

Ransom & Randolph

1. Product and Company Identification

<i>Product Name</i> Keycote™ Binder	<i>MSDS Code Number</i> 347
<i>Trade Name & Synonyms</i> Colloidal silica	<i>Date of Last Revision</i> 07/2006
<i>Chemical Name</i> Amorphous silica, aqueous colloidal solution	<i>Manufacturer</i> Ransom & Randolph
<i>C.A.S. Number</i>	<i>Address</i> 3535 Briarfield Blvd, Maumee, OH 43537
<i>Grades or Minor Variant Identities</i>	<i>Information Telephone Number</i> 419/865-9497 FAX 419/865-9997
<i>Product Use</i> Investment casting binder	<i>Emergency Telephone Number</i> 419/865-9497

2. Composition of Ingredients

<u>Hazardous Components</u>	<u>C.A.S. Number</u>	<u>%</u>
Silica, amorphous	7631-86-9	20 – 40%

3. Hazardous Identification*Emergency Overview*

A milky white odorless clear liquid, which is a mild skin and eye irritant.

<i>Routes of Exposure</i>	<i>Signs & Symptoms</i>	<i>Single, Repeated, or Lifetime Exposure</i>	<i>Severity (Mild, Moderate, Severe)</i>	<i>Acute and Chronic Health Effect(s)</i>	<i>Target Organ(s)</i>
<i>Eye</i>				May cause irritation	Eyes
<i>Skin</i>				May cause irritation	Skin
<i>Inhalation</i>					
<i>Ingestion</i>				None expected	
<i>Other</i>					

Medical Conditions Aggravated by Exposure

None known.

Carcinogenicity (IARC, NTP)

In the shipped form, this product was not evaluated by the IARC, not listed by NTP, and not regulated by OSHA.

Although amorphous silica is not a carcinogen as purchased in this product, portions of it may convert to crystalline silica (cristobalite) when subjected to higher temperatures (e.g. 1700° F), such as when used in a mold for ferrous and other high temperature alloy castings. The exposure to crystalline silica is highest at the mold knockout stage of the casting process.

The specifics on carcinogenicity of respirable crystalline silica follow:

The exposure limits for respirable crystalline silica; specifically cristobalite, established by OSHA-PEL = 0.05 mg/m³.

The IARC and NTP report the following on the carcinogenicity of respirable crystalline silica:

The National Toxicology Program (NTP) published its Ninth Annual Report on Carcinogens which concludes that "silica, crystalline (respirable)" is known to be a human carcinogen. The NTP conclusion is based on experimental animals and limited evidence in humans.

IARC Monograph Volume 68: Silica, silicates, coal dust, and para-aramid fibrils states that there is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica in the forms of quartz and cristobalite from occupational sources. Crystalline silica is categorized in the "Group 1" category which the IARC defines as the agent is carcinogenic to humans.

For more detailed information on the effects of crystalline silica, contact the manufacturer.

Potential Environmental Effects

4. First Aid Measures

<i>Routes of Exposure</i>	<i>First Aid Instructions</i>	<i>Immediate Medical Attention</i>	<i>Delayed Effects</i>
<i>Eye</i>	Immediately flush eyes thoroughly with water for at least 15 minutes		Obtain medical attention if irritation persists.
<i>Skin</i>	Immediately wash with soap and water. Remove all contaminated clothing, which should be laundered before reuse.		
<i>Inhalation</i>	Remove patient to fresh air. Upon irritation or breathing difficulty, consult a physician.		
<i>Ingestion</i>		Consult a physician.	

Other

Never give fluids or induce vomiting if patient is unconscious or having convulsions.

Note to Physicians (Treatment, Testing, and Monitoring)

Symptomatic treatment is advised.

5. Fire-fighting Measures

<i>Flashpoint: (Method)</i>	<i>Flammable (Explosive) Limits in Air</i>		<i>Autoignition Temperature:</i>	<i>Other</i>
	<i>LEL: N/A</i>	<i>UEL: N/A</i>		
N/A			N/A	

