Aluminum Wire 5356 and 4043

MATERIAL SAFETY DATA SHEET

Prepared to U.S.OSH, CMA, ANSI and Canadian WHMIS Standards. This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard (29 CFR 1910.1200). Other government regulations must be reviewed for applicability to these products.

WARNING: PRODUCT COMPONENTS PRESENT HEALTH AND SAFETY HAZARDS. READ AND UNDERSTAND THIS MATERIAL SAFETY DATA SHEET (M.S.D.S). ALSO, FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES. This product may contain Chromium or Nickel which are listed by OSHA, NTP, or IARC as being a carcinogen or potential carcinogen. Use of this product may expose you or others to fumes and gases at levels exceeding those established by the American Conference of Governmental Industries Hygienists (ACGIH) or the Occupational Safety and Health Administration (OSHA). The information contained herein relates only to the specific product. If the product is combined with other materials, all component properties must be considered.

SECTION I

1. **IDENTIFICATION TRADE**
   NAME: PAL 1100, 4043,4047,5356,5554
   CHEMICAL NAME/CLASS: ER1100, ER4043, ER4047, ER5356, ER5554
   CLASSIFICATION: AWS A5.10

SUPPLIER/MANUFACTURER: KT Industries, Inc

ADDRESS: 3112 Northwest Blvd Sheldon, Iowa 51201

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2. **COMPOSITION and INFORMATION OF THE PRODUCT.**

Class	SI	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Al
1100	.95 max	.95 max	.05-.2	.05			.1		99 min
4043	4.5-6.0	.8	.3	.05	.05		.1	.2	Balance
4047	11.0-13.0	.8	.3	.15	.1		.2		Balance
5183	.4	.4	.4	.5-1	4.3-5.2	.05-.25	.25	.15	Balance
5356	.25	.4	.1	.05-.20	4.50-5.50	.05-.20	.1	.06-.20	Balance
5554	.25	.4	.1	.5-1.0	2.4-3.0	.05-.20	.25	.05-.20	Balance
5556	.25	.4	.1	.05-1.0	4.70-5.50	.05-.20	.25	.05-.20	Balance

Chemical Name	Cas #	Exposure Limits in Air (mg/m3)	Exposure Limits in Air (mg/m3)
		OSHA PEL (TWA)	ACGIH TLV (TWA)
Aluminum	7429-90-5	15 (dust),5 (respirable)	10 (dust),5 (fume)
Chromium Metal	7440-47-3	1.0	.5

Copper	7440-50-8	0.1 (fume),1 (dust & mist)	0.2 (fume),1 (dust & mist)
Iron	1309-37-1	10	5
Magnesium	7439-95-4	15 (particulate)	10
Manganese	7440-32-6	1	.2
Silicon	7440-21-3	15 (dust),5 (respirable)	10
Zinc	7440-66-6	5 (fume),5 (dust)	5 (fume),10 (dust)
Titanium	7440-32-6	NE	NE

NE = Not Established Single values shown are maximum, unless otherwise noted.

Occupational Safety and Health Administration 29 CFR 1910.1000 Permissible Exposure Limit (PEL).
American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV).

3. Hazard Identification

EMERGENCY OVERVIEW: These products consist of odorless, solid rods, which have a metallic luster. There are no immediate health hazards associated with these products. These products are not reactive. If involved in a fire, these products may generate irritating aluminum fumes and a variety of metal oxides. Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: During welding operations, the most significant routes of exposure are via inhalation of fumes.

INHALATION: Inhalation of large amounts of particulates generated by these products during welding or brazing operations may be physically irritating and cause deposits of dust in nasal passages. Inhalation of dusts and fumes of Copper and Magnesium (components of these products) can cause metal fume fever. Repeated or prolonged over-exposures, via inhalation, to the dusts generated by these products may cause pulmonary fibrosis (scarring of lung tissue). Asthma-like symptoms have been reported in association with refining aluminum material and fumes from aluminum soldering. Refer to Section 9 (Stability and Reactivity) for information on the specific composition of welding fumes and gases.

CONTACT WITH SKIN or EYES: Contact of these products with the skin is not anticipated to be irritating. Fumes generated during welding or brazing operations can be irritating to the skin and eyes. Symptoms of skin over-exposure may include irritation and redness; prolonged or repeated skin over-exposures may lead to dermatitis. Contact with the molten wire or rods will burn contaminated skin or eyes.

SKIN ABSORPTION: Skin absorption is not a significant route of over-exposure for any component of these products. INGESTION: Not applicable.

INJECTION: Though not a likely route of occupational exposure for these products, injection (via punctures or lacerations in the skin) may cause local reddening, tissue swelling, and discomfort.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. Symptoms associated with over-exposure to this product and the fumes generated during welding operations are as follows:

ACUTE: Inhalation of large amounts of particulates generated by these products during metal processing operations may be physically irritating and cause deposits of dust in nasal passages. Inhalation of dusts and

fumes of Copper and Magnesium (components of these products) can cause metal fume fever. Contact with the molten material will burn contaminated skin or eyes.

