VULTAC® 5

1. PRODUCT AND COMPANY IDENTIFICATION

Company

Arkema Inc.
900 First Avenue
King of Prussia, Pennsylvania 19406

Thio and Fine Chemicals

Customer Service Telephone Number:	(800) 628-4453 (Monday through Friday, 8:00 AM to 5:00 PM EST)

Emergency Information

Transportation:	CHEMTREC: (800) 424-9300 (24 hrs., 7 days a week)
Medical:	Rocky Mountain Poison Center: (866) 767-5089 (24 hrs., 7 days a week)

Product Information

Product name:	VULTAC® 5
Synonyms:	Not available
Molecular formula:	Not available
Chemical family:	Polysulfide
Product use:	Curing agent for rubber

2. HAZARDS IDENTIFICATION

Emergency Overview

Color:	brown
Physical state:	solid
Form:	powder
Odor:	phenol-like

***Classification of the substance or mixture:**
Skin sensitisation, Category 1, H317

*For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labelling

Hazard pictograms:

Signal word: **Warning**

Hazard statements:

H317 : May cause an allergic skin reaction.

Supplemental Hazard Statements:

May form combustible dust concentrations in air.
Processing may release vapors and/or fumes which cause eye, skin and respiratory tract irritation.

Precautionary statements:

Prevention:

P261 : Avoid breathing gas/mist/vapours/spray.
P272 : Contaminated work clothing should not be allowed out of the workplace.
P280 : Wear protective gloves.

Response:

P302 + P352 : IF ON SKIN: Wash with plenty of soap and water.
P333 + P313 : If skin irritation or rash occurs: Get medical advice/ attention.
P363 : Wash contaminated clothing before reuse.

Disposal:

P501 : Dispose of contents/ container to an approved waste disposal plant.

Supplemental information:

Potential Health Effects:

Contains high molecular weight polymer(s). Effects due to processing releases: Irritating to eyes, respiratory system and skin.
Prolonged or repeated exposure may cause: headache, drowsiness, nausea, weakness, (severity of effects depends on extent of exposure).

Other:

This product may release fume and/or vapor of variable composition depending on processing time and temperature.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Wt/Wt	GHS Classification**
Phenol, 4-(1,1-dimethylpropyl)-, polymer with sulfur chloride (S2Cl2)	68555-98-6	>= 70 - <= 80 %	H317
Silica gel, pptd., cryst.-free	112926-00-8	<= 25 %	Not classified
Water	7732-18-5	< 5 %	Not classified
Sulfur	7704-34-9	< 2 %	H315

**For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1. Description of necessary first-aid measures:

Inhalation:
If inhaled, remove victim to fresh air.

Skin:
In case of contact, immediately flush skin with soap and plenty of water. If molten polymer gets on the skin, cool rapidly with cold water. Do not peel solidified product off the skin. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:
Immediately flush eye(s) with plenty of water. Obtain medical treatment for thermal burns.

Ingestion:
If swallowed, DO NOT induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms/effects, acute and delayed:

For most important symptoms and effects (acute and delayed), see Section 2 (Hazard Statements and Supplemental Information) and Section 11 (Toxicology Information) of this SDS.

4.3. Indication of immediate medical attention and special treatment needed, if necessary:

Unless otherwise noted in Notes to Physician, no specific treatment noted; treat symptomatically.

5. FIREFIGHTING MEASURES

Extinguishing media (suitable):
water spray, Carbon dioxide (CO2), Foam, Dry chemical

Extinguishing media (unsuitable):
High volume water jet

Protective equipment:
Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

Further firefighting advice:
Do not use a solid stream of water.
A solid stream of water can cause a dust explosion.
Fire fighting equipment should be thoroughly decontaminated after use.

Fire and explosion hazards:
Dust clouds generated during handling and/or storage can form explosive mixtures with air. Dust explosion characteristics vary with the particle size, particle shape, moisture content, contaminants, and other variables.
Note: Check that all equipment is properly grounded and installed to satisfy electrical classification requirements. As with any dry material, pouring this material or allowing it to free-fall or to be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come into contact with the material or its container.
When burned, the following hazardous products of combustion can occur:
Carbon oxides
Sulphur oxides
Hazardous organic compounds

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, Emergency procedures, Methods and materials for containment/clean-up:
Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel. Ventilate the area. Eliminate all ignition sources. Avoid dust formation and dispersal of dust in the air. Wet down (dampen) the spilled material with water. Sweep or scoop up using non-sparking tools and place into suitable properly labeled containers for prompt disposal. The sweepings should be wetted down further with water. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Implement workplace practices such that dusts are not allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

Protective equipment:
Appropriate personal protective equipment is set forth in Section 8.

