MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY INFORMATION

- **Product name:** X-Gal Staining Kit
- **Catalog number:** GX10003
- **Contact:**

OZ Biosciences
Parc Scientifique de Luminy – Zone Luminy Entreprises
163 Avenue de Luminy – Case 922
13288 Marseille cedex 9, France
Phone: +33 (0)4.86.94.85.16 / Fax: +33 (0)4.86.94.85.15
www.ozbiosciences.com / contact@ozbiosciences.com

KIT CONTENT

Content

- **Fixing Buffer**: formaldehyde, glutaraldehyde, PBS.
- **Staining Buffer**: potassium ferricyanide, potassium ferrocyanide Magnesium Chloride in PBS
- **10X PBS**
- **25X X-Gal stock solution** : 5-bromo-4-chloro-3-indoyl-β-D-Galactopyranoside in DMF

MSDS: Fixing Buffer

SECTION 2 – HAZARDS IDENTIFICATION

OSHA/HCS status
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

· Classification of the substance or mixture

GHS08 health hazard

Resp. Sens. 1 **H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.**
Muta. 2 **H341 Suspected of causing genetic defects.**

Carc. 1 **H350 May cause cancer.**

GHS05 corrosion
Eye Dam. 1 **H318 Causes serious eye damage.**

GHS07
Skin Irrit. 2 H315 Causes skin irritation.
Skin Sens. 1 H317 May cause an allergic skin reaction.

Label elements
GHS label elements The *product is classified and labelled according to the Globally Harmonised System (GHS).*
Hazard pictograms

GHS05

GHS08

Signal word: **Danger!**

Hazard-determining components of labelling:
Glutaraldehyde
formaldehyde

Hazard statements
Causes skin irritation.
Causes serious eye damage.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
Suspected of causing genetic defects.
May cause cancer.

· Precautionary statements
[In case of inadequate ventilation] wear respiratory protection.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Wear protective gloves.
Wear eye protection / face protection.
Wash thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Immediately call a POISON CENTER/doctor.
Specific treatment (see on this label).
If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
Wash contaminated clothing before reuse.
IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF exposed or concerned: Get medical advice/attention.

If skin irritation or rash occurs: Get medical advice/attention.
IF ON SKIN: Wash with plenty of water.
Take off contaminated clothing and wash it before reuse.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· Other hazards
· Results of PBT and vPvB assessment
· PBT: Not applicable.
· vPvB: Not applicable

SECTION 3 – COMPOSITION, INFORMATION ON INGREDIENTS AND CLASSIFICATION

Ingredient name	CAS number	EINECS	%
Formaldehyde	50-00-0	200-001-8	<15%
Glutaraldehyde	111-30-8	203-856-5	<30%

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Formaldehyde: Acute toxicity, Oral (Category 3) ; Acute toxicity, Inhalation (Category 3) ; Acute toxicity, Dermal (Category 3) ; Skin corrosion (Category 1B) ; Skin sensitization (Category 1) ; Carcinogenicity (Category 2) ; Specific target organ toxicity - single exposure (Category 1) ; Specific target organ toxicity - single exposure (Category 3)

Glutaraldehyde: Acute toxicity, Oral (Category 4); Acute toxicity, Inhalation (Category 4); Skin corrosion (Category 1B); Respiratory sensitization (Category 1); Skin sensitization (Category 1); Specific target organ toxicity - single exposure (Category 3); Acute aquatic toxicity (Category 1).

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Formaldehyde : Toxic by inhalation, in contact with skin and if swallowed. Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed. Causes burns. Limited evidence of a carcinogenic effect. May cause sensitization by skin contact.

Glutaraldehyde : Toxic by inhalation. Causes burns. Harmful if swallowed. May cause sensitization by inhalation and skin contact. Very toxic to aquatic organisms.

SECTION 4 – FIRST AID MEASURES

- **Effects and symptoms:**
  - *Inhalation* — Toxic if inhaled. May cause respiratory irritation, allergy, asthma symptoms or breathing difficulties.
  - *Ingestion* — Toxic if swallowed.
  - *Skin and eye contact* — Causes severe skin burns and eye damage. May cause an allergic skin reaction.
  - *Aggravating conditions* — Repeated or prolonged exposure is not known to aggravate medical conditions.

- **First-Aid measures:**
  - *Inhalation* — If inhaled, remove to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately.
  - *Ingestion* — Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.
  - *Skin contact* — In case of contact, immediately flush skin with plenty of water while removing contaminated clothing and shoes. Wash clothes before reuse. Get medical attention immediately.
  - *Eye contact* — In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.
  - *Notes to physician* — Not available.
  - *Protection of first-aiders* — Not available.

SECTION 5 – FIRE FIGHTING MEASURES

- **Flammability of the product:** May be combustible at high temperature.
- **Flash Point:** Not available.
- **Fire hazards in presence of various substances:** Not considered to be flammable.
- **Fire fighting media and instructions:** Use dry chemical, CO2, water spray or foam.
- **Protective clothing (fire):** Be sure to use an approved/certified respirator or equivalent.
- **Hazardous thermal decomposition products:** Burning produces irritant fumes (nitrogen oxides, carbon oxides, halogens).

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Not required.
Environmental precautions:
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.
Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation**.**
Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.

SECTION 7 – HANDLING AND STORAGE

- **Handling:** Avoid breathing vapors or spray mists. Use only in area provided with appropriate exhaust ventilation. Wear personal protective equipment.
- **Storage:** Keep container tightly closed. Store at +4°C. Protect from light.
- **Intended use:** Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific application.
- **Packaging materials**
  Suitable: Use original container.

SECTION 8 – EXPOSURE CONTROLS, PERSONAL PROTECTION

- **Engineering Controls**: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Control parameters
· Ingredients with limit values that require monitoring at the workplace:
111-30-8 Glutaraldehyde
NES Peak limitation: 0.41 mg/m³, 0.1 ppm
Sen
50-00-0 formaldehyde
NES Short-term value: 2.5 mg/m³, 2 ppm
Long-term value: 1.2 mg/m³, 1 ppm
Sen

. **Additional information:** The lists valid during the making were used as basis

- **Personal protection**
  - **Eyes:** Safety glasses.
  - **Body:** Lab coat and gloves.
  - **Respiratory:** Respirator is not needed under normal and intended conditions of use, if exposures are kept below established limits.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance**
  - **Physical State:** Liquid.
  - **Color:** colorless.
  - **Odor:** odorless.
  - **Taste:** Not available.

- **pH:** Not available
- **Boiling point:** Not available
- **Decomposition temperature:** Not available
- **Flash point:** Not available.
- **Solubility:** Soluble in water.

SECTION 10 – STABILITY AND REACTIVITY

- **Stability and reactivity:** The product is stable under recommended storage conditions.
- **Conditions to avoid**: Exposure to light and moisture over prolonged periods, heat, flames, ignition sources.
- **Materials to avoid:** Strong acids, strong bases, strong oxidizing agents.
- **Hazardous polymerization:** Will not occur.
- **Hazardous decomposition products:** Carbon oxides, Nitrogen oxides (NOx), halogens.

SECTION 11 – TOXICOLOGICAL INFORMATION

Formaldehyde

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.
Toxicity to Animals:
Acute oral toxicity (LD50): 42 mg/kg [Mouse]. Acute dermal toxicity (LD50): 15800 mg/kg [Rabbit]. Acute toxicity of the mist(LC50): 454000 mg/m 4 hours [Mouse].
Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH, 2A (Probable for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Classified POSSIBLE for human. DEVELOPMENTAL TOXICITY: Not available May cause damage to the following organs: kidneys, liver, central nervous system (CNS).
Other Toxic Effects on Humans:
Very hazardous in case of ingestion, . Hazardous in case of skin contact (irritant, sensitizer, permeator), of eye contact (corrosive), of inhalation (lung corrosive). Slightly hazardous in case of skin contact (corrosive).
Special Remarks on Toxicity to Animals:
Formaldehyde: LD50 [Rabbit] - Route: Skin; Dose: 270 ul/kg
Special Remarks on Chronic Effects on Humans:
Exposure to Formaldehyde may affect genetic material (mutagenic). Exposure to Formaldehyde may cause adverse reproductive effects and birth defects (teratogenic). Adverse reproductive effects of Formaldehyde are primarily based on animal studies. Very few human studies have been done on the adverse reproductive effects from exposure to Formaldehyde. Studies produced a weak association (limited evidence) between advese human female reproductive effects and occupational exposure. Exposure to Formaldehyde may cause cancer.

Glutaraldehyde

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.
Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 100 mg/kg [Mouse]. Acute dermal toxicity (LD50): >2500 mg/kg [Rat]. Acute toxicity of the vapor (LC50): 480 mg/m 4 hours [Rat]. 3
Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A4 (Not classifiable for human or animal.) by ACGIH. MUTAGENIC
EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast.
DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED]. Contains material which may cause damage to the following organs: blood, the reproductive system, liver,
mucous membranes, spleen, central nervous system (CNS), Urinary system.
Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of ingestion, of inhalation (lung irritant, lung sensitizer). Slightly hazardous in case of skin contact (sensitizer, permeator).
Special Remarks on Toxicity to Animals:
Acute Toxicity: LD50 [Rabbit] dermal: Dose: 560 ul/kg. Reproductive Effects: TDL [male Rat] oral: Dose: 875 mg/kg given 35 days prior to mating TDL [female rat] oral: Dose 4370 mg/kg given 35 days prior to mating. (Glutaraldehyde)
Special Remarks on Chronic Effects on Humans:
May affect genetic material. Reproductive Effects in animals (rat): Paternal effects: testes, epididymis, sperm duct, prostate, seminal vesicle, Cowper's gland, accessory. Maternal effects: uterus, cervix, vagina (Glutaraldehyde)

SECTION 12 – ECOLOGICAL INFORMATION

Toxicity
· **Aquatic toxicity**: No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behaviour in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Ecotoxical effects:**
· **Remark**: Toxic for fish
· **Additional ecological information:**
· **General notes:**
Water hazard class 3 (German Regulation) (Self-assessment): extremely hazardous for water
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
Toxic for aquatic organisms
· **Results of PBT and vPvB assessment**
· **PBT**: Not applicable.
· **vPvB**: Not applicable.
· **Other adverse effects** No further relevant information available.

SECTION 13 – DISPOSAL CONSIDERATIONS

- **Waste stream:** Not available.
- **Waste disposal method**: Contact a licensed professional waste disposal service to dispose of this material. Dispose in accordance with governmental environmental regulations. Observe all federal, state, and local environmental regulations.
- **European waste catalogue (EWC):** Not available.
- **Hazardous waste:** Will not occur.

