

## SAFETY DATA SHEET

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### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: Rayco R-81816  
General Use: Bonding friction material to metal  
Product Description: Nitrile phenolic thermosetting adhesive

**MANUFACTURER:**

Raybestos Powertrain, LLC  
1204 Darlington Avenue  
Crawfordsville, Indiana  
47933 USA

**EMERGENCY TELEPHONE NUMBER:** (765) 362-3500 8am - 5pm EST  
**TRANSPORTATION EMERGENCY:** CHEMTREC (800) 424-9300

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### 2. HAZARDS IDENTIFICATION

Flammable Liquid, Category 2  
Skin Corrosion/Irritation, Category 2  
Skin Sensitizer, Category 1A  
Serious Eye Damage/Eye Irritation, Category 2A  
Toxic to Reproduction, Category 1B  
Carcinogenicity, Category 2A  
Aquatic Toxicity, Category 1



**DANGER!**

#### Emergency Overview:

This product is highly flammable, causes irritation eyes, skin and respiratory tract. Can cause allergic reaction to skin from repeated or prolonged contact. Causes central nervous system depression. Possible effects on human reproduction.

#### GHS Hazard Phrases:

H225: Highly flammable liquid and vapor  
H315 + H317: Causes skin irritation. May cause allergic skin reaction.  
H320: Causes eye irritation.  
H350: May cause cancer.  
H401: Toxic to aquatic life.  
H303: May be harmful if swallowed.  
H361: Suspected to damaging fertility or the unborn child.

### GHS Precaution Phrases:

P210: Keep away from heat, sparks or open flames.  
P270: Do not eat, drink or smoke when using this product.  
P202: Do not handle until all safety precautions have been read and understood.  
P302+P352 + P362+P364 (IF ON SKIN): Wash with plenty of soap and water. Take off contaminated clothing and wash it before use.  
P333+P313: If skin irritation or rash occurs: Get medical advice/attention.  
P261+P271: Use only outdoors or in a well ventilated area. Avoid breathing vapors or dust created from product.  
P501: Dispose of contents and container in accordance with local/state and federal regulations. Do not breathe vapors. Use only in a well ventilated area.  
P280+281: Use personal protective equipment as required. Wear protective gloves and eye protection  
P304+340 (IF INHALED): Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P301+330 (IF SWALLOWED): Rinse mouth. Do NOT induce vomiting.  
P280+P305+351+338: Wear eye protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P403+235: Store in cool, well-ventilated place.  
P273: Avoid release to the environment.  
P240: Ground container and receiving equipment.

### Potential Health Effects (Acute and Chronic):

**Inhalation:** Causes respiratory tract irritation. May cause drowsiness and dizziness, nausea, headache, central nervous system depression.

**Skin Contact:** Causes skin irritation. Prolonged or repeated contact may cause allergic sensitization.

**Eye Contact:** Causes eye irritation. Prolonged contact may result in permanent damage, including burns and blindness.

**Ingestion:** Harmful if swallowed. May cause irritation of the digestive tract. Systemic effects, including central nervous system depression, lowered blood pressure, difficulty breathing, May have reproductive effects.

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS (Specific content percentages are proprietary.)

Chemical Name	CAS Number
Methyl Ethyl Ketone (MEK)	78-93-3
Phenol-Formaldehyde Resin	9003-35-4
1-Butanol	71-36-3
Acrylonitrile/butadiene polymer	9003-18-3
Carbon Black	1333-86-4
Polyvinyl butyral	63148-65-2
Phenol	108-95-2
Hexane Isomers	110-54-3
Synthetic amorphous silica	112945-51-5
Heptane	142-82-5
Zinc oxide	1314-13-2
Formaldehyde	50-00-0
Coumarone-Indene resin	63393-89-5
Naptha	68603-08-7
Polymerized 1,2-dihydro-2,2,4-trimethylquinoline	26780-96-1
Cyclohexane	110-82-7

(Note: See Section 8 for Occupational Exposure Limits)

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#### 4. FIRST AID MEASURES

**Emergency & First Aid Procedures:** Consult a physician and show this safety data sheet to doctor in attendance.

**Inhalation:** Remove to fresh air immediately. If breathing is difficult, give oxygen. Get immediate medical attention.

