1010 N. Hooker Street, Chicago, Illinois 60642

Phone: (312) 337-9000 Fax: (312) 337-9003 www.plibrico.com

Revised Date: 10/19/2015

Supersedes: 1/28/2015



SECTION 1 - MATERIAL IDENTIFICATION

Trade Name and Synonyms: Pligun Al-Tuff LWI 24

Al₂ O₃ - 41.7 SiO₂ - 43.1

Chemical Name and Synonyms: High Temperature Cements

Recommended Use: Refractory/Construction/maintainence/repair material

Manufacturer: Plibrico Company LLC

1010 N. Hooker Street, Chicago, Illinois 60642 Phone 312-337-9000; Fax 312-337-9003

www.plibrico.com

Contact Person: Tom Ervin, tervin@plibrico.com

EMERGENCY PHONE: 312-337-9000,

After 4:30PM weekdays, Weekends, and Holidays:

740-820-8746, 740-604-1033

Product Number: 16540

Manufacturers Code I.D.: L - 2838

Chemical/Mineral Family: Alumino Silicate

Supplier: Plibrico Company LLC

1010 N. Hooker Street, Chicago, Illinois 60642 Phone 312-337-9000; Fax 312-337-9003

www.plibrico.com

SECTION 2- HAZARDOUS IDENTIFICATION



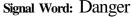




H320: Causes eye irritation







Hazard statement: H315: Causes skin irritation,

H335: May cause respiratory irritation H351: Suspected of causing cancer H373: May cause damage to lung through prolonged or repeated inhalation.

This product contains crystalline silica, a substance that has been listed by:

- 1. IARC: sufficient evidence for the carcinogenicity of crystalline silica to humans. (Group 1)
- ☑ 2. Canadian WHMIS : D2A Materials Causing Other Toxic Effects
- ✓ 3. ACGIH: A2-Suspected Human Carcinogen.
- 4. NTP: a substance known to be a human carcinogen.
- Special Notes: *** Greater amounts of Quartz and Cristobalite may be formed after firing. Major portion of the crystalline silica present in the product as manufactured is not fine enough to normally be considered respirable.

Precautionary Statements:

P260+P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P280 - Wear eye protection/face protection

P285 - Wear respiratory protection

P305+P351+P338 - If in eyes: Rinse cautiously with water.

P302+P352 - If on skin: Wash with plenty of soap and water.

P501- Dispose of material in accordance with local regulation.

Primary Route of Entry: Inhalation, Ingestion, Skin Contact

Target Organs: respiratory tract (nose & throat), eyes, skin

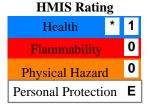
Potential Health Effects:

Eyes: May cause irritation. Abrasive action of dust can damage eye.

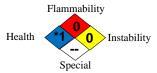
Skin: May cause irritation

Ingestion: May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting, abdominal pain and diarrhea. **Inhalation:** Effects of overexposure:

- 1. Acute: Exposure to nuisance dust may cause temporary irritation or discomfort to skin, eyes, nose, throat or lungs and may aggravate bronchial disorders.
- 2. Chronic: Long term inhalation of respirable quartz, cristobalite, fused silica and/or amorphous silica may cause silicosis (delayed lung injury) and other respiratory disorders. In addition there is sufficient evidence for the carcinogenicity of crystalline silica to humans.







Trade Name and Synonyms: Pligun Al-Tuff LWI 24 Revised Date: 10/19/2015 Page 2 of 4

