		Soft Potting Systems for Castings		✓				55D
	ENCAP®CJC	CJC		High Viscosity, Cable Joining Compound		✓	✓			90A
	ENFIL®HF	RP(V)		Flexible, Low Viscosity Potting Compound			✓			45A
	ENCAP®PC	PU 09		Flexible Transparent Potting Compound			✓	✓		55A
	ENCAST®1117	RP		Hard System for Air Filters					✓	70D
	ENCAST®1118	RP		Low Cost System for HEPA/Pre-filters					✓	85A
	ENCAST®1120	RP		Thixotropic System for Pre-Filters					✓	70A
	ENCAST®1126	RP		Low- Viscosity System for HEPA/Pre-filters					✓	85A
	ENCAST®1115	NA		Single Component Jelly	✓					NA



# CUSTOMERS

## POTTING & CASTING

## ELECTRONIC PROTECTION

## SPECIALITY POLYMERS

## ADHESIVES

## FLOOR & CONSTRUCTION

