

CAST IRON WELDING
flux-coated electrodes, flux-cored wires, and bare welding wires
MATERIAL DATA SAFETY SHEET

Section 1 – Identification

Manufacturer's Name: Postle Industries, Inc. P.O. Box 42037 Cleveland, Ohio 44142
Telephone: 800-321-2978 **Fax:** 216-265-9030

Group A – Nickel base Electrodes – 50, 51, 505, 515, 5150

Group B – Iron base Cast Iron Flux-cored wires - 54-FCG, 54-FCO, 505-FCO, 505-SPL

Group C – Nickel Base solid wires for MIG and TIG – 50-SPL, 53-B, 53-SPL

Section 2 – Hazardous Ingredients

IMPORTANT - This section covers the hazardous materials from which this product is manufactured. The fumes and gases produced during welding with normal use of this product are also addressed in Section 5. The term "hazardous" in this section should be interpreted as a term required and defined in OSHA Hazard Communication Std. (29 CFR Part 1910).

Hazardous Ingredients	% Weight			CAS No.	Exposure Limit (mg/m ³)	
	Group A	Group B	Group C		OSHA PEL	ACGIH TLV
Iron	1-50	40-90	<3	7439-89-6	5.0 (R) 10.0 - Oxide Fume	5.0 (R) - Fe ₂ O ₃
Iron oxide	<5			1309-37-1	10	5 (R) as Fe ₂ O ₃
Manganese and Mn Compounds (1)	<3	1-12	1-12	7439-96-5	5.0 CL - Fume 3.0 STEL	0.2 - Dust & Fume
Nickel (1)	40-99	0-60	30-60	7440-02-0	1.0 - Metal 1.0 - Soluble Compounds 1.0 - Insoluble Compounds	1.0 (I) - Metal 0.1 (I) - Soluble Compounds 0.2 (I) - Insoluble Compounds (A1)
Aluminum (3)	<1	<1		7429-90-5	5.0 (R)	1.0 (R)
Fluorides	1-5	1-5		7789-75-5	2.5 - as F	2.5 as F
Calcium Carbonate	3-10	3-10		1317-65-3	5.0 (R) 5.0 - as CaO	3.0 (R) 2.0 - as CaO
Barium Carbonate	5-15			7787-32-8	0.5 as Ba	0.5 as Ba
Silicate Binders	<5			-----	NL	NL
Silica	<1	<1		14808-60-7	0.1 (R)	0.025 (R) (A2)
(Amorphous Silica Fume)				69012-64-2	0.8	3 (R)
Silicon			<1	7440-21-3	5.0 (R)	3 (R)
Copper			30-60	7440-50-8	1.0 Dust	1.0 Dust

(R) – Respirable Fraction (I) – Inhalable Fraction CL - Ceiling Limit STEL – Short time exposure limit

(A1) – Confirmed Human Carcinogen (A2) – Suspected Human Carcinogen

(1)SARA – Reportable material under section 313 of SARA

(2)SARA – Reportable material under section 313 of SARA only in fibrous form

(3)SARA – Reportable material under section 313 of SARA as dust or fume

The exposure limit for welding fume has been established at 5 mg/m³ with OSHA's PEL and ACGIH's TLV. The individual complex compounds within the fume may have lower exposure limits than the general welding fume PEL/TLV. An Industrial Hygienist, the OSHA Permissible Exposure Limits For Air Contaminants (29 CFR 1910.1000), and the ACGIH Threshold Limit Values should be consulted to determine the specific fume constituents present and their respective exposure limits.

Section 3 – Physical Data

These products as shipped are nonhazardous, nonflammable, nonexplosive and nonreactive.

Section 4 – Fire and Explosion Hazard Data

Welding arc and sparks, and the use of oxy-fuel torches, can ignite combustibles and flammables. Refer to American National Standard Z49.1 for fire prevention during the use of welding and allied procedures.

Section 5 – Reactivity Data – Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used.

Most fume ingredients are present as complex oxides and compounds and not as pure metals. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 2, plus those from the base metal and coating, etc., as noted above.

Monitor for the materials identified in Section 2. Reasonably expected decomposition products from normal use of these products include a complex of the oxides of the materials listed in Section 2. **Fumes from the use of these products may contain manganese, chromium, nickel, fluorides, calcium oxides, amorphous silica fume, vanadium, tungsten, copper, and cobalt whose exposure limits are lower than the 5 mg/m³ PEL/TLV for general welding fume.** Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. [See ANSI/AWS F1.1, available from the "American Welding Society", P.O. Box 351040, Miami, FL 33135. Also, from AWS is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide", which gives additional advice on sampling.]

Section 6 – Exposure Limits - Health Hazard Data

EFFECTS OF OVEREXPOSURE:

Electric arc welding may create one or more of the following health hazards: ARC RAYS can injure eyes and burn skin. ELECTRIC SHOCK can kill. See Section 7. FUMES AND GASES can be dangerous to your health. PRIMARY ROUTES OF ENTRY are the respiratory system, eyes and/or skin.

SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS:

WELDING FUMES - May result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes.

IRON, IRON OXIDE - None are known. Treat as nuisance dust or fume.

MANGANESE - Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours.

NICKEL, NICKEL COMPOUNDS - Metallic taste, nausea, tightness in chest, metal fume fever, allergic reaction.

FLUORIDES - Fluoride compounds evolved may cause skin and eye burns, pulmonary edema and bronchitis.

CALCIUM OXIDE - Dust or fumes may cause irritation of the respiratory system, skin and eyes.

ALUMINUM OXIDE - Irritation of the respiratory system.

BARIUM - Aching eyes, rhinitis, frontal headache, wheezing, laryngeal spasms, salivation or anorexia.

COPPER - Metal fume fever characterized by metallic taste, tightness of chest and fever. Symptoms may last 24 to 48 hours following overexposure.

LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS:

WELDING FUMES - Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis."

IRON, IRON OXIDE FUMES - Can cause siderosis (deposits of iron in lungs) which some researchers believe may affect pulmonary function. Lungs will clear in time when exposure to iron and its compounds ceases. Iron and magnetite (Fe₃O₄) are not regarded as fibrogenic materials.

MANGANESE - Long-term overexposure to manganese compounds may affect the central nervous system. Symptoms may be similar to Parkinson's Disease and can include slowness, changes in handwriting, gait impairment, muscle spasms and cramps and less commonly, tremor and behavioral changes. Employees who are overexposed to manganese compounds should be seen by a physician for early detection of neurological problems.

NICKEL, NICKEL COMPOUNDS - Lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers.

ALUMINUM OXIDE - Pulmonary fibrosis and emphysema.

BARIUM - Long term overexposure to soluble barium compounds may cause nervous disorders and may have deleterious effects on the heart, circulatory system and musculature.

FLUORIDES - Serious bone erosion (Osteoporosis) and mottling of teeth.

SILICA (AMORPHOUS) - Research indicates that silica is present in welding fume in the amorphous form. Long term overexposure may cause pneumoconiosis. Noncrystalline forms of silica (amorphous silica) are considered to have little fibrotic potential.

COPPER - Copper poisoning has been reported in the literature from exposure to high levels of copper. Liver damage can occur due to copper accumulating in the liver characterized by cell destruction and cirrhosis. High levels of copper may cause anemia and jaundice. High levels of copper may cause central nervous system damage characterized by nerve fiber separation and cerebral degeneration.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Persons with pre-existing impaired lung functions (asthma-like conditions).

EMERGENCY AND FIRST AID PROCEDURES:

Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY:

Chromium VI, cobalt, and nickel compounds must be considered carcinogens according to OSHA (29 CFR 1910.1200). Chromium VI compounds are classified as IARC Group 1 and NTP Group 1 carcinogens. Nickel compounds are classified as IARC Group 1 and NTP Group 2 carcinogens. Cobalt compounds are classified as IARC Group 2B carcinogens. Welding fumes must be considered as possible carcinogens under OSHA (29 CFR 1910.1200).

CALIFORNIA PROPOSITION 65:

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)

Section 7 – Special Precautions for Safe Handling and Use / Applicable Control Measures

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTIONS AND THE PRECAUTIONARY LABEL ON THE PRODUCT. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P. O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910) US Government Printing Office, Washington, DC 20210 for more details on the following.

Eye Protection - Wear helmet or use face shield with filter lens. Provide protective screens and flash goggles, if necessary, to shield others. As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to the next lighter shade which gives sufficient view of the weld zone.

Ventilation: Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

Respiratory Protection – Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.

Protective Clothing - Wear hand, head, and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

Spill and Waste Disposal - Product is a non-hazardous solid. No special precautions are required for spills of bulk material. Scrap metal can be reclaimed for reuse. Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with Federal, State, and Local regulations.

SPECIAL PRECAUTIONS (IMPORTANT) - Maintain exposures below the TLV. Use industrial hygiene air monitoring to ensure that your use of this material does not create exposures which exceed TLV. Always use exhaust ventilation. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P. O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910) US Government Printing Office, Washington, DC 20210.

Postle Industries, LLC believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, Postle Industries LLC cannot make any expressed or implied warranty as to this information.

CARBON and ALLOY STEEL WELDING
flux-coated electrodes, flux-cored and bare welding wires
MATERIAL DATA SAFETY SHEET

Section 1 – Identification

Manufacturer's Name: Postle Industries, Inc. P.O. Box 42037 Cleveland, Ohio 44142
Telephone: 800-321-2978 **Fax:** 216-265-9030

Group A – Iron base Electrodes – 30, Super 35, 38, 250, 301, 303, 305, 306HD, 344

Group B – Iron base flux-cored and metal-cored wires – 30-FCG, 306-FCG, 306-FCO, 306-SPL, 3043-SPL, 3044-FCG

