



SAFETY DATA SHEET

MAY BE USED TO COMPLY WITH OSHA'S HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200 AND SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) OF 1986 PUBLIC LAW 99-499. STANDARD SHOULD BE CONSULTED FOR SPECIFIC REQUIREMENTS.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

NAME OF PRODUCT: US FORGE – Self Fluxing Aluminum Rod
PART NUMBERS: 02532, 02533

**MANUFACTURER/
SUPPLIER:** US FORGE
N94 W14355 GARWIN MACE DRIVE
MENOMONEE FALLS, WI 53051 USA

TELEPHONE NUMBER (262) 255-5157 or Toll Free (800) 343-3758
FAX NUMBER: (262) 255-2374
US FORGE WEBSITE: www.us-forge.com

PRODUCT CLASSIFICATION: Self Fluxing Aluminum Rod

SECTION 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Chemically stable and inert. Does not pose a fire hazard as shipped. **Non-Flammable:** Flames used for soldering can ignite combustibles. Refer to American National Standard Z49.1 for fire prevention during welding. In case of fire, use NIOSH/MSHA self contained breathing apparatus.

ROUTES OF ENTRY: Primary route of entry is the respiratory system. Other possible routes are eyes and/or skin contact.

POTENTIAL HEALTH EFFECTS:

EYES: Inert foreign body hazard only.
SKIN: Rashes/irritations due to drying of the skin and/or mechanical abrasion related to skin-to-clothing contact or skin-to-skin contact. Spatter and flames and heat from soldering may cause burns.
INGESTION: Not an expected route of entry, but if ingested product could cause serious injury.
INHALATION: Danger of serious damage to health by prolonged exposure through inhalation.

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

WARNING: avoid breathing welding fumes and gases; they may dangerous to your health. Always use adequate ventilation and use appropriate personal protection equipment.

CARCINOGENICITY

WELDING FUMES (not otherwise specified) are considered to be carcinogenic defined with no further categorization by NIOSH and IARC.

GHS: not applicable

Safety Advice

S53 Avoid exposure - obtain special instructions before use.

S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).



Package Labeling:

The product does not require a hazard warning label in accordance with EC directives/the relevant national laws. Although this product does not require a hazard warning label, we recommend that the safety advice should be observed.

This mixture is not classified as dangerous according to Regulation (EC) No. 1272/2008.

CAUTION:

Limited evidence of carcinogenic effect (welding fumes).

May cause sensitization by skin contact

Brazing/soldering/welding fumes and vapors may cause metal fume fever (headache, dizziness, dryness, cough, nausea, and fever) and these symptoms may appear 4-12 hours after exposure

Precautionary Statements:

P285 In case of inadequate ventilation wear respiratory protection

P314 Get medical advice if you do not feel well

P280 Wear protective gloves/protective clothing/eye protection/face protection

P202 Do not handle until all safety precautions have been read and understood

P260 Do not breathe dust/fume/gas/mist/vapors/spray

P501 Dispose of contents/container to waste treatment facility in accordance with local and national regulations

Before using this product, contact your doctor to determine if exposure to product or use of this product will aggravate your medical conditions.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

IMPORTANT: This section covers the materials from which these products are manufactured. Any of the chemicals or compounds subject to reporting under Title III, in Section 313, of the Superfund Amendments and Reauthorization Act (SARA) are marked by the symbol #.

Exposure Limit (mg/m³)

INGREDIENTS	CAS NUMBER	OSHA PEL	ACGIH-TLV	Percent Ingredients (by weight)
Zinc #	7440-66-6	5	Not listed	85 – 95
Copper #	7440-50-8	0.1	0.2	1 – 11
Aluminum #	7429-90-5	5	5	1 – 11

CAS / EINECS NUMBER / HAZARD CLASSIFICATION FOR ABOVE INGREDIENTS

INGREDIENTS	CAS NUMBER	EINECS NUMBER	Hazard Classification per ECD 67/548/EEC
Zinc #	7440-66-6	231-175-3	No (Zinc in solid form)
Copper #	7440-50-8	231-159-6	No
Aluminum #	7429-90-5	231-072-3	No (Al as an article component)

Exposure limits are subject to change. Contact ACGIH and OSHA for current values. See Section 16 for European Council Directive 67/548/EEC R-phrases



SECTION 4: FIRST AID MEASURES

EMERGENCY & FIRST AID PROCEDURES: Call for medical aid and inform them of the ingredients from Section 3. Employ first aid techniques recommended by The American Red Cross.

EYES: Flush with a large amount of fresh water for at least 15 minutes. Get medical attention.

