SAFETY DATA SHEET 12113

ARMOURCOOL WHITE GRANULES

SECTION 1 – SUBSTANCE IDENTITY AND COMPANY CONTACT INFORMATION

PRODUCT NAME	ArmourCool White Granules
TRADE NAME	White Armour Granules
PRODUCT NUMBER	330535
CHEMICAL FAMILY	Calcined aluminum silicate (kaolin); Crystalline Silica (Quartz); Crystalline Silica (Cristobalite)
PRODUCT USE	Granules for building materials
MANUFACTURER/SUPPLIER	U.S. Silica Company 8490 Progress Drive, Suite 300 Frederick, MD 21701 U.S.A.
WEBSITE	www.iko.com
EMERGENCY NUMBER	CANUTEC: 1-613-996-6666 (24 hours information only)

SECTION 2 – HAZARD IDENTIFICATION

CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

SIGNAL WORD	DANGER
SYMBOL(S)	
CLASSIFICATION	Carcinogenicity – Category 1A Specific Target Organ Toxicity (repeated exposure) – Category 1
HAZARD STATEMENTS	H350 May cause cancer by inhalation. H372 Causes damage to organs through prolonged or repeated exposure by inhalation.
PRECAUTIONARY STATEMENTS	P201 Obtain special instructions before use P202 Do not handle until all safety precautions have been read and understood P260 Do not breathe dust/fume/gas/mist/vapours/spray. P264 Wash thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P281 Use personal protective equipment as required. P285 In case of inadequate ventilation wear respiratory protection. P308+P313 If exposed or concerned: Get medical attention. P314 Get medical advice/attention if you feel unwell. P501 Dispose of content/container in accordance with

local/regional/national/international regulation.

NFPA	Health: 0 Flammability: 0 Instability: 0
HMIS	Health: * Flammability: 0 Physical Hazards: 0

*For further information on health effects, see Sections 2, 8 and 11 of this SDS.

SECTION 3 – CHEMICAL COMPOSITION AND DATA ON COMPONENTS

HAZARDOUS CHEMICAL NAME	% (w/w)	CAS NUMBER
Calcined aluminum silicate (calcined kaolin clay)	95-100 %	92704-41-1
Crystalline Silica (quartz, cristobalite)	0-5 %	14808-60-7 / 14464-46-1
Crystalline Silica (quartz, cristobalite) respirable fraction	< 1 %	14808-60-7 / 14464-46-1

SECTION 4 – FIRST AID

INHALATION	First aid is not generally required. If irritation develops from breathing dust, move the person from the overexposure and seek medical attention if needed.
INGESTION	First aid is not required.
SKIN CONTACT	First aid is not required.
EYE CONTACT	Wash immediately with plenty of water. Do not rub eyes. If irritation persists, seek medical attention.
ACUTE AND CHRONIC SYMPTOMS	Particulates may cause abrasive eye injury. May dry the skin. Inhalation of dust may cause respiratory tract irritation. Symptoms of exposure may include cough, sore throat, nasal congestion, sneezing, wheezing and shortness of breath. Prolonged inhalation of respirable crystalline silica above certain concentrations may cause lung diseases, including silicosis and lung cancer. Refer to section 11, Toxicological Information, for additional information.
MEDICAL ATTENTION	Immediate medical attention is not required.

SECTION 5 – FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA	Use extinguishing media appropriate for surrounding fire.

FIRE FIGHTING	No special firefighting procedures required with respect to this product.
FLAMMABILITY	Not applicable
PROPERTIES:	
FLASH POINT	Not applicable.
FLAMMABLE LIMITS IN AIR	Not applicable.
AUTO IGNITION TEMPERATURE	Not applicable.
SPECIAL PPE FOR FIRE-FIGHTERS	None required.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE MEASURES AND EMERGENCY PROCEDURES	Wear appropriate personal protective equipment an adequate ventilation or adequate respirators (see Section 8). Do not generate airborne dust during clean-up.
ENVIRONMENTAL PRECAUTIONS	No specific precautions. Report releases to regulatory authorities if required by local, state and federal regulations.
SPILL MANAGEMENT	Do not dry sweep. Do not use compressed air to clean spilled product. Use methods to control generation of airborne dust: wet before sweeping; use water spraying/flushing; or use ventilated or HEPA filtered vacuum cleaning system. Dispose of in closed containers.