Group C – Iron Base solid wires for MIG and TIG – 30-B, 30-SPL, 303-B, 303-SPL

Section 2 – Hazardous Ingredients

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Hazardous Ingredients	% Weight			CAS No.	Exposure Limit (mg/m ³)	
	Group A	Group B	Group C		OSHA PEL	ACGIH TLV
Iron	60-98	60-98	60-98	7439-89-6	5.0 (R) 10.0 - Oxide Fume	5.0 (R) - Fe ₂ O ₃
Chromium (1)	0-35	0-35	0-35	7440-47-3	1.0 - Metal 0.5 - Cr II Compounds 0.5 - Cr III Compounds 0.005 - Cr VI Compounds (A1)	0.5 - Metal 0.5 - Cr III Compounds 0.05 - Cr VI Soluble Compounds {A1} 0.01 - Cr VI Insoluble Compounds (A1)
Manganese and Mn Compounds (1)	.5-3	.5-3	<3	7439-96-5	5.0 CL - Fume 3.0 STEL	0.2 - Dust & Fume
Feldspar	<5			68476-25-5	10.0	2.0
Cellulose	0-10			9004-34-6	5.0 (R)	10.0
Nickel (1)	0-15	0-15	0-15	7440-02-0	1.0 - Metal 1.0 - Soluble Compounds 1.0 - Insoluble Compounds	1.0 (I) - Metal 0.1 (I) - Soluble Compounds 0.2 (I) - Insoluble Compounds {A1}
Aluminum (3)		0-5		7429-90-5	5.0 (R)	1.0 (R)
Magnesium		0-3		7439-95-4	5.0 (R)	3.0 (R)
Silica	<5	<5	<5	14808-60-7	0.1 (R)	0.025 (R) (A2)
(Amorphous Silica Fume)				69012-64-2	0.8	3 (R)
Silicon		0-3	<3	7440-21-3	5.0 (R)	3.0 (R)
Kaolin	0-10			1332-58-7	5.0	2.0
Molybdenum	0-3	<3	0-3	7439-98-7	5.0 (R) – Soluble Compounds	0.5 (R) - Soluble Compounds
Fluorides	<5	0-12		7789-75-5	2.5 - as F	2.5 as F
Titanium Dioxide	10-30	0-10		13463-67-7	15.0 Dust	10.0
Calcium Carbonate	0-10			1317-65-3	5.0 (R) 5.0 - as CaO	3.0 (R) 2.0 - as CaO
Barium Fluoride (1)		0-5		7787-32-8	0.5 as Ba	0.5 as Ba
Silicate Binders	<5			-----	NL	NL
Copper			<.5	7440-50-8	1.0 Dust	1.0 Dust

(R) – Respirable Fraction (I) – Inhalable Fraction CL - Ceiling Limit STEL – Short time exposure limit

(A1) – Confirmed Human Carcinogen (A2) – Suspected Human Carcinogen

(1)SARA – Reportable material under section 313 of SARA

(2)SARA – Reportable material under section 313 of SARA only in fibrous form

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Section 3 – Physical Data

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Section 4 – Fire and Explosion Hazard Data

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Section 5 – Reactivity Data – Hazardous Decomposition Products

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Most fume ingredients are present as complex oxides and compounds and not as pure metals. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 2, plus those from the base metal and coating, etc., as noted above.

Monitor for the materials identified in Section 2. Reasonably expected decomposition products from normal use of these products include a complex of the oxides of the materials listed in Section 2. **Fumes from the use of these products may contain manganese, chromium, nickel, fluorides, calcium oxides, amorphous silica fume, vanadium, tungsten, copper, and cobalt whose exposure limits are lower than the 5 mg/m³ PEL/TLV for general welding fume.** Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. [See ANSI/AWS F1.1, available from the "American Welding Society", P.O. Box 351040, Miami, FL 33135. Also, from AWS is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide", which gives additional advice on sampling.]

Section 6 – Exposure Limits - Health Hazard Data

EFFECTS OF OVEREXPOSURE:

Electric arc welding may create one or more of the following health hazards: ARC RAYS can injure eyes and burn skin. ELECTRIC SHOCK can kill. See Section 7. FUMES AND GASES can be dangerous to your health. PRIMARY ROUTES OF ENTRY are the respiratory system, eyes and/or skin.

SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS:

WELDING FUMES - May result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes.

IRON, IRON OXIDE - None are known. Treat as nuisance dust or fume.

CHROMIUM - Inhalation of fume with chromium (VI) compounds can cause irritation of the respiratory tract, lung damage and asthma-like symptoms. Swallowing chromium (VI) salts can cause severe injury or death. Dust on skin can form ulcers. Eyes may be burned by chromium (VI) compounds. Allergic reactions may occur in some people.

MANGANESE - Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours.

NICKEL, NICKEL COMPOUNDS - Metallic taste, nausea, tightness in chest, metal fume fever, allergic reaction.

TITANIUM DIOXIDE - Irritation of respiratory system.

MOLYBDENUM - Irritation of the eyes, nose and throat.

FLUORIDES - Fluoride compounds evolved may cause skin and eye burns, pulmonary edema and bronchitis.

SILICA (AMORPHOUS) - Dust and fumes may cause irritation of the respiratory system, skin and eyes.

CALCIUM OXIDE - Dust or fumes may cause irritation of the respiratory system, skin and eyes.

ALUMINUM OXIDE - Irritation of the respiratory system.

MAGNESIUM, MAGNESIUM OXIDE - Overexposure to the oxide may cause metal fume fever characterized by metallic taste, tightness of chest and fever. Symptoms may last 24 to 48 hours following overexposure.

COPPER - Metal fume fever characterized by metallic taste, tightness of chest and fever. Symptoms may last 24 to 48 hours following overexposure.

BARIUM - Aching eyes, rhinitis, frontal headache, wheezing, laryngeal spasms, salivation or anorexia.

LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS:

WELDING FUMES - Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis."

IRON, IRON OXIDE FUMES - Can cause siderosis (deposits of iron in lungs) which some researchers believe may affect pulmonary function. Lungs will clear in time when exposure to iron and its compounds ceases. Iron and magnetite (Fe₃O₄) are not regarded as fibrogenic materials.

CHROMIUM - Ulceration and perforation of nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Studies have shown that chromate production workers exposed to hexavalent chromium compounds have an excess of lung cancers. Chromium (VI) compounds are more readily absorbed through the skin than chromium (III) compounds.

Good practice requires the reduction of employee exposure to chromium (III) and (VI) compounds.

MANGANESE - Long-term overexposure to manganese compounds may affect the central nervous system. Symptoms may be similar to Parkinson's Disease and can include slowness, changes in handwriting, gait impairment, muscle spasms and cramps and less commonly, tremor and behavioral changes. Employees who are overexposed to manganese compounds should be seen by a physician for early detection of neurological problems.

NICKEL, NICKEL COMPOUNDS - Lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers.

TITANIUM DIOXIDE - Pulmonary irritation and slight fibrosis.

MOLYBDENUM - Prolonged overexposure may result in loss of appetite, weight loss, loss of muscle coordination, difficulty in breathing and anemia.

ALUMINUM OXIDE - Pulmonary fibrosis and emphysema.

MAGNESIUM, MAGNESIUM OXIDE - No adverse long term health effects have been reported in the literature.

BARIUM - Long term overexposure to soluble barium compounds may cause nervous disorders and may have deleterious effects on the heart, circulatory system and musculature.

FLUORIDES - Serious bone erosion (Osteoporosis) and mottling of teeth.

SILICA (AMORPHOUS) - Research indicates that silica is present in welding fume in the amorphous form. Long term overexposure may cause pneumoconiosis. Noncrystalline forms of silica (amorphous silica) are considered to have little fibrotic potential.

COPPER - Copper poisoning has been reported in the literature from exposure to high levels of copper. Liver damage can occur due to copper accumulating in the liver characterized by cell destruction and cirrhosis. High levels of copper may cause anemia and jaundice. High levels of copper may cause central nervous system damage characterized by nerve fiber separation and cerebral degeneration.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Persons with pre-existing impaired lung functions (asthma-like conditions).

EMERGENCY AND FIRST AID PROCEDURES:

Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY:

Chromium VI, cobalt, and nickel compounds must be considered carcinogens according to OSHA (29 CFR 1910.1200). Chromium VI compounds are classified as IARC Group 1 and NTP Group 1 carcinogens. Nickel compounds are classified as IARC Group 1 and NTP Group 2 carcinogens. Cobalt compounds are classified as IARC Group 2B carcinogens. Welding fumes must be considered as possible carcinogens under OSHA (29 CFR 1910.1200).

CALIFORNIA PROPOSITION 65:

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm).

(California Health & Safety Code Section 25249.5 et seq.)

Section 7 – Special Precautions for Safe Handling and Use / Applicable Control Measures

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Ventilation: Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

Respiratory Protection - Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.

Protective Clothing - Wear hand, head, and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

Spill and Waste Disposal - Product is a non-hazardous solid. No special precautions are required for spills of bulk material. Scrap metal can be reclaimed for reuse. Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with Federal, State, and Local regulations.

SPECIAL PRECAUTIONS (IMPORTANT) - Maintain exposures below the TLV. Use industrial hygiene air monitoring to ensure that your use of this material does not create exposures which exceed TLV. Always use exhaust ventilation. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P. O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910) US Government Printing Office, Washington, DC 20210.

Postle Industries, LLC believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, Postle Industries LLC cannot make any expressed or implied warranty as to this information.

Section 1 – Identification

Manufacturer's Name: Postle Industries, Inc. **P.O. Box 42037** **Cleveland, Ohio 44142**
Telephone: 800-321-2978 **Fax:** 216-265-9030

Group A – Iron base metal-cored and flux-cored hardfacing wires**Group B – Nickel and Cobalt Base metal-cored and flux-cored hardfacing wires****Group C – Bare, solid hardfacing and tool steel wires for MIG and TIG****Section 2 – Hazardous Ingredients**

IMPORTANT - This section covers the hazardous materials from which this product is manufactured. The fumes and gases produced during welding with normal use of this product are also addressed in Section 5. The term "hazardous" in this section should be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910).

Hazardous Ingredients	% Weight			CAS No.	Exposure Limit (mg/m ³)	
	Group A	Group B	Group C		OSHA PEL	ACGIH TLV
Iron	55-95	<5	60-98	7439-89-6	5.0 (R) 10.0 - Oxide Fume	5.0 (R) - Fe2O3
Chromium (1)	1-40	0-40	1-15	7440-47-3	1.0 - Metal 0.5 - Cr II Compounds 0.5 - Cr III Compounds 0.005 - Cr VI Compounds (A1)	0.5 - Metal 0.5 - Cr III Compounds 0.05 - Cr VI Soluble Compounds {A1} 0.01 - Cr VI Insoluble Compounds (A1)
Manganese and Mn Compounds (1)	1-25		<1	7439-96-5	5.0 CL - Fume 3.0 STEL	0.2 - Dust & Fume
Columbium	0-10			7440-03-1	5.0 (R)	3.0 (R)
Vanadium (3)	0-10		<5	7440-62-2	0.1 CL - Fume as V2O5 0.5 CL - Respirable Dust as V2O5	0.02 (R) - Fume as V2O5 0.02 (R) - Dust as V2O5
Nickel (1)	0-10	1-70	0-20	7440-02-0	1.0 - Metal 1.0 - Soluble Compounds 1.0 - Insoluble Compounds	1.0 (I) - Metal 0.1 (I) - Soluble Compounds 0.2 (I) - Insoluble Compounds {A1}
Titanium	0-10		0-2	7440-32-6	5.0 (R)	3.0 (R)
Molybdenum	0-10	0-20	0-7	7439-98-7	5.0 (R) – Soluble Compounds	0.5 (R) - Soluble Compounds
Fluorides	0-10	<5		7789-75-5	2.5 - as F	2.5 as F
Titanium Dioxide	0-10	5-15		13463-67-7	15.0 Dust	10.0
Silicon	<5		<1	7440-21-3	5.0 (R)	3.0 (R)
Tungsten	0-10		0-7	7440-33-7	5.0 (R)	5.0, 10 STEL - Insoluble compounds 1.0, 3 STEL - Soluble compounds
Tungsten Carbide						
299-SPL Group A	50-65			12070-12-1	NL	NL
PS10 Group B		50-65		12070-12-1	NL	NL
Aluminum (3)	0-2			7429-90-5	5.0 (R)	1.0 (R)
Calcium Carbonate	0-2	<10		1317-65-3	5.0 (R) 5.0 - as CaO	3.0 (R) 2.0 - as CaO
Boron	0-5	0-5		7440-42-8	5.0 (R) 15.0 - as B2O3	3.0 (R) 10.0 - as B2O3
Zirconium and Zr Compounds	0-3			7440-67-7	5.0 - Fume	5.0
Copper (1)	0-1		<1	7440-50-8	1.0 - Dust 0.1 - Fume	1.0 - Dust 0.2 - Fume
Cobalt (1)		0-50	0-10	7440-48-4	0.1 - Dust & Fume	0.02 - Dust & Fume
Silica	0-5	<5		14808-60-7	0.1 (R)	0.025 (R) (A2)
(Amorphous Silica Fume)				69012-64-2	0.8	3 (R)