SKIN: Wash affected area with soap and water to remove dust or particles. If rash develops, see a physician. Get medical attention for irritations that persist.

INGESTION: Seek medical attention immediately.

INHALATION: Remove to fresh air. If breathing is difficult administer oxygen. If breathing has stopped, begin artificial respiration and obtain medical assistance immediately.

GENERAL: Move to fresh air and call for medical aid.

SECTION 5: FIRE FIGHTING MEASURES

Non-Flammable These products as shipped are non-hazardous, nonflammable, non-explosive, and non-reactive. In case of fire, use NIOSH/MSHA self contained breathing apparatus.

NFPA HAZARD CLASSIFICATION:

Health: 2 Flammability: 0 Reactivity: 0

Other: In case of fire, Use NIOSH/MSHA self contained breathing apparatus.

HMIS HAZARD CLASSIFICATION:

Health: 2 Flammability: 0 Reactivity: 0

Protection: In case of fire, Use NIOSH/MSHA self contained breathing apparatus.

EXTINGUISHING MEDIA: dry chemical extinguisher, CO₂. Do NOT use water on molten metal.

SPECIAL FIRE FIGHTING PROCEDURES: Low pressure extinguisher. In case of fire, use NIOSH/MSHA self contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None.

HAZARDOUS DECOMPOSITION PRODUCTS: Toxic oxides are emitted when heated above the melting point

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: Shovel into a suitable container for proper disposal.

PERSONAL PRECAUTIONS: Wear gloves when prolonged contact with skin is likely.

ENVIRONMENTAL PRECAUTIONS: Do not flush residue into waterways.

SECTION 7: HANDLING AND STORAGE

HANDLING: Avoid exposure to dust, do not ingest and avoid contact with eyes. Some individuals can develop an allergic reaction to certain materials. Do not eat, drink, or smoke when using this product. Wash thoroughly after using this product.

STORAGE: Keep material sealed and dry before use and do not remove product identification label or warning label. After using, keep remaining product sealed and dry and do not remove product identification label or warning label.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION



Read and understand the manufacturer's instructions and precautionary label on this product.

ENGINEERING CONTROLS: Proper ventilation **must** be maintained.

VENTILATION: Use enough ventilation, local exhaust at the work area, or both, to keep the fumes and gases below the TLV's in the workers breathing zone and the general area. Train the welder to keep their head out of the fumes. Monitor fume levels and do not exceed permissible exposure limits or values. Keep exposure as low as possible.

RESPIRATORY PROTECTION: Use NIOSH approved breathing apparatus or air supplied respirator when soldering in a confined space or where local exhaust or ventilation does not keep exposure below the TLV's.

EYE PROTECTION: Wear approved safety glasses or welding goggles appropriate to the procedure.

PROTECTIVE CLOTHING: Wear head, hand, and body protection which help to prevent injury from sparks and flames. See ANSI Z49.1. At a minimum, this includes gloves and protective safety goggles or glasses.

OTHER PROTECTIVE EQUIPMENT: Full protective equipment normally used in soldering / brazing operation so as to prevent any contact. Review operations to avoid contact with hazardous gas, liquid, or solid. See also:

29CFR 1910.132 - 29 CFR 1910.140 Personal Protective Equipment
29 CFR 1910.251 - 29 CFR 1910.257 Welding, Cutting and Brazing

WORK HYGIENIC PRACTICES: Professionally wash contaminated clothing before re-use. Food and drink should not be consumed or tobacco products used, nor cosmetics applied in area where metal exposures are possible.

WASTE: Dispose of any grinding dust and waste residues in accordance with EPA or local regulations. Plastic containers and cardboard packaging can be recycled. Solder can be recycled. Vacuuming is recommended for accumulated metal dust from saw and grind operations.

STORAGE: Keep material sealed and dry before use. Keep remaining product sealed and dry.

EXPOSURE GUIDELINES: Use industrial hygiene monitoring equipment to ensure that exposure does not exceed applicable national exposure limits.

EFFECTS OF OVEREXPOSURE - soldering may create one or more of the following health hazards:

FUMES AND GASES can be dangerous to your health.

PRIMARY ROUTES OF ENTRY are the respiratory system. Other possible routes are eyes and/or skin contact.

PREEXISTING respiratory or allergic conditions may be aggravated in some individuals (i.e. asthma, emphysema).