SECTION 7 - HANDLING AND STORAGE

HANDLING PROCEDURE	Do not generate dust. Do not breathe dust. Do not rely on your sight to determine if dust is in the air. Respirable crystalline silica dust may be in the air without a visible dust cloud. Use adequate exhaust ventilation and dust collection to reduce dust and respirable crystalline silica dust levels to below the permissible exposure limit (“PEL”) or other applicable limit (if lower than the PEL). Maintain and test ventilation and dust collection equipment. Use all available work practices to control dust exposures, such as water sprays. Practice good housekeeping. Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Keep airborne dust concentrations below permissible exposure or other applicable limits. Where necessary to reduce exposures below the PEL or other applicable limit (if lower than the PEL), wear a respirator approved for silica dust when using, handling, storing or disposing of this product or bag. See Section 8, for further information on respirators. Do not alter the respirator. Do not wear a tight-fitting respirator with facial hair

such as a beard or mustache that prevents a good seal between the respirator and face. Maintain, clean, and fit test respirators in accordance with applicable standards. Wash or vacuum clothing that has become dusty.

Participate in training, exposure monitoring, and health surveillance programs to monitor any potential adverse health effects that may be caused by breathing respirable crystalline silica. The OSHA Respirable Crystalline Silica Standards; 29CFR1910.1053, 1915.1053 and 1926.1053, the OSHA Hazard Communication Standard, 29 CFR Sections 1910.1200, 1915.1200, 1917.28, 1918.90, 1926.59 and 1928.21, and state and local worker or community "right-to-know" laws and regulations should be strictly followed.

STORAGE PRECAUTIONS

Use dust collection to trap dust produced during loading and unloading. Keep containers closed and store bags to avoid accidental tearing, breaking, or bursting.

SECTION 8 – EXPOSURE CONTROL AND PERSONAL PROTECTION

Exposure guidelines:

Component	OSHA PEL	ACGIH TLV	NIOSH REL
Calcined kaolin clay	5 mg/m3 TWA (respirable dust) 15 mg/m3 TWA (total dust)	2 mg/m3 TWA (respirable dust)	5 mg/m3 TWA (respirable dust) 15 mg/m3 TWA (total dust)

Until Effective Date of New OSHA PEL below:

Component	OSHA PEL	ACGIH TLV	NIOSH REL
Crystalline Silica (cristobalite)	10 mg/m3 %SiO2 + 2 TWA (respirable dust) 30 mg/m3 %SiO2 + 2 TWA (total dust)	0.025 mg/m3 TWA (respirable dust)	0.05 mg/m3 TWA (respirable dust)
Crystalline Silica (quartz)	10 mg/m3 %SiO2 + 2 TWA (respirable dust) 30 mg/m3 %SiO2 + 2 TWA (total dust)	0.025 mg/m3 TWA (respirable dust)	0.05 mg/m3 TWA (respirable dust)

New OSHA PEL from 2016 Respirable Crystalline Silica Standard – see Effective Dates below.

Component	OSHA PEL	ACGIH TLV	NIOSH REL
Crystalline Silica (quartz, cristobalite)	0.05 mg/m3 TWA (respirable dust)	0.025 mg/m3 TWA (respirable dust)	0.05 mg/m3 TWA (respirable dust)

Effective Dates: Construction 29CFR 1926.1153 Effective June 23, 2017
General Industry and Maritime 29CFR 1910.1053 / 1915.1053 Effective June 23, 2018
Oil and Gas including Hydraulic Fracturing 29CFR 1910.1053 Effective June 23, 2018

ENGINEERING MEASURES — Use adequate general or local exhaust ventilation to maintain concentrations in the workplace below the applicable exposure limits listed above.

PERSONAL PROTECTIVE EQUIPMENT:

RESPIRATORY PROTECTION — If it is not possible to reduce airborne exposure levels to below the OSHA PEL or other applicable limits with ventilation, use the table below to assist you in selecting respirators that will reduce personal exposures to below the OSHA PEL. This table is part of the OSHA Respirator Standard 29CFR1910.134(d). Assigned protection factor (APF) means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by the Standard. For example, an APF of 10 means that the respirator should reduce the airborne concentration of a particulate by a factor of 10, so that if the workplace concentration of a particulate was 150 ug/m3, then a respirator with an APF of 10 should reduce the concentration of particulate to 15 ug/m3. In addition, a cartridge change-out schedule must be developed based on the concentrations in the workplace.