(R) – Respirable Fraction (I) – Inhalable Fraction CL - Ceiling Limit STEL – Short time exposure limit

(A1) – Confirmed Human Carcinogen (A2) – Suspected Human Carcinogen

(1)SARA – Reportable material under section 313 of SARA. (2)SARA – Reportable material under section 313 of SARA only in fibrous form

(3)SARA – Reportable material under section 313 of SARA as dust or fume

NL – Not Listed

The exposure limit for welding fume has been established at 5 mg/m³ with OSHA's PEL and ACGIH's TLV. The individual complex compounds within the fume may have lower exposure limits than the general welding fume PEL/TLV. An Industrial Hygienist, the OSHA Permissible Exposure Limits For Air Contaminants (29 CFR 1910.1000), and the ACGIH Threshold Limit Values should be consulted to determine the specific fume constituents present and their respective exposure limits.

Section 3 – Physical Data

These products as shipped are nonhazardous, nonflammable, nonexplosive and nonreactive.

Section 4 – Fire and Explosion Hazard Data

Welding arc and sparks, and the use of oxy-fuel torches, can ignite combustibles and flammables. Refer to American National Standard Z49.1 for fire prevention during the use of welding and allied procedures.

Section 5 – Reactivity Data – Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used. **Most fume ingredients are present as complex oxides and compounds and not as pure metals.** Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 2, plus those from the base metal and coating, etc., as noted above.

Monitor for the materials identified in Section 2. Reasonably expected decomposition products from normal use of these products include a complex of the oxides of the materials listed in Section 2. **Fumes from the use of these products may contain manganese, chromium, nickel, fluorides, calcium oxides, amorphous silica fume, vanadium, tungsten, copper, and cobalt whose exposure limits are lower than the 5 mg/m³ PEL/TLV for general welding fume.** Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. [See ANSI/AWS F1.1, available from the "American Welding Society", P.O. Box 351040, Miami, FL 33135. Also, from AWS is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide", which gives additional advice on sampling.]

Section 6 – Exposure Limits - Health Hazard Data

W2R

EFFECTS OF OVEREXPOSURE:

Electric arc welding may create one or more of the following health hazards: ARC RAYS can injure eyes and burn skin. ELECTRIC SHOCK can kill. See Section 7. FUMES AND GASES can be dangerous to your health. PRIMARY ROUTES OF ENTRY are the respiratory system, eyes and/or skin.

SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS:

WELDING FUMES - May result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes.

IRON, IRON OXIDE - None are known. Treat as nuisance dust or fume.

CHROMIUM - Inhalation of fume with chromium (VI) compounds can cause irritation of the respiratory tract, lung damage and asthma-like symptoms. Swallowing chromium (VI) salts can cause severe injury or death. Dust on skin can form ulcers. Eyes may be burned by chromium (VI) compounds. Allergic reactions may occur in some people.

MANGANESE - Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours.

COLUMBIUM - Dust or fumes may cause irritation of the respiratory system, skin and eyes.

VANADIUM - Overexposure to the oxide causes green tongue, cough, metallic taste, throat irritation and eczema.

NICKEL, NICKEL COMPOUNDS - Metallic taste, nausea, tightness in chest, metal fume fever, allergic reaction.

TITANIUM DIOXIDE - Irritation of respiratory system.

MOLYBDENUM - Irritation of the eyes, nose and throat.

FLUORIDES - Fluoride compounds evolved may cause skin and eye burns, pulmonary edema and bronchitis.

SILICA (AMORPHOUS) - Dust and fumes may cause irritation of the respiratory system, skin and eyes.

TUNGSTEN - Dust may cause irritation of the skin and eyes. Inhalation of dust may cause acute airways obstructive asthma which is reversible following overexposure. Symptoms are tightening chest and productive cough.

ALUMINUM OXIDE - Irritation of the respiratory system.

CALCIUM OXIDE - Dust or fumes may cause irritation of the respiratory system, skin and eyes.

BORON OXIDE - Irritation of the nose, throat, eyes and skin.

ZIRCONIUM - May cause irritation of the eyes, nose and throat due to mechanical effects.

COPPER - Metal fume fever characterized by metallic taste, tightness of chest and fever. Symptoms may last 24 to 48 hours following overexposure.

COBALT - Pulmonary irritation, cough, dermatitis, weight loss.

LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS:

WELDING FUMES - Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis."

IRON, IRON OXIDE FUMES - Can cause siderosis (deposits of iron in lungs) which some researchers believe may affect pulmonary function. Lungs will clear in time when exposure to iron and its compounds ceases. Iron and magnetite (Fe₃O₄) are not regarded as fibrogenic materials.

CHROMIUM - Ulceration and perforation of nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Studies have shown that chromate production workers exposed to hexavalent chromium compounds have an excess of lung cancers. Chromium (VI) compounds are more readily absorbed through the skin than chromium (III) compounds. Good practice requires the reduction of employee exposure to chromium (III) and (VI) compounds.

MANGANESE - Long-term overexposure to manganese compounds may affect the central nervous system. Symptoms may be similar to Parkinson's Disease and can include slowness, changes in handwriting, gait impairment, muscle spasms and cramps and less commonly, tremor and behavioral changes. Employees who are overexposed to manganese compounds should be seen by a physician for early detection of neurological problems.

COLUMBIUM - No adverse long term health effects have been reported in the literature.

VANADIUM - Prolonged overexposure to vanadium pentoxide can cause nasal catarrh or nose bleeds and chronic respiratory problems.

NICKEL, NICKEL COMPOUNDS - Lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers.

TITANIUM DIOXIDE - Pulmonary irritation and slight fibrosis.

MOLYBDENUM - Prolonged overexposure may result in loss of appetite, weight loss, loss of muscle coordination, difficulty in breathing and anemia.

FLUORIDES - Serious bone erosion (Osteoporosis) and mottling of teeth.

SILICA (AMORPHOUS) - Research indicates that silica is present in welding fume in the amorphous form. Long term overexposure may cause pneumoconiosis. Noncrystalline forms of silica (amorphous silica) are considered to have little fibrotic potential.

TUNGSTEN - Long term overexposure may cause pulmonary fibrosis characterized by a rapid onset of cough, sputum and dyspnea on exertion.

ALUMINUM OXIDE - Pulmonary fibrosis and emphysema.

CALCIUM OXIDE - Prolonged overexposure may cause ulceration of the skin and perforation of the nasal septum, dermatitis and pneumonia.

BORON OXIDE - No chronic effects are known.

ZIRCONIUM - May cause pulmonary fibrosis and pneumoconiosis.

COPPER - Copper poisoning has been reported in the literature from exposure to high levels of copper. Liver damage can occur due to copper accumulating in the liver characterized by cell destruction and cirrhosis. High levels of copper may cause anemia and jaundice. High levels of copper may cause central nervous system damage characterized by nerve fiber separation and cerebral degeneration.

COBALT - Repeated overexposure to cobalt compounds can produce reduced pulmonary function, diffuse nodular fibrosis of lungs and respiratory hypersensitivity. IARC considers cobalt compounds as possibly carcinogenic to humans (GROUP 2B).

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Persons with pre-existing impaired lung functions (asthma-like conditions).

EMERGENCY AND FIRST AID PROCEDURES:

Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY:

Chromium VI, cobalt, and nickel compounds must be considered carcinogens according to OSHA (29 CFR 1910.1200). Chromium VI compounds are classified as IARC Group 1 and NTP Group 1 carcinogens. Nickel compounds are classified as IARC Group 1 and NTP Group 2 carcinogens. Cobalt compounds are classified as IARC Group 2B carcinogens. Welding fumes must be considered as possible carcinogens under OSHA (29 CFR 1910.1200).

CALIFORNIA PROPOSITION 65:

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm).

(California Health & Safety Code Section 25249.5 et seq.)

Section 7 – Special Precautions for Safe Handling and Use / Applicable Control Measures

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTIONS AND THE PRECAUTIONARY LABEL ON THE PRODUCT. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P. O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910) US Government Printing Office, Washington, DC 20210 for more details on the following.

Eye Protection - Wear helmet or use face shield with filter lens. Provide protective screens and flash goggles, if necessary, to shield others. As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to the next lighter shade which gives sufficient view of the weld zone.

Ventilation: Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

Respiratory Protection – Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.

Protective Clothing - Wear hand, head, and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

Spill and Waste Disposal - Product is a non-hazardous solid. No special precautions are required for spills of bulk material. Scrap metal can be reclaimed for reuse. Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with Federal, State, and Local regulations.

SPECIAL PRECAUTIONS (IMPORTANT) - Maintain exposures below the TLV. Use industrial hygiene air monitoring to ensure that your use of this material does not create exposures which exceed TLV. Always use exhaust ventilation. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P. O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910) US Government Printing Office, Washington, DC 20210.

Postle Industries, LLC believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, Postle Industries LLC cannot make any expressed or implied warranty as to this information.

HARDFACING
FLUX-COATED ELECTRODES AND OXY-ACETYLENE RODS
MATERIAL DATA SAFETY SHEET

Section 1 – Identification

Manufacturer's Name: Postle Industries, Inc. P.O. Box 42037 Cleveland, Ohio 44142
Telephone: 800-321-2978 **Fax:** 216-265-9030

Group A – Iron base Hardfacing Electrodes – 21, 27, 205, 206HD, 207, 214, 215HD, 216HD, 217HD, 218HD, 219HD, 248CB

**Group B – Nickel and Cobalt Hardfacing electrodes and rods, with or without tungsten carbide
 14, 14TC and bare and coated electrode 2501, 2506, 2512, 2521**

Group C – Iron Base Tungsten Carbide Oxy-Acetylene Hardfacing Rods - 29, 219 bare and coated electrodes

Section 2 – Hazardous Ingredients

IMPORTANT - This section covers the hazardous materials from which this product is manufactured. The fumes and gases produced during welding with normal use of this product are also addressed in Section 5. The term "hazardous" in this section should be interpreted as a term required and defined in OSHA Hazard Communication Std. (29 CFR Part 1910).