SECTION 14 – TRANSPORT INFORMATION

· **UN-Number**	
· **ADG, IMDG, IATA**	UN1760
· **UN proper shipping name**	
· ADG	1760 CORROSIVE LIQUID, N.O.S. (Glutaraldehyde)
· IMDG	CORROSIVE LIQUID, N.O.S. (Glutaraldehyde)
· IATA	Corrosive liquids, n.o.s. (Glutaraldehyde)
· **Transport hazard class(es)**	
· **ADG, IMDG, IATA**	
· Class	8 Corrosive substances.
· Label	8
· **Packing group**	
· **ADG, IMDG, IATA**	III
· **Environmental hazards:**	Not applicable.
· **Special precautions for user**	Warning: Corrosive substances.
· **Danger code (Kemler):**	80
· **EMS Number**:	F-A,S-B
· **Segregation groups**	Acids
· **Stowage Category**	A
· **Stowage Code**	SW2 Clear of living quarters.
· **Transport in bulk according to Annex II of Marpol and the IBC Code**	Not applicable.
· **Transport/Additional information:**	
· **ADG**	
· **Limited quantities (LQ)**	5L
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· **Transport category**	3
· **Tunnel restriction code**	E
· IMDG	
· **Limited quantities (LQ)**	5L
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· **UN "Model Regulation**":	U N 1 7 6 0 C O R R O S I V E L I Q U I D , N . O . S . (GLUTARALDEHYDE), 8, III

SECTION 15 – REGULATORY INFORMATION

HCS Classification

Target organ effects
Fixing solution Highly toxic material
Corrosive material
Sensitizing material
Carcinogen
Target organ effects

U.S. Federal regulations :

TSCA 8(a) PAIR: Glutaral
TSCA 8(a) IUR: Partial exemption
TSCA 8(d) H and S data reporting: Glutaral

United States inventory (TSCA 8b): Not determined.

.

Clean Water Act (CWA) 311: Formaldehyde;
Clean Air Act (CAA) 112 regulated toxic substances: Formaldehyde
SARA 302/304/311/312 extremely hazardous substances: Formaldehyde
SARA 302/304 emergency planning and notification: Formaldehyde
SARA 302/304/311/312 hazardous chemicals: Formaldehyde

Clean Air Act Section
112(b) Hazardous Air
Pollutants (HAPs): Listed
Clean Air Act Section
602 Class I Substance: Not listed
Clean Air Act Section
602 Class II Substances: Not listed
DEA List I Chemicals
(Precursor Chemicals): Not listed
DEA List II Chemicals
(Essential Chemicals): Not listed

SARA 313

	Product Name	CAS Number	Concentration
Form R - Reporting requirements	Formaldehyde	50-00-0	10-30
Supplier notification	Formaldehyde	50-00-0	10-30

State Regulations:

California Prop. 65
WARNING: This product contains a chemical known to the State of California to cause cancer.

New York : The following components are listed; Formaldehyde
New Jersey : The following components are listed: Formaldehyde Formalin
Pennsylvania : The following components are listed: FORMALDEHYDE
Massachussets: The following components are listed: FORMALDEHYDE

SECTION 16 – OTHER INFORMATION

- **Hazardous Material Information System (U.S.A.):**

- **National Fire Protection Association (U.S.A.):**

0 = not significant
1 = slight
2 = moderate
3 = high
4 = extreme
* = chronic

- **Revisions:**

Issue Date: 22-May-2014
Last Revision Date: 29-Aug-2016
Revision note: New format. updated Section 2,8,15,16.

- **Other Comments:**

To the best of our knowledge, the information contain herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Restriction of use: for research use only.

MSDS: Staining Buffer

SECTION 2 – HAZARDS IDENTIFICATION

Potential Acute Health Effects: Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

- Potential Chronic Health Effects: N/A
- Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. CARCINOGENIC EFFECTS:
- Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL
- Toxicity: Not available.
- This product contains hazardous ingredients to the environment. (Yes; No; N/A): **No**

Classification of the substance or mixture

Classification (EC 1272/2008)

Physical and Chemical Hazards Not classified.
Human health EUH032
Environment Not classified.

Classification (1999/45/EEC) R32.

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

Human health

Warning - this preparation contains a substance not yet tested completely. Contact with acids liberates very toxic gas.

Environment

The product contains a substance which is harmful to aquatic organisms and which may cause long term adverse effects in the aquatic environment.

Label elements

Label In Accordance With (EC) No. 1272/2008

No pictogram required.

Precautionary Statements

P280 Wear protective clothing, gloves, eye and face protection.

Supplemental label information

EUH032 Contact with acids liberates very toxic gas.

Other hazards

This product does not contain any PBT or vPvB substances.

- **Effects and symptoms:**
  - *Inhalation* Slightly hazardous in case of inhalation.
  - *Ingestion* Slightly hazardous in case of ingestion.
  - *Skin contact* Slightly hazardous in case of skin contact.
  - *Eye contact* Slightly hazardous in case of eye contact.
  - *Aggravating conditions* no aggravating condition none..

- **First-Aid measures:**
  - *Inhalation* If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention immediately.
  - *Ingestion* Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.
  - *Skin contact* In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothes before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
  - *Eye contact* In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
  - *Notes to physician* Not available.
  - *Protection of first-aiders* Not available.