1. -- Assigned Protection Factors[5]

Type of respirator[1, 2]	Quarter mask	Half mask	Full facepiece	Helmet/ hood	Loose-fitting facepiece
1. Air-Purifying Respirator	5	[3]10	50	-	-
2. Powered Air-Purifying Respirator (PAPR)	-	50	1,000	[4]25/1,000	25
3. Supplied-Air Respirator (SAR) or Airline Respirator - Demand mode - Continuous flow mode - Pressure-demand or other positive pressure mode	 - - -	 10 50 50	 50 1,000 1,000	 - [4]25/1,000 -	 - 25 -
4. Self-Contained Breathing Apparatus (SCBA) - Demand mode - Pressure-demand or other positive pressure mode (e.g., open/closed circuit)	 - -	 10 -	 50 10,000	 50 10,000	 - -

Notes:

[1]Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.

[2]The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section (29 CFR 1910.134), including training, fit testing, maintenance, and use requirements.

[3]This APF category includes filtering facepieces, and half masks with elastomeric facepieces.

[4]The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or

equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators and receive an APF of 25.
[5]These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

SKIN AND BODY PROTECTION	Maintain good industrial hygiene. Protection is recommended for workers suffering from dermatitis or sensitive skin.
EYE PROTECTION	Safety glasses with side shields or goggles are recommended if eye contact is anticipated.
HYGIENE MEASURES	No information available.
OTHER CONTROLS	No information available.

SECTION 9 – PHYSCAL AND CHEMICAL PROPERTIES

APPEARANCE (PHYSICAL STATE, COLOR etc.)	White granules
ODOR	Odorless
ODOR THRESHOLD	Not applicable.
PH	6.8 - 8.0
MELTING POINT/FREEZING POINT	Approx. 1700°C/ Approx. 3090°F
INITIAL BOILING POINT AND BOILING RANGE	No determined.
FLASH POINT	Not applicable.
EVAPORATION RATE	Not applicable.
FLAMMABILITY	Not applicable.
UPPER/LOWER FLAMMABILITY/EXPLOSIVE LIMITS	Not applicable
VAPOR PRESSURE	Not applicable.
VAPOR DENSITY	Not applicable.
MOLECULAR WEIGHT	No information available.
SOLUBILITY(IES)	Insoluble in water, soluble in hydrochloric acid
PARTITION COEFFICIENT: N-	Not applicable.

OCTANOL/WATER	
AUTO-IGNITION TEMPERATURE	Not applicable.
SPECIFIC GRAVITY	No information available.
VISCOSITY	Not applicable.

SECTION 10 – STABILITY AND REACTIVITY

REACTIVITY:	Not reactive under normal conditions of use.
CHEMICAL STABILITY	Stable
POSSIBILITY OF HAZARDOUS REACTIONS	Contact with powerful oxidizing agents, such as fluorine, chlorine trifluoride and oxygen difluoride, may cause fires.
CONDITIONS TO AVOID	Avoid dust generation in handling and use.
INCOMPATIBLE MATERIALS	Powerful oxidizers such as fluorine, chlorine trifluoride, and oxygen difluoride and hydrofluoric acid.
HAZARDOUS DECOMPOSITION PRODUCTS	Silica will dissolve in hydrofluoric acid and produce a corrosive gas, silicon tetrafluoride.

SECTION 11 – TOXICOLOGICAL INFORMATION

ACUTE/CHRONIC TOXICITY	Prolonged inhalation of respirable crystalline silica may cause lung disease, silicosis, lung cancer and other effects as indicated below.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE	The method of exposure that can lead to the adverse health effects described below is inhalation.

A. SILICOSIS

Silicosis can exist in several forms, chronic (or ordinary), accelerated, or acute:

Chronic or Ordinary Silicosis is the most common form of silicosis, and can occur after many years (10 to 20 or more) of prolonged repeated inhalation of relatively low levels of airborne respirable crystalline silica dust. It is further defined as either simple or complicated silicosis. Simple silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lun zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function o disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF). Complicated silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. If present, complicated silicosis or PMF symptoms include shortness of breath and cough. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease secondary to the lung disease (cor pumonale).