Hazardous Ingredients	% Weight			CAS No.	Exposure Limit (mg/m ³)	
	Group A	Group B	Group C		OSHA PEL	ACGIH TLV
Iron	40-95	<5	30-60	7439-89-6	5.0 (R) 10.0 - Oxide Fume	5.0 (R) - Fe2O3
Chromium (1)	1-40	10-40		7440-47-3	1.0 - Metal 0.5 - Cr II Compounds 0.5 - Cr III Compounds 0.005 - Cr VI Compounds (A1)	0.5 - Metal 0.5 - Cr III Compounds 0.05 - Cr VI Soluble Compounds {A1} 0.01 - Cr VI Insoluble Compounds (A1)
Manganese and Mn Compounds (1)	1-25	<5	<3	7439-96-5	5.0 CL - Fume 3.0 STEL	0.2 - Dust & Fume
Columbium	0-10			7440-03-1	5.0 (R)	3.0 (R)
Vanadium (3)	0-10			7440-62-2	0.1 CL - Fume as V2O5 0.5 CL - Respirable Dust as V2O5	0.02 (R) - Fume as V2O5 0.02 (R) - Dust as V2O5
Nickel (1)	0-10	0-75		7440-02-0	1.0 - Metal 1.0 - Soluble Compounds 1.0 - Insoluble Compounds 5.0 (R) – Soluble Compounds	1.0 (I) - Metal 0.1 (I) - Soluble Compounds 0.2 (I) - Insoluble Compounds {A1} 0.5 (R) - Soluble Compounds
Molybdenum	0-10	0-10		7439-98-7	5.0 (R)	2.5 as F
Fluorides	0-10	<5		7789-75-5	2.5 - as F	10.0
Titanium Dioxide	0-10	5-15		13463-67-7	15.0 Dust	3.0 (R)
Silicon	0-5	<5	<3	7440-21-3	5.0 (R)	0.025 (R) (A2)
Silica (Amorphous Silica Fume)	0.1-5	<5	<3	14808-60-7 69012-64-2	0.1 (R) 0.8	3 (R)
Tungsten	0-10			7440-33-7	5.0 (R)	5.0, 10 STEL - Insoluble compounds 1.0, 3 STEL - Soluble compounds
Tungsten Carbide 219HD only Group A	50-65			12070-12-1	NL	NL
14TC only Group B		30-60		12070-12-1	NL	NL
Group C			50-70	12070-12-1	NL	NL
Calcium Carbonate	1-10	1-10		1317-65-3	5.0 (R) 5.0 - as CaO	3.0 (R) 2.0 - as CaO
Cobalt (1)		0-60		7440-48-4	0.1 - Dust & Fume	0.02 - Dust & Fume
Silicate Binders	<5			-----	NL	NL

(R) – Respirable Fraction (I) – Inhalable Fraction CL - Ceiling Limit STEL – Short time exposure limit

(A1) – Confirmed Human Carcinogen (A2) – Suspected Human Carcinogen

(1)SARA – Reportable material under section 313 of SARA

(2)SARA – Reportable material under section 313 of SARA only in fibrous form

(3)SARA – Reportable material under section 313 of SARA as dust or fume

The exposure limit for welding fume has been established at 5 mg/m³ with OSHA's PEL and ACGIH's TLV. The individual complex compounds within the fume may have lower exposure limits than the general welding fume PEL/TLV. An Industrial Hygienist, the OSHA Permissible Exposure Limits For Air Contaminants (29 CFR 1910.1000), and the ACGIH Threshold Limit Values should be consulted to determine the specific fume constituents present and their respective exposure limits.

Section 3 – Physical Data

These products as shipped are nonhazardous, nonflammable, nonexplosive and nonreactive.

Section 4 – Fire and Explosion Hazard Data

Welding arc and sparks, and the use of oxy-fuel torches, can ignite combustibles and flammables. Refer to American National Standard Z49.1 for fire prevention during the use of welding and allied procedures.

Section 5 – Reactivity Data – Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used.

Most fume ingredients are present as complex oxides and compounds and not as pure metals. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 2, plus those from the base metal and coating, etc., as noted above.

Monitor for the materials identified in Section 2. Reasonably expected decomposition products from normal use of these products include a complex of the oxides of the materials listed in Section 2. **Fumes from the use of these products may contain manganese, chromium, nickel, fluorides, calcium oxides, amorphous silica fume, vanadium, tungsten, copper, and cobalt whose exposure limits are lower than the 5 mg/m³ PEL/TLV for general welding fume.** Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. [See ANSI/AWS F1.1, available from the "American Welding Society", P.O. Box 351040, Miami, FL 33135. Also, from AWS is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide", which gives additional advice on sampling.]

Section 6 – Exposure Limits - Health Hazard Data

EFFECTS OF OVEREXPOSURE:

Electric arc welding may create one or more of the following health hazards: ARC RAYS can injure eyes and burn skin. ELECTRIC SHOCK can kill. See Section 7. FUMES AND GASES can be dangerous to your health. PRIMARY ROUTES OF ENTRY are the respiratory system, eyes and/or skin.

SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS:

WELDING FUMES - May result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes.

IRON, IRON OXIDE - None are known. Treat as nuisance dust or fume.

CHROMIUM - Inhalation of fume with chromium (VI) compounds can cause irritation of the respiratory tract, lung damage and asthma-like symptoms. Swallowing chromium (VI) salts can cause severe injury or death. Dust on skin can form ulcers. Eyes may be burned by chromium (VI) compounds. Allergic reactions may occur in some people.

MANGANESE - Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours.

COLUMBIUM - Dust or fumes may cause irritation of the respiratory system, skin and eyes.

VANADIUM - Overexposure to the oxide causes green tongue, cough, metallic taste, throat irritation and eczema.

NICKEL, NICKEL COMPOUNDS - Metallic taste, nausea, tightness in chest, metal fume fever, allergic reaction.

TITANIUM DIOXIDE - Irritation of respiratory system.

MOLYBDENUM - Irritation of the eyes, nose and throat.

FLUORIDES - Fluoride compounds evolved may cause skin and eye burns, pulmonary edema and bronchitis.

SILICA (AMORPHOUS) - Dust and fumes may cause irritation of the respiratory system, skin and eyes.

TUNGSTEN - Dust may cause irritation of the skin and eyes. Inhalation of dust may cause acute airways obstructive asthma which is reversible following overexposure. Symptoms are tightening chest and productive cough.

CALCIUM OXIDE - Dust or fumes may cause irritation of the respiratory system, skin and eyes.

COBALT - Pulmonary irritation, cough, dermatitis, weight loss.

LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS:

WELDING FUMES - Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis."

IRON, IRON OXIDE FUMES - Can cause siderosis (deposits of iron in lungs) which some researchers believe may affect pulmonary function. Lungs will clear in time when exposure to iron and its compounds ceases. Iron and magnetite (Fe₃O₄) are not regarded as fibrogenic materials.

CHROMIUM - Ulceration and perforation of nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Studies have shown that chromate production workers exposed to hexavalent chromium compounds have an excess of lung cancers. Chromium (VI) compounds are more readily absorbed through the skin than chromium (III) compounds.

Good practice requires the reduction of employee exposure to chromium (III) and (VI) compounds.

MANGANESE - Long-term overexposure to manganese compounds may affect the central nervous system. Symptoms may be similar to Parkinson's Disease and can include slowness, changes in handwriting, gait impairment, muscle spasms and cramps and less commonly, tremor and behavioral changes. Employees who are overexposed to manganese compounds should be seen by a physician for early detection of neurological problems.

COLUMBIUM - No adverse long term health effects have been reported in the literature.

VANADIUM - Prolonged overexposure to vanadium pentoxide can cause nasal catarrh or nose bleeds and chronic respiratory problems.

NICKEL, NICKEL COMPOUNDS - Lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers.

TITANIUM DIOXIDE - Pulmonary irritation and slight fibrosis.

MOLYBDENUM - Prolonged overexposure may result in loss of appetite, weight loss, loss of muscle coordination, difficulty in breathing and anemia.

FLUORIDES - Serious bone erosion (Osteoporosis) and mottling of teeth.

SILICA (AMORPHOUS) - Research indicates that silica is present in welding fume in the amorphous form. Long term overexposure may cause pneumoconiosis. Noncrystalline forms of silica (amorphous silica) are considered to have little fibrotic potential.

TUNGSTEN - Long term overexposure may cause pulmonary fibrosis characterized by a rapid onset of cough, sputum and dyspnea on exertion.

CALCIUM OXIDE - Prolonged overexposure may cause ulceration of the skin and perforation of the nasal septum, dermatitis and pneumonia.

COBALT - Repeated overexposure to cobalt compounds can produce reduced pulmonary function, diffuse nodular fibrosis of lungs and respiratory hypersensitivity. IARC considers cobalt compounds as possibly carcinogenic to humans (GROUP 2B).

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Persons with pre-existing impaired lung functions (asthma-like conditions).

EMERGENCY AND FIRST AID PROCEDURES:

Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY:

Chromium VI, cobalt, and nickel compounds must be considered carcinogens according to OSHA (29 CFR 1910.1200). Chromium VI compounds are classified as IARC Group 1 and NTP Group 1 carcinogens. Nickel compounds are classified as IARC Group 1 and NTP Group 2 carcinogens. Cobalt compounds are classified as IARC Group 2B carcinogens. Welding fumes must be considered as possible carcinogens under OSHA (29 CFR 1910.1200).

CALIFORNIA PROPOSITION 65:

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)

Section 7 – Special Precautions for Safe Handling and Use / Applicable Control Measures

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTIONS AND THE PRECAUTIONARY LABEL ON THE PRODUCT. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P. O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910) US Government Printing Office, Washington, DC 20210 for more details on the following.

Eye Protection - Wear helmet or use face shield with filter lens. Provide protective screens and flash goggles, if necessary, to shield others. As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to the next lighter shade which gives sufficient view of the weld zone.

Ventilation: Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

Respiratory Protection - Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.

Protective Clothing - Wear hand, head, and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

Spill and Waste Disposal - Product is a non-hazardous solid. No special precautions are required for spills of bulk material. Scrap metal can be reclaimed for reuse. Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with Federal, State, and Local regulations.