Soldering fumes cannot be classified simply. The composition and quantity of both are dependent upon the metal being soldered, the process, procedure, and the rod used. 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 soldered (such as paint, plating, or galvanizing), the volume of the work area, the quality and the amount of ventilation, position of the worker'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 material is consumed, fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Fume and decomposition products, not the ingredients in the rod, are important. Decomposition products include those originating from the volatilization, reaction, or oxidation of materials in Section 3, plus those from the base metal and coating, etc., as noted above. These components are virtually always present as complex oxides and not as metals (Characterization of Arc Welding Fume: American Welding Society). The following limits can be used as guidance. Refer to Section 11 for more information about welding fumes.

<u>SUBSTANCE</u>	<u>CAS NUMBER</u>	<u>Exposure Limit (mg/m³)</u>	
		<u>OSHA PEL</u>	<u>ACGIH-TLV</u>
Zinc oxide # (fume)	1314-13-2	5	Not listed
Aluminum (# as fume)	7429-90-5	5	5
Copper fume #	7440-50-8	0.1	0.2

MONITOR FUME LEVELS. One recommended way to determine the composition and quantity of fumes and gas to which workers are exposed is to take an air sample in the worker's breathing zone (see ANSI/AWS F1.1, F1.2, F1.3, F1.4, and F1.5, available from the "American Welding Society," 550 N.W. LeJeune Road, Miami, FL 33126).

Gaseous reaction products may include carbon monoxide and carbon dioxide.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: bare solid rod

Boiling point: not applicable

Working Temperature: approx. 710 °F (375 °C)

pH-Value: not applicable

Flash point: not determined

SECTION 10: STABILITY AND REACTIVITY

GENERAL: These items are only intended for soldering applications.

STABILITY: Product is chemically stable and non-reactive.

INCOMPATIBILITY / CONDITIONS TO AVOID: Keep product away from high heat and moisture.

MATERIALS TO AVOID: Strong acids, strong oxidizers, some halogenated compounds.

HAZARDOUS POLYMERIZATION: Will not occur.

REACTIVITY: None.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Metallic oxides. Fumes can be dangerous to your health. See Section 11

NOTE: In other countries the exposure limits listed in Section 3 may be different and the appropriate country standards should be used.

SECTION 11: TOXICOLOGICAL INFORMATION

Threshold Limit Value: The ACGIH recommended general limit for welding fume NOS (not otherwise specified) is 5 mg/m³. The ACGIH 1999 preface states: "The TLV-TWA should be used as guides in the control of health hazards and should not be used as firm lines between safe and dangerous concentrations." See Section 8 for specific fume constituents that may modify the TLV. Brazing/soldering/welding vapors and fumes from brazing/soldering/welding may cause metal fume fever. Symptoms can appear 4 to 12 hours after (headache, dizziness, dryness, cough, nausea and fever).



SHORT TERM (ACUTE) OVEREXPOSURE: FUMES AND GASES can be dangerous to your health. Primary routes of entry are the respiratory system, eyes, ingestion, and/or skin. Preexisting respiratory or allergic conditions may be aggravated in some individuals. Soldering/welding vapors and fumes from soldering/welding may cause metal fumes fever. Symptoms can appear 4 to 12 hours after (headache, dizziness, dryness, cough, nausea and fever) May cause irritation of respiratory tract. Repeated or prolonged exposure may cause irritation of eyes and skin. Fumes may result in discomfort such as sneezing, and coughing, and should be considered as an irritant to the respiratory system. Existing lung disorders may be aggravated. If swallowed, nausea, vomiting, and diarrhea may result. Skin contact may result in mild dermatitis or irritation, with existing skin disorders possibly being aggravated. Upon eye contact, mild irritation to eye surfaces may result, and existing eye disorders possibly being aggravated. **COPPER:** Individuals with Wilson’s Disease are at increased risk of COPPER poisoning. Acute (short-term) exposure may cause respiratory tract irritation, fever, muscle ache, chills, weakness, cough, and a metallic taste. **INHALATION** may cause respiratory tract and mucous membrane irritation. Symptoms include nasal discharge and nosebleeds, coughing, sore throat and labored breathing. Severe exposure may cause bronchospasm and pulmonary edema. Absorption may cause systemic poisoning similar to that which occurs with ingestion. Inhalations of fumes may cause a flu-like illness called ‘metal fume fever’. Typically metal fume fever begins four to twelve hours after sufficient exposure to freshly formed fumes. First symptoms are a metallic taste, dryness, and irritation of the throat. Cough and shortness of breath may occur along with a headache, fatigue, nausea, vomiting, diarrhea, and painful spasms of the limbs. Copper poisoning can result in hemolytic anemia and kidney, liver, and spleen damage.

