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### What is a Coating?



What is a coating?

- Coating is a covering that is applied to the surface of an object, usually referred to as the substrate.



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### Examples of Coatings

1. Chemically Resistant Epoxies – line of high chemical resistant modified epoxies.
2. Coal-Tars – excellent water resistance for immersion and below grade conditions.
3. Elastomerics – a thick film, fast setting, self priming, polyester or polyurea cladding materials.
4. Epoxy-Mastics – surface tolerant epoxies with wetting properties for a minimally prepared steel.
5. Polyurethane – Series of weatherable polyurethane coatings and clear coats characterized by their color and gloss retention.



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### What Makes a Chemical/Coating Hazardous?

1. Physical Hazards:

- Explosion/ Fire
- Violent Reaction

2. Health Hazards:

- Chronic (Long-term exposure and effects)
- Acute (Short-term & Immediate effects)



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### Why Should You Protect from Coating?

Risks:

1. Acute:

- May cause skin, eye, and respiratory irritation.
- May cause dermatitis and allergic responses



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### Why Should You Protect from Coating?

1. Chronic:

- May cause lung disease
- Asthma
- Bronchitis



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### Precautions

Job Safety  
Analysis (JSA)  
Based on:

1. MSDS Sheets
2. Engineering Controls



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### MSDS: Material Safety Data Sheet

1. Review the sheets completely.
2. Discuss the work practices, emergency procedures and PPE to be followed.
3. Have available during coating procedures.



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### MSDS Reviewed


**Section 1 – Chemical Product/Company Information (Example)**

Example

Preparer: Regulatory, Department  
Manufacturer: Carbolite Company  
350 Hanley Industrial Ct.  
St. Louis, MO 63144

→ If you have any questions contact the preparer.

**Section 2 – Composition/Information on Ingredients (Example)**



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**MSDS Reviewed**

**Section 3 – Hazards Identification (Example)**


**Emergency Overview: Warning!** May cause allergic skin reactions. May cause irritation. Contains SILICA which can cause cancer. Risk of Cancer depends on duration and level of exposure.

**Eye Contact:** May cause eye irritation.

**Skin Contact:** May cause allergic skin reaction. May cause skin irritation.

**Inhalation:** May cause nose and throat irritation.

**Ingestion:** May be harmful if swallowed.




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**MSDS Reviewed**

**Section 3 – Hazards Identification (Example)**

**Chronic Hazards:** Crystalline silica is known to cause silicosis, a noncancerous lung disease. Exposure is by route of inhalation. If material is in a liquid matrix it is unlikely to be inhaled.

**Primary Route(s) Of Entry:** Skin Contact, Skin Absorption, Inhalation, Eye Contact.

**Medical Conditions Prone to Aggravation by Exposure:** If sensitized to amines, epoxies, or other chemicals do not use. See a physician if a medical condition exists.




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**MSDS Reviewed**



**Section 4 – First Aid Measures (Example)**

**First Aid - Eye Contact:** If material gets into eyes, flush with water immediately for 15 minutes. Consult a physician.

**First Aid - Skin Contact:** In case of contact, wash skin immediately with soap and water.

**First Aid - Inhalation:** If inhaled, remove to fresh air. Administer oxygen if necessary. Consult a physician if symptoms persist or exposure was severe.

**First Aid - Ingestion:** If swallowed do not induce vomiting. Seek immediate medical attention.


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**MSDS Reviewed**

**Section 5 – Fire Fighting Measures (Physical Hazards) (Example)**

- Flash Point, F: 350F (177C) (Setaflash)
- Lower Explosive Limit, %: N/A
- Upper Explosive Limit, %: N/A
- Extinguishing Media: Carbon Dioxide, Dry Chemical, Foam, Water Fog




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**MSDS Reviewed**

**Section 5 – Fire Fighting Measures (Physical Hazards) (Example)**

• **Unusual Fire And Explosion Hazards:** This product contains less than 1% volatile components. The amount of vapors that could accumulate are minimal. However, vapors are heavier than air and could travel long distances, ignite, and flashback. Eliminate all ignition sources. Keep away from sparks, open flames, and heat sources. All electrical equipment and installations should be made and grounded in accordance with the National Electrical Code. In areas where explosion hazards exist, workers should be required to use nonferrous tools and to wear conductive and non-sparking shoes.

• **Special Firefighting Procedures:** Evacuate hazard area of unprotected personnel. Use a NIOSH approved self-contained breathing unit and complete body protection. Cool surrounding containers with water in case of fire exposure.




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**MSDS Reviewed**

**Section 6 – Accidental Release Measures (Example)**

**Steps To Be Taken If Material Is Released Or Spilled:**

1. Eliminate all ignition sources.
2. Handling equipment must be grounded to prevent sparking.
3. Evacuate the area of unprotected personnel.
4. Wear appropriate personal protection clothing and equipment.