SECTION 3 – COMPOSITION, INFORMATION ON INGREDIENTS AND CLASSIFICATION

Proprietary mixture of ingredients in water

Ingredient name	CAS number	EINECS	%
Potassium ferricyanide	13746-66-2	237-323-3	<5%
Potassium ferrocyanide	14459-95-1	237-722-2	<5%
Magnesium Chloride	7791-18-6	232-094-6	<5%
Water			

Ingredients are not hazardous or their concentrations do not exceed the limit specified according to 29 CFR 1910.1200 Hazard Communication Standard (USA) and Directive 1999/45/EC-2001/59/EC (EU).

SECTION 4 – FIRST AID MEASURES

4Description of first aid measures

General information
Warning - this preparation contains a substance not yet tested completely. Get medical advice/attention if you feel unwell. Contact with acids liberates very toxic gas. IF exposed or concerned: Get medical advice/attention.
Inhalation
Due to the small packaging the risk of inhalation is minimal. Move into fresh air and keep at rest. Get medical attention if any discomfort continues.
Ingestion
Get medical attention if any discomfort continues.
Skin contact
Remove contaminated clothing. Wash skin thoroughly with soap and water for several minutes. Get medical attention promptly if symptoms occur after washing.
Eye contact
Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues

Most important symptoms and effects, both acute and delayed
Inhalation
No specific symptoms noted.
Ingestion
Not known. May cause discomfort if swallowed.
Skin contact
No specific symptoms noted.
Eye contact
Spray in the eyes: May cause temporary eye irritation.

Indication of any immediate medical attention and special treatment needed
The severity of the symptoms described will vary dependant of the concentration and the length of exposure. Warning - this preparation contains a substance not yet tested completely. Contact with acids liberates very toxic gas. Hydrogen cyanide (HCN).

SECTION 5 – FIRE FIGHTING MEASURES

- **Flammability of the product:** not flammable.
- **Flash Point:** N/A.
- **Fire hazards in presence of various substances:** N/A.
- **Fire fighting media and instructions:** SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
- **Protective clothing (fire):** Be sure to use an approved/certified respirator or equivalent.
- **Hazardous thermal decomposition products:** Carbon oxides, nitrogen oxides, sulfur oxides.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

- **Personal precautions:** Safety glasses, lab coat and gloves.
- **Environmental precautions and clean-up methods:** Absorb with an inert material and put the spilled material in an appropriate waste disposal. Finish cleaning by spreading water on the contaminated surface and allow evacuating through the sanitary system.
- **Small spill and leak:** Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.
- **Additional information:** No dangerous substances are released.

SECTION 7 – HANDLING AND STORAGE

- **Handling:** Avoid breathing vapors or spray mists.
- **Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area. Store at +4°C.
- **Intended use:** Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific application.
- **Packaging materials**
  Suitable: Use original container.

SECTION 8 – EXPOSURE CONTROLS, PERSONAL PROTECTION

- **Engineering Controls**: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station location.
- **Personal protection**
  - **Eyes:** Safety glasses.
  - **Body:** Lab coat and gloves.

- **Respiratory:** Respirator is not needed under normal and intended conditions of use, if exposures are kept below established limits.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance**
  - **Physical State:** Liquid.
  - **Color:** yellow.
  - **Odor:** Not available.
  - **Taste:** Not available.
- **Molecular weight:** Not available.
- **pH:** Between 4 and 11
- **Boiling point:** 100°C.
- **Decomposition temperature:** 100°C.
- **Melting point:** Not available.
- **Flash point:** Not available.
- **Dispersion properties:** Not available.
- **Solubility:** miscible in water.

SECTION 10 – STABILITY AND REACTIVITY

- **Stability and reactivity:** The product is stable at a pH between 4 and 11
- **Conditions to avoid**: pH < 4 and pH > 11, using temperatures < + 2°C and > + 96°C
- **Materials to avoid:** Strong acids, strong bases and pure organic solvents.
- **Hazardous polymerization:** Will not occur.
- **Hazardous decomposition products:** Not available.

SECTION 11 – TOXICOLOGICAL INFORMATION

Information on toxicological effects

Toxicological information
Warning - this preparation contains a substance not yet tested completely.
Other Health Effects
Contact with acids liberates very toxic gas. Hydrogen cyanide (HCN).
Acute toxicity:
Acute Toxicity (Oral LD50)
No information available.
Based on available data the classification criteria are not met.
Acute Toxicity (Dermal LD50)
No information available.
Based on available data the classification criteria are not met.
Acute Toxicity (Inhalation LC50)
No information available.
Based on available data the classification criteria are not met.
Skin Corrosion/Irritation:
Based on available data the classification criteria are not met.
Serious eye damage/irritation:
Based on available data the classification criteria are not met.
Respiratory or skin sensitisation:
Respiratory sensitisation
No information available.
Based on available data the classification criteria are not met.
Skin sensitisation
No information available.
Based on available data the classification criteria are not met.
Germ cell mutagenicity:
Genotoxicity - In Vitro
No information available.
Based on available data the classification criteria are not met.
Carcinogenicity:
Carcinogenicity
No information available.
Based on available data the classification criteria are not met.
Reproductive Toxicity:
Reproductive Toxicity - Fertility
No information available.
Based on available data the classification criteria are not met.
Reproductive Toxicity - Development

No information available.
Based on available data the classification criteria are not met.
Specific target organ toxicity - single exposure:
STOT - Single exposure
No information available.
Based on available data the classification criteria are not met.
Specific target organ toxicity - repeated exposure:
STOT - Repeated exposure
No information available.
Based on available data the classification criteria are not met.
Aspiration hazard:
Not anticipated to present an aspiration hazard based on chemical structure.

Toxicological information on ingredients.

POTASSIUM FERROCYANIDE (CAS: 14459-95-1)

Toxicological information
CAUTION! Contact with acids liberates very toxic gas. Hydrogen cyanide (HCN).
Acute toxicity:
Acute Toxicity (Oral LD50)
3613 mg/kg Rat
IUCLID data sheet.
Based on available data the classification criteria are not met.
Acute Toxicity (Dermal LD50)
No information available.
*Based on available data the classification criteria are not met***.**
Acute Toxicity (Inhalation LC50)
> 1000 mg/m3 Rat 4 hours
IUCLID data sheet.
Limited information on study available. No reported deaths occurred. Based on available data the classification criteria are not met.

Skin Corrosion/Irritation:
Dose
(Dose and duration unstated) Rabbit
IUCLID data sheet.
Not irritating. Based on available data the classification criteria are not met.
Serious eye damage/irritation:
Slightly Irritating. Based on available data the classification criteria are not met.
Respiratory or skin sensitisation:
Respiratory sensitisation
No information available.
Based on available data the classification criteria are not met.
Skin sensitisation
Guinea pig maximization test (GPMT): Guinea Pig
IUCLID data sheet.
Not Sensitising. Based on available data the classification criteria are not met.
Germ cell mutagenicity:
Genotoxicity - In Vitro
DNA damage and/or repair:
IUCLID data sheet.
Negative.
Based on available data the classification criteria are not met.
Genotoxicity - In Vivo
No information available.
Based on available data the classification criteria are not met.

Carcinogenicity:
Carcinogenicity
(Dose and duration unstated) Oral Rat
IUCLID data sheet.
Is not expected to be carcinogenic, based on results of related chemicals in animal studies Based on available data the classification criteria are not met.
Reproductive Toxicity:
Reproductive Toxicity - Fertility
No information available.
Based on available data the classification criteria are not met.
Reproductive Toxicity - Development
Teratogenicity: NOAEL =<0.036 ppm Inhalation. Rat
Delivered in aerosol form, 24 hours a day for an unknown duration. Insufficient data presented and test not conducted to OECD guidelines.
IUCLID data sheet.
Data lacking..

Specific target organ toxicity - single exposure:
STOT - Single exposure
No information available.
Not classified as a specific target organ toxicant after a single exposure.
Specific target organ toxicity - repeated exposure:
STOT - Repeated exposure
No information available.
Not classified as a specific target organ toxicant after repeated exposure.
Aspiration hazard:
Viscosity
Not applicable.
Not anticipated to present an aspiration hazard based on chemical structure.

POTASSIUM FERRICYANIDE (CAS: 13746-66-2)
Toxicological information
CAUTION! Contact with acids liberates very toxic gas. Hydrogen cyanide (HCN).

Acute toxicity:
Acute Toxicity (Oral LD50)
2970 mg/kg Mouse
Supplier Safety Data Sheet
Based on available data the classification criteria are not met.
Acute Toxicity (Dermal LD50)
No information available.
Based on available data the classification criteria are not met.
Acute Toxicity (Inhalation LC50)
No information available.
Based on available data the classification criteria are not met.

Skin Corrosion/Irritation:
Data lacking. Based on available data the classification criteria are not met.
Serious eye damage/irritation:
Data lacking. Based on available data the classification criteria are not met.
Respiratory or skin sensitisation:
Respiratory sensitisation
No information available.
Based on available data the classification criteria are not met.
Skin sensitisation
No information available.
Based on available data the classification criteria are not met.
Germ cell mutagenicity:
Genotoxicity - In Vitro
No information available.
Based on available data the classification criteria are not met.
Genotoxicity - In Vivo
No information available.
Based on available data the classification criteria are not met.
Carcinogenicity:
Carcinogenicity
No information available.
Based on available data the classification criteria are not met.
Reproductive Toxicity:
Reproductive Toxicity - Fertility
No information available.
Based on available data the classification criteria are not met.
Reproductive Toxicity - Development
No information available.
Based on available data the classification criteria are not met.
Specific target organ toxicity - single exposure:
STOT - Single exposure
No information available.
Not classified as a specific target organ toxicant after a single exposure.
Specific target organ toxicity - repeated exposure:
STOT - Repeated exposure
No information available.
Not classified as a specific target organ toxicant after repeated exposure.

Aspiration hazard:
Viscosity
Not applicable.
Not anticipated to present an aspiration hazard based on chemical structure

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity
The product contains a substance which is harmful to aquatic organisms and which may cause long term adverse effects in the aquatic environment.

Toxicity
Acute Fish Toxicity
Not considered toxic to fish.

Ecological information on ingredients.

POTASSIUM FERROCYANIDE (CAS: 14459-95-1)
Acute Toxicity - Fish
LC50 96 hours 19 mg/l Poecilia reticulata (Guppy)
IUCLID data sheet.
LC50 96 hours > 100 mg/l Pimephales promelas (Fat-head Minnow)
IUCLID data sheet.
Acute Toxicity - Aquatic Invertebrates
EC50 96 hours 32 mg/l Daphnia magna
IUCLID data sheet.
Acute Toxicity - Microorganisms
NOEC ~ 47 mg/l Activated sludge
IUCLID data sheet.