<i>Flame Propagation or Burning Rate (for solids):</i>	<i>Properties Contributing to Fire Intensity</i>	<i>Flammability Classification NFDA Rating:</i>	
<i>Extinguishing Media</i> Water spray, foam, carbon dioxide, dry chemical		<i>Extinguishing Media to Avoid</i> N/A	
<i>Protection and Procedures for Firefighters:</i> Avoid eye and skin contact. Do not breathe fumes.			
<i>Unusual Fire and Explosion Hazards:</i> <p style="text-align: center;">None</p>			
6. Accidental Release Measures			
<i>Containment Techniques</i> Contain spill to prevent spreading.			
<i>Spill/Leak Clean-Up Procedures and Equipment</i> Absorb on solid absorbent materials. Shovel into containers for disposal.			
<i>Evacuation Procedures</i>			
<i>Special Instructions</i> Prevent run-off to sewers, streams, or bodies of water.			
<i>Reporting Requirements</i>			
7. Handling and Storage			
<i>Handling Practices and Warnings</i> Normal handling precautions applicable to industrial chemicals.			
<i>Storage Practices and Warnings</i> Do not freeze. Do not store in light metal containers (aluminum).			
8. Exposure Controls/Personal Protection			
<i>Ventilation</i>	<i>Other Engineering Controls</i> General ventilation.		
<i>Routes of Entry:</i>	<i>Personal Protective Equipment (PPE) for Normal Use:</i>	<i>PPE for Emergencies:</i>	
<i>Eye/Face</i>	Chemical workers goggles recommended.		
<i>Skin</i>	Rubber/PVC gloves and full workers clothes recommended.		
<i>Inhalation</i>	Use approved respirator for dusty or misty conditions.		
<i>General Hygiene Considerations and Work Practices</i>			
<i>Other Protective Measures and Equipment</i> Eye wash and shower.			

9. Physical and Chemical Properties

<i>Appearance</i> White, translucent liquid		<i>Odor</i> None	
<i>Normal Physical State:</i> Liquid X Gas Solid		<i>Boiling Point</i> 212° F (100° C)	<i>Melting Point</i> 32° F (0° C)
		<i>Freezing Point</i> 32° F (0° C)	
<i>Specific Gravity or Density (H₂O=1)</i> 1.2	<i>Solubility in Water</i> Disperse but is negligibly soluble		<i>pH</i> 6.5
<i>Vapor Pressure (mm Hg.)</i> Not applicable	<i>Vapor Density (AIR = 1)</i>		<i>Evaporation Rate (water=1)</i> No data
<i>Other</i> % Volatile by volume: 75 - 85% (water)			

10. Stability and Reactivity

<i>Incompatibility (Materials to Avoid)</i> Metal oxide salts			
<i>Hazardous Products Produced During Decomposition</i> None			
<i>Hazardous Polymerization?</i>	<i>May Occur</i>	<i>May Not Occur</i> Y	<i>Conditions to Avoid</i>
<i>Stability?</i>	<i>Stable</i> Y	<i>Unstable</i>	<i>Conditions to Avoid</i> Freezing

11. Toxicological Information

<i>Toxicity Data, Epidemiology Studies, Carcinogenicity, Neurological Effects, Genetic Effects, Reproductive Effects, or Structure Activity Data</i>	
Toxicological information	This product is considered to be relatively harmless to man. However, dust from the dry product/spray may irritate the respiratory tract and cause symptoms of bronchitis.
Acute Toxicity	LD50 (oral, rat) = 3160 mg/kg (as 100% Silicon dioxide).
Component Analysis – LD50	No information
Inhalation Effects	Rat TClO = 50 mg/m ³ /6hr/2Y-I:CAR*
Irritation to skin	No information
Irritation to eyes	No information
Sensitization Data	Not a sensitizer. (Magnusson-Kilgman test).*

12. Ecological Information

<i>Toxicity, Environmental Fate, Physical/Chemical Data, or Other Data Supporting Environmental Hazard Statements</i>	
Biodegradability:	Not applicable for inorganic substances.
Aquatic Toxicity:	LC50 (Brachydanio rerio) 96 hr > 5000 mg/L. EC50 (Ceriodaphnia dubia) 48 hr = 7600 mg/L. Algae: EC50 (selenastrum capricornutum) = 440 mg/L.
This product is not expected to present an environmental hazard.	

13. Disposal Considerations

Regulations

In accordance with municipal, provincial, state and federal regulations.

Properties (Physical/Chemical) Affecting Disposal

14. Transport Information

Regulated for shipping?
Yes No X

Proper Shipping Name
Not regulated

Packing Group
N/A

Do changes in quality, packaging, or shipment method change product classification?
Yes No X

Hazard Class
N/A

Identification Number
N/A

Other

Not classified as dangerous for transport: ADR, RID, DOT, IMO, IMDG, ICAO, IATA-DGR.

15. Regulator Information

Federal Regulations

US Federal Regulations: In compliance
Canada DSL: In compliance

International Regulations

Other

16. Other Information

NFPA Hazard Rating	Health: 1	Flammability: 0	Reactivity: 0
HMIS Hazard Rating	Health: 1	Flammability: 0	Reactivity: 0
Personal Protection: Use NIOSH/OSHA approved respirator.			

The information set forth herein has been gathered from standard reference materials and/or Ransom & Randolph Company test data and is, to the best knowledge and belief of Ransom & Randolph Company accurate and reliable. Such information is offered solely for your consideration, investigation and verification and it is not suggested or guaranteed that the hazard precautions or procedures mentioned are the only ones which exist. Ransom & Randolph Company makes no warranties, express or implied, with respect to the use of such information or the use of the specific material identifies here in combination with any other material or process, and assumes no responsibility therefore.