SAFETY DATA SHEET

Issuing Date 29-Nov-2017 **Revision date** 13-Nov-2019 **Revision Number** 2

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier
Product Name Library Normalization Diluent

Other means of identification
Product Code(s) 15035431

Synonyms None

Recommended use of the chemical and restrictions on use
Recommended use reagent

Details of the supplier of the safety data sheet

Manufacturer Address	Company Phone Number	E-mail address
Illumina, Inc. 5200 Illumina Way San Diego, CA 92122 USA www.illumina.com	1-858-809-ILMN 1-858-202-4566	SDS@illumina.com

Emergency telephone number
24 Hour Emergency Phone Number 1-760-476-3962

2. HAZARDS IDENTIFICATION

GHS Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Carcinogenicity	Category 2
Reproductive toxicity	Category 1B
Specific target organ toxicity (repeated exposure)	Category 2

Label elements

Emergency Overview

Signal word
Danger

Hazard statements
Suspected of causing cancer
May damage fertility or the unborn child
May cause damage to organs through prolonged or repeated exposure

test_tech_name

Appearance colorless liquid **Physical state** Liquid **Odor** Odor: Contains 2-Mercaptoethanol

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Do not breathe dust/fume/gas/mist/vapors/spray
Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response
IF exposed or concerned: Get medical advice/attention

Precautionary Statements - Storage
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Not applicable

Other Information
Unknown acute toxicity 10.8 % of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

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

Chemical name	CAS No	Weight-%	Trade Secret
Formamide	75-12-7	5 - 10	*
2-Mercaptoethanol	60-24-2	<0.1	*

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

General advice Treat symptomatically. Use first aid treatment according to the nature of the injury. Remove and isolate contaminated clothing and shoes.

Eye contact In case of contact with substance, immediately flush skin or eyes with running water for at test_tech_name

least 20 minutes.

Skin Contact Wash skin with soap and water. Get medical attention if irritation develops and persists.

Inhalation If symptomatic, move to fresh air. Get medical attention if symptoms persist. Move victim to fresh air.

Ingestion Get medical advice/attention.

Self-protection of the first aider Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Most important symptoms and effects, both acute and delayed

Symptoms May damage fertility or the unborn child. Persons with impaired reproductive function may be more susceptible to the effects of this material. May cause cancer. May cause damage to organs through prolonged or repeated exposure.

Indication of any immediate medical attention and special treatment needed

Note to physicians Persons with impaired reproductive function may be more susceptible to the effects of this material.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Dry chemical, CO2, water spray or regular foam, Water spray, fog or regular foam, Move containers from fire area if you can do it without risk, Dike fire-control water for later disposal

Unsuitable extinguishing media
Do not scatter spilled material with high pressure water streams.

Specific hazards arising from the chemical
None known.

Hazardous combustion products
Carbon oxides. Ammonia. Nitrogen oxides (NOx). Hydrogen cyanide.

Explosion data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Do not touch or walk through spilled material. Stop leak if you can do it without risk. Avoid breathing dust/fume/gas/mist/vapors/spray.

For emergency responders Use personal protection recommended in Section 8. Keep unnecessary personnel away.

test_tech_name

Environmental precautions

Environmental precautions Prevent entry into waterways, sewers, basements or confined areas. See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so. Prevent runoff from entering drains, sewers, or streams.

Methods for cleaning up Use personal protective equipment as required. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13). Large spill. Prevent runoff from entering drains, sewers, or streams. Dike far ahead of liquid spill for later disposal.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Use personal protective equipment as required. Handle in accordance with good industrial hygiene and safety practice. Do not breathe vapor.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed. Keep/store only in original container. Store away from incompatible materials.

Incompatible materials Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines .

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Formamide 75-12-7	TWA: 10 ppm Skin	(vacated) TWA: 20 ppm (vacated) TWA: 30 mg/m^3 (vacated) STEL: 30 ppm (vacated) STEL: 45 mg/m^3	TWA: 10 ppm TWA: 15 mg/m^3

NIOSH IDLH Immediately Dangerous to Life or Health

Other Information Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

test_tech_name

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin and body protection Wear chemical-resistant gloves, footwear and protective clothing appropriate for risk of exposure. Contact glove manufacturer for specific information.

Respiratory protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations When using do not eat, drink or smoke. Wash hands thoroughly after handling. Handle in accordance with good industrial hygiene and safety practice. Regular cleaning of equipment, work area and clothing is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid
Appearance	colorless liquid
Odor	Odor: Contains 2-Mercaptoethanol
Color	colorless

Property	**Values**	**Remarks • Method**
pH	No data available	
Melting point / freezing point	No data available	
Boiling point / boiling range		
Flash point		
Evaporation rate	No data available	
Flammability (solid, gas)	No data available	
Flammability Limit in Air		
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Vapor pressure	No data available	
Vapor density	No data available	
Specific gravity	No data available	
Water solubility	No data available	
Solubility in other solvents	No data available	
Partition coefficient	No data available	
Autoignition temperature	No data available	
Decomposition temperature	No data available	
Kinematic viscosity	No data available	
Dynamic viscosity	No data available	
Explosive properties	No unusual fire or explosion hazards noted.	
Oxidizing properties	No data available	

Other information

Softening point	No data available
Molecular weight	No data available

test_tech_name

VOC Content (%)	No data available
Liquid Density	No data available
Bulk density	No data available

10. STABILITY AND REACTIVITY

Reactivity

Chemical stability
Stable under normal conditions. Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous polymerization
Hazardous polymerization does not occur.

Conditions to avoid
None known.

Incompatible materials
Strong oxidizing agents.

Hazardous decomposition products
None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation	Under normal conditions of intended use, this material is not expected to be an inhalation hazard.
Eye contact	Direct contact with eyes may cause temporary irritation.
Skin Contact	Prolonged contact may cause redness and irritation.
Ingestion	No harmful effects expected in amounts likely to be ingested by accident.

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Formamide 75-12-7	= 5577 mg/kg (Rat) > 5000 mg/kg (Rat)	-	> 3900 ppm (Rat) 6 h

Information on toxicological effects

Symptoms Suspected of causing cancer. May damage fertility or the unborn child.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation	Not classified.
Serious eye damage/eye irritation	Not classified.

test_tech_name

Sensitization	Not classified.
Germ cell mutagenicity	Not classified.
Carcinogenicity	Suspected of causing cancer
Reproductive toxicity	May damage fertility or the unborn child.
STOT - single exposure	Not classified.
STOT - repeated exposure	May cause damage to organs through prolonged or repeated exposure.
Chronic toxicity	Contains a known or suspected reproductive toxin. May cause adverse effects on the bone marrow and blood-forming system.
Target organ effects	Central nervous system, Eyes, Reproductive System, Respiratory system, Skin, blood.
Aspiration hazard	Not classified.
Other adverse effects	No information available.

Numerical measures of toxicity - Product Information

Unknown acute toxicity 10.8 % of the mixture consists of ingredient(s) of unknown toxicity

12. ECOLOGICAL INFORMATION

Ecotoxicity

1.7 % of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical name	Algae/aquatic plants	Fish	Crustacea
Formamide 75-12-7	500 mg/L: EC50 72 h Desmodesmus subspicatus 500 mg/L: EC50 96 h Desmodesmus subspicatus	4600 - 9300 mg/L: LC50 96 h Leuciscus idus static 9135 mg/L: LC50 96 h Brachydanio rerio static	500 mg/L: EC50 48 h Daphnia magna
Sodium chloride 7647-14-5	-	4747 - 7824 mg/L: LC50 96 h Oncorhynchus mykiss flow-through 5560 - 6080 mg/L: LC50 96 h Lepomis macrochirus flow-through 6020 - 7070 mg/L: LC50 96 h Pimephales promelas static 6420 - 6700 mg/L: LC50 96 h Pimephales promelas static 12946 mg/L: LC50 96 h Lepomis macrochirus static 7050 mg/L: LC50 96 h Pimephales promelas semi-static	340.7 - 469.2 mg/L: EC50 48 h Daphnia magna Static 1000 mg/L: EC50 48 h Daphnia magna
2-Mercaptoethanol 60-24-2	12 mg/L: EC50 72 h Desmodesmus subspicatus	46 - 100 mg/L: LC50 96 h Leuciscus idus static	1.52 mg/L: EC50 48 h Daphnia magna

Persistence and degradability
Readily biodegradable.

Bioaccumulation

Chemical name	Partition coefficient
Formamide 75-12-7	-0.82
2-Mercaptoethanol 60-24-2	-0.056

Mobility
No data available.

Other adverse effects

test_tech_name

No data available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging Do not reuse container. Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

DOT Not regulated

TDG Not regulated

MEX Not regulated

ICAO (air) Not regulated

IATA Not regulated

IMDG Not regulated

RID Not regulated

ADR Not regulated

ADN Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Does not comply
ENCS	Does not comply
IECSC	Complies
KECL	Does not comply
PICCS	Complies
AICS	Complies
INSQ	This product complies with INSQ

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances

test_tech_name

KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances
INSQ - Mexican National Inventory of Chemical Substances

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute health hazard	No
Chronic Health Hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Formamide 75-12-7	X	X	X
Sodium phosphate dibasic 7558-79-4	X	X	X
2-Mercaptoethanol 60-24-2	X	X	X

U.S. EPA Label Information
EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION

NFPA	**Health hazards** 2	**Flammability** 0	**Instability** 0	**Physical and Chemical Properties** -
HMIS	**Health hazards** 2	**Flammability** 0	**Physical hazards** 0	**Personal protection** X

Prepared By Illumina Inc.
test_tech_name

Issuing Date	29-Nov-2017
Revision date	13-Nov-2019
Revision Note	Not applicable.

Disclaimer

Although reasonable care has been taken in the preparation of this document, Illumina makes no warranties or representations of any kind as to the accuracy or completeness of the information contained herein, and Illumina assumes no responsibility regarding the suitability of this information or the product for the user's intended purposes or for the consequences of use of this information or the use of the product. The user of this (M)SDS and product should make a determination as to the suitability of the information and the product for their particular purpose(s). To the extent provided by applicable law, Illumina shall not be held liable for any damage or expenses of any kind resulting from handling, use, storage, or disposal of the product.

End of Safety Data Sheet

test_tech_name