7. HANDLING AND STORAGE

Handling

General information on handling:
Avoid breathing dust.
Avoid breathing processing fumes or vapors.
Avoid prolonged or repeated contact with skin.
Keep away from heat, sparks and flames.
Keep container closed.
Wash thoroughly after handling.
Avoid creating dust in handling, transfer or clean up.
Prevent dust accumulation.
Implement routine housekeeping practices to ensure that dusts do not accumulate on surfaces.
Check that all equipment is properly grounded and installed to satisfy electrical classification requirements.
Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations.
Container hazardous when empty.
Follow label warnings even after container is emptied.
RESIDUAL DUSTS MAY EXPLODE ON IGNITION.
DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.
Improper disposal or reuse of this container may be dangerous and/or illegal.
Emptied container retains product residue.

Storage

General information on storage conditions:
Keep in a dry, cool place.Store in closed containers, in a secure area to prevent container damage and subsequent spillage.Store in well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity.Ensure that all storage and handling equipment is properly grounded and installed to satisfy electrical classification requirements.Static electricity may accumulate when transferring material.All metal and groundable storage containers, including but not limited to drums, cylinders, Returnable Intermodal Bulk Containers (RIBCs) and Class C Flexible Intermodal Bulk Containers (FIBCs) must be bonded and grounded during filling and emptying operations.Observe all federal, state and local regulations and National Fire Protection Association (NFPA) Codes, which pertain to the specific local conditions of storage and use, including NFPA 654.

Storage incompatibility – General:
Store separate from: Strong oxidizing agents

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:

Silica gel, pptd., cryst.-free (112926-00-8)

US. OSHA Table Z-3 (29 CFR 1910.1000)

Time weighted average	20millions of particles per cubic foot of air

US. OSHA Table Z-3 (29 CFR 1910.1000)

Time weighted average	0.8 mg/m3
Remarks:	The exposure limit is calculated from the equation, 80/(%SiO2), using a value of 100% SiO2. Lower values of % SiO2 will give higher exposure limits.

Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

Engineering controls:
Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above).If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Check that all dust control equipment such as local exhaust ventilation, material transport systems, and air-material separation devices involved in handling this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment.Isolation devices may be appropriate to prevent propagation from one unit to another.Ensure that dust-handling systems are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).Consult ACGIH ventilation manual, NFPA Standard 91 and NFPA Standard 654 for design of exhaust system and safe handling.

Respiratory protection:
Avoid breathing dust. Avoid breathing processing fumes or vapors. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Skin protection:
Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Rinse immediately if skin is contaminated. Wash contaminated clothing and clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

Eye protection:
Where eye contact may be likely, wear chemical goggles and have eye flushing equipment available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	brown
Physical state:	solid
Form:	powder
Odor:	phenol-like
Odor threshold:	No data available.
Flash point	Not applicable
Lower flammable limit (LFL):	Not determined
Upper flammable limit (UFL):	Not determined
pH:	not determined
Density:	not determined
Specific Gravity (Relative density):	1.435 (77 °F(25 °C))
Boiling point/boiling range:	not determined
Melting point/range:	not determined
Freezing point:	No data available.
Evaporation rate:	No data available.
Solubility in water:	Negligible
Viscosity, dynamic:	No data available.
% Volatiles:	0 %
Oil/water partition	No data available.

coefficient:

Thermal decomposition: No data available.

Flammability: See GHS Classification in Section 2

10. STABILITY AND REACTIVITY

Stability:
This material is chemically stable under normal and anticipated storage, handling and processing conditions.

Hazardous reactions:
Hazardous polymerization does not occur.

Materials to avoid:
Strong oxidizing agents

Conditions / hazards to avoid:
Avoid dust formation. Avoid flames, welding arcs, potential ignition sources, or other high temperature sources which induce thermal decomposition.

Hazardous decomposition products:

Thermal decomposition giving flammable and toxic products :
Carbon oxides
Sulphur oxides
Hazardous organic compounds

11. TOXICOLOGICAL INFORMATION

Data on this material and/or its components are summarized below.

