

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/29/2019

Version Number 2

Reviewed on 03/29/2019

1 Identification

- **Product identifier**
- **Trade name: Benzidines and Nitrogen Pesticide Standard (1X1 mL)**
- **Part number: NPM-530-1**
- **Application of the substance / the mixture** Reagents and Standards for Analytical Chemical Laboratory Use
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Agilent Technologies, Inc.
5301 Stevens Creek Blvd.
Santa Clara, CA 95051 USA
- **Information department:**
Telephone: 800-227-9770
e-mail: pdl-msds_author@agilent.com
- **Emergency telephone number: CHEMTREC®: 1-800-424-9300**

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS02 Flame

Flam. Liq. 2 H225 Highly flammable liquid and vapor.



GHS08 Health hazard

Carc. 1A H350 May cause cancer.

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



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Eye Irrit. 2A H319 Causes serious eye irritation.

Skin Sens. 1 H317 May cause an allergic skin reaction.

- **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:**

acetonitrile

ethylene thiourea

1-(2-chlorophenyl)-2-thiourea

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3,3'-dimethoxybenzidine

3,3'-dichlorobenzidine

· **Hazard statements**

Highly flammable liquid and vapor.

Harmful if swallowed.

Causes serious eye irritation.

May cause an allergic skin reaction.

May cause cancer.

May damage fertility or the unborn child.

· **Precautionary statements**

Obtain special instructions before use.

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

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Keep container tightly closed.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting/equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Avoid breathing dust/fume/gas/mist/vapors/spray

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Contaminated work clothing must not be allowed out of the workplace.

Wear protective gloves/protective clothing/eye protection/face protection.

If swallowed: Call a poison center/doctor if you feel unwell.

Rinse mouth.

If on skin (or hair): 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.

Specific treatment (see on this label).

If skin irritation or rash occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

Wash contaminated clothing before reuse.

In case of fire: Use for extinction: CO₂, powder or water spray.

Store in a well-ventilated place. Keep cool.

Store locked up.

Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**· **NFPA ratings (scale 0 - 4)**

Health = 2

Fire = 3

Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = *2

Fire = 3

Reactivity = 0

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

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· **vPvB:** Not applicable.

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3 Composition/information on ingredients

· **Chemical characterization: Mixtures**· **Description:** Mixture of the substances listed below with nonhazardous additions.· **Dangerous components:**

75-05-8	acetonitrile	40.559%
150-68-5	monuron (ISO)	0.56%
96-45-7	ethylene thiourea	0.56%
119-90-4	3,3'-dimethoxybenzidine	0.56%
92-87-5	benzidine	0.56%
91-94-1	3,3'-dichlorobenzidine	0.56%
119-93-7	4,4'-bi-o-toluidine	0.56%
330-54-1	diuron(ISO)	0.56%
330-55-2	linuron (ISO)	0.56%
63-25-2	carbaryl (ISO)	0.56%

4 First-aid measures

· **Description of first aid measures**· **General information:**

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

· **After inhalation:**

Supply fresh air and to be sure call for a doctor.

In case of unconsciousness place patient stably in side position for transportation.

· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.· **After eye contact:**

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

· **After swallowing:** Immediately call a doctor.· **Information for doctor:**· **Most important symptoms and effects, both acute and delayed** No further relevant information available.· **Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**· **Suitable extinguishing agents:**CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.· **For safety reasons unsuitable extinguishing agents:** Water with full jet· **Special hazards arising from the substance or mixture** No further relevant information available.

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- **Advice for firefighters**
- **Protective equipment:** No special measures required.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** 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.
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

· PAC-1:

75-05-8	acetonitrile	13 ppm
96-45-7	ethylene thiourea	0.085 mg/m ³
119-90-4	3,3'-dimethoxybenzidine	20 mg/m ³
92-87-5	benzidine	0.93 mg/m ³
91-94-1	3,3'-dichlorobenzidine	2.1 ppm
119-93-7	4,4'-bi-o-toluidine	0.0018 mg/m ³
5344-82-1	1-(2-chlorophenyl)-2-thiourea	0.014 mg/m ³
83-79-4	rotenone	15 mg/m ³
63-25-2	carbaryl (ISO)	1.5 mg/m ³

· PAC-2:

75-05-8	acetonitrile	50 ppm
96-45-7	ethylene thiourea	0.94 mg/m ³
119-90-4	3,3'-dimethoxybenzidine	220 mg/m ³
92-87-5	benzidine	10 mg/m ³
91-94-1	3,3'-dichlorobenzidine	23 ppm
119-93-7	4,4'-bi-o-toluidine	0.02 mg/m ³
5344-82-1	1-(2-chlorophenyl)-2-thiourea	0.15 mg/m ³
83-79-4	rotenone	420 mg/m ³
63-25-2	carbaryl (ISO)	100 mg/m ³