SPECIAL PRECAUTIONS (IMPORTANT) - Maintain exposures below the TLV. Use industrial hygiene air monitoring to ensure that your use of this material does not create exposures which exceed TLV. Always use exhaust ventilation. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P. O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910) US Government Printing Office, Washington, DC 20210.

Postle Industries, LLC believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, Postle Industries LLC cannot make any expressed or implied warranty as to this information.

COPPER BASE
Welding Electrodes and bare welding wires
MATERIAL DATA SAFETY SHEET

Section 1 – Identification

Manufacturer's Name: Postle Industries, Inc. P.O. Box 42037 Cleveland, Ohio 44142
Telephone: 800-321-2978 **Fax:** 216-265-9030

Group A – Copper base Electrodes – 94, 95, 950, 918

Group B – Copper Base solid wires for MIG and TIG – 18-B, 18-SPL, 94-B, 94-SPL, 95-B, 95-SPL, 97-B, 97-SPL

Section 2 – Hazardous Ingredients

IMPORTANT - This section covers the hazardous materials from which this product is manufactured. The fumes and gases produced during welding with normal use of this product are also addressed in Section 5. The term "hazardous" in this section should be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910).

Hazardous Ingredients	% Weight		CAS No.	Exposure Limit (mg/m ³)	
	Group A	Group B		OSHA PEL	ACGIH TLV
Iron	0-5	0-2	7439-89-6	5.0 (R) 10.0 - Oxide Fume	5.0 (R) - Fe2O3
Manganese and Mn Compounds (1)	0-15	0-2	7439-96-5	5.0 CL - Fume 3.0 STEL	0.2 - Dust & Fume
Nickel (1)	0-5		7440-02-0	1.0 - Metal 1.0 - Soluble Compounds 1.0 - Insoluble Compounds	1.0 (I) - Metal 0.1 (I) - Soluble Compounds 0.2 (I) - Insoluble Compounds {A1}
Copper		<.5	7440-50-8	1.0 Dust	1.0 Dust
Aluminum (3)	0-10	0-15	7429-90-5	5.0 (R)	1.0 (R)
Fluorides	<5		7789-75-5	2.5 - as F	2.5 as F
Calcium Carbonate	0-7		1317-65-3	5.0 (R) 5.0 - as CaO	3.0 (R) 2.0 - as CaO
Barium Carbonate	0-10		7787-32-8	0.5 as Ba	0.5 as Ba
Silicate Binders	<5		-----	NL	NL
Tin	0-7	0-10	7440-31-5	2.0	2.0
Zinc		0-2	7440-66-6	5.0 - as F	5 - Fume
Silicon		0-5	7440-21-3	5.0 (R)	3.0 (R)

(R) – Respirable Fraction (I) – Inhalable Fraction CL - Ceiling Limit STEL – Short time exposure limit

(A1) – Confirmed Human Carcinogen (A2) – Suspected Human Carcinogen

(1)SARA – Reportable material under section 313 of SARA

(2)SARA – Reportable material under section 313 of SARA only in fibrous form

(3)SARA – Reportable material under section 313 of SARA as dust or fume

The exposure limit for welding fume has been established at 5 mg/m3 with OSHA's PEL and ACGIH's TLV. The individual complex compounds within the fume may have lower exposure limits than the general welding fume PEL/TLV. An Industrial Hygienist, the OSHA Permissible Exposure Limits For Air Contaminants (29 CFR 1910.1000), and the ACGIH Threshold Limit Values should be consulted to determine the specific fume constituents present and their respective exposure limits.

Section 3 – Physical Data

These products as shipped are nonhazardous, nonflammable, nonexplosive and nonreactive.

Section 4 – Fire and Explosion Hazard Data

Welding arc and sparks, and the use of oxy-fuel torches, can ignite combustibles and flammables. Refer to American National Standard Z49.1 for fire prevention during the use of welding and allied procedures.

Section 5 – Reactivity Data – Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used.

Most fume ingredients are present as complex oxides and compounds and not as pure metals. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 2, plus those from the base metal and coating, etc., as noted above.

Monitor for the materials identified in Section 2. Reasonably expected decomposition products from normal use of these products include a complex of the oxides of the materials listed in Section 2. **Fumes from the use of these products may contain manganese, chromium, nickel, fluorides, calcium oxides, amorphous silica fume, vanadium, tungsten, copper, and cobalt whose exposure limits are lower than the 5 mg/m3 PEL/TLV for general welding fume.** Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. [See ANSI/AWS F1.1, available from the "American Welding Society", P.O. Box 351040, Miami, FL 33135. Also, from AWS is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide", which gives additional advice on sampling.]

Section 6 – Exposure Limits - Health Hazard Data

EFFECTS OF OVEREXPOSURE:

Electric arc welding may create one or more of the following health hazards: ARC RAYS can injure eyes and burn skin. ELECTRIC SHOCK can kill. See Section 7. FUMES AND GASES can be dangerous to your health. PRIMARY ROUTES OF ENTRY are the respiratory system, eyes and/or skin.

SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS:

WELDING FUMES - May result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes.

IRON, IRON OXIDE - None are known. Treat as nuisance dust or fume.

MANGANESE - Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours.

NICKEL, NICKEL COMPOUNDS - Metallic taste, nausea, tightness in chest, metal fume fever, allergic reaction.

FLUORIDES - Fluoride compounds evolved may cause skin and eye burns, pulmonary edema and bronchitis.

CALCIUM OXIDE - Dust or fumes may cause irritation of the respiratory system, skin and eyes.

ALUMINUM OXIDE - Irritation of the respiratory system.

COPPER - Metal fume fever characterized by metallic taste, tightness of chest and fever. Symptoms may last 24 to 48 hours following overexposure.

BARIUM - Aching eyes, rhinitis, frontal headache, wheezing, laryngeal spasms, salivation or anorexia.

Zinc - Exposure to zinc oxide fume may cause respiratory tract irritation and "metal fume fever", which is characterized by a metallic taste, cough, dry throat, chills, fever, tightness of chest, headache, nausea, shortness of breath, vomiting, and fatigue.

LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS:

WELDING FUMES - Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis."

IRON, IRON OXIDE FUMES - Can cause siderosis (deposits of iron in lungs) which some researchers believe may affect pulmonary function. Lungs will clear in time when exposure to iron and its compounds ceases. Iron and magnetite (Fe₃O₄) are not regarded as fibrogenic materials.

MANGANESE - Long-term overexposure to manganese compounds may affect the central nervous system. Symptoms may be similar to Parkinson's Disease and can include slowness, changes in handwriting, gait impairment, muscle spasms and cramps and less commonly, tremor and behavioral changes. Employees who are overexposed to manganese compounds should be seen by a physician for early detection of neurological problems.

NICKEL, NICKEL COMPOUNDS - Lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers.

ALUMINUM OXIDE - Pulmonary fibrosis and emphysema.

COPPER - Copper poisoning has been reported in the literature from exposure to high levels of copper. Liver damage can occur due to copper accumulating in the liver characterized by cell destruction and cirrhosis. High levels of copper may cause anemia and jaundice. High levels of copper may cause central nervous system damage characterized by nerve fiber separation and cerebral degeneration.

BARIUM - Long term overexposure to soluble barium compounds may cause nervous disorders and may have deleterious effects on the heart, circulatory system and musculature.

FLUORIDES - Serious bone erosion (Osteoporosis) and mottling of teeth.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Persons with pre-existing impaired lung functions (asthma-like conditions).

EMERGENCY AND FIRST AID PROCEDURES:

Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY:

Chromium VI, cobalt, and nickel compounds must be considered carcinogens according to OSHA (29 CFR 1910.1200). Chromium VI compounds are classified as IARC Group 1 and NTP Group 1 carcinogens. Nickel compounds are classified as IARC Group 1 and NTP Group 2 carcinogens. Cobalt compounds are classified as IARC Group 2B carcinogens. Welding fumes must be considered as possible carcinogens under OSHA (29 CFR 1910.1200).

CALIFORNIA PROPOSITION 65:

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm).

(California Health & Safety Code Section 25249.5 et seq.)

Section 7 – Special Precautions for Safe Handling and Use / Applicable Control Measures

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTIONS AND THE PRECAUTIONARY LABEL ON THE PRODUCT. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P. O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910) US Government Printing Office, Washington, DC 20210 for more details on the following.

Eve Protection - Wear helmet or use face shield with filter lens. Provide protective screens and flash goggles, if necessary, to shield others. As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to the next lighter shade which gives sufficient view of the weld zone.

Ventilation: Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

Respiratory Protection - Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.

Protective Clothing - Wear hand, head, and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

Spill and Waste Disposal - Product is a non-hazardous solid. No special precautions are required for spills of bulk material. Scrap metal can be reclaimed for reuse. Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with Federal, State, and Local regulations.

SPECIAL PRECAUTIONS (IMPORTANT) - Maintain exposures below the TLV. Use industrial hygiene air monitoring to ensure that your use of this material does not create exposures which exceed TLV. Always use exhaust ventilation. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P. O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910) US Government Printing Office, Washington, DC 20210.

Postle Industries, LLC believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, Postle Industries LLC cannot make any expressed or implied warranty as to this information.

Section 1 – Identification

Manufacturer's Name: Postle Industries, Inc. P.O. Box 42037 Cleveland, Ohio 44142
Telephone: 800-321-2978 **Fax:** 216-265-9030

Postalloy 40**Section 2 – Hazardous Ingredients**

IMPORTANT - This section covers the hazardous materials from which this product is manufactured. The fumes and gases produced during welding with normal use of this product are also addressed in Section 5. The term "hazardous" in this section should be interpreted as a term required and defined in OSHA Hazard Communication Std. (29 CFR Part 1910).

Hazardous Ingredients	% Weight Group A	CAS No.	Exposure Limit (mg/m ³)	
			OSHA PEL	ACGIH TLV
Aluminum (3)	40-70	7429-90-5	5.0 (R)	1.0 (R)
Fluorides	1-5	7789-75-5	2.5 - as F	2.5 as F
Potassium Chloride	10-30	7447-40-7	NL	NL
Potassium Hexafluoroaluminate	1-5	13775-52-5	2.5 - as F	2.5 - as
Sodium Chloride	1-30	7647-14-5	NL	NL
Sodium Hexafluoroaluminate	1-5	15096-52-3	2.5 - as F	2.5 - as F
Lithium Hexafluoroaluminate	5-10	13821-20-0	2.5 - as F	2.5 - as F
Silicon	5-10	7440-21-3	5.0 (R)	3.0 (R)

(R) – Respirable Fraction (I) – Inhalable Fraction CL - Ceiling Limit STEL – Short time exposure limit

(A1) – Confirmed Human Carcinogen (A2) – Suspected Human Carcinogen

(1)SARA – Reportable material under section 313 of SARA

(2)SARA – Reportable material under section 313 of SARA only in fibrous form

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NL – Not Listed

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Persons with pre-existing impaired lung functions (asthma-like conditions).

