GUANIDINE NITRATE

GHS SAFETY DATA SHEET

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
GUANIDINE NITRATE

OTHER NAMES

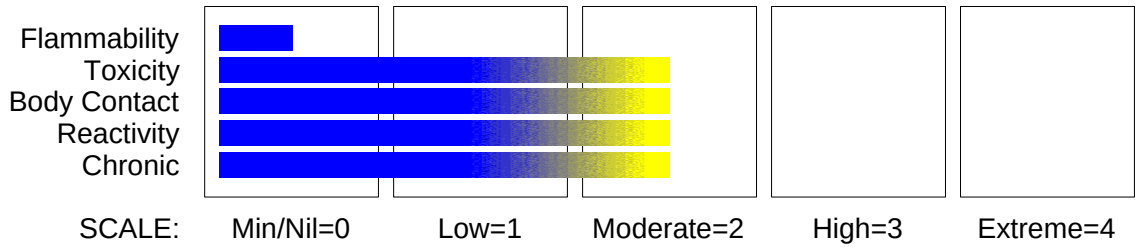
CH5N3.HNO3, "guanidine mononitrate", "guanidinium nitrate", "guanadine nitrate (sic)"

PROPER SHIPPING NAME
GUANIDINE NITRATE

PRODUCT USE
Manufacture of explosives, disinfectants, photographic chemicals.

SUPPLIER
Company: S D FINE- CHEM LIMITED
Address:
315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,
MUMBAI- 400030.INDIA.
technical@sdfine.com
Telephone: 91- 22- 24959898
Telephone: 91- 22- 24959899
Fax: 91- 22- 24937232

HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

GHS Classification
Acute Aquatic Hazard Category 2
Acute Toxicity (Oral) Category 4
Eye Irritation Category 2A

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Oxidizing Solid Category 3
Respiratory Irritation Category 3
Skin Corrosion/Irritation Category 2

EMERGENCY OVERVIEW

HAZARD

WARNING
Determined by using GHS criteria:
H335 H275 H302 H315 H319 H401
May cause respiratory irritation
May intensify fire; oxidizer
Harmful if swallowed
Causes skin irritation
Causes serious eye irritation
Toxic to aquatic life

PRECAUTIONARY STATEMENTS

Prevention

Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wash thoroughly after handling.
Keep away from heat.
Take any precaution to avoid mixing with combustible or incompatible materials.

Response

If eye irritation persists, get medical advice/attention.
IF ON SKIN: Gently wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin irritation occurs, seek medical advice/attention.
Wear eye/face protection.
Wash/Decontaminate removed clothing before reuse.
Specific treatment: refer to Label or MSDS.
Remove/Take off immediately all contaminated clothing

Storage

Store away from combustibles and incompatible materials
Store locked up.

Disposal

Dispose of contents and container in accordance with relevant legislation.

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Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
guanidine nitrate	506-93-4	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

For advice, contact a Poisons Information Centre or a doctor.
· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
· For advice, contact a Poisons Information Centre or a doctor.
Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
· Induce vomiting with fingers down the back of the of the throat, ONLY IF CONSCIOUS.
· Lean patient forward or place on left side (head-down position if possible) to maintain open airway and prevent aspiration.
NOTE: Wear a protective glove when inducing vomiting by mechanical means.
· In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
· If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
· If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

EYE

If this product comes in contact with the eyes:
· Immediately hold eyelids apart and flush the eye continuously with running water.
· Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
· Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
· Transport to hospital or doctor without delay.
· Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin contact occurs:
· Immediately remove all contaminated clothing, including footwear.
· Flush skin and hair with running water (and soap if available).
· Seek medical attention in event of irritation.

INHALED

· If dust is inhaled, remove from contaminated area.
· Encourage patient to blow nose to ensure clear passage of breathing.
· If irritation or discomfort persists seek medical attention.

NOTES TO PHYSICIAN

The toxicity of nitrates and nitrites result from their vasodilating properties and their propensity to form methaemoglobin.
· Most produce a peak effect within 30 minutes.
· Clinical signs of cyanosis appear before other symptoms because of the dark

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pigmentation of methaemoglobin.
· Initial attention should be directed towards improving oxygen delivery, with assisted ventilation, if necessary. Hyperbaric oxygen has not demonstrated conclusive benefits.
· Institute cardiac monitoring, especially in patients with coronary artery or pulmonary disease.
· Hypotension should respond to Trendelenburg's position and intravenous fluids; otherwise dopamine may be needed.
· Naloxone, glucose and thiamine should be given if a multiple ingestion is suspected.
· Decontaminate using Ipecac Syrup for alert patients or lavage for obtunded patients who present within 2-4 hours of ingestion.
· Symptomatic patients with methaemoglobin levels over 30% should receive methylene blue.(Cyanosis alone, is not an indication for treatment). The usual dose is 1-2 mg/kg of a 1% solution (10 mg/ml) IV over 5 minutes; repeat, using the same dose if symptoms of hypoxia fail to subside within 1 hour.
[Ellenhorn and Barceloux: Medical Toxicology]
BIOLOGICAL EXPOSURE INDEX - BEI
These represent the determinants observed in specimens collected from a healthy worker who has been exposed at the Exposure Standard (ES or TLV):

