

## RSN R4060/HRD 28C

Heat curing Epoxy encapsulant with excellent heat and chemical resistance

### Typical Properties

(Not for specification purposes. All tests run at 25°C unless otherwise noted)

#### RSN / A-side Properties:

Appearance	Visual	Soft Paste Black
Specific Gravity	ASTM-D-1475	1.65 g/cc
Viscosity @ 25°C	ASTM-D-2393	300,000 cP
@ 40°C		38,000 cP
Flash Point, PMCC		>198°C (388°F)

#### Hardener / B side Properties

Appearance	Visual	Amber
Specific Gravity	ASTM D-1475	1.17 g/cc
Viscosity @ 25C	ASTM D-2393	90 cP
Flash point, Cleveland Open Cup		140°C (284°F)

#### Mix Properties

Viscosity @ 25C	ASTM D-2393	3,000 cP
Pot life @ 25C		3 -5 days
Gel Time @ 100°C		28 minutes

#### Mix Ratio:

Parts by weight (part by volume) 100A : 30B ( 100A:42B)

#### Recommended Cure Schedules:

General usage: 6-8 hours @ 100°C or 2-3 hours @ 125°C  
High temperature usage: 2 hours @ 125°C + 4 hours @ 150°C

Please note: any cure schedule selected for use should be confirmed through testing as being appropriate for your particular processing methods and for your intended application.

#### Cured Properties (cured 7 days at 25°C)

Appearance	Visual	Black glossy solid
Specific Gravity		1.63 g / ml
Shore Hardness @ 25°C	ASTM-D-2240	97D
@ 100°C		95D
Barcol Hardness @ 25°C / 100°C / 180°C		89 / 86 / 18
Cure shrinkage	ASTM-D-2566	0.8% by volume
Heat Deflection Temp.	Perkin Elmer Appl. Cast #20	133°C
Coefficient of Thermal Expansion(CTE) (per °C)	ASTM-E-381	23 x 10 <sup>-6</sup>
Water absorption 24 hrs @ 25°C / 2 hrs @ 100°C	ASTM-D-252	0.05% / 0.26%
Recommended service temperature		-55°C to +180°C
Thermal weight loss Aged 7 days @ 200°C		0.49%
Volume resistivity @ 25°C	ASTM-D-257	1.5x 10 <sup>14</sup> Ω-cm
@ 150°C		3.8x 10 <sup>10</sup> Ω-cm
@ 180°C		2.4x 10 <sup>9</sup> Ω-cm
Dielectric Strength	ASTM-D-149	425 volts/mil
Dielectric Constant @1KHz @ 25°C / 150°C / 180°C	ASTM-D-150	4.05 / 4.72 / 6.06
Dissipation Factor @1KHz @ 25°C / 150°C / 180°C	ASTM-D-150	0.02 / 0.074 / 0.20

RSN R4060 with hardener HRD 28C is a multipurpose, heat curing epoxy system with excellent electrical and mechanical properties. The cured polymer is resistant to extended exposure to at least 180°C and provides excellent chemical resistance to acids, bases, and many solvents and other chemicals.

This epoxy system can be used for potting and encapsulation applications including under-the-hood automotive applications and is also useful for structural casting and some adhesive applications due to its good mechanical strength and adhesion to many common materials such as metals, glass, and some plastics.

#### Storage Guidelines:

Store this material in a clean, dry environment in its tightly closed original container. These products are not considered especially temperature sensitive, but should ideally be stored at 18-35°C (64-95°F). Under these conditions the products will have a minimum shelf-life of 12 months from the date of shipment.

#### Processing Guidelines:

This system can be mixed manually or by using either dynamic or static mixing systems. Whatever method is chosen, be sure to accurately weigh both the resin and the hardener prior to mixing them and ensure the correct mix ratio is used.

If mixing manually mix for at least 2 minutes and be sure to scrap the walls and bottom of the mixing vessel to be sure that all of the material is thoroughly mixed. To ensure a void free casting, vacuum de-air the mixture after thorough mixing. A vacuum of 28 inches of mercury is generally sufficient to remove the vast majority of entrapped air within 5-10 minutes. Large volumes of the mixed system may require longer times under vacuum.

If processing in a humid environment, it may be advisable to fully cure within an oven at 40-60°C in order to prevent vapor absorption that can lead to streaks on the surface of the casting.

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**Handling Precautions:**

Mandatory and recommended industrial hygiene procedures should be followed whenever these products are being handled and processed. For additional information please consult the corresponding material safety data sheets.

**Specialty Polymers & Services, Inc. (SP&S)**  
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**Personal Hygiene:****RSN R4060**

**CAUTION!** May cause eye irritation. Prolonged or repeated skin contact may cause irritation, and may cause allergic skin reaction. Harmful if inhaled. Harmful if swallowed. In accordance with good industrial practice, handle with care and avoid unnecessary personal contact. Avoid contact with eyes and prolonged or repeated skin contact. Do not inhale mists. Use with adequate ventilation. For industrial use only.

**Tel - 661-294-1790**

**Fax - 661-294-0640**

**HRD 28C**

**WARNING!** Causes severe eye irritation. Causes skin irritation and possible allergic skin reaction. Harmful if inhaled. Harmful if swallowed. In accordance with good industrial practice, handle with care and avoid unnecessary personal contact. Avoid contact with eyes and prolonged or repeated skin contact. Do not inhale mists. Use with adequate ventilation. For industrial use only.

**First Aid**

In case of contact:

**Skin** - Wash skin thoroughly with mild soap and water. Remove contaminated clothing and wash before reuse. Discard contaminated shoes and other articles made of leather

**Eyes** - Flush eyes with plenty of water for 15 minutes and get prompt medical attention.

**Inhalation** - Remove person to fresh air

**Ingestion** - Do not induce vomiting. Dilute with plenty of water and contact physician immediately. Never give anything by mouth to an unconscious person

**Disclaimer:**

**IMPORTANT:** The following supercedes Buyer's documents. **SELLER / MANUFACTURER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller / Manufacturer be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict liability, tort or contract arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results presented are based on controlled or laboratory work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended