1 IDENTIFICATION

PRODUCT NAME: HI-CAST 60, HI-CAST 60 A, & LC60 REFRACTORY CASTABLE

CHEMICAL NAME: HIGH ALUMINA REFRACTORY CASTABLE

PRODUCT USE: HIGH TEMPERATURE RESIDENTIAL AND INDUSTRIAL APPLICATIONS

MANUFACTURER: ALSEY REFRACTORIES COMPANY
266 STATE ROUTE 106 SOUTH
ALSEY, IL 62610
1-314-963-7900

EMERGENCY CONTACT: 1-314-963-7900
MONDAY THRU THURSDAY, 09:00 – 15:00 US CENTRAL TIME [UTC-5]

2 HAZARD IDENTIFICATION

HAZARD CLASSIFICATION:
- SPECIFIC TARGET ORGAN TOXICITY, REPEATED EXPOSURE — CATEGORY 1
- CARCINOGENICITY — CATEGORY 1A*
- SERIOUS SKIN CORROSION/IRRITATION — CATEGORY 2
- EYE DAMAGE/EYE IRRITATION — CATEGORY 3
- SPECIFIC TARGET ORGAN TOXICITY, SINGLE EXPOSURE — CATEGORY 3

SIGNAL WORD: DANGER

HAZARD STATEMENTS:
- MAY CAUSE DAMAGE TO LUNGS THROUGH PROLONGED/REPEATED EXPOSURE THROUGH INHALATION
- MAY CAUSE CANCER [SILICOSIS]*
- CAUSES MILD SKIN IRRITATION
- CAUSES EYE IRRITATION

PICTOGRAM:

PRECAUTIONARY STATEMENTS:

PREVENTION:
- DO NOT EAT, DRINK OR SMOKE WHEN USING THIS PRODUCT.
- USE ONLY OUTDOORS OR IN A WELL-VENTILATED AREA.
- USE PERSONAL PROTECTIVE EQUIPMENT AS REQUIRED.
- WASH THOROUGHLY AFTER HANDLING.

RESPONSE:
- EYE IRRITATION: REMOVE CONTACT LENSES AND RINSE EYES
- SEEK MEDICAL ATTENTION IF NECESSARY
- SKIN IRRITATION: WASH WITH SOAP AND WATER.
- SEEK MEDICAL ATTENTION IF NECESSARY
- BREATHING: IF DIFFICULTY BREATHING REMOVE TO FRESH AIR, KEEP AT REST
- SEEK IMMEDIATE MEDICAL ATTENTION.

*ACCORDING TO GROUP 1 OF THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC), THERE IS SUFFICIENT EVIDENCE IN HUMANS FOR THE CARCINOGENICITY OF INHALED CRYSTALLINE SILICA IN THE FORM OF QUARTZ OR CRISTOBALITE FROM OCCUPATIONAL SOURCES.
3 COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS-NO</th>
<th>WEIGHT %</th>
</tr>
</thead>
<tbody>
<tr>
<td>SILICA (TOTAL)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRISTOBALITE SILICA (TOTAL)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRISTOBALITE (SiO₂)**</td>
<td>14464-46-1</td>
<td></td>
</tr>
<tr>
<td>QUARTZ (SiO₂)**</td>
<td>14808-60-7</td>
<td></td>
</tr>
<tr>
<td>TITANIUM DIOXIDE</td>
<td>13463-67-7</td>
<td>1-4</td>
</tr>
<tr>
<td>ALUMINUM OXIDE</td>
<td>1344-28-1</td>
<td>50-70</td>
</tr>
<tr>
<td>CALCIUM ALUMINATE CEMENT</td>
<td>65997-16-2</td>
<td>5-20</td>
</tr>
</tbody>
</table>

** QUARTZ AND CRISTOBALITE, POLYMORPHS OF CRISTOBALITE SILICA, CLASSIFIED BY IARC AS KNOWN HUMAN CARCINOGENS – GROUP 1. NTP LISTS RESPIRABLE CRISTOBALITE SILICA AMONG SUBSTANCES WHICH MAY REASONABLE BE ANTICIPATED TO BE CARCINOGENS.

4 FIRST AID MEASURES

INHALATION: FIRST AID NOT GENERALLY REQUIRED. PRODUCT IS SUPPLIED WET DUST CANNOT OCCUR UNTIL AFTER DRYING OR SETTING. IF DIFFICULTY BREATHING OCCURS WHILE BREATHING DUST, MOVE THE PERSON TO FRESH AIR AND SEEK MEDICAL ATTENTION ONLY IF NECESSARY.

SKIN CONTACT: IF SKIN IRRITATION OCCURS, WASH THOROUGHLY WITH SOAP AND WATER.

EYE CONTACT: WASH IMMEDIATELY WITH WATER. DO NOT RUB EYES. REMOVE CONTACT LENSES. SEEK MEDICAL ATTENTION IF IRRITATION PERSISTS.

ACUTE/DELAYED: EYES – PARTICULATES MAY CAUSE ABRASIVE EYE DAMAGE INHALATION – MAY CAUSE RESPIRATORY TRACT IRRITATION PROLONGED INHALATION – MAY CAUSE LUNG DISEASE, INCLUDING SILICOSIS

5 FIRE FIGHTING MEASURES

NON-FLAMMABLE, NON-COMBUSTIBLE, NON AUTO-IGNITING

NO SPECIAL INSTRUCTIONS OR CONDITIONS EXIST

6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: AVOID BREATHING DUST. SKIN AND EYE CONTACT SHOULD BE AVOIDED.

SMALL/LARGE SPILL: SCOOP OR SHOVEL AND PLACE IN CONTAINER FOR DISPOSAL.

METHODS FOR CLEAN UP: DISPOSE CONTAMINATED MATERIAL AS WASTE ACCORDING TO SECTION 13. ENSURE ADEQUATE VENTILATION.

7 HANDLING AND STORAGE

HANDLING: PREVENT FORMATION OF DUST. ENSURE PROPER VENTILATION. KEEP RESPIRATORY DEVICE AVAILABLE.

STORAGE: STORE IN A DRY PLACE AWAY FROM EXTREME HEAT; MINIMIZE SKIN CONTACT.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS-NO</th>
<th>OSHA PEL (RESPIRABLE DUST)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRISTOBALITE SILICA (CRISTOBALITE)</td>
<td>14464-46-1</td>
<td>½ THE VALUE CALCULATED FROM THE RESPIRABLE DUST FORMULA FOR QUARTZ</td>
</tr>
<tr>
<td>CRISTOBALITE SILICA (QUARTZ)</td>
<td>14808-60-7</td>
<td>10mg/m³</td>
</tr>
<tr>
<td>TITANIUM DIOXIDE</td>
<td>13463-67-7</td>
<td>15 mg/m³ *TOTAL DUST</td>
</tr>
<tr>
<td>ALUMINUM OXIDE</td>
<td>1344-09-8</td>
<td>15 mg/m³ *TOTAL DUST or 5 mg/m³ (RESP. FRACTION)</td>
</tr>
<tr>
<td>CALCIUM ALUMINATE CEMENT</td>
<td>65997-16-2</td>
<td>NOT ESTABLISHED</td>
</tr>
</tbody>
</table>

ENGINEERING MEASURES: GENERAL MECHANICAL VENTILATION IS USUALLY ADEQUATE.

EYE/FACE PROTECTION: GOGGLES OR SAFETY GLASSES WITH SIDE SHIELDS SHOULD BE WORN.

REVISED 12/14/2015
SKIN AND BODY PROTECTION: IMPERVIOUS GLOVES AND LONG-SLEEVED AND LONG-LEGGED CLOTHING SHOULD BE WORN TO PREVENT SKIN CONTACT. SAFETY SHOES SHOULD BE WORN TO PREVENT FOOT INJURY FROM ACCIDENTALLY DROPPED BRICKS.

RESPIRATORY PROTECTION: USE A NIOSH APPROVED RESPIRATOR WHEN WORKING AROUND MATERIAL AND WHEN REMOVING THIS PRODUCT AFTER SERVICE. A RESPIRATORY PROTECTION PROGRAM SHOULD BE IMPLEMENTED IF EXPOSURES EXCEED OSHA PELs.

WORK/HYGIENIC PRACTICES: AVOID CONTACT WITH SKIN, EYES AND CLOTHING. AFTER HANDLING THIS PRODUCT, WASH HANDS BEFORE EATING OR DRINKING.

9 PHYSICAL AND CHEMICAL PROPERTIES

| APPEARANCE: | BROWN POWDER | AUTO IGNITION: | PRODUCT IS NOT SELF-IGNITING |
| PHYSICAL STATE: | GRANULAR MIXTURE | ODOR: | EARTHY |
| PH: | NA | WATER SOLUBILITY: | SLIGHT |
| FLASH POINT: | NOT APPLICABLE | EXPLOSION LIMITS: | NOT AN EXPLOSION HAZARD |
| BOILING POINT: | NOT APPLICABLE | MELTING POINT: | 3050°F |
| SPECIFIC GRAVITY: | 2.8 g/cc |

10 STABILITY AND REACTIVITY

STABILITY: PRODUCT IS STABLE UNDER NORMAL CONDITIONS OF USE, STORAGE, AND TRANSPORTATION.

INCOMPATIBLE PRODUCTS: AVOID CONTACT WITH ALUMINUM.

CONDITIONS TO AVOID: AVOID DUST FORMATION. REFRACTORIES CONTAINING CRYSTALLINE SILICA MAY, AFTER SERVICE, CONTAIN MORE OR LESS CRYSTALLINE SILICA. CARE MUST BE TAKEN TO AVOID AND/OR CONTROL DUST FROM DEMOLITION. IF IN DOUBT OF THE PROPER PROTECTION, SEEK ADVICE FROM A SAFETY PROFESSIONAL.

11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY—PRODUCT INFORMATION: NO DATA FOR LD50 OR LC50 FOR ORAL, DERMAL OR INHALATION ROUTES OF ADMINISTRATION.

CHRONIC TOXICITY: IRRITANT TO SKIN AND MUCOUS MEMBRANES.

CARCINOGENICITY: CARCINOGENIC IF INHALED.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Carcinogenicity Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRISTOBALITE (SiO₂) 14464-46-1</td>
<td>IARC-1, MAK-1, NIOSH-Ca, NTP-K, TLV-A2</td>
</tr>
<tr>
<td>QUARTZ (SiO₂) 14808-60-7</td>
<td>IARC-1, MAK-1, NIOSH-Ca, NTP-K, TLV-A2</td>
</tr>
<tr>
<td>SILICA, VITREOUS 60676-86-0</td>
<td>IARC-3, NIOSH-Ca</td>
</tr>
<tr>
<td>TITANIUM DIOXIDE 13463-67-1</td>
<td>IARC-2B, MAK-3A, NIOSH-Ca, TLV-A4</td>
</tr>
<tr>
<td>ALUMINUM OXIDE</td>
<td>MAK-2(fibrous dust), TLV-A4</td>
</tr>
</tbody>
</table>

TARGET ORGAN EFFECTS: LUNGS, EYES, RESPIRATORY SYSTEM, SKIN

12 ECOLOGICAL INFORMATION

ECO TOXICOLOGICAL/CHEMICAL FATE INFORMATION: NOT AVAILABLE.

13 DISPOSAL INFORMATION

DISPOSAL OF PRODUCT: AS SUPPLIED, PRODUCT MAY BE DISPOSED OF IN AN APPROVED LANDFILL, IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS. DUST CREATED DURING DEMOLITION OF USED PRODUCT MAY CONTAIN CRYSTALLINE SILICA.
SAFETY DATA SHEET
HI-CAST 60 & LC60

PACKAGING DISPOSAL: REUSE, RECYCLE OR TREAT AS INDUSTRIAL WASTE.