LONG-TERM (CHRONIC) OVEREXPOSURE - Prolonged or excessive exposures may result in argyria, a permanent localized blue-gray discoloration of the eye, skin, or mucous membranes. Primary route of entry is the respiratory system. Excessive **ZINC** intake has been associated with copper deficiency anemia. Prolonged or excessive exposures may result in argyria, a permanent localized blue-grey discoloration of the eye, skin, or mucous membranes. Chronic (long-term) exposure to **COPPER** may damage the liver, kidney, spleen, pancreas, and brain. Copper poisoning can result in hemolytic anemia and kidney, liver, and spleen damage. Ingestion of large amounts may be fatal.

Avoid direct inhalation of fumes during heating and use. Monitor fume levels.

SECTION 12: ECOLOGICAL INFORMATION

MATERIAL: Welding consumables and materials can degrade into the components used to manufacture the product. Avoid exposure to conditions that could lead to accumulation in soils and groundwater.

CONTAMINATED PACKAGING: Empty containers should be taken for local recycling, recovery, or waste disposal. Metals may be recycled.

SECTION 13: DISPOSAL CONSIDERATION

WASTE DISPOSAL METHOD: Dispose of any rod and waste residues in accordance with EPA or local regulations.

Review U.S. Federal Hazardous Waste Regulations §40 CFR261 to determine if this is hazardous in USA. Please be advised that state and local requirements, or other country requirements, for waste disposal may be more restrictive or otherwise different than U.S. Federal regulations. It is not possible to give this product a waste code number according to the European waste catalogue because only the intended use of the user consents the assignment of a specific code number.

SECTION 14: TRANSPORTATION INFORMATION

DOMESTIC TRANSPORT REGULATIONS (USA): DOT - not regulated.
DOMESTIC TRANSPORT REGULATIONS (CANADA): TDG - not regulated.
DOMESTIC TRANSPORT REGULATIONS (MEXICO): MEX - not regulated.

INTERNATIONAL TRANSPORT REGULATIONS:

ICAO – not regulated
IATA – not regulated
IMDG / IMO – not regulated

OTHER AGENCIES: No international regulations or restrictions are applicable.

Handle with care to avoid damaging the product. Do not remove product identification label or warning label. Keep material away from heat. Do not store near food materials.



SECTION 15: REGULATORY INFORMATION

Read and understand the manufacturer's instructions and precautionary label on this product.

See American National Standard Z49.1, Safety in Welding and Cutting, published by the "American Welding Society," 550 N.W. LeJeune Road, Miami, FL 33126 and OSHA Publication 2206 (29CFR 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 for more information. Before using this product, understand and your employer's safety practices.

U.S. EPA TSCA (TOXIC SUBSTANCE CONTROL ACT): All constituents of these products are on the TSCA inventory list or are excluded from listing.

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center and to our Local Emergency Planning Committee.

EPCRA/SARA TITLE III 313 TOXIC CHEMICALS:

The following metallic components are listed as SARA 313 "TOXIC CHEMICALS" and are potentially subject to annual SARA 313 reporting. See Section 3 if the ingredient is present and for percent.

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>DISCLOSURE THRESHOLD</u>
Chromium & chromium compounds	7440-47-3	1.0 % de minimis concentration
Chromium VI	Not listed	0.1 % de minimis concentration
Barium compounds	Not listed	1.0 % de minimis concentration
Cobalt	7440-48-4	0.1 % de minimis concentration
Copper	7440-50-8	1.0 % de minimis concentration
Manganese	7439-96-5	1.0 % de minimis concentration
Nickel	7440-02-0	0.1 % de minimis concentration
Aluminum (fume or dust)	7429-90-5	1.0 % de minimis concentration
Silver	7440-22-4	1.0 % de minimis concentration

Package Labeling:

Additional advice on labeling

As a finished article the product does not need to be labeled in accordance with EC-directives or respective national laws.

International rules may vary and the appropriate regulations should be followed as defined by the country where the product is used.

SECTION 16: OTHER INFORMATION

This Safety Data Sheet has been revised due to modifications to several paragraphs and/or new format.

Prepared by: US Forge, USA

SUPPLEMENTAL INFORMATION – DEFINITIONS:

IARC: International Agency for the Research on Cancer
 NIOSH: National Institute for Occupational Safety and Health
 OSHA: U.S. Occupational Safety and Health Administration
 ACGIH: American Conference of Governmental Industrial Hygienists
 CAS: Chemical Abstracts Service Registry Number
 EINECS: European Inventory of Existing Chemical Substances

PEL: Permissible Exposure Limit
 NTP: National Toxicology Program
 TLV: Threshold Limit Value
 ECD: European Council Directive
 GHS: Globally Harmonized System

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