Data for Phenol, 4-(1,1-dimethylpropyl)-, polymer with sulfur chloride (S2Cl2) (68555-98-6)

Acute toxicity

Oral:
Practically nontoxic. (rat) LD50 = 5,500 mg/kg.

Dermal:
No deaths occurred. (rabbit) LD0 > 2,000 mg/kg.

Skin Irritation:
Not irritating. (rabbit) (4 h)

Eye Irritation:
Causes mild eye irritation. (rabbit)

Skin Sensitization:
May cause an allergic skin reaction. Guinea pig maximization test. Skin allergy was observed. (Strong sensitizer)

Human experience
Skin contact:
Skin: Slightly irritating.

Data for Silica gel, pptd., cryst.-free (112926-00-8)

Acute toxicity

Oral:
No deaths occurred. (rat) LD0 > 5,000 mg/kg.

Dermal:
No deaths occurred. (rabbit) LD0 > 5,000 mg/kg.

Inhalation:
No deaths occurred. (rat) 4 h LC0 >= 2.08 mg/l. (dust/mist)

Skin Irritation:
Practically non-irritating. (rabbit) OECD Test Guideline 404 0-2 / 8. (4 h)

Eye Irritation:
Causes mild eye irritation. (rabbit)

Skin Sensitization:
Not a sensitizer. Guinea pig maximization test. (guinea pig) No skin allergy was observed

Repeated dose toxicity
Repeated inhalation administration to rat / affected organ(s): lung, lymph node / signs: inflammation /
No adverse systemic effects reported. (Local effects, reversible)

Repeated oral administration to rat / No adverse systemic effects reported.

Carcinogenicity
Chronic oral administration to rat and mouse / affected organ(s): lung / No increase in tumor incidence was reported.
Classified by the International Agency for Research on Cancer as: Group 3: Unclassifiable as to carcinogenicity in humans.

Genotoxicity

Assessment in Vitro:
No genetic changes were observed in laboratory tests using: bacteria, animal cells, human cells, yeast

Genotoxicity

Assessment in Vivo:
No genetic changes were observed in laboratory tests using: rats

Developmental toxicity
Exposure during pregnancy. Oral (rat, rabbit, hamster, mouse) / No birth defects were observed.

Other information
Information given is based on data obtained from similar substances.

Human experience
Inhalation:
Respiratory system: No increase in tumor incidence was reported. No significant impairment of lung function. (based on reports of occupational exposure to workers)

Data for Sulfur (7704-34-9)

Acute toxicity

Oral:
No deaths occurred. (rat) LD0 > 2,000 mg/kg.

Dermal:
No deaths occurred. (rabbit) LD0 > 2,000 mg/kg.

Inhalation:
Practically nontoxic. (rat) 4 h LC50 > 5.43 mg/l. (dust)

Skin Irritation:
Causes skin irritation. (rabbit)

Eye Irritation:
Causes mild eye irritation. (rabbit)

Skin Sensitization:
Not a sensitizer. Repeated skin exposure. (guinea pig) No skin allergy was observed

Repeated dose toxicity
Subchronic inhalation administration to rat / signs: reduced body weight

Subchronic oral administration to rat / No adverse effect has been observed in chronic toxicity tests.

Repeated dermal administration to rat / affected organ(s): Skin / signs: Irritation

Genotoxicity

Assessment in Vitro:
No genetic changes were observed in laboratory tests using: bacteria, animal cells

Genotoxicity

Assessment in Vivo:
No genetic changes were observed in a laboratory test using: mice

Human experience
Inhalation:
Respiratory disorders, chronic bronchitis. (dust)

Human experience
Skin contact:
Erythema. (repeated or prolonged exposure)

Human experience
Eye contact:

Dust and/or vapor are reported to cause irritation when proper industrial hygiene controls/procedures are not used.

12. ECOLOGICAL INFORMATION

Chemical Fate and Pathway
No data are available.

Ecotoxicology
Data on this material and/or its components are summarized below.

