

Issuing Date 02-Mar-2015

Revision Date 02-Mar-2015

Revision Number 1

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

**Product identifier**

**Product Name** MS#-LDR, FORMAMIDE

**Other means of identification**

**Product Code(s)** 15023304

**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**

illumina, Inc.  
5200 Illumina Way  
San Diego, CA 92122 USA

**Company Phone Number**

1-858-809-ILMN  
1-858-202-4566

**E-mail address**

SDS@illumina.com

www.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).

Reproductive toxicity	Category 1B
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**Label elements**

**Emergency Overview**

**Signal word**

Danger

**Hazard statements**

May damage fertility or the unborn child



**Appearance** colorless liquid

**Physical state** Liquid

**Odor** Odorless / mild

**Precautionary Statements - Prevention**

Obtain special instructions before use  
Do not handle until all safety precautions have been read and understood  
Use personal protective equipment as required

**Precautionary Statements - Response**

IF exposed or concerned: Get medical advice/attention

**Precautionary Statements - Storage**

Store locked up

**Precautionary Statements - Disposal**

Dispose of in accordance with federal, state and local regulations

**Hazards not otherwise classified (HNOC)**

Not applicable

**Other Information**

May be harmful if inhaled

Unknown acute toxicity                      99.9 % 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	60 - 100	*

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

### 4. FIRST AID MEASURES

**Description of first aid measures**

<b>General advice</b>	Treat symptomatically.
<b>Eye contact</b>	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Get medical attention if irritation develops and persists.
<b>Skin Contact</b>	Wash skin with soap and water. Get medical attention if irritation develops and persists.
<b>Inhalation</b>	If symptomatic, move to fresh air. Get medical attention if symptoms persist.
<b>Ingestion</b>	Get medical advice/attention.
<b>Self-protection of the first aider</b>	Use personal protective equipment as required.

**Most important symptoms and effects, both acute and delayed**

**Symptoms**                                      No information available.

**Indication of any immediate medical attention and special treatment needed**

**Note to physicians**                              May damage fertility or the unborn child. Persons with impaired reproductive function may be more susceptible to the effects of this material.

### 5. FIRE-FIGHTING MEASURES

**Suitable extinguishing media**

Water, Water spray (fog), Foam, Dry chemical, Carbon dioxide (CO2)

**Unsuitable extinguishing media**

None known.

**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** Use personal protective equipment as required. Keep people away from and upwind of spill/leak.

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

**Environmental precautions**

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses, or onto the ground. 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. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up** Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. Use personal protective equipment as required.

## 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.

**Conditions for safe storage, including any incompatibilities**

**Storage Conditions** Keep container tightly closed. Keep/store only in original container. Store away from incompatible materials. Store at -15° C to -25° C (5° F to -13° F).

**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 S*	(vacated) TWA: 20 ppm (vacated) TWA: 30 mg/m <sup>3</sup> (vacated) STEL: 30 ppm (vacated) STEL: 45 mg/m <sup>3</sup>	TWA: 10 ppm TWA: 15 mg/m <sup>3</sup>

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.

**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. Regular cleaning of equipment, work area and clothing is recommended. Wash hands thoroughly after handling. Keep away from food, drink and animal feeding stuffs.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Information on basic physical and chemical properties**

**Physical state** Liquid  
**Appearance** colorless liquid  
**Odor** Odorless / mild  
**Color** colorless

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	No data available	
Melting point / freezing point °F - VALUE 1	3 °C / 37 °F	
Boiling point / boiling range	211 °C / 412 °F	
Flash point	154 °C / 309 °F	Cleveland Open Cup
Evaporation rate - VALUE	No data available	
Flammability (solid, gas)	No data available	
Flammability Limit in Air		
Upper flammability limit:	No data available	
Lower flammability limit:	No data available	
Vapor pressure	No data available	
Vapor density	1.56	
Specific gravity - VALUE 1	1.13	@ 20 C°
Water solubility	Soluble in water	
Solubility in other solvents	No data available	
Partition coefficient	-1.51	
Autoignition temperature °C - VALUE	No data available	

**Decomposition temperature** No data available  
**Kinematic viscosity - VALUE 1** No data available  
**Dynamic viscosity - VALUE 1** 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** 45.04 g/mol  
**VOC Content (%)** 99.9000015258789  
**Liquid Density** 1.13 g/cm3  
**Bulk density** No data available

**10. STABILITY AND REACTIVITY**

**Reactivity**  
 The product is stable and non-reactive under normal conditions of use, storage and transport.

**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** Reproductive toxicant

**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.

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** None known.

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

**Skin corrosion/irritation** Not classified.

<b>Serious eye damage/eye irritation</b>	Not classified.
<b>Sensitization</b>	Not classified.
<b>Germ cell mutagenicity</b>	Not classified.
<b>Carcinogenicity</b>	This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.
<b>Reproductive toxicity</b>	May cause harm to the unborn child.
<b>STOT - single exposure</b>	Not classified.
<b>STOT - repeated exposure</b>	Not classified.
<b>Chronic toxicity</b>	Contains a known or suspected reproductive toxin.
<b>Target organ effects</b>	Central nervous system, Eyes, Reproductive System, Respiratory system, Skin.
<b>Aspiration hazard</b>	Not classified.
<b>Other adverse effects</b>	No information available.

**Numerical measures of toxicity - Product Information**

**Unknown acute toxicity**                      99.9 % of the mixture consists of ingredient(s) of unknown toxicity

**12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

0 % 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

**Persistence and degradability**

Not a PBT or vPvB substance or mixture.

**Bioaccumulation**

Chemical name	Partition coefficient
Formamide 75-12-7	-0.82

**Mobility**

No data available.

**Other adverse effects**

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

<u>TDG</u>	Not regulated
<u>MEX</u>	Not regulated
<u>ICAO (air)</u>	Not regulated
<u>IATA</u>	Not regulated
<u>IMDG</u>	Not regulated
<u>RID</u>	Not regulated
<u>ADR</u>	Not regulated
<u>ADN</u>	Not regulated

## 15. REGULATORY INFORMATION

### International Inventories

<b>TSCA</b>	Complies
<b>DSL/NDL</b>	Does not comply
<b>EINECS/ELINCS</b>	Does not comply
<b>ENCS</b>	Does not comply
<b>IECSC</b>	Complies
<b>KECL</b>	Does not comply
<b>PICCS</b>	Complies
<b>AICS</b>	Complies

### Legend:

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDL** - 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

**KECL** - Korean Existing and Evaluated Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**AICS** - Australian 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

<b>Acute health hazard</b>	Yes
<b>Chronic Health Hazard</b>	Yes
<b>Fire hazard</b>	No
<b>Sudden release of pressure hazard</b>	No
<b>Reactive Hazard</b>	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
Water 7732-18-5	-	-	X

**U.S. EPA Label Information**

EPA Pesticide Registration Number Not applicable

<b>16. OTHER INFORMATION</b>
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<b><u>NFPA</u></b>	Health hazards 2	Flammability 1	Instability 0	Physical and Chemical Properties -
<b><u>HMIS</u></b>	Health hazards 2	Flammability 1	Physical hazards 0	Personal protection X

Prepared By Illumina Inc.  
 Issuing Date 02-Mar-2015  
 Revision Date 02-Mar-2015

Revision Note  
 Not applicable.

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**End of Safety Data Sheet**