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**MSDS Reviewed**

**Section 6 – Accidental Release Measures (Example)**

**Steps To Be Taken If Material Is Released Or Spilled:**

5. Follow exposure controls/personal protection guidelines in Section 8.
6. Contain and soak up residual with an absorbent (clay or sand).
7. Take up absorbent material and seal tightly for proper disposal.
8. Dispose of in accordance with local, state and federal regulations.




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**MSDS Reviewed**

**Section 7 – Handling and Storage (Example)**

**Handling:**

1. Do not get in eyes, on skin, or on clothing.
2. Keep container tightly closed when not in use.
3. Wear personal protection equipment.
4. Do not breathe vapors.
5. Wash thoroughly after handling.
6. If pouring or transferring materials, ground all containers and tools.




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**MSDS Reviewed**

**Section 7 – Handling and Storage (Example)**

**Storage:**

- Keep away from heat, sparks, open flames and oxidizing agents. Keep containers closed. Store in a cool, dry place with adequate ventilation.




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## MSDS Reviewed

**Section 8 – Exposure Controls/Personal Protection (Example)**

**Engineering Controls:**

**Examples:**

- Use explosion-proof ventilation when required to keep below health exposure guidelines and Lower Explosion Limit (LEL).

**Evaluate for Confined Space Entry:**

1. Test atmosphere in the tank to ensure the conditions fall within the acceptable limit.
2. Assign hole watch if applicable.
3. Safety and rescue plan ready.



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## MSDS Reviewed

**Section 8 – Exposure Controls/Personal Protection (Example)**

**Respiratory Protection:**

- Use only with ventilation to keep levels below exposure guidelines listed in Section 2. User should test and monitor exposure levels to ensure all personnel are below guidelines. If not sure, or not able to monitor, use MSHA/NIOSH approved supplied air respirator. Follow all current OSHA requirements for respirator use.



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## How Should You Protect

**Personal Protective Equipment**

Including Respiratory Protection

1. Respiratory Protection Program
2. Proper Type of Respirator per Coating
3. Medical Evaluation & Fit Testing



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**MSDS Reviewed**

**Section 8 – Exposure Controls/Personal Protection (Example)**

**Skin Protection:**  
 - Recommend impervious gloves and clothing to avoid skin contact. If material penetrates to skin, change gloves and clothing. The use of protective creams may be beneficial to certain individuals. Protective creams should be applied before exposure.

**Eye Protection:**  
 - Recommend safety glasses with side shields or chemical goggles to avoid eye contact.

**Other protective equipment:**  
 - Eye wash and safety showers should be readily available.


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**MSDS Reviewed**

**Section 9 – Physical and Chemical Properties (Example)**

**Hygienic Practices:**

- Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet facilities.
- Use of a hand cleaner is recommended.
- Launder contaminated clothing before reuse.
- Leather shoes can absorb and allow hazardous materials to pass through.
- Check shoes carefully after soaking before reuse.




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**MSDS Reviewed**

**Section 10 – Stability and Reactivity (Example)**


**Conditions To Avoid:** Heat, sparks and open flames.

**Incompatibility:** Avoid contact with strong oxidizing agents.

**Hazardous Decomposition Products:** Carbon monoxide, nitrogen oxides, and unidentified organic compounds. Consider all smoke and fumes from burning material as very hazardous.

**Hazardous Polymerization:** Will not occur under normal conditions.

**Stability:** This product is stable under normal storage conditions.




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**MSDS Reviewed – Remaining Sections**

Section 11 – Toxicological Information
Section 12 – Ecological Information
Section 13 – Disposal Information
Section 14 – Transportation Information
Section 15 – Regulatory Information
Section 16 – Other Information: HMIS Ratings (Example)



The image shows a GHS hazard diamond with four colored quadrants: red (top), blue (left), yellow (right), and white (bottom). To its right is a sample HMIS label with the following categories and checkboxes: HEALTH , FLAMMABILITY , REACTIVITY , and SPECIFIC . The label also includes the text 'OSHA/NIOSH STATE/LOCAL COMMUNICATION' at the bottom.

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**10 Commandments of Safety**

1. Learn the safe way to do your job before your start.
2. Think safety. Act safely at all times.
3. Obey safety rules and regulations-they are for your protection.
4. Wear proper clothing and protective equipment.
5. Conduct yourself properly at all times; horseplay is prohibited.




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**10 Commandments of Safety**

6. Operate only the equipment you are authorized to use.
7. Inspect tools and equipment for safe conditions before starting work.
8. Advise your supervisor promptly of any unsafe condition or practice.
9. Report any injury immediately to your supervisor.
10. Support the safety program: Take an active part.




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**Conclusion**

If in doubt ask. . .

- Safety personnel
- Vendors
- Coatings Manufacture



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**NPCA**  
Your Precast Education Connection

**Coating Safety**

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