SECTION 3-	HAZARDOUS	INGREDIENTS
DECTION 3		HIGHEDIENIS

Ingredients (checked)	C.A.S. No.	Weight %	TLV ACGIH mg/m ³	OSHA PEL mg/m ³	EINECS
X Quartz***	14808-60-7	8.06	0.025(resp.dust)	10 mg/m ³ /%SiO ₂ +2 (resp)	238-878-4
X Cristobalite***	14464-46-1	7.35	0.025(resp.dust)	1/2(10 mg/m ³ /%SiO ₂ +2 (resp))	238-455-4
Amorphous Silica***	69012-64-2		0.025(resp.dust)	Not Established	273-761-1
Fused Silica***	60676-86-0		0.025(resp. dust)	$80 \text{ mg/m}^3/\% \text{SiO}_2$	262-373-8
Zirconium Silicate***	14940-68-2		10	15(total), 5(resp.)	239-019-6
Aluminum Phosphate	13530-50-2	-	2 mg/m ³ TWA(as Al)	2 mg/m ³ TWA(as Al)	236-875-2
Alumina	1344-28-1	-	1(resp.dust)	15(total), 5(resp.)	215-691-6
X Aluminosilicate(Mullite)	1302-93-8	53 63.	2(resp.dust)	15(total), 5(resp.)	215-113-2
Aluminosilicate(Kyanite)	1302-76-7	-	2(resp.dust)	15(total), 5(resp.)	215-106-4
Bauxite	1318-16-7	-	10	15(total), 5(resp.)	
Silicon Carbide	409-21-2	-	10	15(total), 5(resp.)	206-991-8
Pyrophyllite	12269-78-2	-	10	15(total), 5(resp.)	
Spinel	1302-67-6	-	10	15(total), 5(resp.)	215-105-9
Andalusite	12183-80-1	-	10	15(total), 5(resp.)	235-352-6
Zirconiumdioxide	1314-23-4	-	10	15(total), 5(resp.)	215-227-2
X Calcium Aluminate Cement	65997-16-2	18 28.	10	15(total), 5(resp.)	266-045-5
Calcium Silicate Cement	65997-15-1	-	10	15(total), 5(resp.)	266-043-4
X Clay	1332-58-7	1.0 - 9.7	2(resp.dust)	15(total), 5(resp.)	265-064-6
X Calcium Fluoride	7789-75-5	1 - 5	2.5 as F	2.5 as F	232-188-7
Barium Sulfate	772-74-37	-	10	10(total), 5(resp.)	231-784-4
Bentonite	1302-78-9	-	10	15(total), 5(resp.)	215-108-5
X Perlite	93763-70-3	6.0 - 16.	10	15(total), 5(resp.)	310-127-6
Sodium Silicate	1344-09-8	-	10	15(total), 5(resp.)	215-687-4
X Titanium Oxide	13463-67-7	1.9	10	15(total), 5(resp.)	215-280-1
— ☐Organic Fiber	9003-07-0	0.05 - 0.5	10(total), 3(resp.)	15(total), 5(resp.)	

SECTION 4- FIRST AID MEASURES

Eyes: Immediately flush eyes with plenty of water and get medical attention.

Skin: Wash with soap and water. Get medical attention if irritation develops or persists.

Ingestion: If swallowed, seek medical attention.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. Get immediate attention.

If symptoms persist, seek medical attention.

SECTION 5- FIRE FIGHTING MEASURES

Unusual Fire and Explosive Hazards: The product will not burn. Improper mixing and bake-out of materials may result in steam spalling during initial heating. Refer to mixing instructions and bake-out schedules for proper procedures.

Fire Fighting Equipment: Fire fighters should wear full protective gear and self-contained breathing apparatus-SCBA.

SECTION 6- ACCIDENTAL RELEASE MEASURES

Steps to be taken in case material is released or spilled: Wear protective clothing as described in Section 8 of this sheet. Use routine housekeeping procedures, avoid dusting, collect material in closed containers or bags.

Waste Disposal Method: According to the EPA (40CFR 261.3) wastes are not hazardous wastes. Wastes may be disposed of in a landfill, however, in accordance with federal, state, and local regulations.

SECTION 7 - HANDLING AND STORAGE

To ensure product quality, store material in a dry place. Minimize dust generation and avoid inhalation and contact with refractory dusts during processing, installation, maintenance and tear-out. After handling of refractory dusts from processing, installation, maintenance or tear-out, wash exposed skin areas thoroughly. Wash clothing contaminated with dusts

SECTION 8 - EXPOSURE CONTROL/PERSONAL PROTECTION

Ventilation: Local and Mechanical: follow OSHA STD 29 CFR 1910.94.

Respiratory Protection: Good ventilation should be provided if dust is created when working with materials. Used material, which is being removed, should be dampend to reduce dust. In addition, when dust is present, workers should employ repirator protection. Recommended: NIOSH approved respirator for dusts and mists, including silica, in compliance with OSHA STD 29.CFR1910.134.

Protection Gloves: Protective gloves recommended.

Eye Protection: Safety glasses/goggles.

Other Protective Equipment: As required to meet applicable OSHA standards.

Note: See Section 3 for occupational exposure limit values.



Revised Date: 10/19/2015



SECTION 9- PHYSICAL AND CHEMICAL PROPERTIES

Appearance, Color & Odour: Granular aggregate & fine powder mix, light grey in color, earthly smell

Solubility in Water: Negligible pH: Alkaline Vapor Pressure: Not applicable

Boiling Point (o): N/A Vapor Density: Not applicable

Melting Point (o): 2450F / 1343C Evaporation Rate: Not applicable

Specific Gravity: 1.3 % Volatile by Weight: Not applicable

SECTION 10- STABILITY AND REACTIVITY DATA

Stability: Stable Hazardous Polymerization: May not occur Incompatibility: Materials to avoid: N/A

Hazardous Decomposition: N/A

SECTION 11 - TOXICOLOGICAL INFORMATION

Effects of overexposure:

- 1. Acute: Exposure to nuisance dust may cause temporary irritation or discomfort to skin, eyes, nose, throat or lungs and may aggravate bronchial disorders.
- 2. Chronic: Long term inhalation of respirable quartz, cristobalite, fused silica and/or amorphous silica may cause silicosis (delayed lung injury) and other respiratory disorders.
- 3. Prolonged contact with skin may cause irritation.