EMERGENCY AND FIRST AID PROCEDURES:

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Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY:

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SPECIAL PRECAUTIONS (IMPORTANT) - Maintain exposures below the TLV. Use industrial hygiene air monitoring to ensure that your use of this material does not create exposures which exceed TLV. Always use exhaust ventilation. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P. O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910) US Government Printing Office, Washington, DC 20210.

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MATERIAL DATA SAFETY SHEET

Postle Industries, Inc.
P.O. Box 42037 Cleveland, Ohio 44142
Phone: 800-321-2978 Fax: 216-265-9030

SECTION 1 - IDENTIFICATION**MetalTec 9000 Concrete Polymer – Part A, Part B and Part C****SECTION 2 - HAZARDOUS INGREDIENTS**

HARDENER - Part A	CAS Number	OSHA PEL	ACGIH TLV	BASE - Part B	CAS Number	OSHA PEL	ACGIH TLV	
Aliphatic Amines and Epoxy Modifiers	Mixture	N.A.	N.A.	Resin based on Bisphenol A Diglycidyl Ether Polymer Pigments	25068-38-6	N.A.	N.A.	60-90%
HMIS Hazard Rating	H-2	F-1	R-0	HMIS Hazard Rating	H-2	F-1	R-0	10-30%
QUARTZ - Part C	CAS Number	OSHA PEL	ACGIH 8-hr. TWA: 50 micrograms respirable free Silica per cubic meter of air (50Ug/m ³)					
Crystalline Quartz	14808-60-7		OSHA PEL 8-hr. TWA (respirable dust): 0.10 mg/m ³ – See 29 CFR, Part 1910.1000 (Z-3 Table) for mineral dusts, specifically "Silica: Crystalline: Quartz (respirable)".					
Crystalline Quartz (respirable)		10 mg/m ³ % SiO ₂ + 2	The percent of quartz in the formula is the amount determined from an airborne sample. Both concentration and percent quartz for the application of this limit are to be determined from fractions passing a size-selector (10 microns or smaller)					
Quartz (total dust)		30 mg/m ³ % SiO ₂ + 2						
HMIS Hazard Rating	H-4	F-0	R-0					

SECTION 3 - PHYSICAL DATA

HARDENER - Part A	BASE - Part B	QUARTZ – Part C
Boiling Point >380°F(173°C)	Boiling Point >500°F(260°C)	Boiling Point 4046°F(2230°C)
% Volatiles 0.00	% Volatiles 0.00	% Volatiles 0.00
Specific Gravity(Water=1) N.A.	Specific Gravity(Water=1) N.A.	Specific Gravity(Water=1) 2.65
Appearance and Odor: Dark colored liquid	Appearance and Odor: Gray liquid	Appearance and Odor: Tan/White

SECTION 4 – FIRE AND EXPLOSION

	HARDENER – Part A	BASE – Part B	QUARTZ – Part C
Flash Point	210°F(99°C) (Closed Cup)	>480°F(249°C) (PMCC)	None
Extinguishing Media	CO ₂ , water spray, dry chemical, foam	CO ₂ , water spray, dry chemical, foam	N.A.
Special Fire Fighting Procedures	Toxic fumes (CO ₂ , CO and NO) will evolve when this material is involved in a fire. Self-contained breathing apparatus should be made available to fire fighters. Keep containers cool.	Toxic fumes (CO ₂ , CO and aldehydes) will evolve when this material is involved in a fire. Self-contained breathing apparatus should be made available to fire fighters. Keep containers cool.	None
Unusual fire & explosion hazards	None	None	None

SECTION 5 - REACTIVITY DATA

	HARDENER – Part A	BASE – Part B	QUARTZ – Part C
Stability	Material is stable.	Material is stable	Material is stable
Incompatibility with Other Substances	Oxidizing materials,	Strong oxidizing agents	Hydrofluoric acid, alkalines, manganese trioxide
Hazardous Decomposition Products	Ammonia, hydrogen cyanide, NO,CO, CO ₂ . Oxygen starved conditions can produce nitriles, amides, carbamates, isocyanates, cyanogens, cyanic acid.	CO, CO ₂ , Aldehydes	None
Hazardous Polymerization	Will not occur	Will not occur	Will not occur
Conditions to avoid	None	High temp., strong acids/bases	None

SECTION 6 – HEALTH HAZARD INFORMATION

HARDENER - Part A	BASE – Part B	QUARTZ – Part C	
Routes of Entry	Skin, eyes, ingestion, inhalation.	Skin, eyes, ingestion, inhalation.	Inhalation
Affects of Overexposure	May cause severe pain and irritation to skin and eyes. Can aggravate skins disorders and allergies. Can result in adverse eye effects (conjunctivitis or corneal damage). Can aggravate chronic respiratory disease (Bronchitis, Emphysema). Ingestion may cause gastrointestinal irritation or ulceration.	May cause irritation to eyes and skin and may aggravate allergies, eczema or other skin conditions. Because of its low toxicity it is unlikely to be an inhalation hazard.	Symptoms are dyspnea – caused by many lung scars that develop from the silica dust – pain in the chest, decrease vital capacity and cough. Chronic lung scarring leads to a progressive massive fibrosis that is often accompanied by increased susceptibility to the risk of impaired health due to a combination of smoking and silica dust exposure.
Skin Absorption	A single prolonged exposure may be harmful. The LD50 for skin absorption in rabbits is 1000 mg/kg.	The LD50 for rabbits is >20 ml/kg.	
Ingestion	Oral LD50 for rats is 620 mg/kg.	The LD50 for rats is 11.4 g/kg (15.6 g/kg mice)	
Other Effects	This material is not considered to be a carcinogenic by NTP, IARC, or OSHA.	This material is not considered to be a carcinogen by NTP, IARC, or OSHA.	Excessive inhalation of dust may result in respiratory disease, including silicosis, pneumoconiosis and pulmonary fibrosis IARC has evaluated in Volume 42 Monographs on the Evaluation of the Carcinogenicity Risk of Chemicals to Humans, Silica and some Silicates (1987), that there is “sufficient evidence for the carcinogenicity crystalline silica in experimental animals” and “limited evidence” with respect to humans.

SECTION 7- FIRST AID

HARDENER - Part A	
Eyes	Immediate and continuous irrigation with flowing water for at least 30 minutes. Call physician.
Skin	Immediately flush skin with water for at least 15 minutes. Get medical attention for burns or if rash develops.
Inhalation	Remove to fresh air and administer oxygen if breathing is difficult.
Ingestion	Call physician immediately. Remove stomach contents by gastric suction or induce vomiting only if directed by medical personnel.

SECTION 8- PREVENTATIVE MEASURES

Spills or Leaks	Part A - Scoop up material and return to containers if not contaminated, otherwise soak up with absorbent. Part B – Scoop up material and return to containers if not contaminated, otherwise soak up with absorbent. Part C – If uncontaminated, collect Spill using dustless method (water or vacuum). If contaminated use appropriate method in consideration of contamination.
Waste Disposal	Part A - Dispose of in accordance with federal, state and local regulations. Incineration is acceptable and the preferred method of disposal. Part B – Not a hazardous waste by RCRA Criteria. Dispose of properly by federal, state and local regulations. Part C – If uncontaminated, dispose of as an inert, non-metallic mineral. If contaminated, use appropriate method in accordance with local, state and federal regulations.
Hand Protection	Chemical resistant gloves.
Eye Protection	Chemical goggles or safety glasses with side shields. Contact lenses should not be worn.
Skin Protection	Wear clothing with long sleeve shirts to cover skin.
Respiratory Protection	Parts A & B - Generally, for Parts A & B, respiratory protection is unnecessary provided there is adequate ventilation. Otherwise, use a cartridge mask, NIOSH approved for organic vapors is recommended. Avoid breathing vapors. Part C – Use conventional particulate respiratory protection based upon considerations of airborne concentrations and duration of exposure. See most recent ANSI, OSHA and MSHA standards-(ANSI Z.88.22) (OSHA 20 CFR Part 1910.134) and (MSHA 30 CFR Part 56).
Ventilation	Use good general mechanical ventilation and local exhaust. Avoid breathing vapors and dusts. Do not permit dust to accumulate.
Handling Precautions	Wear protective clothing including chemical gloves and splash goggles. Wash hands before eating, drinking, smoking or using toilet facilities. Use with adequate ventilation. Mixing part A and B may produce enough heat to cause burns. Warn and train works concerning the hazards of working with crystalline silica. Avoid creation of respirable dust.

Regulatory U.S. Regulations - Reviewed under SARA Sections **Information** 311 & 312 and meets the following categories: **an immediate health hazard**
 SARA Title III – no known toxic chemicals subject to requirements of Sec. 313. Canadian Regulations – WHIMIS designations for this product: D.2.B.

MATERIAL DATA SAFETY SHEET

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MetalTec Ceramic Repair Compounds (MT6000,MT6300,MT7000,MT7100,MT7150,MT7900,MTCerbide)
Part A and Part B

SECTION 2 - HAZARDOUS INGREDIENTS

HARDENER - Part A	CAS	OSHA	ACGIH	BASE - Part B	CAS	OSHA	ACGIH
	Number	PEL	TLV		Number	PEL	TLV
Aliphatic Amines and Epoxy Modifiers	Mixture	N.A.	N.A.	Liquid Epoxy Resin	Mixture	N.A.	N.A.
HMIS Hazard Rating	H-3	F-1	R-0	HMIS Hazard Rating	H-2	F-1	R-0

SECTION 3 - PHYSICAL DATA

HARDENER - Part A
BASE - Part B

Boiling Point	482°F(250°C)	Boiling Point	>400°F(200°C)
Melting Point	N.A.	Melting Point	N.A.
% Volatiles	0.00	% Volatiles	0.00
Vapor Pressure(mm Hg)	N.A.	Vapor Pressure(mm Hg)	N.A.
Vapor Density(Air=1)	N.A.	Vapor Density(Air=1)	N.A.
Solubility in water	Negligible	Solubility in water	Insoluble
Specific Gravity(Water=1)	N.A.	Specific Gravity(Water=1)	N.A.
Evaporation Rate(Butyl Acetate=1)	<.01	Evaporation Rate(Butyl Acetate=1)	N.A.
Appearance and Odor:	MT7000 Black paste, Ammonia odor	Appearance and Odor:	MT7000 Gray paste, mild odor
	MT7100 Liquid, Ammonia odor		MT7100 Black paste, mild odor
	MT7150 Liquid, Ammonia odor		MT7150 White paste, mild odor
	MTCerbide White paste, Ammonia order		MTCerbide Yellow paste, mild odor