Determinant	Index	Sampling Time	Comments
1. Methaemoglobin in blood	1.5% of haemoglobin	During or end of shift	B, NS, SQ

B: Background levels occur in specimens collected from subjects NOT exposed
NS: Non-specific determinant;also observed after exposure to other materials
SQ: Semi-quantitative determinant - Interpretation may be ambiguous; should be used as a screening test or confirmatory test.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
Carbon dioxide.
Foam.
Flooding quantities of water only.

FIRE FIGHTING
· Alert Fire Brigade and tell them location and nature of hazard.
· May be violently or explosively reactive.
· Wear full body protective clothing with breathing apparatus.
· Prevent, by any means available, spillage from entering drains or water courses.
· Fight fire from a safe distance, with adequate cover.
· Extinguishers should be used only by trained personnel.
· Use water delivered as a fine spray to control fire and cool adjacent area.
· DO NOT approach containers suspected to be hot.
· Cool fire exposed containers with water spray from a protected location.
· If safe to do so, remove containers from path of fire.
· If fire gets out of control withdraw personnel and warn against entry.
· Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD
Oxidising agents as a class are not necessarily combustible themselves, but can increase the risk and intensity of fire in many other substances.

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Contact with readily oxidisable organic material may cause ignition /fire.

FIRE INCOMPATIBILITY
Avoid storage with reducing agents.

Personal Protective Equipment
Gloves, boots (chemical resistant).
Breathing apparatus - high vapour/dust levels only.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS
· Clean up all spills immediately.
· No smoking, naked lights, ignition sources.
· Avoid all contact with any organic matter including fuel, solvents, sawdust, paper or cloth and other incompatible materials, as ignition may result.
· Avoid breathing dust or vapours and all contact with skin and eyes.
· Control personal contact by using protective equipment.
· Contain and absorb spill with dry sand, earth, inert material or vermiculite.
· DO NOT use sawdust as fire may result.
· Scoop up solid residues and seal in labelled drums for disposal.
· Neutralise/decontaminate area.

MAJOR SPILLS
· Clear area of personnel and move upwind.
· Alert Fire Brigade and tell them location and nature of hazard.
· May be violently or explosively reactive.
· Wear full body protective clothing with breathing apparatus.
· Prevent, by any means available, spillage from entering drains or water courses.
· No smoking, flames or ignition sources.
· Increase ventilation.
· Contain spill with sand, earth or other clean, inert materials.
· NEVER USE organic absorbents such as sawdust, paper or cloth.
· Use spark-free and explosion-proof equipment.
· Collect any recoverable product into labelled containers for possible recycling.
· Avoid contamination with organic matter to prevent subsequent fire and explosion.
· DO NOT mix fresh with recovered material.
· Collect residues and seal in labelled drums for disposal.
· Wash area and prevent runoff into drains.
· Decontaminate equipment and launder all protective clothing before storage and re-use.
· If contamination of drains or waterways occurs advise emergency services.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

X	X	X	X	0	0

+: May be stored together

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O: May be stored together with specific preventions
X: Must not be stored together

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

· Avoid personal contact and inhalation of dust, mist or vapours.
· Always wear protective equipment and wash off any spillage on clothing.
· Use in well ventilated areas, prevent accumulation of vapours.
· Keep material away from light, heat, ignition sources, flammables or combustibles.
· Keep dry and away from incompatible materials.
· Keep cool and below defined Control Temperature.
· Avoid friction, shock or containment.
· Use non-sparking equipment.
· Avoid physical damage to containers
· DO NOT repack or return unused portions to original container.
· Withdraw only sufficient material for immediate use.
· Contamination can cause VIOLENT DECOMPOSITION with intense heat and fire.
· Ensure proper rotation of stocks to limit decomposition and instability which may occur on long storage.
· When handling NEVER smoke, eat or drink.
· Always wash hands with soap and water after handling.
· Use only good occupational work practice.
· Observe manufacturer's storing and handling directions.

SUITABLE CONTAINER

Polyethylene or polypropylene container.
Polylined drum.
Stainless steel.
Plastic container.
Plastic drum.
Steel drum with plastic liner.
· Check that containers are clearly labelled.

