SECTION 1: PRODUCT & COMPANY IDENTIFICATION

1.1 Product Identifiers
   Product Name / Description: Al-doped Lithium Lanthanum Zirconium Oxide powder (Ampcera brand)
   CAS Number: N/A

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against
   Identified Uses: Laboratory chemicals, Manufacture of substances

1.3 Details of the Supplier of the Safety Data Sheet
   Company: MSE Supplies LLC
   Address: 4400 E Broadway Blvd, Suite 600, Tucson AZ 85711
   Phone: +1 (520) 789-6673
   Email: info@msesupplies.com

1.4 Emergency Telephone Number
   Manufacturer: +1 (520) 789-6673 (8am to 5pm Arizona Time)
   U.S. Poison Control Center: +1-800-222-1222
   ChemTel (North America): +1 (800) 255-3924 (during transportation only)
   ChemTel (International): +1 (813) 248-0585 (during transportation only – collect calls accepted)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture
   GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
   Skin corrosion / irritation (Category 1B) – H314
   Specific target organ toxicity, single exposure; respiratory tract irritation (Category 3) – H335

2.2 Label Elements
   GHS Label Elements, including precautionary statements

   Pictogram(s): !
   Signal Word: Danger

   Hazard Statement(s):
   H314 Causes severe skin burns and eye damage
   H335 May cause respiratory irritation

   Precautionary Statement(s):
   P202 Do not handle until all safety precautions have been read and understood
   P231 + 232 Handle under inert gas. Protect from moisture
   P233 Keep container tightly closed
   P262 Do not get in eyes, on skin, or on clothing
   P260 Do not breathe dust / fume / gas / mist / vapors / spray
   P280 Wear protective gloves, protective clothing, & eye protection
   P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water / shower.
   P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
   P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
   P405 Store locked up
   P501 Dispose of contents / container in accordance with local regulations
2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

Formula: Li$_{6.25}$ Al$_{0.25}$La$_3$Zr$_2$O$_{12}$
CAS-No.: N/A

Hazard Classification: Skin corrosion /irritation (Cat. 1B, H314); STOT SE Resp. Tract Irritation (Cat. 3, H335)

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice:
Move out of exposed area. Seek medical attention of irritation occurs. Show this SDS to the doctor in attendance.

After Inhalation:
If breathed in, move person into fresh air. If not breathing, give artificial respiration and seek medical attention.

After Skin Contact:
Immediately remove all contaminated clothing. Rinse skin with water or shower. Seek medical attention.

After Eye Contact:
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing and seek medical attention if irritation occurs.

After Swallowing:
Never give anything by mouth to an unconscious person. Rinse mouth with water. Do NOT induce vomiting. Seek immediate medical attention.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

4.3 Indication of any Immediate Medical Attention and Special Treatment Needed

No further relevant information available

SECTION 5: FIREFIGHTING MEASURES

5.1 Suitable Extinguishing Media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide

5.2 Hazardous Combustion Products

Lithium oxide, zirconium oxide, lanthanum oxide, aluminum oxide

5.3 Advice for Firefighters

Wear self-contained breathing apparatus for firefighting and full protective suit

5.4 Other Information

No further relevant information available

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment, and Emergency Procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

6.2 Environmental Precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and Materials for Containment and Cleaning Up

Use neutralizing agent. Pick up and arrange disposal without creating dust. Keep in closed containers for disposal.

6.4 Reference to Other Sections

For safe handling, see Section 7; for personal protection, see Section 8; for disposal, see Section 13.
SECTION 7: HANDLING AND STORAGE

7.1 Precautions for Safe Handling
Handle in a controlled environment, under inert gas. Appropriate personal protective equipment should be used at all times. Avoid contact with eyes and skin. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Avoid breathing dust. For additional precautions, see section 2.2.

7.2 Conditions for Safe Storage (including any incompatibilities)
Keep container tightly sealed, in a cool, dry place under inert gas. This material is moisture and air sensitive. Protect from humidity and keep away from water. Keep away from oxidizing agents. Store in a locked cabinet or with access restricted to technical experts or their assistants. Also see Section 10.5.

7.3 Specific End Uses
A part from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure Controls

Appropriate Engineering Controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Keep away from food and beverages.