POTASSIUM FERRICYANIDE (CAS: 13746-66-2)
Acute Toxicity - Fish
LC50 96 hours 869 mg/l Onchorhynchus mykiss (Rainbow trout)
Supplier Safety Data Sheet
Acute Toxicity - Aquatic Invertebrates
EC50 48 hours 549 mg/l Daphnia magna
Supplier Safety Data Sheet

Persistence and degradability
Degradability
There are no data on the degradability of this product.

Ecological information on ingredients.

POTASSIUM FERROCYANIDE (CAS: 14459-95-1)
Degradability
Not Applicable - Inorganic chemical.
IUCLID data sheet.
Decomposition products: Hydrogen cyanide (HCN). Iron salts.

POTASSIUM FERRICYANIDE (CAS: 13746-66-2)
Degradability
Not Applicable - Inorganic chemical.

Bioaccumulative potential
No data available on bioaccumulation.
Partition coefficient
Not determined.

Ecological information on ingredients.

POTASSIUM FERROCYANIDE (CAS: 14459-95-1)
Bioaccumulative potential
No data available on bioaccumulation.

POTASSIUM FERRICYANIDE (CAS: 13746-66-2)
Bioaccumulative potential
No data available on bioaccumulation.

Mobility in soil
Mobility:
The product is soluble in water.

Ecological information on ingredients.

POTASSIUM FERROCYANIDE (CAS: 14459-95-1)
Mobility:
Soluble in water.

POTASSIUM FERRICYANIDE (CAS: 13746-66-2)
Mobility:
Soluble in water.

SECTION 13 – DISPOSAL CONSIDERATIONS

- **Waste stream:** Not available.
- **Waste disposal method**: Contact a licensed professional waste disposal service to dispose of this material. Dispose in accordance with governmental environmental regulations. Observe all federal, state, and local environmental regulations.
- **European waste catalogue (EWC):** Not available.
- **Hazardous waste:** Will not occur.

SECTION 14 – TRANSPORT INFORMATION

Note Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

D.O.T.: Not regulated.

IATA.: Not regulated.

IMDG: Not regulated.

SECTION 15 – REGULATORY INFORMATION

- **US Federal Regulations**

RCRA (Lists of Hazardous Wastes, 40 CFR 261 Subpart D): Not applicable

CLEAN AIR ACT (SEC. 112. Hazardous Air Pollutants): Not applicable

CLEAN WATER ACT (RQ, 40 CFR): Not applicable

SARA Title III:
Section 302 -304, 40 CFR 355: Components present in this product at a level which could require reporting are: none.
Section 311 - 312: Components present in this product at a level which could require reporting are: none.
Section 313: Not applicable

TSCA Section 8(b) Inventory Status: All ingredients are listed on TSCA Inventory of Chemical Substances or exempt from TSCA Inventory requirements.

AICS Inventory Status: All ingredients are listed on the Australia Inventory of Chemical Substances.

State Lists

This product does not contain any Proposition 65 chemicals.

- This product is not classified according to the EU regulations.

SECTION 16 – OTHER INFORMATION

- **Hazardous Material Information System (U.S.A.)**

Health	2
Fire	0
Reactivity	0
Personal Protection	E

- **National Fire Protection Association (U.S.A.):**

0 = not significant
1 = slight
2 = moderate
3 = high
4 = extreme
* = chronic

- **Revisions:**

Issue Date: 22-May-2014
Last Revision Date: 29-Aug-2016
Revision note: New format. updated Section 2,8,15,16.

- **Other Comments:**

To the best of our knowledge, the information contain herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Restriction of use: for research use only.

SECTION 2 – HAZARDS IDENTIFICATION

· Classification of the substance or mixture:

GHS02 Flame
Flam. Liq. 3 H226 Flammable liquid and vapor.

GHS08 Health hazard
Repr. 1B H360 May damage fertility or the unborn child.

GHS07
Eye Irrit. 2A H319 Causes serious eye irritation. ·

Label elements
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS). ·

Hazard pictograms


GHS02

GHS07

GHS08

· Signal word **DANGER**

· Hazard-determining components of labeling: **N,N-dimethylformamide**

· Hazard statements
Flammable liquid and vapor. Causes serious eye irritation. May damage fertility or the unborn child. ·

Precautionary statements
Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use explosion-proof electrical/ventilating/lighting/equipment. Wear protective gloves / eye protection / face protection. Ground/bond container and receiving equipment. Keep container tightly closed. Use only non-sparking tools. Take precautionary measures against static discharge. Wash thoroughly after handling. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
In case of fire: Use for extinction: CO2, powder or water spray.
Store locked up. Store in a well-ventilated place. Keep cool.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· Other hazards
· Results of PBT and vPvB assessment ·
PBT: Not applicable. · vPvB: Not applicable.

SECTION 3 – COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient name	CAS number	EINECS	%
5-bromo-4-chloro-3-indolyl-β-D-galactopyranoside	7240-90-6	-	<5%
N,N-dimethyformamide	68-12-2	200-679-5	

N,N-Dimethylformamide: ORAL (LD50): Acute: 2800 mg/kg [Rat]. 2900 mg/kg [Mouse].5000 mg/kg [Rabbit]. DERMAL (LD50): Acute: 4720 mg/kg [Rabbit].