**Eye Contact:** Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses. Get medical attention.

**Skin Contact:** Remove contaminated clothing and immediately flush skin with plenty of water and wash with soap. Get medical attention if irritation results or persists. Wash clothing separately before reuse.

**Ingestion:** If swallowed, do NOT induce vomiting. Wash mouth out with water if conscious and give victim a glass of water or milk. Call a physician or poison control center immediately.

**Signs and Symptoms of Exposure:** Symptoms of exposure may include eye and skin irritation, sore throat, cough, dizziness, drowsiness, headache, nausea, and vomiting.

**Note to Physician:** Treat symptomatically and supportively.

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#### 5. FIRE FIGHTING MEASURES

**Flashpoint and Method:** 37°F Pinsky Martens Closed Cup

**Suitable Extinguishing Media:** In case of fire, use water spray, carbon dioxide, dry chemical powder or appropriate foam.

**Fire Fighting Instructions:** As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Vapors are heavier than air and may travel to a source of ignition and flash back. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool.

**Hazardous Combustion Products:** Carbon monoxide, butyraldehyde, butyric acid acrolein, crotonaldehyde in trace amounts.

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#### 6. ACCIDENTAL RELEASE MEASURES

##### **Protective Precautions, Equipment and Emergency Procedures**

Use personal protective equipment. (See Section 8) Avoid breathing vapors. Avoid contact with eyes, skin and clothing. Ensure adequate ventilation. Remove sources of ignition. Evacuate personnel to safe areas. Vapors can accumulate in low areas. Clean up spills immediately. Use a spark proof tool. Absorb spills with inert material (e.g., dry sand or earth), then place in a chemical waste container. Keep container tightly closed. Keep away from heat, sparks and flame. Dispose of contaminated adsorbent in accordance with Federal, State, and Local regulations.

##### **Environmental Precautions**

Do not let product enter drains.

## 7. HANDLING AND STORAGE

**Precautions to be taken in handling:** Ensure adequate ventilation. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Use spark proof tools.

**Precautions to be taken in storing:** Keep away from sources of ignition. Store in a cool, dry, well-ventilated area. Store in a tightly closed container. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits					
INGREDIENTS	CAS #	OSHA PEL STEL	ACGIH TLV STEL or C	NIOSH REL STEL or C IDLH	EU OEL STEL
Methyl Ethyl Ketone (MEK)	78-93-3	200 ppm NE	200 ppm 300 ppm	200 ppm 300 ppm 3000 ppm	No Data
Phenol-Formaldehyde Resin	9003-35-4	No Data	No Data	No Data	No Data
1-Butanol	71-36-3	100 ppm	20 ppm	C 50 ppm NE 1400	No Data
Acrylonitrile/butadiene	9003-18-3	No Data	No Data	No Data	No Data
Carbon Black	1333-86-4	3.5 mg/m <sup>3</sup> NE	3.5 mg/m <sup>3</sup> NE	3.5 mg/m <sup>3</sup> NE	20 ppm
n-Hexane	110-54-3	500 ppm	50 ppm (skin)	50 ppm NE 1100 ppm	No Data
Vinyl terpolymer	63148-65-2	No Data	No Data	No Data	No Data
Phenol	108-95-2	5ppm (skin)	5 ppm (skin),	5 ppm (skin) C 15.6 (15 min skin) 250 ppm	No Data
Formaldehyde	50-00-0	0.75 ppm 2.0 ppm	No Data 0.30 ppm "C"	0.016 ppm 0.10 ppm "C"	No Data

Components in Section 3 that are not listed are below threshold limits for reporting. Carbon black is regulated as a dust: This product is in the form of a viscous liquid, and should not present a dust hazard. However, the cured resin may be machined, producing dust, which should not exceed the levels given above for nuisance dusts.

**PEL** = Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limit; an 8-hour time-weighted average (TWA) unless otherwise noted.