Personal Protective Equipment

Eye / Face Protection:
Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin Protection:
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection:
Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory Protection:
Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of Environmental Exposure
Do not let product enter drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

Form: Solid (powder)
Color: White
Odor: Odorless
pH: Not determined
Melting point/range: Not determined
Specific Gravity: Not determined
Density (20 °C): Not determined
Viscosity (20 °C): Not determined
Boiling Point: Not determined
Flashpoint: Not determined
9.2 Other Information
No further relevant information available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
No information known

10.2 Chemical Stability
Stable under recommended storage conditions (see Section 7.2)

10.3 Possibility of Hazardous Reactions
Reacts with strong oxidizing agents

10.4 Conditions to Avoid
No further relevant information available

10.5 Incompatible Materials
Air, water / moisture, oxidizing agents

10.6 Hazardous Decomposition Products
Lithium oxide, zirconium oxide, lanthanum oxide, aluminum oxide (in the Event of Fire, see Section 5)

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

Acute Toxicity
Oral LD50: No Data Available
Inhalation LC50: No Data Available
Dermal LD50: No Data Available

Skin corrosion/irritation
Causes severe skin burns

Serious eye damage/eye irritation
Causes serious eye damage

Respiratory or skin sensitization
No Data Available

Germ cell mutagenicity
No Data Available

Carcinogenicity
IARC: No classification data on carcinogenic properties of the material is available.
ACGIH: No classification data on carcinogenic properties of the material is available.
NTP: No classification data on carcinogenic properties of the material is available.
OSHA: No classification data on carcinogenic properties of the material is available.

Reproductive Toxicity
No Data Available
Teratogenicity
No Data Available

Specific Target Organ Toxicity - Single Exposure (Globally Harmonized System)
May cause respiratory irritation

Specific Target Organ Toxicity - Repeated Exposure (Globally Harmonized System)
Effects not known

Aspiration Hazard
No Data Available

Additional Information
RTECS: Not available
To the best of our knowledge, the chemical, physical, and toxicological properties of this product have not been thoroughly investigated.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity
Aquatic toxicity – low; no further information available

12.2 Persistence and Degradability
No Data Available

12.3 Bioaccumulative Potential
No Data Available

12.4 Mobility in Soil
No Data Available

12.5 Results of PBT and vPvB Assessment
PBT/vPvB assessment not available as chemical safety assessment not conducted / required.

12.6 Other Adverse Effects
The toxicological properties of this material have not been fully investigated.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods – Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

13.2 Waste Treatment Methods – Contaminated Packaging
Dispose of properly as you would with unused product.

SECTION 14: TRANSPORT INFORMATION

14.1 Department of Transportation (DOT - US)
UN number: 3262          Class: 8          Packing Group: III
Proper Shipping Name: Corrosive solid, basic, inorganic, n.o.s. (Lithium Lanthanum Zirconium Oxide)

14.2 International Maritime Dangerous Goods (IMDG)
UN number: 3262          Class: 8          Packing Group: III
Proper Shipping Name: Corrosive solid, basic, inorganic, n.o.s. (Lithium Lanthanum Zirconium Oxide)

14.3 International Air Transport Association (IATA)
UN number: 3262          Class: 8          Packing Group: III
Proper Shipping Name: Corrosive solid, basic, inorganic, n.o.s. (Lithium Lanthanum Zirconium Oxide)

14.4 Additional Transport Information
HS Code (first 6 digits) / HTS-US (9 digits) #: 2825.90.9000
Excepted Quantities (EQ): 30g (net) / 1kg (gross)  Limited Quantities (LQ): 5 kg
SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture
   No Data Available

15.2 Chemical Safety Assessment
   A chemical safety assessment was not carried out for this product.

SECTION 16: OTHER INFORMATION

REACH Number
A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

HMIS Classification

| Health Hazard: | 3 |
| Flammability Hazard: | 0 |
| Physical Hazard: | 1 |

NFPA Rating

| Health Hazard: | 3 |
| Flammability Hazard: | 0 |
| Reactivity Hazard: | 1 |

Disclaimer
The above information is believed to be correct but does not guarantee being all inclusive and shall be used only as a general guide. The information in this document is to our best knowledge at the time it is prepared and is applicable to the product regarding appropriate safety precautions. It does not represent any guarantee of the properties of the material. MSE Supplies LLC and its Affiliates shall not be held liable for any damage resulting from handling or from contacting with the above product.

Preparation Information
MSE Supplies LLC
Revision Date: 12/22/2019