SECTION 4 – FIRST AID MEASURES

- **Effects and symptoms:**
  - *Inhalation* May cause irritation to the respiratory tract. Symptoms may include coughing, sore throat, difficult breathing and chest pain.
  - *Ingestion* May be harmful if swallowed. Symptoms may include nausea, vomiting and diarrhea.
  - *Skin contact* May cause irritation with redness and pain. May be absorbed through the skin with possible systemic effects.
  - *Eye contact* May cause irritation, redness and pain.
  - *Aggravating conditions* Repeated or prolonged exposure is not known to aggravate medical conditions.

- **First-Aid measures:**
  - *Inhalation* If inhaled, remove to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately.
  - *Ingestion* Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.
  - *Skin contact* In case of contact, immediately flush skin with plenty of water while removing contaminated clothing and shoes. Wash clothes before reuse. Get medical attention immediately.
  - *Eye contact* In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.
  - *Notes to physician* Not available.
  - *Protection of first-aiders* Not available.

SECTION 5 – FIRE FIGHTING MEASURES

- **Flammability of the product:** May be combustible at high temperature.
- **Flash Point:** Not available.
- **Fire hazards in presence of various substances:** Not considered to be flammable.
- **Fire fighting media and instructions:** Use dry chemical, CO2, water spray or foam.
- **Protective clothing (fire):** Be sure to use an approved/certified respirator or equivalent.
- **Hazardous thermal decomposition products:** Burning produces irritant fumes (nitrogen oxides, carbon oxides, halogens).

SECTION 6 – ACCIDENTAL RELEASE MEASURES

· Personal precautions, protective equipment and emergency procedures

Not required.

· Environmental precautions:

Do not allow product to reach sewage system or any water course. Inform respective authorities in case of seepage into water course or sewage system. Do not allow to enter sewers/ surface or ground water.

· Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). Dispose contaminated material as waste according to item 13. Ensure adequate ventilation.

· Reference to other sections

See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment.

SECTION 7 – HANDLING AND STORAGE

- **Handling:** Avoid breathing vapors or spray mists. Use only in area provided with appropriate exhaust ventilation. Wear personal protective equipment.
- **Storage:** Keep container tightly closed. Store at – 20°C. Protect from light.
- **Intended use:** Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific application.
- **Packaging materials**
  Suitable: Use original container.

SECTION 8 – EXPOSURE CONTROLS, PERSONAL PROTECTION

Components with limit values that require monitoring at the workplace:

CAS: 68-12-2 N,N-dimethylformamide

PEL Long-term value:	30 mg/m³, 10 ppm Skin
REL Long-term value:	30 mg/m³, 10 ppm Skin
TLV Long-term value:	30 mg/m³, 10 ppm Skin; BEI

·Ingredients with biological limit values:

	CAS: 68-12-2 N,N-dimethylformamide
BEI	15 mg/L
Medium:	urine
Time:	end of shift
Parameter:	N-Methylformamide
	40 mg/L
Medium:	urine
Time:	prior to last shift of workweek
Parameter:	N-Acetyl-S-(N-methylcarbamoyl) cysteine (semi-quantitative)
· Additional information:	The lists that were valid during the creation were used as basis. (Contd. on page 5)US

· Exposure controls
· Personal protective equipment:
· General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Store protective clothing separately. Avoid contact with the eyes. Avoid contact with the eyes and skin. ·
Breathing equipment:
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
· Protection of hands:
Protective gloves
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. ·

Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed**.** ·
Eye protection:
Tightly sealed goggles

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance**
  - **Physical State:** Liquid.
  - **Color:** Yellow.
  - **Odor:** Not available.
  - **Taste:** Not available.

- **Molecular weight:** Not available.
- **Molecular formula:** Not available
- **pH:** Not available
- **Melting point:** Not available.
- **Decomposition temperature:** Not available
- **Flash point:** Not available.
- **Solubility:** Soluble in water.

SECTION 10 – STABILITY AND REACTIVITY

- **Stability and reactivity:** The product is stable under recommended storage conditions.
- **Conditions to avoid**: Exposure to light and moisture over prolonged periods, heat, flames, ignition sources.
- **Materials to avoid:** Strong acids, strong bases, strong oxidizing agents.
- **Hazardous polymerization:** Will not occur.
- **Hazardous decomposition products:** Carbon oxides, Nitrogen oxides (NOx), halogens.
- **Remarks on reactivity:** N,N-dimethylformamide can react vigorously with oxidizing agents, halogenated hydrocarbons, and inorganic nitrates. Incompatible with carbon tetrachloride, alkyl aluminums, sodium tetrahydroborate, nitrates, chromic acid, diisocyanatomethane, triethylaluminum, sodium hydride, lithium azide, metallic sodium, bromine, magnesium nitrate, potassium permanganate, nitric acid, chromium trioxide, borohydrides, phosphorus trioxide, diborane, octafluoroisobutyrate, sodium nitrite, perchloryl fluoride, postassium methyl 4,4'-dinitrobutyrate. Reaction with inorganic acid chlorides, such as phosphorous oxychloride and thionyl chloride, may form dimethylcarbamoyl, a

suspect carcinogen. May release dimethylamine and carbon monoixde if heated above 350 C (662F).

