

# PHENOLPHTHALEIN

GHS Safety Data Sheet

Version No:1

Page 1 of 11

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME

PHENOLPHTHALEIN

### OTHER NAMES

C20-H14-O4, "pH indicator", "3, 3-bis(hydroxyphenyl)-1-(3H)-isobenzofuranone", "3, 3-bis(hydroxyphenyl)-1-(3H)-isobenzofuranone"

### PRODUCT USE

Acid-base indicator useful in the pH range 8.2 (colourless) to 10 (violet red); laxative (cathartic) present in many over-the-counter products; laboratory reagent.

### SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,

248, WORLI,

MUMBAI- 400030.INDIA.

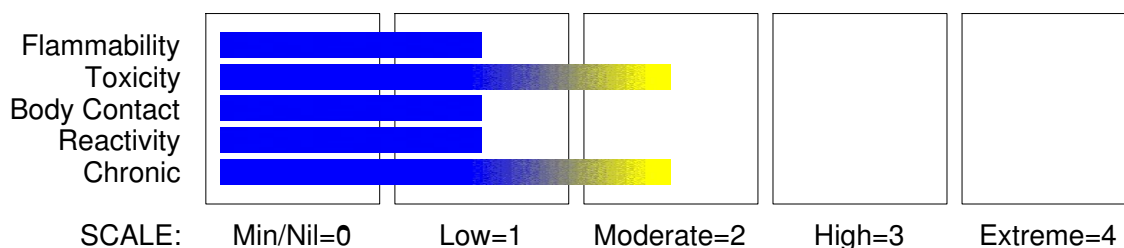
technical@sdfine.com

Telephone: 91- 22- 24959898

Telephone: 91- 22- 24959899

Fax: 91- 22- 24937232

### HAZARD RATINGS



## Section 2 - HAZARDS IDENTIFICATION

### GHS Classification

Carcinogen Category 2

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# PHENOLPHTHALEIN

GHS Safety Data Sheet

Version No:1

Page 2 of 11

## Section 2 - HAZARDS IDENTIFICATION



### EMERGENCY OVERVIEW

#### HAZARD

WARNING

Determined by using GHS criteria:

H351

Suspected of causing cancer

#### PRECAUTIONARY STATEMENTS

##### Prevention

Do not handle until all safety precautions have been read and understood.

Use personal protective equipment as required.

Obtain special instructions before use.

##### Response

If exposed or concerned: Get medical attention advice.

##### Storage

Store locked up.

##### Disposal

Dispose of contents and container in accordance with relevant legislation.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

| NAME            | CAS RN  | %   |
|-----------------|---------|-----|
| phenolphthalein | 77-09-8 | >99 |

## Section 4 - FIRST AID MEASURES

### SWALLOWED

For advice, contact a Poisons Information Centre or a doctor.

- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

### EYE

If this product comes in contact with the eyes:

- Wash out immediately with fresh running water.

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# PHENOLPHTHALEIN

GHS Safety Data Sheet

Version No:1

Page 3 of 11

## Section 4 - FIRST AID MEASURES

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- 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.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

### SKIN

If skin or hair contact occurs:

- 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

Treat symptomatically.

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## Section 5 - FIRE FIGHTING MEASURES

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### EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.
- Water spray or fog - Large fires only.

### FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.
- 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.
- Equipment should be thoroughly decontaminated after use.

### FIRE/EXPLOSION HAZARD

- Solid which exhibits difficult combustion or is difficult to ignite.
- Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
- Dry dust can also be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.
- Build-up of electrostatic charge may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.
- All movable parts coming in contact with this material should have a speed of less than 1-metre/sec.

May emit clouds of acrid smoke.

Combustion products include: carbon monoxide (CO) and carbon dioxide (CO<sub>2</sub>).

continued...

# PHENOLPHTHALEIN

GHS Safety Data Sheet

Version No:1

Page 4 of 11

## Section 5 - FIRE FIGHTING MEASURES

### FIRE INCOMPATIBILITY

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

## Section 6 - ACCIDENTAL RELEASE MEASURES

### EMERGENCY PROCEDURES

#### MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Control personal contact by using protective equipment.
- Use dry clean up procedures and avoid generating dust.
- Place in a suitable labelled container for waste disposal.

#### MAJOR SPILLS

Remove all ignition sources.

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Control personal contact by using protective equipment and dust respirator.
- Prevent spillage from entering drains, sewers or water courses.
- Avoid generating dust.
- Sweep, shovel up. Recover product wherever possible.
- Put residues in labelled plastic bags or other containers for disposal.
- If contamination of drains or waterways occurs, advise emergency services.

### EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:

phenolphthalein      400 mg/m<sup>3</sup>

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

phenolphthalein      15 mg/m<sup>3</sup>

other than mild, transient adverse effects without perceiving a clearly defined odour is:

phenolphthalein      2.5 mg/m<sup>3</sup>

The threshold concentration below which most people will experience no appreciable risk of health effects:

phenolphthalein      0.75 mg/m<sup>3</sup>

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

|                 |          |               |         |
|-----------------|----------|---------------|---------|
| Very Toxic (T+) | >= 0.1%  | Toxic (T)     | >= 3.0% |
| R50             | >= 0.25% | Corrosive (C) | >= 5.0% |
| R51             | >= 2.5%  |               |         |
| else            | >= 10%   |               |         |

where percentage is percentage of ingredient found in the mixture

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# PHENOLPHTHALEIN

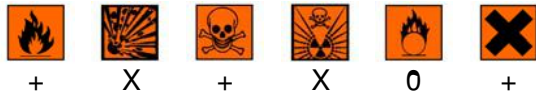
GHS Safety Data Sheet

Version No:1

Page 5 of 11

## Section 6 - ACCIDENTAL RELEASE MEASURES

### SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



*+: May be stored together*

*O: May be stored together with specific precautions*

*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

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- When handling DO NOT eat, drink or smoke.
- Always wash hands with soap and water after handling.
- Avoid physical damage to containers.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.

### SUITABLE CONTAINER

Glass container is suitable for laboratory quantities.

Plastic container . Plastic drum.

- Metal can or drum
- Packaging as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

### STORAGE INCOMPATIBILITY

Avoid storage with oxidisers.

### STORAGE REQUIREMENTS

- Keep dry.
- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials.
- Protect containers against physical damage.
- Check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

The following materials had no OELs on our records

- phenolphthalein:

CAS:77- 09- 8 CAS:546094- 13- 7 CAS:467- 29- 8  
CAS:57214- 20- 7 CAS:390417- 24- 0

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# PHENOLPHTHALEIN

GHS Safety Data Sheet

Version No:1

Page 6 of 11

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### 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 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

- Rubber gloves.
- PVC gloves.
- Safety footwear.

#### OTHER

No special equipment needed when handling small quantities.

#### OTHERWISE:

- Overalls.
- Barrier cream.
- Eyewash unit.

#### GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the computer-generated selection: phenolphthalein

Protective Material

|                |   |
|----------------|---|
| NATURAL RUBBER | A |
| NEOPRENE       | A |
| NITRILE        | A |
| PVC            | A |

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

\* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

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# PHENOLPHTHALEIN

GHS Safety Data Sheet

Version No:1

Page 7 of 11

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### 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

General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

| Type of Contaminant:                                                                                                                                                                                                | Air Speed:                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| solvent, vapours, degreasing etc., evaporating from tank (in still air)                                                                                                                                             | 0.25- 0.5 m/s (50- 100 f/min)  |
| aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation) | 0.5- 1 m/s (100- 200 f/min.)   |
| direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)                                                      | 1- 2.5 m/s (200- 500 f/min)    |
| grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).                                                                | 2.5- 10 m/s (500- 2000 f/min.) |

Within each range the appropriate value depends on:

| Lower end of the range                                    | Upper end of the range             |
|-----------------------------------------------------------|------------------------------------|
| 1: Room air currents minimal or favourable to capture     | 1: Disturbing room air currents    |
| 2: Contaminants of low toxicity or of nuisance value only | 2: Contaminants of high toxicity   |
| 3: Intermittent, low production.                          | 3: High production, heavy use      |
| 4: Large hood or large air mass in motion                 | 4: Small hood - local control only |

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits

continued...

# PHENOLPHTHALEIN

GHS Safety Data Sheet

Version No:1

Page 8 of 11

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### APPEARANCE

White to off-white minute odourless crystals; practically insoluble in water. Soluble in acetone, toluene and moderately soluble in alcohol. Slightly soluble in chloroform. Insoluble in petroleum ether.

### PHYSICAL PROPERTIES

Solid.

Does not mix with water.

Sinks in water.

Molecular Weight: 320.34

Melting Range (°C): 258- 263

Solubility in water (g/L): Partly miscible

pH (1% solution): Not available.

Volatile Component (%vol): Not available

Relative Vapour Density (air=1): Not available.

Lower Explosive Limit (%): Not applicable

Autoignition Temp (°C): Not available.

State: Divided solid

Boiling Range (°C): (decomp)

Specific Gravity (water=1): 1.28 - 1.30

pH (as supplied): Not applicable

Vapour Pressure (kPa): Negligible

Evaporation Rate: Not applicable

Flash Point (°C): Not applicable

Upper Explosive Limit (%): Not applicable

Decomposition Temp (°C): Not available.

Viscosity: Not available

## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

### CONDITIONS CONTRIBUTING TO INSTABILITY

- 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 damaging to the health of the individual. Constant use of purgatives/laxatives may decrease the sensitivity of the intestinal mucosa causing a diminished response to normal stimuli. The redevelopment of a normal habit is thus prevented.

##### EYE

Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).

The dust may produce eye discomfort causing transient smarting, blinking.

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# PHENOLPHTHALEIN

## Section 11 - TOXICOLOGICAL INFORMATION

### SKIN

The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

### INHALED

The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

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.