STORAGE INCOMPATIBILITY

Avoid storage with organic material, strong reducing agents and metal powders.
Mixtures with nitro-compounds, chlorates or strong acids may be explosive and sensitive to shock or friction.
DO NOT store near acids.

STORAGE REQUIREMENTS

Keep dry.
· Store in original containers.
· Keep containers securely sealed as supplied.
· Store in a cool, well ventilated area.
· Keep dry.
· Store under cover and away from sunlight.
· Store away from flammable or combustible materials, debris and waste. Contact may cause fire or violent reaction.

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· Store away from incompatible materials and foodstuff containers.
· DO NOT stack on wooden floors or pallets.
· Protect containers from physical damage.
· Check regularly for leaks.
· Observe manufacturer's storage and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

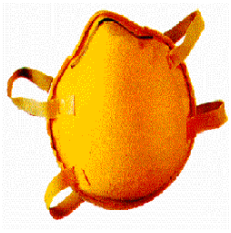
The following materials had no OELs on our records

• guanidine nitrate: CAS:506- 93- 4 CAS:24011- 90- 3 CAS:6609- 93- 4

MATERIAL DATA

These "dusts" have little adverse effect on the lungs and do not produce toxic effects or organic disease. Although there is no dust which does not evoke some cellular response at sufficiently high concentrations, the cellular response caused by P.N.O.C.s has the following characteristics:
· the architecture of the air spaces remain intact,
· scar tissue (collagen) is not synthesised to any degree,
· tissue reaction is potentially reversible.
Extensive concentrations of P.N.O.C.s may:
· seriously reduce visibility,
· cause unpleasant deposits in the eyes, ears and nasal passages,
· contribute to skin or mucous membrane injury by chemical or mechanical action, per se, or by the rigorous skin cleansing procedures necessary for their removal. [ACGIH]
This limit does not apply:
· to brief exposures to higher concentrations
· nor does it apply to those substances that may cause physiological impairment at lower concentrations but for which a TLV has as yet to be determined.
This exposure standard applies to particles which
· are insoluble or poorly soluble* in water or, preferably, in aqueous lung fluid (if data is available) and
· have a low toxicity (i.e.. are not cytotoxic, genotoxic, or otherwise chemically reactive with lung tissue, and do not emit ionizing radiation, cause immune sensitization , or cause toxic effects other than by inflammation or by a mechanism of lung overload).

PERSONAL PROTECTION

EYE
· Safety glasses with side shields; or as required,
· Chemical goggles.
· Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or

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restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET
Wear chemical protective gloves, eg. PVC.
Wear safety footwear.

OTHER
Overalls.
· Impervious apron.
· Eyewash unit.

RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

* - Negative pressure demand ** - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
For further information consult
your
Occupational Health and Safety Advisor.

ENGINEERING CONTROLS
Local exhaust ventilation may be required for safe working, i.e. to keep exposures below required standards, otherwise PPE is required.
If exposure to workplace dust is not controlled, respiratory protection is required; wear SAA approved dust respirator.
Provide adequate ventilation in warehouse or closed storage areas.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE
Granular white powder; mixes with water (1:10).

PHYSICAL PROPERTIES
Solid.
Mixes with water.

Molecular Weight: 122.08
Melting Range (°C): 213- 215
Solubility in water (g/L): Miscible
Boiling Range (°C): Not available
Specific Gravity (water=1): Not available
pH (as supplied): Not applicable

continued...

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

pH (1% solution): 7
Volatile Component (%vol): Negligible
Relative Vapour Density (air=1): Not available
Lower Explosive Limit (%): Not available
Autoignition Temp (°C): Not available
State: Divided solid

Vapour Pressure (kPa): Negligible
Evaporation Rate: Not available
Flash Point (°C): Not available
Upper Explosive Limit (%): Not available
Decomposition Temp (°C): Not available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

Presence of heat source and ignition source.
· Presence of incompatible materials.
· Product is considered stable.
· Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.
Considered an unlikely route of entry in commercial/industrial environments.

EYE
Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals.
Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.
The material may be irritating to the eye, with prolonged contact causing inflammation.
Repeated or prolonged exposure to irritants may produce conjunctivitis.

SKIN
Evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.
Skin contact is not thought to have harmful health effects (as classified under EC

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Directives); the material may still produce health damage following entry through wounds, lesions or abrasions.
The material may produce severe skin irritation after prolonged or repeated exposure, and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) thickening of the epidermis.

Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.

INHALED
Limited evidence exists, or practical experience predicts, that the material produces irritation of the respiratory system in a significant number of individuals following inhalation.
Although inhalation is not thought to produce harmful effects (as classified under EC Directives), the material may still produce health damage, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally confined to doses producing mortality rather than those producing morbidity (disease, ill-health).
Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.
The substance and/or its metabolites may bind to haemoglobin inhibiting normal uptake of oxygen. This condition, known as "methaemoglobinemia", is a form of oxygen starvation (anoxia).