14 TRANSPORT INFORMATION
U.S.A. DOT: NOT REGULATED.
CANADIAN TDG: NOT REGULATED.
ADDITIONAL INFORMATION: NOT DANGEROUS ACCORDING TO AVAILABLE INFORMATION.

15 REGULATORY INFORMATION
INTERNATIONAL INVENTORIES
TSCA: THIS SUBSTANCE OR ALL THE INGREDIENTS OF THIS PRODUCT ARE ON THE CHEMICAL SUBSTANCES INVENTORY OF THE TOXIC SUBSTANCES CONTROL ACT (TSCA INVENTORY). THE PRESENCE ON THIS LIST DOES NOT REQUIRE ANY LEGAL REPORTING. ALL COMPONENTS LISTED.
DSL: ALL COMPONENTS LISTED.

U.S. FEDERAL REGULATIONS
SARA 313: NO MATERIAL LISTED IN THE COMPONENTS IN SECTION 3 OF THIS MSDS IS ON THE SARA 313 LIST.
CALIFORNIA: CALIFORNIA PROPOSITION 65: THIS PRODUCT CONTAINS CRYSALLINE SILICA, CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.
OTHER STATES: CRYSTALLINE SILICA PRODUCTS ARE NOT KNOWN TO BE REGULATED BY STATES OTHER THAN CALIFORNIA; HOWEVER, STATE AND LOCAL OSHA AND EPA REGULATIONS MAY APPLY TO THESE PRODUCTS. CONTACT YOUR LOCAL AGENCY IF IN DOUBT.

WHMIS HAZARD CLASS
CLASS D - DIVISION 2 - SUB DIVISION A: UNTESTED MIXTURE CONTAINING A VERY TOXIC MATERIAL

THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CONTROLLED PRODUCTS REGULATIONS (CPR) AND THE MSDS CONTAINS ALL THE INFORMATION REQUIRED BY THE CPR.

16 OTHER INFORMATION
REMOVAL OF REFRACTORIES:
DUE TO THE PRESENCE OF CRYSALLINE SILICA IN USED REFRACTORY DEBRIS, CAUTION SHOULD BE USED DURING TEAR-OUT.

1. EMPLOYEES SHOULD BE APPRISED OF THE HAZARDS AND PRECAUTIONS FOR SAFE USE AND/OR EXPOSURE.
2. APPROVED RESPIRATORS, IN ACCORDANCE WITH REQUIREMENTS OF FEDERAL REGULATIONS, SHOULD BE USED FOR DUST LEVELS ABOVE ESTABLISHED EXPOSURE LIMITS FOR RESPIRABLE CRYSALLINE SILICA.
3. DUST GENERATION SHOULD BE MINIMIZED BY THE USE OF DUST CONTROL EQUIPMENT OR WATER SPRAY.
4. WEAR PROTECTIVE CLOTHING AND VACUUM CLEAN PRIOR TO REMOVING CLOTHING.
5. WHERE THERE IS A POSSIBILITY OF EXPOSURE TO DUST CONTAINING RESPIRABLE CRYSALLINE SILICA, THE FOLLOWING WARNING SHOULD BE POSTED.

<table>
<thead>
<tr>
<th>FREE SILICA WORK AREA</th>
<th>AVOID BREATHING DUST</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUST MAY CAUSE DELAYED LUNG INJURY [SILICOSIS]</td>
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</tr>
</tbody>
</table>

NOTE: THIS SAFETY DATA SHEET CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION AND IS NOT TO BE DISCLOSED TO THE GENERAL PUBLIC OR TO COMPETITION EXCEPT AS REQUIRED BY LAW. THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE, WHETHER ORIGINATING WITH ALSEY REFRactories COMPANY OR NOT. THIS INFORMATION IS OFFERED SOLELY FOR USE IN YOUR EVALUATION OF THIS PRODUCT IN RESPECT TO SAFETY, HEALTH, AND ENVIRONMENTAL HAZARDS.

SDS STATUS: REPLACES ALL PRIOR SDS
SDS END