Accelerated Silicosis can occur with prolonged repeated inhalation of high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of initial exposure. Progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that lung lesions appear earlier and progression is more rapid.

Acute Silicosis can occur after the repeated inhalation of very high concentrations of respirable crystalline silica over a short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough, weakness and weight loss. Acute silicosis is fatal.

B. CANCER
IARC - The International Agency for Research on Cancer ("IARC") concluded that “crystalline silica in the form of quartz or cristobalite dust is carcinogenic to humans (Group 1)”. For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 100C,"A Review of Human Carcinogens: Arsenic, Metals, Fibres and Dusts " (2011).

NTP classifies “Silica, Crystalline (respirable size)” as a known human carcinogen.

C. AUTOIMMUNE DISEASES
Several studies have reported excess cases of several autoimmune disorders -- scleroderma, systemic lupus erythematosus, rheumatoid arthritis -- among silica-exposed workers.

D. TUBERCULOSIS
Individuals with silicosis are at increased risk to develop pulmonary tuberculosis, if exposed to tuberculosis bacteria. Individuals with chronic silicosis have a three-fold higher risk of contracting tuberculosis than similar individuals without silicosis.

E. KIDNEY DISEASE
Several studies have reported excess cases of kidney diseases, including end stage renal disease, among silica exposed workers. For additional information on the subject, the following may be consulted: "Kidney Disease and Silicosis”, Nephron, Volume 85, pp. 14-19 (2000).

F. NON-MALIGNANT RESPIRATORYDISEASES
The reader is referred to Section 3.5 of the NIOSH Special Hazard Review cited below for information concerning the association between exposure to crystalline silica and chronic bronchitis, emphysema and small airways disease. There are studies that disclose an association between dusts found in various mining occupations and non-malignant respiratory diseases, particularly among smokers. It is unclear whether the observed associations exist only with underlying silicosis, only among smokers, or result from exposure to mineral dusts generally (independent of the presence or absence of crystalline silica, or the level of crystalline silica in the dust).

Sources of information:
The ***NIOSH Hazard Review - Occupational Effects of Occupational Exposure to Respirable Crystalline Silica*** published in April 2002 summarizes and discusses the medical and epidemiological literature on the health risks and diseases associated with occupational exposures to respirable crystalline silica. The NIOSH Hazard Review is available from NIOSH - Publications Dissemination, 4676 Columbia Parkway, Cincinnati, OH 45226, or through the NIOSH website,www.cdc.gov/niosh/topics/silica, then click on the link “NIOSH Hazard Review: Health Effects of Occupational Exposure to Respirable Crystalline Silica”.

For a more recent review of the health effects of respirable crystalline silica, the reader may consult *Fishman’s Pulmonary Diseases and Disorders*, Fourth Edition, Chapter 57. “Coal Workers’ Lung Diseases and Silicosis”.

The US Occupational Safety and Health Administration (OSHA) published a summary of respirable

crystalline silica health effects in connection with OSHA's Proposed Rule regarding occupational exposure to respirable crystalline silica. The summary was published in the September 12, 2013 Federal Register, which can be found at www.federalregister.gov/articles/2013/09/12/2013-20997/occupational-exposure-to-respirable-crystalline silica.

Numerical measures of toxicity:
Crystalline Silica (quartz): LD50 oral rat >22,500 mg/kg
Kaolin: LD50 oral rat >5000 mg/kg.

PRIMARY ROUTE OF EXPOSURE	Inhalation

HEALTH EFFECTS:

EYES	Particulates may cause abrasive injury.
SKIN	This product may dry skin.
INHALATION	Inhalation of dust may cause respiratory tract irritation. Symptoms of exposure may include cough, sore throat, nasal congestion, sneezing, wheezing and shortness of breath.
INGESTION	Ingestion is an unlikely route of exposure. If dust is swallowed, it may irritate the mouth and throat.
STOT (SPECIFIC TARGET ORGAN TOXICITY)- SINGLE EXPOSURE	No information available.
STOT (SPECIFIC TARGET ORGAN TOXICITY) – REPEATED EXPOSURE	No information available.
CARCINOGENICITY	Refer to Cancer Status, under health effects, inhalation above.
REPRODUCTIVE TOXICITY:	
DEVELOPMENT OF OFFSPRING	No information available.
SEXUAL FUNCTION AND FERTILITY	No information available.
GERM CELL MUTAGENICITY	No information available.