· PAC-3:

75-05-8	acetonitrile	150 ppm
96-45-7	ethylene thiourea	110 mg/m ³
119-90-4	3,3'-dimethoxybenzidine	380 mg/m ³
92-87-5	benzidine	61 mg/m ³
91-94-1	3,3'-dichlorobenzidine	140 ppm
119-93-7	4,4'-bi-o-toluidine	36 mg/m ³

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5344-82-1	1-(2-chlorophenyl)-2-thiourea	0.91 mg/m ³
83-79-4	rotenone	2,500 mg/m ³
63-25-2	carbaryl (ISO)	600 mg/m ³

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.
- **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store in a cool location.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**

- **Components with limit values that require monitoring at the workplace:**

75-05-8 acetonitrile

PEL	Long-term value: 70 mg/m ³ , 40 ppm
REL	Long-term value: 34 mg/m ³ , 20 ppm
TLV	Long-term value: 34 mg/m ³ , 20 ppm
	Skin

96-45-7 ethylene thiourea

REL	Use in encapsulated form; See Pocket Guide App. A
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119-90-4 3,3'-dimethoxybenzidine

REL	See Pocket Guide Apps. A and C
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92-87-5 benzidine

PEL	see 29 CFR 1910.1003
REL	See Pocket Guide Apps. A and C
TLV	Skin; L

91-94-1 3,3'-dichlorobenzidine

PEL	see 29 CFR 1910.1003
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REL	and its salts; See Pocket Guide App.A
TLV	Skin; L
119-93-7 4,4'-bi-o-toluidine	
REL	Ceiling limit value: 0.02* mg/m ³ *60-min; Skin; See Pocket Guide Apps.A and C
TLV	Skin
330-54-1 diuron(ISO)	
REL	Long-term value: 10 mg/m ³
TLV	Long-term value: 10 mg/m ³

· **Additional information:** The lists that were valid during the creation were used as basis.

· **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:**

When used as intended with Agilent instruments, the use of the product under normal laboratory conditions and with standard practices does not result in significant airborne exposures and therefore respiratory protection is not needed.

Under an emergency condition where a respirator is deemed necessary, use a NIOSH or equivalent approved device/equipment with appropriate organic or acid gas cartridge.

· **Protection of hands:**

Although not recommended for constant contact with the chemicals or for clean-up, nitrile gloves 11-13 mil thickness are recommended for normal use. The breakthrough time is 1 hr. For cleaning a spill where there is direct contact of the chemical, butyl rubber gloves are recommended 12-15 mil thickness with breakthrough times exceeding 4 hrs. Supplier recommendations should be followed.

· **Material of gloves**

- For normal use: nitrile rubber, 11-13 mil thickness
- For direct contact with the chemical: butyl rubber, 12-15 mil thickness

· **Penetration time of glove material**

- For normal use: nitrile rubber: 1 hour
- For direct contact with the chemical: butyl rubber: >4 hours

· **Eye protection:**



Tightly sealed goggles

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9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form: Fluid

Color: According to product specification

· **Odor:** Characteristic

· **Odor threshold:** Not determined.

· **pH-value:** Not determined.

· **Change in condition**

Melting point/Melting range: Undetermined.

Boiling point/Boiling range: 81 °C (177.8 °F)

· **Flash point:** 2 °C (35.6 °F)

· **Flammability (solid, gaseous):** Not applicable.

· **Ignition temperature:** 525 °C (977 °F)

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

· **Explosion limits:**

Lower: 4.4 Vol %

Upper: 16 Vol %

· **Vapor pressure at 20 °C (68 °F):** 23 hPa (17.3 mm Hg)

· **Density:** Not determined.

· **Relative density** Not determined.

· **Vapor density** Not determined.

· **Evaporation rate** Not determined.

· **Solubility in / Miscibility with**

Water: Not miscible or difficult to mix.

· **Partition coefficient (n-octanol/water):** Not determined.

· **Viscosity:**

Dynamic: Not determined.

Kinematic: Not determined.

· **Solvent content:**

Water: 51.6 %

VOC content: 0.00 %

 0.0 g/l / 0.00 lb/gal

Solids content: 5.6 %

· **Other information** No further relevant information available.