For crystalline silica (quartz /cristobalite):

CARCINOGENICITY: Product contains crystalline silica which may cause delayed respiratory disease (silicosis) if inhaled over a prolonged period of time. IARC concludes that "there is a sufficient evidence for the carcinogenicity of crystalline silica to humans." (Group 1).

For aluminum silicate: Aluminum silicate minerals have been found to cause lung fibrosis in the absence of crystalline silica.

SECTION 12 - ECOLOGICAL INFORMATION

No ecological concerns have been identified.

Not applicable for as-manufactured refractory product. Dusts of as-manufactured refractory product have a low order of aquatic toxicity (rating TLm96: over 1000 ppm), are insoluble, and are not very mobile. Based upon this information, it is not believed to be a significant threat to the environment if accidentally released on land or into water. However, dusts generated during maintenance and tear-out operations may be contaminated with other hazardous substances (e.g. metal). Evaluation of dusts from specific processes should be performed by a qualified environmental professional to determine if an environmental threat exists in the case of a release.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Disposal Method: According to the EPA (40CFR261.3) wastes are not hazardous wastes. Wastes may be disposed of in a landfill, however, in accordance with federal, state, and local regulations. However, dusts generated during maintenance and tear-out operations may be contaminated with other hazardous substances (e.g. metals). Therefore, appropriate waste analysis may be necessary to determine proper disposal. Waste characterization and disposal/treatment methods should be determined by a qualified environmental professional in accordance with applicable federal, state and local regulations.

Trade Name and Synonyms: Pligun Al-Tuff LWI 24 Revised Date: 10/19/2015 Page 4 of 4

SECTION 14 - TRANSPORT INFORMATION

Canadian Transportation of Dangerous Goods Regulation: Hazard Class & PIN: Not Regulated

DOT Proper Shipping Name (29 CFR 172.101): Not regulated DOT Hazard Class (29 CFR 172.101): Not regulated UN/NA Code (49 CFR 172.101): Not applicable DOT Labels Required (49 CFR 172.101): Not applicable DOT Placards Required (49 CFR 172.504): Not applicable Land Transport ADR/RID (cross-border): Not regulated Maritime Transport IMDG: Not regulated Air Transport ICAO-TI and IATA-DGR: Not regulated

SECTION 15 - REGULATORY INFORMATION

CANADIAN WHMIS: D2A

CANADIAN EPA: Components of this product are listed on the Domestic Substance List (DSL).

U.S. FEDERAL REGULATIONS:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

SARA TITLE III: EPCRA Section 302 (EHSs):

This product does not contain ingredients subject to reporting requirements of 40 CFR Part 355, Appendices A and B (Extremely Hazardous Substances).

CERCLA Section 304:

This product does not contain ingredients subject to state and local reporting under Section 304 of SARA Title III as listed in 40 CFR Part 302, Table 302.4

SECTION 311/312 HAZARD CATEGORIES:

Product (airborne particulates) is categorized as an immediate (acute) health hazard and a delayed (chronic) health hazard as defined by SARA Title III Section 311/312 (40 CFR 370).

SECTION 313 TOXIC CHEMICALS: None

TSCA: Components of this product are listed on the TSCA Inventory.

SECTION 16 - OTHER INFORMATION

Only Trained personel should use this material.

Abbreviations:

ACGIH: American Conference of Governmental Industrial Hygienists

CAS: Chemical Abstracts Service

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act

DOT: Department of Transportation EPA: Environmental Protection Agency

IARC: International Agency for Research on Cancer

NFPA: National Fire Protection Association

NIOSH: National Institute for Occupational Safety and Health

NTP: National Toxicology Program

OSHA: Occupational Safety and Health Administration SARA: Superfund Amendment and Reauthorization Act

WHMIS: Workplace Hazardous Materials Information System (Canada)

DISCLAIMER

The information presented herein is presented in good faith and believed to be accurate as of the effective date of this Safety Data Sheet. Occupational exposure limits are under constant review and may be changed at any time. Employers may use this SDS to supplement other information gathered by them in their efforts to assure the health and safety of their employees and the proper use of this product. This summary of the relevant data reflects professional judgment. Employers should note that information perceived to be less relevant has not been included in this SDS. Therefore, given the summary nature of this document, Plibrico Company LLC does not extend any warranty (expressed or implied), assume any responsibility or make any representation regarding the completeness of this information or its suitability for the purposes envisioned by the user. No warranty guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use. In addition, Plibrico Company LLC shall not be liable for injury arising by either misuse of materials, or failure to follow safety procedures as outlined in the safety data sheet.