**STEL** = Short Term Exposure Limit. A 15-minute TWA concentration which should not be exceeded at any time during a workday. The duration of a STEL exposure should not be repeated more than 4 times per day, with at least one-hour between successive exposures to the STEL.

**REL** = National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit, based upon a 8-hour time-weighted average exposure.

**TLV** = American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value, based upon a 8-hour time-weighted average exposure.

**IDLH** = Immediately Dangerous to Life or Health. IDLH concentrations pose an immediate threat to life or health, or pose an immediate threat of severe exposure to contaminants likely to have adverse cumulative or delayed effects on health.

**C** = Ceiling. An employee's exposure to any substance, the exposure limit of which is preceded by a "C", shall at no time exceed the exposure limit given for that substance during any part of a work day.

**Skin** = The skin notation indicates that absorption of this substance through intact skin may contribute significantly to the absorbed dose.

**EU OEL** = European Union Occupational Exposure Limit based upon a 8-hour time-weighted average exposure.

**No Data** = Occupational exposure limit has not been established or is not available.

#### ENGINEERING CONTROLS:

Use adequate general or local exhaust ventilation or process enclosure to keep airborne concentrations below the occupational exposure limits. Ventilation fans and other electrical service must be non-sparking.

#### PERSONAL PROTECTION:

##### Respirator:

If ventilation or engineering controls are inadequate to maintain airborne contaminants at levels below the PEL, a NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge in accordance with a Respiratory Protection Program prescribed in the OSHA Respirator Standard (29 CFR 1910.134) or by the European standard EN 149. Respirators may be worn at levels up to 10 ppm of formaldehyde.

##### Eye Protection:

Wear appropriate protective safety glasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN 166. Use eye protection tested and approved under appropriated government standards such as NIOSH (US) or EN 166 (EU). should be worn to protect the eyes against splashing when appropriate. Neoprene coated gloves should be worn. Have access to eyewash station.

##### Protective Clothing:

Wear appropriate protective clothing to prevent skin exposure. The type of protective clothing should be selected according to the concentration and amount of the dangerous substance at the specific workplace.

##### Skin Protection:

Wear appropriate protective gloves such as neoprene or nitrile to prevent skin exposure. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact. Wash and dry hands after glove use. Have access to safety shower.

##### Work/Hygienic/Maintenance Practices:

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Wash contaminated clothing before reuse. Discard contaminated shoes. Do not smoke, eat or drink while using product.

##### Environmental Exposure Controls:

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Pressure:	71 mm Hg	Vapor Density:	2.4
Specific Gravity:	>1		(Air = 1)
Solubility in	insoluble	Evaporation	4.6
pH:	UNK		(n-Butyl Acetate = 1)
Boiling Point:	176 °F (80° C)	Freezing Point:	UNK
Viscosity:	1,900-2,200 cps	Odor:	Ketone
Physical State:	Liquid	Appearance:	Black, syrupy liquid
Explosive Limits:		Percent	76.6%
LEL:	No Data		
UEL:	No Data		
Auto Ignition:	No Data		

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## 10. STABILITY AND REACTIVITY

**Stability:** Stable

**Conditions to Avoid:** Heat.

**Incompatible Materials and Conditions to Avoid:** Avoid excessive heat, strong acids, alkalis, amines, and oxidizers.

**Hazardous Decomposition:** Will not occur.

**Possibility of Hazardous Reactions:** Will occur. Material will polymerize in an exothermic reaction if heated.

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## 11. TOXICOLOGICAL INFORMATION

**Toxicological Information:** This mixture has not been tested for toxicity. Toxicological information on the individual hazardous components of this mixture may be obtained, if needed, by writing to Raybestos Powertrain, LLC at the address listed in section 1 of this MSDS.

**Sensitization:** No data available.

**Germ cell mutagenicity:** No Data available.

**Chronic Toxicological Effects:** Specific target organ toxicity, repeated exposure: Liver and kidneys.

**Carcinogenicity:** Formaldehyde is listed as a carcinogen by the National Toxicology Program (NTP), and as a suspected carcinogen by both the International Agency for Research on Cancer (IARC) and OSHA.  
108-90-7 (Chlorobenzene): ACGIH:A3 Confirmed animal carcinogen with unknown relevance to humans.  
NTP: Phenol-Reasonably anticipated to be a human carcinogen.