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10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

LD/LC50 values that are relevant for classification:
ATE (Acute Toxicity Estimate)

Oral	LD50	618 mg/kg (rat)
Dermal	LD50	>4,931 mg/kg (rabbit)
Inhalative	LC50/4 h	8,844 mg/L (mouse)

75-05-8 acetonitrile

Oral	LD50	1,320 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rabbit)
Inhalative	LC50/4 h	3,587 mg/L (mouse)

150-68-5 monuron (ISO)

Oral	LD50	1,053 mg/kg (rat)
Dermal	LD50	>2,500 mg/kg (rat)

96-45-7 ethylene thiourea

Oral	LD50	1,832 mg/kg (rat)
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119-90-4 3,3'-dimethoxybenzidine

Oral	LD50	~1,920 mg/kg (rat)
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22212-55-1 ethyl N-benzoyl-N-(3,4-dichlorophenyl)-DL-alaninate

Oral	LD50	1,550 mg/kg (rat)
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92-87-5 benzidine

Oral	LD50	309 mg/kg (rat)
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91-94-1 3,3'-dichlorobenzidine

Oral	LD50	4,740 mg/kg (rat)
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119-93-7 4,4'-bi-o-toluidine

Oral	LD50	404 mg/kg (rat)
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5344-82-1 1-(2-chlorophenyl)-2-thiourea

Oral	LD50	4.6 mg/kg (rat)
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330-54-1 diuron(ISO)

Oral	LD50	1,017 mg/kg (rat)
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Dermal	LD50	>5,000 mg/kg (rat)
Inhalative	LC50/4 h	>5.05 mg/L (rat)
330-55-2 linuron (ISO)		
Oral	LD50	1,146 mg/kg (rat)
Dermal	LD50	>5,000 mg/kg (rabbit)
Inhalative	LC50/4 h	6,150 mg/L (rat)
83-79-4 rotenone		
Oral	LD50	60 mg/kg (rat)
Dermal	LD50	>1,000 mg/kg (rabbit)
63-25-2 carbaryl (ISO)		
Oral	LD50	230 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rabbit)

· **Primary irritant effect:**

- **on the skin:** No irritant effect.
- **on the eye:** Irritating effect.
- **Sensitization:** Sensitization possible through skin contact.

· **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)**

150-68-5	monuron (ISO)	3
96-45-7	ethylene thiourea	3
119-90-4	3,3'-dimethoxybenzidine	2B
58-08-2	caffeine	3
92-87-5	benzidine	1
91-94-1	3,3'-dichlorobenzidine	2B
119-93-7	4,4'-bi-o-toluidine	2B
63-25-2	carbaryl (ISO)	3

· **NTP (National Toxicology Program)**

96-45-7	ethylene thiourea	R
119-90-4	3,3'-dimethoxybenzidine	R
92-87-5	benzidine	K
91-94-1	3,3'-dichlorobenzidine	R
119-93-7	4,4'-bi-o-toluidine	R

· **OSHA-Ca (Occupational Safety & Health Administration)**

92-87-5	benzidine
91-94-1	3,3'-dichlorobenzidine

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12 Ecological information

 · **Toxicity**

 · **Aquatic toxicity:**
22212-55-1 ethyl N-benzoyl-N-(3,4-dichlorophenyl)-DL-alaninate

LC50 (96h) - for fish 0.539 mg/L/96h (Pimephales promelas (fathead minnow))

 · **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 3 (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.

 · **Results of PBT and vPvB assessment**

 · **PBT:** Not applicable.

 · **vPvB:** Not applicable.

 · **Other adverse effects** No further relevant information available.

13 Disposal considerations

 · **Waste treatment methods**

 · **Recommendation:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

 · **Uncleaned packagings:**

 · **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

 · **Not Regulated, De minimus Quantities** -

 · **UN-Number**

 · **DOT, IMDG, IATA**

UN1993

 · **UN proper shipping name**

 · **DOT**

 · **IMDG**

 · **IATA**

Flammable liquids, n.o.s. (Acetonitrile)

FLAMMABLE LIQUID, N.O.S. (ACETONITRILE, carbaryl (ISO)), MARINE POLLUTANT

FLAMMABLE LIQUID, N.O.S. (ACETONITRILE)

