Safety Data Sheet

SDS prepared by Steve Davis of Aardvark Clay & Supplies GHS – United States

Section 1. Product and Company Identification

Product Name Raku Glaze - RG-307 - Shogun Blue

Synonym Ceramic Glaze - dry

Supplier/ Manufacturer

Aardvark Clay & Supplies
1400 East Pomona St.
Santa Ana, Ca. 92705 USA
714-541-4157 phone
714-541-2021 fax
contact@aardvarkclay.com

Emergency Phone Number 911

Product Use Pottery Manufacturing

Restrictions on use Not applicable

Section 2. Hazards Identification

This glaze contains Gerstley Borate which is composed of a mixture of the minerals Colemanite and Ulexite. Gerstley Borate is a mineral-based product and **no specific hazardous properties have been observed**. Similar borate salts are considered hazardous under the OSHA Hazard Communications Standard and under the Canadian Controlled Products Regulations of the Hazardous Products Act, (WHMIS) based on animal chronic toxicity studies.

GHS/Hazcom 2012 Labels	GHS/Hazcom 2012 Classifications:
	**Health:**
	CARCINOGENICITY (Inhalation) - Category 1A (quartz) (See Section 11 for carcinogen listings)
	CARCINOGENICITY (Inhalation) - Category 1B (cobalt carbonate)
	RESPIRATORY SENSITIZATION - Category 1 (cobalt carbonate)
	REPRODUCTIVE TOXICITY - Category 1B (cobalt carbonate)
	SPECIFIC TARGET ORGAN TOXICITY (Repeated Exposure) (respiratory tract) (inhalation) - Category 1 (quartz)
	GERM CELL MUTAGENICITY - Category 2 (cobalt carbonate)
	**ACUTE TOXICITY (Oral)** - Category 4 (lithium carbonate, copper carbonate)
	SPECIFIC TARGET ORGAN TOXICITY (Single Exposure) (respiratory tract) (inhalation) - Category 3 (quartz)
	EYE IRRITANT - Category 2A (quartz, lithium carbonate)
	SKIN IRRITANT - Category 2 (quartz)
	SKIN SENSITIZER - Category 1 (cobalt carbonate)
	**Environmental:**
	ACUTE HAZARD TO THE AQUATIC ENVIRONMENT - Category 1 (cobalt carbonate)
	ACUTE HAZARD TO THE AQUATIC ENVIRONMENT - Category 3 (lithium carbonate)
	CHRONIC HAZARD TO THE AQUATIC ENVIRONMENT - Category 1 (cobalt carbonate)
Signal Word:	**Physical:**
Danger	Not Hazardous

Hazard Statements:			
Health:			
H303	May be harmful if swallowed.	H335	May cause respiratory irritation
H317	May cause an allergic skin irritation.	H350	May cause cancer.
H320	Causes eye irritation	H372	Causes damage to organs (lungs) through prolonged or repeated exposure (inhalation).
Environmental:		**Physical:**	
H412	Harmful to aquatic life with long lasting effects.	Not hazardous	

Precaution Statements:			
Prevention			
P281	Use personal protective equipment as required.	P261	Avoid breathing dust/spray.
P262	Do not get into eyes, on skin, or on clothing.	P284	[In case of inadequate ventilation] wear respiratory protection.
P264	Wash hands thoroughly after handling.	P270	Do not eat, drink, or smoke when using this product.
P272	Contaminated clothing should not be allowed out of the workplace.	P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.	P202	Do not handle until all safety precautions have been read and understood.

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Response			
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+ P312+ P330	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.
P391	Collect Spillage.	P363	Wash contaminated clothing before reuse.
P302+ P352	IF ON SKIN: Wash with plenty of soap and water.	P308+ P313	If exposed or concerned: Get medical advice/attention.
P333+ P313	If skin irritation or a rash occurs: Get medical advice/attention.	P337+ P313	If eye irritation persists, get medical advice/attention.
Storage		**Disposal**	
P402	Store in a dry place.	P501	Dispose of contents/container in accordance with local/regional/national/international regulations.
P404	Store in a closed container.		
Hazards not otherwise classified:	Slippery when wet.	**% of ingredients with unknown acute toxicity:**	None known.