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## 12. ECOLOGICAL INFORMATION

**General Ecological Information:** Harmful to aquatic organisms.

**Persistence and Degradability:** No data available.

**Bioaccumulative Potential:** No data available.

**Mobility in Soil:** No data available.



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## 13. DISPOSAL CONSIDERATIONS

**Waste Disposal Method:** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste in accordance with US EPA classification determination listed in 40 CFR 261.

RCRA U-Series: CAS # 78-93-3: U159 (Ignitable waste, toxic waste.) CAS# 108-90-7: U037.

Waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

Contact a licensed professional waste disposal service to dispose of this material and contaminated packaging.



**14. TRANSPORT INFORMATION**

**Land Transport (US DOT):** Adhesive (containing a flammable liquid)

**DOT Hazard Class:** 3 FLAMMABLE LIQUID

**UN/NA Number:** UN 1133, packing group II.

**LAND TRANSPORT (Canadian TDG):** Shipping Name: No Information Available.

**15. REGULATORY INFORMATION**

**Regulatory Constant Report**

VOC solvent density (lb/gal): 6.85  
 Product density (lb/gal): 8.25  
 lb VOC/lb Solid: 2.52  
 lb VHAP/lb Solid: 2.11  
 lb VOC/gal: 5.71

	<b>% Weight</b>	<b>% Volume</b>
Solids	26.9-27.9	14.4-15.2
Total Volatiles	71.3-72.0	83.4-84.2
Water Content	1.1-1.9	1.1-1.9

<b>VOC and VHAP Data</b>			
<b>CAS Number</b>	<b>VOC Name</b>	<b>VHAP? (Y/N)</b>	<b>Wt %</b>
108-95-2	Phenol	Y	3.90
50-00-0	Formaldehyde	Y	0.11
78-93-3	Methyl Ethyl Ketone	Y	52.10
110-54-3	n-Hexane	Y	1.73

TSCA (Toxic Substance Control Act): All intentional components listed.

CERCLA (Comprehensive Response Compensation and Liability Act):

<b>Chemical Name Chemicals listed in Table 302.4 of 40 CFR Part 302</b>	<b>RCRA Waste Number</b>	<b>RQ in pounds (kilograms)</b>
Phenol	U188	1000(454)
Formaldehyde	U122	100(45.4)
Methyl Ethyl Ketone (MEK)	U159	5000(2270)
1-Butanol	U031	5000(2270)
Zinc Compounds	none	none

EPCRA (Emergency Planning and Community Right-to-Know Act): 311/312 Hazard Categories:  
 Immediate Health, Chronic Health, Fire  
 313 Reportable Ingredients:

<b>Ingredient</b>	<b>Reportable Concentration (%)</b>
Phenol	1.0
Formaldehyde	0.1
Methyl Ethyl Ketone (MEK)	1.0
1-Butanol	1.0
Zinc Compounds	1.0



**This material meets the EPA “Hazard Categories” defined for SARA Title III Sections 311/312 as indicated:**

- |                                   |                |
|-----------------------------------|----------------|
| Acute (immediate) Health Hazard   | (X) Yes ( ) No |
| Chronic (delayed) Health Hazard   | (X) Yes ( ) No |
| Fire Hazard                       | (X) Yes ( ) No |
| Sudden Release of Pressure Hazard | ( ) Yes (X) No |
| Reactive Hazard                   | ( ) Yes (X) No |

**16. OTHER INFORMATION**

**Revision Date:** 7/30/2015

**Prepared by:** Wilcox Environmental Engineering – 317-427-0999

**Additional Information about This Product:** No Data Available

**Company Policy or Disclaimer:** To the best of our knowledge, the information contained herein is accurate. However, Raybestos Powertrain, LLC assumes no liability whatsoever for the accuracy or completeness of the information contained herein. Although certain hazards are described, we cannot guarantee that these are the only hazards that exist. All materials may present unknown hazards and should be used with caution. Final determination of the suitability of any material is the sole responsibility of the user.