

SAFETY DATA SHEET

Muse® Nitric Oxide Kit

Section 1. Identification

GHS product identifier	: Muse® Nitric Oxide Kit
Other means of identification	: MCH100112-1 4700-1666 Muse® Nitric Oxide Reagent MCH100112-2 4700-1673 Muse® 7-AAD Reagent 4700-1330 1X Assay Buffer
Product type	: Liquid.
Code	:
Identified uses	: For Professional use only. Use as per Product Insert.
Supplier/Manufacturer	: Luminex Corporation 12212 Technology Blvd Austin, Texas 78727 Tel: 1-512-381-4397 Toll free: 1-877-785-2323 (US and Canada) Fax: 1-512-219-5114 http://www.luminexcorp.com
e-mail address of person responsible for this SDS	: Support@Luminexcorp.com
Emergency telephone number (with hours of operation)	: 1-512-381-4397 24/7

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	: FLAMMABLE LIQUIDS - Category 4
<u>GHS label elements for the kit</u>	
Signal word	: Warning
Hazard statements	: H227 - Combustible liquid.
<u>Precautionary statements</u>	
Prevention	: P280 - Wear protective gloves. Wear eye or face protection. P210 - Keep away from flames and hot surfaces. - No smoking.
Response	: Not applicable.
Storage	: P403 - Store in a well-ventilated place. P235 - Keep cool.
Disposal	: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
<u>GHS label elements by compartment</u>	
Signal word	: 4700-1666 Warning 4700-1673 No signal word. 4700-1330 No signal word.
Hazard statements	: 4700-1666 H227 - Combustible liquid. 4700-1673 No known significant effects or critical hazards. 4700-1330 No known significant effects or critical hazards.



Section 2. Hazards identification

Precautionary statements

Prevention	: 4700-1666	P280 - Wear protective gloves. Wear eye or face protection.
	4700-1673	P210 - Keep away from flames and hot surfaces. - No smoking.
	4700-1330	Not applicable.
Response	: 4700-1666	Not applicable.
	4700-1673	Not applicable.
	4700-1330	Not applicable.
Storage	: 4700-1666	P403 - Store in a well-ventilated place.
	4700-1673	P235 - Keep cool.
	4700-1330	Not applicable.
Disposal	: 4700-1666	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	4700-1673	Not applicable.
	4700-1330	Not applicable.
Hazards not otherwise classified	: None known.	

Section 3. Composition/information on ingredients

Substance/mixture	: Mixture
Other means of identification	: Not available.

Ingredient name	%	CAS number
4700-1666 Dimethyl sulfoxide	80 - 100	67-68-5
4700-1673 Dimethyl sulfoxide	1 - 5	67-68-5

United States: The exact percentage (concentration) in the composition has been withheld as a trade secret in accordance with paragraph (i) of §1910.1200.

Canada: The exact percentage (concentration) in the composition has been withheld as a trade secret in accordance with the amended HPR as of April 2018.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: Not applicable.
Inhalation	: Not applicable.
Skin contact	: Not applicable.
Ingestion	: Not applicable.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: 4700-1666	No known significant effects or critical hazards.
	4700-1673	No known significant effects or critical hazards.
	4700-1330	No known significant effects or critical hazards.

Section 4. First aid measures

Inhalation	: 4700-1666	No known significant effects or critical hazards.
	4700-1673	No known significant effects or critical hazards.
	4700-1330	No known significant effects or critical hazards.
Skin contact	: 4700-1666	No known significant effects or critical hazards.
	4700-1673	No known significant effects or critical hazards.
	4700-1330	No known significant effects or critical hazards.
Ingestion	: 4700-1666	No known significant effects or critical hazards.
	4700-1673	No known significant effects or critical hazards.
	4700-1330	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	:	No known significant effects or critical hazards.
Inhalation	:	No known significant effects or critical hazards.
Skin contact	:	No known significant effects or critical hazards.
Ingestion	:	No known significant effects or critical hazards.

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

Notes to physician	:	None identified.
Specific treatments	:	No specific treatment.
Protection of first-aiders	:	No special measures required.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	:	Use dry chemical, CO ₂ , water spray (fog) or foam.
Unsuitable extinguishing media	:	Do not use water jet or water-based fire extinguishers.

Specific hazards arising from the chemical : Combustible liquid. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide
 sulfur oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : No special requirements.

Methods and materials for containment and cleaning up

Spill : Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations.
MCH100112-1: Store at -15°C to -25°C.
MCH100112-2: Store at 2°C to 8°C.