Section 3. Composition / Information on Ingredients

Substance/Mixture: Mixture - A trade secret claim is made for this glaze.

Chemical	CAS Numbers	Ingredients	Chemical % of Mixture
Quartz,(Crystalline Silica) SiO2	CAS # 14808-60-7	Feldspar, Talc, Silica	<17
Sodium-Calcium Pentaborate Octahydrate NaO.2CaO.5B2O3.5H2O	CAS # 1319-33-1	Ulexite from Gerstley Borate	<15
Di-Calcium Hexaborate Pentahydrate Ca2B6O11.5H2O	CAS # 12291-65-5	Colemanite from Gerstley Borate	<35
Feldspar Na_2O, Al_2O_3, $6SiO_2$	CAS # 68476-25-5	Feldspar	Trade Secret Claim
Magnesium Silicate $Mg_3Si_4O_{10}(OH)_2$	CAS # 14807-96-6	Talc – non asbestos	Trade Secret Claim
Dolomite $CaCO_3.MgCO_3$ or $CaMg(CO_3)2$	CAS # 16389-88-1	Talc – non asbestos	Trade Secret Claim
Lithium Carbonate Li2CO3	CAS # 554-13-2	Lithium Carbonate	<5
Copper Carbonate CuCO3	CAS # 12069-69-1	Copper Carbonate	<2
Cobalt Carbonate Hydroxide CoO3.3Co(OH)2.H2O	CAS # 513-79-1	Cobalt Carbonate	<2

Section 4. First-Aid Measures

Description of first-aid Measures:	
First-aid measures general	Never give anything by mouth to an unconscious person. If you feel unwell, seek medical attention.
First-aid measures after inhalation	Move victim to well ventilated area. If mechanical discomfort persists, seek medical attention.
First-aid measures after skin contact	Remove contaminated clothing. Wash affected area with soap and warm water. Obtain medical attention if irritation persists.
First-aid measures after eye contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if pain, blinking, or redness persists.
First-aid measures after ingestion	Rinse mouth. Do NOT induce vomiting. Small amount unlikely to be toxic by ingestion. If large amount ingested or if discomfort persist, drink two glasses of water and seek medical attention.
Most Important Symptoms and Effects, both Acute and Delayed:	
Symptoms/injuries	Causes damage to organs through prolonged or repeated exposure (inhalation) from dust.
Symptoms/injuries after inhalation	May cause cancer by inhalation. Dust from this product may cause irritation to the respiratory tract.
Symptoms/injuries after skin contact	Prolonged contact with large amounts of dust may cause mechanical irritation.
Symptoms/injuries after eye contact	Prolonged contact with large amounts of dust may cause mechanical irritation.
Symptoms/injuries after ingestion	If a large quantity has been ingested, symptoms may include nausea, vomiting, and diarrhea.
Chronic symptoms	Repeated or prolonged exposure to respirable crystalline silica dust can cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss. Acute silicosis can be fatal.

If exposed or concerned, get medical advice and attention.

Section 5. Fire-Fighting Measures

National Fire Protection Association (U.S.A.)

Suitable extinguishing media	This mixture is not combustible. Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	No restrictions on extinguishing media for this mixture.
Special hazards arising from the substance or mixture	This mixture is not flammable and does not support fire.
Hazardous thermal decomposition products	This mixture does not contain hazardous decomposition products.
Special protective actions for fire-fighters	Mixture can become slippery when wet.
Special protective equipment for fire-fighters	Fire-fighters should wear appropriate protective equipment.

Section 6. Accidental Release Measures

Use of personal precautions	Avoid inhalation of dust.. Wear a N-95 face mask when cleaning up dust.
Emergency procedures	There are no emergency procedures required for this mixture.
Methods and materials for containment	There are no special spill measures that apply for this mixture.
Clean up procedures	For dusts, use a vacuum to clean up spillage. If appropriate, use gentle water spray to wet down and minimize dust generation. Place dry clay dust in a sealed container. **Wear a N-95 face mask when cleaning up dust.**

Section 7. Handling & Storage

Precautions for safe handling	Keep bags out of direct sunlight. Do not expose dry glaze to moisture until use. Do not expose liquid glaze to freezing. Use proper lifting techniques to avoid physical injury.
Recommendations on the conditions for safe storage	No special storage considerations, but keep in a dry, cool location.

