

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/ Aardvark Clay & Supplies

Manufacturer 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	GHS/Hazcom 2012 Classifications:
2012 Labels	
	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)
24	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	Hazard Statements:			
Health	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:		Physic	al:	
H412 Harmful to aquatic life with long lasting effects.		Not haz	zardous	

Precau	Precaution Statements:			
Prevei	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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Respo	Response				
P305+	IF IN EYES: Rinse cautiously with w	IF IN EYES: Rinse cautiously with water for several minutes.		IF SWALLOWED: Call a POISON CENTER or doctor/physician if	
P351+	Remove contact lenses if present a	and easy to do – continue	P312+	you feel unwell. Rinse mouth.	
P338	rinsing.		P330		
P391	Collect Spillage.		P363	Wash contaminated clothing before reuse.	
P302+	IF ON SKIN: Wash with plenty of soap and water.		P308+	If exposed or concerned: Get medical advice/attention.	
P352			P313		
P333+	If skin irritation or a rash occurs: Get medical advice/attention.		P337+	If eye irritation persists, get medical advice/attention.	
P313			P313		
Storag	Storage		Dispos	al	
P402	Store in a dry place.		P501	Dispose of contents/container in accordance with	
P404	Store in a closed container.			local/regional/national/international regulations.	
Hazard	Hazards not otherwise classified: Slippery when wet.		% of ir	ngredients 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 ₂ O, Al ₂ O ₃ , 6SiO ₂	CAS # 68476-25-5	Feldspar	Trade Secret Claim
Magnesium Silicate Mg ₃ Si ₄ O 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.



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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	Evnosura	Controls /	Personal	Protection

Chemical Name	CAS Numbers	Occupational Exposure Limits
Quartz, (Crystalline Silica)	CAS#14808-60-7	ACGIH TLV: TWA 0.025 mg/ m³ (respirable)
SiO2		OSHA PEL: TWA 10 mg/m³/ 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/ m³ (respirable)
		CAL OSHA PEL: TWA .3 mg/ m³ (total)
Sodium-Calcium Pentaborate Octahydrate	CAS # 1319-33-1	ACGIH TLV: TWA 2 mg/ m ³
NaO.2CaO.5B2O3.5H2O		OSHA PEL: TWA 5 mg/m³ (respirable)
		OSHA PEL: TWA 15 mg/m³ (total)
		CAL OSHA PEL: TWA 5 mg/ m ³
Di-Calcium Hexaborate Pentahydrate	CAS # 12291-65-5	ACGIH TLV: TWA 2 mg/ m ³
Ca2B6O11.5H2O		OSHA PEL: TWA 5 mg/m³ (respirable)
		OSHA PEL: TWA 15 mg/m³ (total)
		CAL OSHA PEL: TWA 5 mg/ m ³
Feldspar	CAS # 68476-25-5	ACGIH TLV: TWA 2 mg/ m ³
Na ₂ O, Al ₂ O ₃ , 6SiO ₂		OSHA PEL: TWA 5 mg/m³ (respirable)
-2-7 2-372		OSHA PEL: TWA 15 mg/m³ (total)
		CAL OSHA PEL: TWA 5 mg/ m ³
Magnesium Silicate (Talc / non-asbestos)	CAS # 14807-96-6	ACGIH TLV: TWA 2 mg/ m ³
$Mg_3Si_4O_{10}(OH)_2$	0.1011 21007 30 0	OSHA PEL: TWA 5 mg/m³ (respirable)
		OSHA PEL: TWA 15 mg/m³ (total)
		CAL OSHA PEL: TWA 5 mg/ m ³
Dolomite	CAS # 16389-88-1	ACGIH TLV: TWA 2 mg/ m ³
CaCO ₃ .MgCO ₃ or CaMg(CO ₃)2		OSHA PEL: TWA 5 mg/m³ (respirable)
		OSHA PEL: TWA 15 mg/m³ (total)
		CAL OSHA PEL: TWA 5 mg/ m ³
Lithium Carbonate	CAS # 554-13-2	ACGIH TLV: TWA 10 mg/ m ³
Li2CO3		OSHA PEL: TWA 5 mg/m³ (respirable)
		OSHA PEL: TWA 10 mg/m³ (total)
		CAL OSHA PEL: TWA 10 mg/ m ³
Copper (II) Carbonate	CAS # 12069-69-1	ACGIH TLV: TWA not established
CuCO3		OSHA PEL: TWA not established
No Occupational Exposure Limits are listed		OSHA PEL: TWA not established
for this chemical.		CAL OSHA PEL: TWA not established
Cobalt Carbonate Hydroxide	CAS # 513-79-1	ACGIH TLV: TWA .02 (Co) mg/ m³ (respirable
CoO3.3Co(OH)2.H2O		OSHA PEL: TWA .1 (Co) mg/m³ (respirable)
		OSHA PEL: TWA not established (total)
		CAL OSHA PEL: TWA not established



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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
рН	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



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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

Routes of Exposure.	illialation of dry glaze dust, ingestion			
Descriptions of the delayed, immediate, or chronic effects from short- and long-term exposure				
Inhalation	nhalation 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	e mechanical irritation.		
	Contains Borax & Lithium Carbon	ate 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 Pulmo	onary Disorder.	Shortness of breath; possible fever.		
Tuberculosis – Silicosis makes an indi	vidual more susceptible to TB.	Fatigue; loss of appetite.		
Scleroderma – a disease affecting skin, blood vessels, joints and skeletal		Chest pain; dry, nonproductive cough.		
muscles. Possible renal disease.		Respiratory failure, which may eventually lead to death.		
Remarks	Remarks			
Carcinogenicity Repeated or long term exp		posure to respirable crystalline silica dust may cause lung damage in the form		
f t		include progressively more difficult breathing, cough, fever, and weight loss.		
		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 <u>IARC</u> as **Group 1**: The agent (mixture) is <u>carcinogenic</u> to humans. The exposure circumstance entails exposures that are carcinogenic to humans. This category is used when there is <u>sufficient evidence</u> 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 <u>sufficient evidence</u> 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	



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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 case, 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 wastell, waterways, drains, and sewers.	
Physical and chemical properties	Dry glaze dust should be placed in a sealed container or in a manner that reduces or	
that may affect disposal	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	There are no special precautions for disposal in a landfill.	
or incineration activities	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	ı	-	-	=	-
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 III	This mixture contains no substances at or above the
(Emergency Planning & Community Right-to-Know Act)	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.

Information presented herein has been compiled from sources considered to be dependable and is accurate and reliable to the best of our knowledge and belief but is not guaranteed to be so. Nothing herein is to be construed as recommending any practice or any product in violation of any patent or in violation of any law or regulation. It is the user's responsibility to determine for himself the suitability of any material for a specific purpose and to adopt such safety precautions as may be necessary. We make no warranty as to the results to be obtained in using any material and, since conditions of use are not under our control, we must necessarily disclaim all liability with respect to the use of any material supplied by us.