Section 8. Exposure controls/personal protection

Control parameters

United States

Occupational exposure limits

Ingredient name	Exposure limits
4700-1666 Dimethyl sulfoxide	AIHA WEEL (United States, 7/2018). TWA: 250 ppm 8 hours.
4700-1673 Dimethyl sulfoxide	AIHA WEEL (United States, 7/2018). TWA: 250 ppm 8 hours.

Canada

Occupational exposure limits

Ingredient name	Exposure limits
4700-1666 Dimethyl sulfoxide	AIHA WEEL (United States, 7/2018). TWA: 250 ppm 8 hours.
4700-1673 Dimethyl sulfoxide	AIHA WEEL (United States, 7/2018). TWA: 250 ppm 8 hours.

Appropriate engineering controls : No special ventilation requirements.

Environmental exposure controls : No special measures required.

Section 8. Exposure controls/personal protection

Individual protection measures

Hygiene measures	:	Follow good industrial hygiene practice.
Eye/face protection	:	Not required under normal conditions of use.
<u>Skin protection</u>		
Hand protection	:	Not required under normal conditions of use.
Body protection	:	Not required under normal conditions of use.
Other skin protection	:	Not required under normal conditions of use.
Respiratory protection	:	Not required under normal conditions of use.

Section 9. Physical and chemical properties

Appearance

Physical state	:	4700-1666	Liquid.
		4700-1673	Liquid.
		4700-1330	Liquid. [Clear.]
Color	:	4700-1666	Not determined.
		4700-1673	Not determined.
		4700-1330	Colorless.
Odor	:	4700-1666	Not determined
		4700-1673	Not determined
		4700-1330	Odorless.
Odor threshold	:	Not available.	
pH	:	4700-1666	Not available.
		4700-1673	Not available.
		4700-1330	Not available.
Melting point	:	Not available.	
Initial boiling point and boiling range	:	4700-1666	Not available.
		4700-1673	Not available.
		4700-1330	Not available.
Flash point	:	4700-1666	Closed cup: 87°C (188.6°F)
		4700-1673	Not available.
		4700-1330	Not available.
Evaporation rate	:	Not available.	
Flammability (solid, gas)	:	Not available.	
Lower and upper explosive (flammable) limits	:	Not available.	
Vapor pressure	:	4700-1666	Not available.
		4700-1673	Not available.
		4700-1330	Not available.
Vapor density	:	4700-1666	Not available.
		4700-1673	Not available.
		4700-1330	Not available.
Relative density	:	4700-1666	Not available.
		4700-1673	Not available.
		4700-1330	Not available.
Solubility	:	4700-1666	Not available.
		4700-1673	Not available.
		4700-1330	Not available.

Section 9. Physical and chemical properties

Partition coefficient: n-octanol/water	:	Not available.
Auto-ignition temperature	:	Not available.
Decomposition temperature	:	Not available.
Viscosity	:	4700-1666 Not available. 4700-1673 Not available. 4700-1330 Not available.
Flow time (ISO 2431)	:	Not available.

Section 10. Stability and reactivity

Reactivity	:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	:	4700-1666 The product is stable. 4700-1673 The product is stable. 4700-1330 The product is stable.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	:	4700-1666 Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. 4700-1673 No specific data. 4700-1330 No specific data.
Incompatible materials	:	4700-1666 Reactive or incompatible with the following materials: oxidizing materials. 4700-1673 Reactive or incompatible with the following materials: oxidizing materials. 4700-1330 Reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
4700-1666 Dimethyl sulfoxide	LD50 Dermal LD50 Oral	Rat Rat	40000 mg/kg 14500 mg/kg	- -
4700-1673 Dimethyl sulfoxide	LD50 Dermal LD50 Oral	Rat Rat	40000 mg/kg 14500 mg/kg	- -

Irritation/Corrosion

There is no data available.

Sensitization

There is no data available.

Section 11. Toxicological information

Mutagenicity

There is no data available.

Carcinogenicity

There is no data available.