Symptoms include cyanosis (a bluish discolouration skin and mucous membranes) and breathing difficulties. Symptoms may not be evident until several hours after exposure.

At about 15% concentration of blood methaemoglobin there is observable cyanosis of the lips, nose and earlobes. Symptoms may be absent although euphoria, flushed face and headache are commonly experienced. At 25-40%, cyanosis is marked but little disability occurs other than that produced on physical exertion. At 40-60%, symptoms include weakness, dizziness, lightheadedness, increasingly severe headache, ataxia, rapid shallow respiration, drowsiness, nausea, vomiting, confusion, lethargy and stupor. Above 60% symptoms include dyspnea, respiratory depression, tachycardia or bradycardia, and convulsions. Levels exceeding 70% may be fatal.

CHRONIC HEALTH EFFECTS
Principal routes of exposure are by accidental skin and eye contact and inhalation of generated dusts.
Guanidine has been used in the clinical treatment of certain conditions. The most serious effect of such treatment is suppression of bone-marrow; this appears to be dose-related. Minor side-effects include gastro-intestinal disturbances and parathesis of the lips, face, hands and feet. Neurological symptoms include hyperirritability, tremor, ataxia and , rarely, seizures. Unusual side-effects include atrial fibrillation and hypotension, skin reactions, hypoglycaemia and raised blood creatinine concentrations. Guanidine hydrochloride markedly increased weakness in two Chinese patients with motor neurone weakness; it appears that Oriental men might be more sensitive to the postulated guandine -induced depletion of axonal acetylcholine. Chronic exposures to therapeutic doses of guanidine may have produced severe fibrosing interstitial nephritis in one patient.

TOXICITY AND IRRITATION

TOXICITY	IRRITATION
Oral (rat) LD50: 1028 mg/kg	Skin (rabbit): 500 mg/24h

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Eye (rabbit): 92 mg - Mild

Section 12 - ECOLOGICAL INFORMATION

The nitrates are of environmental concern because of their high water solubility and consequent leaching, diffusion, and environmental mobility in soil and water. Nitrate can contaminate groundwater to unacceptable levels. Nitrite is formed from nitrate or ammonium ion by micro-organisms in soil, water, sewage and the alimentary tract. The concern with nitrate in the environment is related to its conversion to nitrite.

Methaemoglobinaemia is caused following exposure to high levels of nitrite and produces difficulties in oxygen transport in the blood. Thousands of cases involving poisoning of infants, particularly in rural areas, have been reported as a result of drinking nitrate rich well-water.

Other concerns deriving from exposure to environmental nitrates relate to the production of nitrosamines following the reaction of food nitrites and secondary amines. Other nitroso-compounds may result following reaction with nitrites and amides, ureas, carbamates and other nitrogenous compounds. Nitrosamines produce liver damage, haemorrhagic lung lesions, convulsions and coma in rats, and teratogenic effects in experimental animals.

The N-nitroso class of compounds include potent carcinogens and mutagens: induction of tumors by single doses of N-nitroso compounds testify to this.

Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Authority for disposal.
- Bury or incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

Labels Required: OXIDIZING AGENT
HAZCHEM: 1[Y]

UNDG:

Dangerous Goods Class:	5.1	Subrisk:	None
UN Number:	1467	Packing Group:	III

Shipping Name:GUANIDINE NITRATE

continued...

Section 14 - TRANSPORTATION INFORMATION

Air Transport IATA:

ICAO/IATA Class:	5.1	ICAO/IATA Subrisk:	None
UN/ID Number:	1467	Packing Group:	III
ERG Code:	5L		

Shipping name:GUANIDINE NITRATE

Maritime Transport IMDG:

IMDG Class:	5.1	IMDG Subrisk:	None
UN Number:	1467	Packing Group:	III
EMS Number:	F- A, S- Q		

Shipping name:GUANIDINE NITRATE

Section 15 - REGULATORY INFORMATION

REGULATIONS

guanidine nitrate (CAS: 506-93-4) is found on the following regulatory lists;
OECD Representative List of High Production Volume (HPV) Chemicals

No data available for guanidine nitrate as CAS: 24011-90-3, CAS: 6609-93-4.

Section 16 - OTHER INFORMATION

Denmark Advisory list for selfclassification of dangerous substances

Substance	CAS	Suggested codes
guanidine nitrate	506- 93- 4	Xn; R22

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
guanidine nitrate	506- 93- 4, 24011- 90- 3, 6609- 93- 4

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

Issue Date: 28-Jun-2018