Section 8. Exposure Controls / Personal Protection

Chemical Name	CAS Numbers	Occupational Exposure Limits
Quartz, (Crystalline Silica) SiO2	CAS#14808-60-7	ACGIH TLV: TWA 0.025 mg/ m^3 (respirable) OSHA PEL: TWA 10 mg/m^3/ divided by the value "%SiO2" + 2 (respirable) OSHA PEL: TWA 30 mg/m^3/ divided by the value "%SiO2" + 2 (total dust) CAL OSHA PEL: TWA .05 mg/ m^3 (respirable) CAL OSHA PEL: TWA .3 mg/ m^3 (total)
Sodium-Calcium Pentaborate Octahydrate NaO.2CaO.5B2O3.5H2O	CAS # 1319-33-1	ACGIH TLV: TWA 2 mg/ m^3 OSHA PEL: TWA 5 mg/m^3 (respirable) OSHA PEL: TWA 15 mg/m^3 (total) CAL OSHA PEL: TWA 5 mg/ m^3
Di-Calcium Hexaborate Pentahydrate Ca2B6O11.5H2O	CAS # 12291-65-5	ACGIH TLV: TWA 2 mg/ m^3 OSHA PEL: TWA 5 mg/m^3 (respirable) OSHA PEL: TWA 15 mg/m^3 (total) CAL OSHA PEL: TWA 5 mg/ m^3
Feldspar Na_2O, Al_2O_3, $6SiO_2$	CAS # 68476-25-5	ACGIH TLV: TWA 2 mg/ m^3 OSHA PEL: TWA 5 mg/m^3 (respirable) OSHA PEL: TWA 15 mg/m^3 (total) CAL OSHA PEL: TWA 5 mg/ m^3
Magnesium Silicate (Talc / non-asbestos) $Mg_3Si_4O_{10}(OH)_2$	CAS # 14807-96-6	ACGIH TLV: TWA 2 mg/ m^3 OSHA PEL: TWA 5 mg/m^3 (respirable) OSHA PEL: TWA 15 mg/m^3 (total) CAL OSHA PEL: TWA 5 mg/ m^3
Dolomite $CaCO_3.MgCO_3$ or $CaMg(CO_3)2$	CAS # 16389-88-1	ACGIH TLV: TWA 2 mg/ m^3 OSHA PEL: TWA 5 mg/m^3 (respirable) OSHA PEL: TWA 15 mg/m^3 (total) CAL OSHA PEL: TWA 5 mg/ m^3
Lithium Carbonate Li2CO3	CAS # 554-13-2	ACGIH TLV: TWA 10 mg/ m^3 OSHA PEL: TWA 5 mg/m^3 (respirable) OSHA PEL: TWA 10 mg/m^3 (total) CAL OSHA PEL: TWA 10 mg/ m^3
Copper (II) Carbonate CuCO3 No Occupational Exposure Limits are listed for this chemical.	CAS # 12069-69-1	ACGIH TLV: TWA not established OSHA PEL: TWA not established OSHA PEL: TWA not established CAL OSHA PEL: TWA not established
Cobalt Carbonate Hydroxide CoO3.3Co(OH)2.H2O	CAS # 513-79-1	ACGIH TLV: TWA .02 (Co) mg/ m^3 (respirable OSHA PEL: TWA .1 (Co) mg/m^3 (respirable) OSHA PEL: TWA not established (total) CAL OSHA PEL: TWA not established

Section 8. Exposure Controls / Personal Protection

Appropriate engineering controls: When mixing, use local exhaust ventilation or other engineering controls as required to maintain exposures below applicable occupational exposure limits (TLV).

Recommendations for personal protective measures

Local Exhaust: When mixing glazes, use sufficient local exhaust to reduce the level of respirable dust to the applicable standards set forth in Section III - ACGIH "Industrial Ventilation, A Manual of Recommended Practice," latest edition.