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eye contact	: 4700-1666	No known significant effects or critical hazards.
	4700-1673	No known significant effects or critical hazards.
	4700-1330	No known significant effects or critical hazards.
Inhalation	: 4700-1666	No known significant effects or critical hazards.
	4700-1673	No known significant effects or critical hazards.
	4700-1330	No known significant effects or critical hazards.
Skin contact	: 4700-1666	No known significant effects or critical hazards.
	4700-1673	No known significant effects or critical hazards.
	4700-1330	No known significant effects or critical hazards.
Ingestion	: 4700-1666	No known significant effects or critical hazards.
	4700-1673	No known significant effects or critical hazards.
	4700-1330	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: No known significant effects or critical hazards.
Inhalation	: No known significant effects or critical hazards.
Skin contact	: No known significant effects or critical hazards.
Ingestion	: No known significant effects or critical hazards.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects	: No known significant effects or critical hazards.
Potential delayed effects	: No known significant effects or critical hazards.

Long term exposure

Potential immediate effects	: No known significant effects or critical hazards.
Potential delayed effects	: No known significant effects or critical hazards.

Potential chronic health effects

Section 11. Toxicological information

- General** : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

There is no data available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
4700-1666 Dimethyl sulfoxide	Acute EC50 18299 µg/L Marine water Acute LC50 37.437 mg/L Marine water Acute LC50 25000 ppm Fresh water Acute LC50 34000000 µg/L Fresh water Chronic NOEC 3323 µg/L Marine water Chronic NOEC 100 ul/L Fresh water	Algae - Nitzschia pungens Crustaceans - Artemia sp. Daphnia - Daphnia magna - Neonate Fish - Pimephales promelas Algae - Nitzschia pungens Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	96 hours 48 hours 48 hours 96 hours 96 hours 21 days
4700-1673 Dimethyl sulfoxide	Acute EC50 18299 µg/L Marine water Acute LC50 37.437 mg/L Marine water Acute LC50 25000 ppm Fresh water Acute LC50 34000000 µg/L Fresh water Chronic NOEC 3323 µg/L Marine water Chronic NOEC 100 ul/L Fresh water	Algae - Nitzschia pungens Crustaceans - Artemia sp. Daphnia - Daphnia magna - Neonate Fish - Pimephales promelas Algae - Nitzschia pungens Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	96 hours 48 hours 48 hours 96 hours 96 hours 21 days

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
4700-1666 Dimethyl sulfoxide	-1.35	3.16	low
4700-1673 Dimethyl sulfoxide	-1.35	3.16	low

Mobility in soil


- Soil/water partition coefficient (K_{oc})** : Not available.

- Other adverse effects** : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. No specific disposal consideration.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	NA1993	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	COMBUSTIBLE LIQUID, N.O. S. (Dimethyl sulfoxide)	-	-	-
Transport hazard class(es)	3 	-	-	-
Packing group	III	-	-	-
Environmental hazards	No.	No.	No.	No.

AERG : 128

Additional information

DOT Classification : Non-bulk packages (less than or equal to 119 gal) of combustible liquids are not regulated as hazardous materials.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
United States inventory (TSCA 8b): Not determined.
TSCA 12(b) one-time export: None of the components are listed.
TSCA 12(b) annual export notification: None of the components are listed.
Clean Water Act (CWA) 307: None of the components are listed.
Clean Water Act (CWA) 311: Disodium hydrogenorthophosphate; Disodium phosphate heptahydrate

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : 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



Section 15. Regulatory information

SARA 302/304

Composition/information on ingredients

Name	EHS	SARA 302 TPQ		SARA 304 RQ	
		(lbs)	(gallons)	(lbs)	(gallons)
4700-1673 Sodium Azide	Yes.	500	-	1000	-

SARA 304 RQ : 6000000 lbs / 2724000 kg

SARA 311/312

Classification : FLAMMABLE LIQUIDS - Category 4

SARA 313

There is no data available.

State regulations

- Massachusetts** : None of the components are listed.
- New York** : None of the components are listed.
- New Jersey** : The following components are listed: Dimethyl sulfoxide
- Pennsylvania** : None of the components are listed.
- California Prop. 65**

This product does not require a Safe Harbor warning under California Prop. 65.

Canadian lists

- Canada inventory (DSL NDSL)** : Not determined.
- Canadian NPRI** : None of the components are listed.
- CEPA Toxic substances** : None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Ingredient name	List name	Status
Not listed.		

Section 16. Other information

Procedure used to derive the classification

Classification	Justification
4700-1666 FLAMMABLE LIQUIDS - Category 4	On basis of test data

History

- Date of issue mm/dd/yyyy** : 10/30/2019
- Date of previous issue** : Not applicable
- Version** : 1
- Prepared by** : KMK Regulatory Services Inc.



Section 16. Other information

Key to abbreviations

- : ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- UN = United Nations

Notice to reader

To the best of our knowledge, the information contained 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.