Data for Silica gel, pptd., cryst.-free (112926-00-8)

Aquatic toxicity data:
No effect up to the limit of solubility. Brachydanio rerio (zebrafish) 96 h LC0 > 10,000 mg/l (nominal concentrations reported)

Aquatic invertebrates:
No effect up to the limit of solubility. Daphnia (water flea) 24 h LC0 > 10,000 mg/l (nominal concentrations reported)

Chronic toxicity to aquatic plants:
No effect up to the limit of solubility. Desmodesmus subspicatus (green algae) 72 h NOEC > 10000 mg/l (Nominal concentration)

Data for Sulfur (7704-34-9)

Aquatic toxicity data:
No effect up to the limit of solubility. Oncorhynchus mykiss (rainbow trout), Bluegill sunfish 96 h LD50 > 0.005 mg/l

Aquatic invertebrates:
No effect up to the limit of solubility. Daphnia magna (Water flea) 48 h EC50 > 0.005 mg/l

Algae:
No effect up to the limit of solubility. Algae 72 h NOEC > 0.005 mg/l

Microorganisms:
Activated sludge 3 h EC50 = 1,900 mg/l

Chronic toxicity to aquatic invertebrates:
Practically nontoxic. Daphnia magna (Water flea) 21 d NOEC > 100 mg/l (Nominal concentration)

Chronic toxicity to aquatic plants:
No effect up to the limit of solubility. Algae 72 d NOEC > 0.005 mg/l

Terrestrial toxicity data:
Practically nontoxic. Eisenia fetida (earthworms) 14 d NOEC > 1,000 mg/kg

13. DISPOSAL CONSIDERATIONS

Waste disposal:
Disposal via incineration is recommended. Dispose of in accordance with federal, state and local regulations.

Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

14. TRANSPORT INFORMATION

US Department of Transportation (DOT): not regulated

International Maritime Dangerous Goods Code (IMDG): not regulated

15. REGULATORY INFORMATION

Chemical Inventory Status

US. Toxic Substances Control Act	TSCA	The components of this product are all on the TSCA Inventory.
Canadian Domestic Substances List (DSL)	DSL	All components of this product are on the Canadian DSL
China. Inventory of Existing Chemical Substances in China (IECSC)	IECSC (CN)	Conforms to
Japan. ENCS - Existing and New Chemical Substances Inventory	ENCS (JP)	Conforms to
Japan. ISHL - Inventory of Chemical Substances	ISHL (JP)	Conforms to
Korea. Korean Existing Chemicals Inventory (KECI)	KECI (KR)	Conforms to
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	PICCS (PH)	Conforms to
Australia Inventory of Chemical Substances (AICS)	AICS	Conforms to

United States – Federal Regulations

SARA Title III – Section 302 Extremely Hazardous Chemicals:
The components in this product are either not SARA Section 302 regulated or regulated but present in negligible concentrations.

SARA Title III - Section 311/312 Hazard Categories:
Acute Health Hazard, Fire Hazard

SARA Title III – Section 313 Toxic Chemicals:
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):

The components in this product are either not CERCLA regulated, regulated but present in negligible concentrations, or regulated with no assigned reportable quantity.

United States – State Regulations

New Jersey Right to Know

Chemical name	CAS-No.
Silica gel, pptd., cryst.-free	112926-00-8
Sulfur	7704-34-9

Pennsylvania Right to Know

Chemical name	CAS-No.
Phenol, 4-(1,1-dimethylpropyl)-, polymer with sulfur chloride (S2Cl2)	68555-98-6
Silica gel, pptd., cryst.-free	112926-00-8
Sulfur	7704-34-9
Hydrochloric acid	7647-01-0

Pennsylvania Right to Know – Environmentally Hazardous Substance(s)

Chemical name	CAS-No.
Hydrochloric acid	7647-01-0

California Prop. 65
This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive defects.

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.

Miscellaneous:

Other information:	Refer to National Fire Protection Association (NFPA) Code 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

Latest Revision(s):

Reference number:	200005542
Date of Revision:	12/04/2017
Date Printed:	12/05/2017

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It is the sole responsibility of the manufacturer of the medical device to determine the suitability (including biocompatibility) of all raw materials, products and components, including any medical grade Arkema products, in order to ensure that the final end-use product is safe for its end use; performs or functions as intended; and complies with all applicable legal and regulatory requirements (FDA or other national drug agencies) It is the sole responsibility of the manufacturer of the medical device to conduct all necessary tests and inspections and to evaluate the medical device under actual end-use requirements and to adequately advise and warn purchasers, users, and/or learned intermediaries (such as physicians) of pertinent risks and fulfill any postmarket surveillance obligations. Any decision regarding the appropriateness of a particular Arkema material in a particular medical device should be based on the judgment of the manufacturer, seller, the competent authority, and the treating physician.