SECTION 4 - FIRE AND EXPLOSION

HARDENER - Part A
BASE - Part B

Flash Point	230°F(110°C) (PMCC)	Flash Point	>200°F(93°C)
Flammability Limits	LFL: N.A. UFL: N.A.	Flammability Limits	LFL: N.A. UFL: N.A.
Autoignition Temperature	N.A.	Autoignition Temperature	N.A.
Extinguishing Media	CO2, water spray, dry chemical, foam	Extinguishing Media	CO2, water spray, dry chemical, alcohol foam
Special Fire Fighting Procedures	Toxic fumes (CO2, CO and NO) will evolve when this material is involved in a fire. Self-contained breathing apparatus should be made available to fire fighters. Keep containers cool.	Special Fire Fighting Procedures	Toxic fumes (CO2, CO and aldehydes) will evolve when this material is involved in a fire. Self-contained breathing apparatus should be made available to fire fighters. Keep containers cool.
Unusual fire & explosion Hazards	None	Unusual fire & explosion Hazards	None

SECTION 5 - REACTIVITY DATA

HARDENER - Part
BASE - Part B

Stability	Material is stable. Can autoignite at 561°F(294°C)	Stability	Material is stable
Incompatibility with Other Substances	Acids, oxidizing materials, halogenated organic aldehydes ketones and acrylates	Incompatibility with Other Substances	Strong oxidizing agents
Hazardous Decomposition products	NO, CO, CO2.	Hazardous Decomposition products	CO, CO2, Aldehydes
Hazardous Polymerization	Will not occur	Hazardous Polymerization	Will not occur
Conditions to avoid	None	Conditions to avoid	High temperatures, strong acids or bases

SECTION 6 – HEALTH HAZARD INFORMATION

HARDENER - Part A		BASE – Part B
Routes of Entry	Skin, eyes, ingestion, inhalation.	Skin, eyes, ingestion, inhalation.
Affects of Overexposure	May cause burns to skin and eyes, asthmatic reactions, skin sensitization, or other allergic reactions. Can result in permanent impairment of vision, even blindness. High concentrations of vapor can cause irritation to eyes and respiratory tract. Ingestion may cause gastrointestinal irritation or ulceration. May cause burns to mouth and throat.	May cause irritation to eyes and skin and may aggravate allergy, eczema or other skin conditions
Skin Absorption	A single prolonged exposure may be harmful. The LD50 for skin absorption in rabbits is 800 mg/kg.	Not established
Ingestion	Single dose oral toxicity is low. Oral LD50 for rats is 4340 mg/kg.	The LD50 for rats >5000 mg/kg.
Other Effects	Did not cause cancer in long term animal studies. Birth defects are unlikely. In laboratory animals fed exaggerated doses, adverse effects occurred that were believed to be associated with an observed copper deficiency. However, exposures having no adverse effect on the mother should have no effect on the fetus. Results of in vitro (test tube) mutagenicity tests have been positive.	This material is not considered to be a carcinogenic by NTP, IARC, or OSHA.

SECTION 7- FIRST AID

HARDENER - Part A		BASE – Part B
Eyes	Immediate and continuous irrigation with flowing water for at least 30 minutes. Call physician.	Immediate and continuous irrigation with flowing water for at least 15 minutes. Call physician.
Skin	Immediately flush skin with water for at least 15 minutes. Get medical attention for burns or if rash develops.	Promptly wash skin with soap and water.
Inhalation	Remove to fresh air and administer oxygen if breathing is difficult.	Remove to fresh air and administer oxygen if breathing is difficult.
Ingestion	Do not induce vomiting. Give large amounts of water or milk. Get medical attention.	Give large amounts of water. Consult physician.
Note to Physician	May cause tissue destruction leading to stricture. If lavage is performed, suggest endotracheal and/or esophagoscopy control. If burn is present, treat as thermal burn. No specific antidote. Excessive exposure may aggravate pre-existing asthma.	None

SECTION 8- PREVENTATIVE MEASURES

HARDENER - Part A		BASE – Part B
Spills or Leaks	Scoop up material and return to containers if not contaminated, otherwise soak up with absorbent.	Scoop up material and return to containers if not contaminated, otherwise soak up with absorbent.
Waste Disposal	Dispose of in accordance with federal, state and local regulations. Incineration is acceptable and the preferred method of disposal.	Not a hazardous waste by RCRA criteria. Dispose of properly by federal, state and local regulations.
Hand Protection	Chemical resistant gloves.	
Eye Protection	Chemical goggles or safety glasses with side shields. Contact lenses should not be worn.	
Skin Protection	Wear clothing with long sleeve shirts to cover skin.	
Respiratory Protection	Generally, respiratory protection is unnecessary provided there is adequate ventilation. Otherwise, use a cartridge mask NIOSH approved for organic vapors is recommended. Avoid breathing vapors.	
Ventilation	Use good general mechanical ventilation and local exhaust. Avoid breathing vapors and dusts.	
Handling Precautions	Wear protective clothing including chemical gloves and splash goggles. Wash hands before eating, drinking, smoking or using toilet facilities. Use with adequate ventilation. Mixing part A and B may produce enough heat to cause burns.	
Regulatory Information	U.S. Regulations - Reviewed under SARA Sections 311 & 312 and meets the following categories: an immediate health hazard a delayed health hazard No known toxic chemicals subject to requirements of Sec. 313. Canadian Regulations - WHIMIS designations for this Product: D.1.B. – D.2.A. – E.	U.S. Regulations – Not a hazardous waste under RCRA CERCLA status – not listed. SARA Title III. This product does not contain a toxic chemical for routine annual "toxic chemical release reporting" under Section 313. Canadian Regulations – WHIMIS designation for this product: D.2.B.

DATE PREPARED: 7/1/2007

MATERIAL DATA SAFETY SHEET

Postle Industries, Inc.
P.O. Box 42037 Cleveland, Ohio 44142
Phone: 800-321-2978 Fax: 216-265-9030

SECTION 1 - IDENTIFICATION**MetalTec 9000 Concrete Polymer – Part A, Part B and Part C****SECTION 2 - HAZARDOUS INGREDIENTS**

HARDENER - Part A	CAS Number	OSHA PEL	ACGIH TLV	BASE - Part B	CAS Number	OSHA PEL	ACGIH TLV	
Aliphatic Amines and Epoxy Modifiers	Mixture	N.A.	N.A.	Resin based on Bisphenol A Diglycidyl Ether Polymer	25068-38-6	N.A.	N.A.	60-90%
				Pigments				10-30%
HMIS Hazard Rating	H-2	F-1	R-0	HMIS Hazard Rating	H-2	F-1	R-0	

QUARTZ - Part C	CAS Number	OSHA PEL	ACGIH 8-hr. TWA:
Crystalline Quartz	14808-60-7		50 micrograms respirable free Silica per cubic meter of air (50Ug/m ³)
Crystalline Quartz (respirable)		<u>10 mg/ m³</u> % SiO ₂ + 2	OSHA PEL 8-hr. TWA (respirable dust): 0.10 mg/m ³ – See 29 CFR, Part 1910.1000 (Z-3 Table) for mineral dusts, specifically “Silica: Crystalline: Quartz (respirable)”.
Quartz (total dust)		<u>30 mg/ m³</u> % SiO ₂ + 2	The percent of quartz in the formula is the amount determined from an airborne sample. Both concentration and percent quartz for the application of this limit are to be determined from fractions passing a size-selector (10 microns or smaller)
HMIS Hazard Rating	H-4	F-0 R-0	

SECTION 3 - PHYSICAL DATA

HARDENER - Part A	BASE - Part B	QUARTZ – PART C
Boiling Point >380°F(173°C)	Boiling Point >500°F(260°C)	Boiling Point 4046°F(2230°C)
% Volatiles 0.00	% Volatiles 0.00	% Volatiles 0.00
Specific Gravity(Water=1) N.A.	Specific Gravity(Water=1) N.A.	Specific Gravity(Water=1) 2.65
Appearance and Odor: Dark colored liquid	Appearance and Odor: Gray liquid	Appearance and Odor: Tan/White

SECTION 4 – FIRE AND EXPLOSION

	HARDENER – Part A	BASE – Part B	QUARTZ – Part C
Flash Point	210°F(99°C) (Closed Cup)	>480°F(249°C) (PMCC)	None
Extinguishing Media	CO2, water spray, dry chemical, foam	CO2, water spray, dry chemical, foam	N.A.
Special Fire Fighting Procedures	Toxic fumes (CO2, CO and NO) will evolve when this material is involved in a fire. Self-contained breathing apparatus should be made available to fire fighters. Keep containers cool.	Toxic fumes (CO2, CO and aldehydes) will evolve when this material is involved in a fire. Self-contained breathing apparatus should be made available to fire fighters. Keep containers cool.	None
Unusual fire & explosion hazards	None	None	None

SECTION 5 - REACTIVITY DATA

	HARDENER – Part A	BASE – Part B	QUARTZ – Part C
Stability	Material is stable.	Material is stable	Material is stable
Incompatibility with Other Substances	Oxidizing materials,	Strong oxidizing agents	Hydrofluoric acid, alkalines, manganese trioxide
Hazardous Decomposition Products	Ammonia, hydrogen cyanide, NO,CO, CO2. Oxygen starved conditions can produce nitriles, amides, carbamates, isocyanates, cyanogens, cyanic acid.	CO, CO2, Aldehydes	None
Hazardous Polymerization	Will not occur	Will not occur	Will not occur
Conditions to avoid	None	High temp., strong acids/bases	None

SECTION 6 – HEALTH HAZARD INFORMATION

HARDENER - Part A	BASE – Part B	QUARTZ – Part C	
Routes of Entry	Skin, eyes, ingestion, inhalation.	Skin, eyes, ingestion, inhalation.	Inhalation
Affects of Overexposure	May cause severe pain and irritation to skin and eyes. Can aggravate skins disorders and allergies. Can result in adverse eye effects (conjunctivitis or corneal damage). Can aggravate chronic respiratory disease (Bronchitis, Emphysema). Ingestion may cause gastrointestinal irritation or ulceration.	May cause irritation to eyes and skin and may aggravate allergies, eczema or other skin conditions. Because of its low toxicity it is unlikely to be an inhalation hazard.	Symptoms are dyspnea – caused by many lung scars that develop from the silica dust – pain in the chest, decrease vital capacity and cough. Chronic lung scarring leads to a progressive massive fibrosis that is often accompanied by increased susceptibility to the risk of impaired health due to a combination of smoking and silica dust exposure.
Skin Absorption	A single prolonged exposure may be harmful. The LD50 for skin absorption in rabbits is 1000 mg/kg.	The LD50 for rabbits is >20 ml/kg.	
Ingestion	Oral LD50 for rats is 620 mg/kg.	The LD50 for rats is 11.4 g/kg (15.6 g/kg mice)	
Other Effects	This material is not considered to be a carcinogenic by NTP, IARC, or OSHA.	This material is not considered to be a carcinogen by NTP, IARC, or OSHA.	Excessive inhalation of dust may result in respiratory disease, including silicosis, pneumoconiosis and pulmonary fibrosis IARC has evaluated in Volume 42 Monographs on the Evaluation of the Carcinogenicity Risk of Chemicals to Humans, Silica and some Silicates (1987), that there is “sufficient evidence for the carcinogenicity crystalline silica in experimental animals” and “limited evidence” with respect to humans.