CHRONIC: Chronic skin over-exposure to the fumes of these products during welding or brazing operations may produce dermatitis (red, inflamed skin). Repeated or prolonged over-exposures, via inhalation, to the dusts generated by these products may cause pulmonary fibrosis (scarring of lung tissue). Asthma-like symptoms have been reported in association with refining aluminum material and fumes from aluminum soldering.

TARGET ORGANS: ACUTE: For fumes: Skin, eyes, respiratory system. CHRONIC: Skin, respiratory system, pancreas and liver.

SECTION II

4. FIRST-AID MEASURES

Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take a copy of label and MSDS to health professional with victim.

SKIN EXPOSURE: If fumes generated by welding operations involving these products contaminate the skin, begin decontamination with running water. If molten material contaminates the skin, immediately begin decontamination with cold, running water. Minimum flushing is for 15 minutes. Victim must seek medical attention if any adverse reaction occurs.

EYE EXPOSURE: If fumes generated by welding operations involving these products enter the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek immediate medical attention.

INHALATION: If fumes generated by welding operations involving these products are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions.

INGESTION: If swallowed call physician immediately! Do not induce vomiting unless directed by medical personnel. Rinse mouth with water if person is conscious. Never give fluids or induce vomiting if person is unconscious, having convulsions, or not breathing.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Skin, respiratory disorders, pancreas and liver disorders may be aggravated by prolonged over-exposures to the dusts or fumes generated by these products.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not flammable.

AUTOIGNITION TEMPERATURE: Not flammable.

FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): Not applicable. Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS:

Water Spray: YES Carbon Dioxide: YES
Halon: YES Foam: YES
Dry Chemical: YES Other: Any "ABC" Class

UNUSUAL FIRE AND EXPLOSION HAZARDS: When involved in a fire, this material may decompose and produce irritating fumes containing iron, manganese, and nickel compounds. The molten material can present a significant thermal hazard to firefighters. Explosion Sensitivity to Mechanical Impact: Not sensitive. Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Not applicable

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: These products are solid wire and rods, with no spill or leak hazards.

SECTION III

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: Do not eat or drink while handling these products. Use ventilation and other engineering controls to minimize potential exposure to these products.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Use in a properly ventilated location. Avoid breathing fumes of these products during welding or brazing operations. When these products are used during welding or brazing operations, follow the requirements of the Federal Occupational Safety and Health Welding and Cutting Standard (29 CFR 1910 Subpart Q) and the safety standards of the American National Standards Institute for welding and cutting (ANSI Z49.1). Store packages in a cool, dry location. Storage in an atmosphere that is wet, moist, or highly humid may lead to corrosion of these products. Store away from incompatible materials (see Section 9, Stability and Reactivity).

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in Section 2 (Composition and Information on Ingredients). Prudent practice is to ensure eyewash/safety shower stations are available near areas where this product is used.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed in Section 2 (Composition and Information on Ingredients). If respiratory protection is needed (i.e. a Weld Fume Respirator, or Air-Line Respirator for welding in confined spaces), U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the Canadian CSA Standard Z94.4-93 and applicable standards of Canadian Provinces. Respiratory Protection is recommended to be worn during welding operations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-face piece pressure/demand SCBA or a full face piece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

EYE PROTECTION: Safety glasses. When these products are used in conjunction with welding, wear safety glasses, goggles, welding helmet or face-shield with filter lens of appropriate shade number (per ANSI Z49.1-1988, "Safety in Welding and Cutting"). If necessary, refer to U.S. OSHA 29 CFR 1910.133, or appropriate Canadian Standards. If necessary, refer to U.S. OSHA 29 CFR 1910.138, or appropriate Standards of Canada.

HAND PROTECTION: Wear gloves for routine industrial use. When these products are used in conjunction with welding, wear gloves that protect from sparks and flame (per ANSI Z49.1-1988, "Safety in Welding and Cutting"). If necessary, refer to U.S. OSHA 29 CFR 1910.138, or appropriate Standards of Canada.

BODY PROTECTION: None normally needed for normal circumstances of use. Use body protection appropriate for task (i.e. apron, coveralls, chemically resistant boots). If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136.

9. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: Aluminum compounds and metal oxides.

NOTE: The composition and quality of welding fumes and gases are dependent upon the metal being welded, the process, the procedure, and the electrodes used. Other conditions that could also influence the composition and quantity of fumes and gases to which workers may be exposed include the following: any coatings on metal being welded (e.g. paint, plating, or galvanizing), the number of welders and the volume of the work area, the quality of ventilation, the position of the welder's head with respect to the fume plume, and the presence of other contaminates in the atmosphere. 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 (Composition and Information on Ingredients). Fume and gas decomposition products, and not the ingredients in the electrode, are important. Concentration of the given fume or gas component may decrease or increase by many times the original concentration. New compounds in the electrode may form. Decomposition products of normal operations include not only those originating from volatilization, reaction, or oxidation of the product's components but also those from base metals and any coating (as noted previously). The best method to determine the actual composition of generated fumes and gases is to take an air sample from inside the welder's helmet if worn or in breathing zone. For additional information, refer to the American Welding Society Publication, "Fumes and Gases in the Welding Environment".

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong acids, strong bases, strong oxidizers, metal oxides, alcohols, halogenated hydrocarbons, halogens.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Avoid uncontrolled exposure to extreme temperatures and incompatible materials.