 · **Transport hazard class(es)**

 · **DOT, IATA**

 · **Class**

3 Flammable liquids

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· Label	3
· IMDG	
	
· Class	3 Flammable liquids
· Label	3
· Packing group	
· DOT, IMDG, IATA	II
· Environmental hazards:	Product contains environmentally hazardous substances: carbaryl (ISO), diuron(ISO)
· Marine pollutant:	Symbol (fish and tree)
· Special precautions for user	Warning: Flammable liquids
· Danger code (Kemler):	33
· EMS Number:	F-E, <u>S-E</u>
· Stowage Category	B
· 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: 5 L On cargo aircraft only: 60 L
· IMDG	
· Limited quantities (LQ)	1L
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· UN "Model Regulation":	UN 1993 FLAMMABLE LIQUID, N.O.S. (ACETONITRILE), 3, II, ENVIRONMENTALLY HAZARDOUS

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara

· Section 355 (extremely hazardous substances):	
5344-82-1	1-(2-chlorophenyl)-2-thiourea
· Section 313 (Specific toxic chemical listings):	
75-05-8	acetonitrile
150-68-5	monuron (ISO)
96-45-7	ethylene thiourea
119-90-4	3,3'-dimethoxybenzidine
92-87-5	benzidine

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91-94-1	3,3'-dichlorobenzidine
119-93-7	4,4'-bi-o-toluidine
330-54-1	diuron(ISO)
330-55-2	linuron (ISO)
63-25-2	carbaryl (ISO)

· TSCA (Toxic Substances Control Act):

75-05-8	acetonitrile
150-68-5	monuron (ISO)
96-45-7	ethylene thiourea
119-90-4	3,3'-dimethoxybenzidine
58-08-2	caffeine
92-87-5	benzidine
91-94-1	3,3'-dichlorobenzidine
119-93-7	4,4'-bi-o-toluidine
5344-82-1	1-(2-chlorophenyl)-2-thiourea
330-54-1	diuron(ISO)
330-55-2	linuron (ISO)
63-25-2	carbaryl (ISO)
7732-18-5	water

· TSCA new (21st Century Act): (Substances not listed)

150-68-5	monuron (ISO)
119-90-4	3,3'-dimethoxybenzidine
92-87-5	benzidine
91-94-1	3,3'-dichlorobenzidine
119-93-7	4,4'-bi-o-toluidine
330-55-2	linuron (ISO)
63-25-2	carbaryl (ISO)

· Proposition 65
· Chemicals known to cause cancer:

96-45-7	ethylene thiourea
119-90-4	3,3'-dimethoxybenzidine
92-87-5	benzidine
91-94-1	3,3'-dichlorobenzidine
119-93-7	4,4'-bi-o-toluidine
330-54-1	diuron(ISO)
63-25-2	carbaryl (ISO)

· Chemicals known to cause reproductive toxicity for females:

63-25-2	carbaryl (ISO)
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· Chemicals known to cause reproductive toxicity for males:

63-25-2	carbaryl (ISO)
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· Chemicals known to cause developmental toxicity:

96-45-7	ethylene thiourea
330-55-2	linuron (ISO)
63-25-2	carbaryl (ISO)

· Carcinogenic categories
· EPA (Environmental Protection Agency)

75-05-8	acetonitrile	CBD, D
92-87-5	benzidine	A
91-94-1	3,3'-dichlorobenzidine	B2

· TLV (Threshold Limit Value established by ACGIH)

75-05-8	acetonitrile	A4
92-87-5	benzidine	A1
91-94-1	3,3'-dichlorobenzidine	A3
119-93-7	4,4'-bi-o-toluidine	A3
330-54-1	diuron(ISO)	A4
83-79-4	rotenone	A4
63-25-2	carbaryl (ISO)	A4

· NIOSH-Ca (National Institute for Occupational Safety and Health)

96-45-7	ethylene thiourea
119-90-4	3,3'-dimethoxybenzidine
92-87-5	benzidine
91-94-1	3,3'-dichlorobenzidine
119-93-7	4,4'-bi-o-toluidine

· National regulations:

· Additional classification according to Decree on Hazardous Materials:
Carcinogenic hazardous material group III (dangerous).

· Information about limitation of use:

Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation.
Exceptions can be made by the authorities in certain cases.

· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

The information contained in this document is based on Agilent's state of knowledge at the time of preparation.
No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

· Department issuing SDS: Document Control / Regulatory

· Contact: regulatory@ultrasci.com

· Date of preparation / last revision 03/29/2019 / 1

· Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

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Trade name: Benzidines and Nitrogen Pesticide Standard (1X1 mL)

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EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Flam. Liq. 2: Flammable liquids – Category 2
Acute Tox. 4: Acute toxicity – Category 4
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
Skin Sens. 1: Skin sensitisation – Category 1
Carc. 1A: Carcinogenicity – Category 1A
Repr. 1B: Reproductive toxicity – Category 1B

· * **Data compared to the previous version altered.**

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