SECTION 12 – ECOLOGICAL INFORMATION

ECOTOXICITY	Calcined kaolin clay and crystalline silica are not known to be ecotoxic. There is no data that suggests that calcined kaolin clay or crystalline silica is toxic to birds, fish, invertebrates, microorganisms or plants.

PERSISTENCE & DEGRADABILITY	Calcined kaolin clay is not degradable.
BIODEGRADATION MOBILITY	Calcined kaolin clay is not mobile in soil.
BIOACCUMULATION POTENTIAL	Calcined kaolin clay is not bioaccumulative.

SECTION 13 – DISPOSAL CONSIDERATIONS

DISPOSAL RECOMMENDATIONS	Discard any product, residue, disposable container or liner in full compliance with national regulations.

SECTION 14 – TRANSPORT INFORMATION

The following applies to all modes of transportation.

UN number: None

UN proper shipping name: Not regulated

Transport hazard classes(es): None

Packing group, if applicable: None

Environmental hazards: None

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not determined

Special precautions: None known.

SECTION 15 - REGULATIONS

UNITED STATES (FEDERAL AND STATE)

TSCA Status: All ingredients are listed on the EPA TSCA inventory or are exempt.

RCRA: This product is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

CERCLA: This product is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 40 CFR §302.

Emergency Planning and Community Right to Know Act (SARA Title III): This product contains the following chemicals subject to SARA 302 or SARA 313 reporting: None above the de minimus concentrations.

Clean Air Act: This product is not processed with nor contains any Class I or Class II ozone depleting substances.

California Proposition 65: Crystalline silica (airborne particles of respirable size) is classified as a substance known to the State of California to be a carcinogen.

California Inhalation Reference Exposure Level (REL): California established a chronic non-cancer effect REL of 3 µg for silica (crystalline, respirable). A chronic REL is an airborne level of a substance at or below which no non-cancer health effects are anticipated in individuals indefinitely exposed to the substance.

Massachusetts Toxic Use Reduction Act: Silica, crystalline (respirable size, <10 microns) is “toxic” for purposes of the Massachusetts Toxic Use Reduction Act.

Pennsylvania Worker and Community Right to Know Act: Kaolin and Quartz are hazardous substances under the Act, but it is not a special hazardous substance or an environmental hazardous substance.

Texas Commission on Environmental Quality: The Texas CEQ has established chronic and acute Reference Values and short term and long term Effects Screening Levels for crystalline silica (quartz). The information can be accessed through www.tceq.texas.gov.

CANADA

Domestic Substances List: U. S. Silica Company products, as naturally occurring substances, are on the Canadian DSL.

WHMIS Classification: D2A

OTHER NATIONAL INVENTORIES

Australian Inventory of Chemical Substances (AICS): All of the components of this product are listed on the AICS inventory or exempt from notification requirements.

China: All of the components of this product are listed on the IECSC inventory or exempt from notification requirements.

Japan Ministry of International Trade and Industry (MITI): All of the components of this product are existing chemical substances as defined in the Chemical Substance Control Law Registry.

Korea Existing Chemicals Inventory (KECI) (set up under the Toxic Chemical Control Law): Listed on the ECL.

Philippines Inventory of Chemicals and Chemical Substances (PICCS): Listed for PICCS.

Taiwan: All of the components of this product are listed on the CSNN inventory or exempt from notification requirements.

SECTION 16 – OTHER INFORMATION

REVISION DATE OF SDS	April 20, 2022
REPLACES THE MSDS/SDS FROM	(new)

PREPARED BY	Research Department
GENERAL INFORMATION	1-888-766-2468
WEBSITE	www.iko.com
OTHER INFO/DISCLAMERS	Read this Safety Data Sheet before handling or disposing of this product. This product safety information is provided to help our customers with health, safety and/or environmental matters. We have taken reasonable effort to ensure that the test methods and sources for this data are correct and reliable, however, we give no warranty, expressed or implied, regarding its correctness. Since conditions or methods of handling and using this product are beyond our control, we do not assume responsibility and expressly disclaim liability for damages resulting from or connected with the handling, storage, use or disposal of the product.