Respiratory Protection: Dust is generated when working with dry glaze. To minimize exposure to dust and/or crystalline silica, the mixing of dry glaze materials should be conducted with sufficient ventilation. Respirable dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by feasible engineering controls, including (but not limited to) wet suppression, ventilation, and process enclosure. When such controls are not feasible, NIOSH/MSHA approved respirators must be worn in accordance with a respiratory protection program which meets OSHA requirements as set forth at 29 CFR1910.134 and ANSI Z88.2-1080 – "Practices for Respiratory Protection".
In most cases, a disposable N-95 Particulate Respirator is sufficient.

Eye Protection: Use NIOSH/OSHA approved safety glasses with side shields. Face shields can also be used when mixing dry glaze. Wear tight fitting dust goggles when excessively (visible) dusty conditions are present or are anticipated.
NIOSH recommends that contact lenses not be worn when working with crystalline silica dust.

Skin Protection: Use gloves and/or protective clothing if abrasion or allergic reactions are experienced.

Work/Hygienic Practices: Avoid creating and breathing dust.
Wear NIOSH/MSHA approved dust mask when working in dust conditions - (N-95).
Food, beverages, and smoking materials should NOT be in the work area.
Persons using ceramic materials should wash hands thoroughly before eating, drinking, smoking, or applying cosmetics.

Protective Clothing Pictograms

N-95 face mask

Section 9. Physical & Chemical Properties

Physical State	Powder
Appearance	Tinted powder
Odor	None
Odor Threshold	Not Applicable
pH	6 – 8
Solubility in Water	None
Melting Point	1050 °C (1900°F)
Freezing Point	< 0 °C (<32°F)
Specific Gravity / Relative Density	2.35 g/cc
Evaporation Rate	Not Applicable
Flash Point	Not Applicable
Auto-Ignition Temperature	Not Applicable
Decomposition Temperature	Not Applicable
Flammability	Not Applicable
Vapor Pressure	Not Applicable
Vapor Density	Not Applicable
Explosive Limits	Not Applicable
Viscosity	Not Applicable
Partition Coefficient: n-octanol/water	Not Applicable
Initial Boiling Point & Boiling Range	Not Applicable

Section 10. Stability & Reactivity

Reactivity	Hazardous reactions will not occur under normal conditions.
Chemical stability	Stable at standard temperature and pressure. No stabilizers required to maintain chemical stability.
Possibility of hazardous reactions	Hazardous polymerization will not occur.
Conditions to avoid	None known
Incompatible materials	None known
Hazardous decomposition products	None known

Section 11. Toxicological Information

Routes of Exposure: Inhalation of dry glaze dust, Ingestion

Descriptions of the delayed, immediate, or chronic effects from short- and long-term exposure	
Inhalation	Inhalation of high concentrations of dry glaze dust may cause mechanical irritation and discomfort. Long term exposure may cause chronic effects.
Eye Contact	May be an eye irritant. May cause mechanical irritation. Contains Borax & Lithium Carbonate which are eye irritants.
Skin Contact/Irritation	Not a primary skin irritant. May cause dry skin.
Sensitization	Not a sensitizer.
Ingestion	If a large quantity has been ingested, symptoms may include nausea, vomiting, and diarrhea.
Chronic Effects	
OSHA Carcinogen	Lung cancer – Crystalline silica has been classified by OSHA as a human lung carcinogen. Repeated or prolonged exposure to respirable crystalline silica dust may cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss. Acute silicosis can be fatal.
Mutagenic Effects	None Known
Teratogenic Effects	None Known
Developmental Toxicity	None Known

Effects of Silicosis	**Symptoms of Silicosis**
Bronchitis/Chronic Obstructive Pulmonary Disorder. Tuberculosis – Silicosis makes an individual more susceptible to TB. Scleroderma – a disease affecting skin, blood vessels, joints and skeletal muscles. Possible renal disease.	Shortness of breath; possible fever. Fatigue; loss of appetite. Chest pain; dry, nonproductive cough. Respiratory failure, which may eventually lead to death.