SECTION 11 – TOXICOLOGICAL INFORMATION

·Information on toxicological effects
· Acute toxicity:

· LD/LC50 values that are relevant for classification:
CAS: 68-12-2 N,N-dimethylformamide
Oral LD50 2800 mg/kg (rat)
Dermal LD50 4720 mg/kg (rabbit)
Inhalative LC50/4 h 9400 mg/l (mouse)

· Primary irritant effect:
on the skin: No irritant effect. ·
on the eye: Irritating effect. ·
Sensitization: No sensitizing effects know**n. ·**
Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful Irritant

Carcinogenic categories

·IARC (International Agency for Research on Cancer)	CAS: 68-12-2 N,N-dimethylformamide 3
NTP (National Toxicology Program)	None of the ingredients is listed.
OSHA-Ca (Occupational Safety & Health Administration)	None of the ingredients is listed**.**

SECTION 12 – ECOLOGICAL INFORMATION

Toxicity
Aquatic toxicity: No further relevant information available. ·
Persistence and degradability No further relevant information available.
Behavior in environmental systems:
Bioaccumulative potential No further relevant information available. ·
Mobility in soil No further relevant information available.
Additional ecological information:
·**General notes:**
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. ·

Results of PBT and vPvB assessment · PBT: Not applicable. **· vPvB:** Not applicable.

SECTION 13 – DISPOSAL CONSIDERATIONS

- **Waste stream:** Not available.
- **Waste disposal method**: Contact a licensed professional waste disposal service to dispose of this material. Dispose in accordance with governmental environmental regulations. Observe all federal, state, and local environmental regulations.
- **European waste catalogue (EWC):** Not available.
- **Hazardous waste:** Will not occur.

SECTION 14 – TRANSPORT INFORMATION

UN-Number
DOT, IMDG, IATA UN2265
UN proper shipping name
DOT N,N-Dimethylformamide mixture
IMDG, IATA N,N-DIMETHYLFORMAMIDE mixture

Transport hazard class(es)
DOT
Class 3 Flammable liquids
Label 3

IMDG, IATA
Class 3 Flammable liquids
Label 3
Packing group
DOT, IMDG, IATA III

Environmental hazards:	Not applicable. ·
Special precautions for user	Warning: Flammable liquids
Danger code (Kemler):	30
EMS Number:	F-E,S-D
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable**.**
Transport/Additional information:	
DOT	
Quantity limitations	On passenger aircraft/rail: 60 L On cargo aircraft only: 220 L
IMDG	
Limited quantities (LQ)	5L
Excepted quantities (EQ)	Code: E1
Maximum net quantity per inner packaging:	30 m**l**
Maximum net quantity per outer packaging:	1000 ml
UN "Model Regulation":	**UN** 2265 N,N-DIMETHYLFORMAMIDE MIXTURE, 3, **III**

SECTION 15 – REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture
Sara
Section 355 (extremely hazardous substances):
None of the ingredients is listed. ·
Section 313 (Specific toxic chemical listings):
CAS: 68-12-2 N,N-dimethylformamide
TSCA (Toxic Substances Control Act):
CAS: 68-12-2 N,N-dimethylformamide

Proposition 65
Chemicals known to cause cancer:
None of the ingredients is listed.
Chemicals known to cause reproductive toxicity for females:
None of the ingredients is listed.
Chemicals known to cause reproductive toxicity for males:
None of the ingredients is listed.
Chemicals known to cause developmental toxicity:
None of the ingredients is listed.

Carcinogenic categories
EPA (Environmental Protection Agency)
None of the ingredients is listed.
TLV (Threshold Limit Value established by ACGIH)
CAS: 68-12-2 N,N-dimethylformamide

NIOSH-Ca (National Institute for Occupational Safety and Health)
None of the ingredients is listed.
GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS). ·

Label elements
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS). ·

Hazard pictograms


GHS02

GHS07

GHS08

· **Signal word** **DANGER**

· Hazard-determining components of labeling: **N,N-dimethylformamide**

· Hazard statements
Flammable liquid and vapor. Causes serious eye irritation. May damage fertility or the unborn child. ·

Precautionary statements
Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use explosion-proof electrical/ventilating/lighting/equipment. Wear protective gloves / eye protection / face protection. Ground/bond container and receiving equipment. Keep container tightly closed. Use only non-sparking tools. Take precautionary measures against static discharge. Wash thoroughly after handling. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
In case of fire: Use for extinction: CO2, powder or water spray.
Store locked up. Store in a well-ventilated place. Keep cool.
Dispose of contents/container in accordance with local/regional/national/international regulations**.**

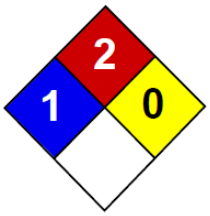
· Other hazards
· Results of PBT and vPvB assessment ·
PBT: Not applicable. · vPvB: Not applicable.
.

SECTION 16 – OTHER INFORMATION

- **Hazardous Material Information System (U.S.A.):**

Health	**2**
Fire hazard	**2**
Reactivity	**0**
Personal protection	**E**

- **National Fire Protection Association (U.S.A.):**



0 = not significant
1 = slight
2 = moderate
3 = high
4 = extreme
* = chronic

- **Revisions:**

Issue Date: 22-May-2014
Last Revision Date: 29-Aug-2016
Revision note: New format. updated Section 2,8,15,16.

- **Other Comments:**

To the best of our knowledge, the information contain herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Restriction of use: for research use only.