SECTION 7- FIRST AID

HARDENER - Part A

Eyes	Immediate and continuous irrigation with flowing water for at least 30 minutes. Call physician.
Skin	Immediately flush skin with water for at least 15 minutes. Get medical attention for burns or if rash develops.
Inhalation	Remove to fresh air and administer oxygen if breathing is difficult.
Ingestion	Call physician immediately. Remove stomach contents by gastric suction or induce vomiting only if directed by medical personnel.

SECTION 8- PREVENTATIVE MEASURES

Spills or Leaks	Part A - Scoop up material and return to containers if not contaminated, otherwise soak up with absorbent. Part B – Scoop up material and return to containers if not contaminated, otherwise soak up with absorbent. Part C – If uncontaminated, collect Spill using dustless method (water or vacuum). If contaminated use appropriate method in consideration of contamination.
Waste Disposal	Part A - Dispose of in accordance with federal, state and local regulations. Incineration is acceptable and the preferred method of disposal. Part B – Not a hazardous waste by RCRA Criteria. Dispose of properly by federal, state and local regulations. Part C – If uncontaminated, dispose of as an inert, non-metallic mineral. If contaminated, use appropriate method in accordance with local, state and federal regulations.
Hand Protection	Chemical resistant gloves.
Eye Protection	Chemical goggles or safety glasses with side shields. Contact lenses should not be worn.
Skin Protection	Wear clothing with long sleeve shirts to cover skin.
Respiratory Protection	Parts A & B - Generally, for Parts A & B, respiratory protection is unnecessary provided there is adequate ventilation. Otherwise, use a cartridge mask, NIOSH approved for organic vapors is recommended. Avoid breathing vapors. Part C – Use conventional particulate respiratory protection based upon considerations of airborne concentrations and duration of exposure. See most recent ANSI, OSHA and MSHA standards-(ANSI Z.88.22) (OSHA 20 CFR Part 1910.134) and (MSHA 30 CFR Part 56).
Ventilation	Use good general mechanical ventilation and local exhaust. Avoid breathing vapors and dusts. Do not permit dust to accumulate.
Handling Precautions	Wear protective clothing including chemical gloves and splash goggles. Wash hands before eating, drinking, smoking or using toilet facilities. Use with adequate ventilation. Mixing part A and B may produce enough heat to cause burns. Warn and train works concerning the hazards of working with crystalline silica. Avoid creation of respirable dust.

Regulatory hazard

U.S. Regulations - Reviewed under SARA Sections **Information** 311 & 312 and meets the following categories:

an immediate health

SARA Title III – no known toxic chemicals subject to requirements of Sec. 313.
Canadian Regulations – WHIMIS designations for this product: D.2.B.

DATE PREPARED: 7/1/2007

MATERIAL DATA SAFETY SHEET

Postle Industries, Inc.
P.O. Box 42037 Cleveland, Ohio 44142
Phone: 800-321-2978 Fax: 216-265-9030

SECTION 1 - IDENTIFICATION

MetalTec Ceramic Repair Compounds (MT6000,MT6300,MT7000,MT7100,MT7150,MT7900,MTCerbide)
Part A and Part B

SECTION 2 - HAZARDOUS INGREDIENTS

HARDENER - Part A	CAS	OSHA	ACGIH	BASE - Part B	CAS	OSHA	ACGIH
	Number	PEL	TLV		Number	PEL	TLV
Aliphatic Amines and Epoxy Modifiers	Mixture	N.A.	N.A.	Liquid Epoxy Resin	Mixture	N.A.	N.A.
HMIS Hazard Rating	H-3	F-1	R-0	HMIS Hazard Rating	H-2	F-1	R-0

SECTION 3 - PHYSICAL DATA

HARDENER - Part A		BASE - Part B	
Boiling Point	482°F(250°C)	Boiling Point	>400°F(200°C)
Melting Point	N.A.	Melting Point	N.A.
% Volatiles	0.00	% Volatiles	0.00
Vapor Pressure(mm Hg)	N.A.	Vapor Pressure(mm Hg)	N.A.
Vapor Density(Air=1)	N.A.	Vapor Density(Air=1)	N.A.
Solubility in water	Negligible	Solubility in water	Insoluble
Specific Gravity(Water=1)	N.A.	Specific Gravity(Water=1)	N.A.
Evaporation Rate(Butyl Acetate=1)	<.01	Evaporation Rate(Butyl Acetate=1)	N.A.
Appearance and Odor:		Appearance and Odor:	
MT7000	Black paste, Ammonia odor	MT7000	Gray paste, mild odor
MT7100	Liquid, Ammonia odor	MT7100	Black paste, mild odor
MT7150	Liquid, Ammonia odor	MT7150	White paste, mild odor
MTCerbide	White paste, Ammonia order	MTCerbide	Yellow paste, mild odor

SECTION 4 - FIRE AND EXPLOSION

HARDENER - Part A		BASE - Part B	
Flash Point	230°F(110°C) (PMCC)	Flash Point	>200°F(93°C)
Flammability Limits	LFL: N.A. UFL: N.A.	Flammability Limits	LFL: N.A. UFL: N.A.
Autoignition Temperature	N.A.	Autoignition Temperature	N.A.
Extinguishing Media	CO2, water spray, dry chemical, foam	Extinguishing Media	CO2, water spray, dry chemical, alcohol foam
Special Fire Fighting Procedures	Toxic fumes (CO2, CO and NO) will evolve when this material is involved in a fire. Self-contained breathing apparatus should be made available to fire fighters. Keep containers cool.	Special Fire Fighting Procedures	Toxic fumes (CO2, CO and aldehydes) will evolve when this material is involved in a fire. Self-contained breathing apparatus should be made available to fire fighters. Keep containers cool.
Unusual fire & explosion Hazards	None	Unusual fire & explosion Hazards	None

SECTION 5 - REACTIVITY DATA

HARDENER - Part		BASE - Part B	
Stability	Material is stable. Can autoignite at 561°F(294°C)	Stability	Material is stable
Incompatibility with Other Substances	Acids, oxidizing materials, halogenated organic aldehydes ketones and acrylates	Incompatibility with Other Substances	Strong oxidizing agents
Hazardous Decomposition products	NO, CO, CO2.	Hazardous Decomposition products	CO, CO2, Aledhydes
Hazardous Polymerization	Will not occur	Hazardous Polymerization	Will not occur
Conditions to avoid	None	Conditions to avoid	High temperatures, strong acids or bases

SECTION 6 – HEALTH HAZARD INFORMATION

HARDENER - Part A		BASE – Part B
Routes of Entry	Skin, eyes, ingestion, inhalation.	Skin, eyes, ingestion, inhalation.
Affects of Overexposure	May cause burns to skin and eyes, asthmatic reactions, skin sensitization, or other allergic reactions. Can result in permanent impairment of vision, even blindness. High concentrations of vapor can cause irritation to eyes and respiratory tract. Ingestion may cause gastrointestinal irritation or ulceration. May cause burns to mouth and throat.	May cause irritation to eyes and skin and may aggravate allergy, eczema or other skin conditions
Skin Absorption	A single prolonged exposure may be harmful. The LD50 for skin absorption in rabbits is 800 mg/kg.	Not established
Ingestion	Single dose oral toxicity is low. Oral LD50 for rats is 4340 mg/kg.	The LD50 for rats >5000 mg/kg.
Other Effects	Did not cause cancer in long term animal studies. Birth defects are unlikely. In laboratory animals fed exaggerated doses, adverse effects occurred that were believed to be associated with an observed copper deficiency. However, exposures having no adverse effect on the mother should have no effect on the fetus. Results of in vitro (test tube) mutagenicity tests have been positive.	This material is not considered to be a carcinogenic by NTP, IARC, or OSHA.

SECTION 7- FIRST AID

HARDENER - Part A		BASE – Part B
Eyes	Immediate and continuous irrigation with flowing water for at least 30 minutes. Call physician.	Immediate and continuous irrigation with flowing water for at least 15 minutes. Call physician.
Skin	Immediately flush skin with water for at least 15 minutes. Get medical attention for burns or if rash develops.	Promptly wash skin with soap and water.
Inhalation	Remove to fresh air and administer oxygen if breathing is difficult.	Remove to fresh air and administer oxygen if breathing is difficult.
Ingestion	Do not induce vomiting. Give large amounts of water or milk. Get medical attention.	Give large amounts of water. Consult physician.
Note to Physician	May cause tissue destruction leading to stricture. If lavage is performed, suggest endotracheal and/or esophagoscopy control. If burn is present, treat as thermal burn. No specific antidote. Excessive exposure may aggravate pre-existing asthma.	None

SECTION 8- PREVENTATIVE MEASURES

HARDENER - Part A		BASE – Part B
Spills or Leaks	Scoop up material and return to containers if not contaminated, otherwise soak up with absorbent.	Scoop up material and return to containers if not contaminated, otherwise soak up with absorbent.
Waste Disposal	Dispose of in accordance with federal, state and local regulations. Incineration is acceptable and the preferred method of disposal.	Not a hazardous waste by RCRA criteria. Dispose of properly by federal, state and local regulations.
Hand Protection	Chemical resistant gloves.	
Eye Protection	Chemical goggles or safety glasses with side shields. Contact lenses should not be worn.	
Skin Protection	Wear clothing with long sleeve shirts to cover skin.	
Respiratory Protection	Generally, respiratory protection is unnecessary provided there is adequate ventilation. Otherwise, use a cartridge mask. NIOSH approved for organic vapors is recommended. Avoid breathing vapors.	
Ventilation	Use good general mechanical ventilation and local exhaust. Avoid breathing vapors and dusts.	
Handling Precautions	Wear protective clothing including chemical gloves and splash goggles. Wash hands before eating, drinking, smoking or using toilet facilities. Use with adequate ventilation. Mixing part A and B may produce enough heat to cause burns.	
Regulatory Information	U.S. Regulations - Reviewed under SARA Sections 311 & 312 and meets the following categories: an immediate health hazard a delayed health hazard No known toxic chemicals subject to requirements of Sec. 313. Canadian Regulations - WHIMIS designations for this Product: D.1.B. – D.2.A. – E.	U.S. Regulations – Not a hazardous waste under RCRA CERCLA status – not listed. SARA Title III. This product does not contain a toxic chemical for routine annual "toxic chemical release reporting" under Section 313. Canadian Regulations – WHIMIS designation for this product: D.2.B.