Remarks	
Carcinogenicity	Repeated or long term exposure to respirable crystalline silica dust may cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss. Acute silicosis can be fatal. Short term exposure is of little concern.
Numerical Measures of toxicity	None Known

Section 11. Toxicological Information

OSHA, IARC, and NTP Carcinogen Classifications

Chemicals with Carcinogen Potential	**CAS#**	**OSHA**	**IARC**	**NTP**
Quartz, (Crystalline Silica) SiO2	CAS # 14808-60-7	Yes	Yes - Group 1	Yes

OSHA, IARC, and NTP Carcinogen Classifications

Substances, mixtures and exposure circumstances in this list have been classified by the IARC as ***Group 1****: The agent (mixture) is carcinogenic to humans. The exposure circumstance entails exposures that are carcinogenic to humans.* This category is used when there is *sufficient evidence* of carcinogenicity in humans. Exceptionally, an agent (mixture) may be placed in this category when evidence of carcinogenicity in humans is less than sufficient but there is *sufficient evidence* of carcinogenicity in experimental animals and strong evidence in exposed humans that the agent (mixture) acts through a relevant mechanism of carcinogenicity.

Section 12. Ecological Information (non-mandatory)

Ecotoxicity	Harmful to aquatic environment.
Biochemical oxygen demand (BOD5)	None Known
Chemical oxygen demand(COD)	None Known
Products of Biodegradation	None Known
Toxicity of the products of Biodegradation	None Known
Bioaccumulation Potential	None Known
Potential to move from soil to groundwater	None Known
Other adverse effects	None Known

Section 13. Disposal Considerations

Personal Protection	Refer to Section 8: "Recommendations for Personal Protective Measures" when disposing of glaze waste.
Appropriate disposal containers	Standard waste disposal containers – no specials requirements.
Appropriate disposal methods	Disposal of this product should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. In most cases, this is normal waste disposal. The generation of waste should be avoided or minimized. Dispose of non-recyclable products via a licensed waste disposal contractor. Waste packaging should be recycled. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.
Physical and chemical properties that may affect disposal	Dry glaze dust should be placed in a sealed container or in a manner that reduces or eliminates the release of the product. Packaging should be recycled before disposal.
Sewage disposal	Do not dispose of into sinks or toilets. They will clog. Never dispose of this product into a sewer system.
Special precautions for landfills or incineration activities	There are no special precautions for disposal in a landfill. This product is non-combustible and is not suitable for incineration.

Section 14. Transportation Information

Regulatory Information	UN Number	UN Proper Shipping Name	Transport Hazard Class	Packing Group Number	Bulk Transport Guidance	Special Precautions
DOT Classification	Not regulated	-	-	-	-	-
TDG Classification	Not regulated	-	-	-	-	-
ADR/RID Class	Not regulated	-	-	-	-	-
IMDG Class	Not regulated	-	-	-	-	-
IATA-DGR Class	Not regulated	-	-	-	-	-

Section 15. Regulatory Information

TSCA – Toxic Substances Control Act - EPA	Quartz and other chemicals are listed in the TSCA Chemical Substance Inventory
California Prop. 65	⚠ **WARNING**: This product can expose you to chemicals including Quartz and Lithium Carbonate, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.
SARA/Title lll (Emergency Planning & Community Right-to-Know Act)	This mixture contains no substances at or above the reporting threshold under Section 313, based on available data.

Section 16. Other Information

Definitions

OSHA means Occupational Safety & Health Administration
IARC means International Agency for Research on Cancer
NTP means National Toxicology Program
CAS means Chemical Abstract Service
ACGIH means American Conference of Governmental Industrial Hygienists
CAL-OSHA means California OSHA, most CAL-OSHA standards defer to the federal OSHA standards
OSHA means Occupational Safety & Health Administration
OSHA PEL means OSHA Permissible Exposure Limit
TWA means Time Weighted Average (average exposure on the basis of an 8h/day, 40h/week work schedule)
TLV means Threshold Limit Value - American Conference of Governmental Industrial Hygienists (ACGIH)

This SDS is in compliance with The Globally Harmonized System of Classification and Labeling of Chemicals (GHS) – prepared Oct. 23, 2015. This data sheet is subject to change without notice.

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