### CHRONIC HEALTH EFFECTS

On the basis, primarily, of animal experiments, concern has been expressed that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment.

Principal routes of exposure are by accidental skin and eye contact and inhalation of generated dusts.

Prolonged use of purgatives/ laxatives may produce watery diarrhoea with excessive loss of water and electrolytes (particularly potassium), muscular weakness and weight loss. Changes in intestinal musculature associated with malabsorption, and dilation of the bowel, similar to ulcerative colitis and to megacolon may also result. Cardiac and renal symptoms have also been reported.

In industrial situations, long-term, repeated exposure to high levels of dust will lead to chronic non-specific lung disease (ILO Encyclopaedia).

Indiscriminate use of phenolphthalein results in chronic constipation and laxative dependence, loss of normal bowel function, and bowel irritation.

Habitual use over several years may cause a "cathartic colon", i.e., a poorly functioning, atonic dilation of the colon, especially of the right side, resulting in extensive bowel retention. This condition resembles chronic ulcerative colitis both radiologically and pathologically, involves thinning of the intestinal wall and loss of the normal mucosal pattern of the terminal ileum. Long term use or overdose have been associated, anecdotally, with abdominal pain, diarrhoea, electrolyte imbalance (hypokalaemia, hypocalcaemia, and/ or metabolic acidosis or alkalosis), dehydration, malabsorption, protein-losing gastroenteropathy, steatorrhea, anorexia, weight loss, polydipsia, polyuria, cardiac arrhythmias, muscle weakness, prostration and histopathologic lesions. Kidney, muscle, and central nervous system disturbances may be due to electrolyte imbalance. Hypokalaemia contributes to kidney dysfunction associated with rhabdomyolysis (muscle wasting).

Phenolphthalein allergy is often manifested by inflammatory reactions of the skin. In extreme cases recurrences involve progressively more severe lesions characterised by bullous erythema multiforme, with focal haemorrhage and necrosis. Cross-sensitivity reactions in individuals previously sensitised by phthalic anhydride and its congeners, might be the subject of speculation.

Phenolphthalein has weak oestrogen activity, in fashion similar to that said to be exerted by other phthalates. Phenolphthalein competes with oestrogen for binding sites on cultured MCF-7 human breast cancer cells. In a study conducted in Melbourne, Australia, with 1408 subjects, there was no statistically significant increased risk of colorectal cancer in phenolphthalein laxative users (Kune, 1993). Under the conditions of a 2-year feed study using male rats, there was clear evidence of carcinogenic activity based on a marked increased in the incidence of benign

# PHENOLPHTHALEIN

GHS Safety Data Sheet

Version No:1

Page 10 of 11

## Section 11 - TOXICOLOGICAL INFORMATION

pheochromocytomas of the adrenal medulla, and of renal tubule adenomas, and adenomas or carcinomas (combined). There was some evidence of carcinogenic activity of phenolphthalein in female rats. There was clear evidence in male mice of carcinogenic activity based on increased incidences of histiocytic sarcomas and of malignant lymphomas of thymic origin. In female mice there was also clear evidence of carcinogenic activity based on increased incidences of histiocytic sarcomas, malignant tumours of all types, lymphomas of thymic origin, and benign sex-cord stromal tumours of the ovary.

National Toxicological Program, Technical Reports Series, No. 465, 1996

### TOXICITY AND IRRITATION

#### TOXICITY

Oral (rat) LD: >1000 mg/kg

Oral (human) TDLo: 29 mg/kg

Oral (rat) TDLo: 324000 mg/kg/13W- C

WARNING: This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.

#### IRRITATION

Nil Reported

## Section 12 - ECOLOGICAL INFORMATION

No data for phenolphthalein.

## Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
  - Consult State Land Waste Management Authority for disposal.
  - Bury residue in an authorised landfill.
  - Recycle containers if possible, or dispose of in an authorised landfill.
- Treat as chemical laboratory waste.

## Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS:UN, IATA, IMDG

## Section 15 - REGULATORY INFORMATION

### REGULATIONS

phenolphthalein (CAS: 77-09-8) is found on the following regulatory lists;  
International Agency for Research on Cancer (IARC) Carcinogens

No data available for phenolphthalein as CAS: 546094-13-7, CAS: 467-29-8, CAS: 57214-20-7, CAS: 390417-24-0.

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# PHENOLPHTHALEIN

GHS Safety Data Sheet

Version No:1

Page 11 of 11

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## Section 16 - OTHER INFORMATION

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### Denmark Advisory list for selfclassification of dangerous substances

| Substance       | CAS       | Suggested codes |
|-----------------|-----------|-----------------|
| phenolphthalein | 77- 09- 8 | Xn; R22         |

### INGREDIENTS WITH MULTIPLE CAS NUMBERS

| Ingredient Name | CAS                                                                |
|-----------------|--------------------------------------------------------------------|
| phenolphthalein | 77- 09- 8, 546094- 13- 7, 467 - 29- 8, 57214- 20- 7, 390417- 24- 0 |

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: 30-Aug-2017