

Printing date 08/09/2018 Reviewed on 03/22/2016

1 Identification

- · Product identifier
- · Trade name: 5-bromo-4-chloro-3-indolyl β-D-galactopyranoside (X-GAL)
- · Article number: X1001-5 & X1001-25
- · Application of the substance / the mixture Laboratory Reagent
- · Details of the supplier of the safety data sheet
- · Manufacturer/Supplier:

Zymo Research Corp.

17062 Murphy Ave.

Irvine, CA 92614

USA

Phone: 1-949-679-1190 or 1-888-882-9682

sds@zymoresearch.com

- · Information department: Product safety department
- · Emergency telephone number:

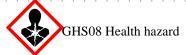
During normal business hours (8 am to 5 pm Pacific Standard Time): +1 (949) 679 1190

2 Hazard(s) identification

· Classification of the substance or mixture



Flam. Liq. 3 H226 Flammable liquid and vapor.



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



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.

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· 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.

Wash thoroughly after handling.

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

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.

If eye irritation persists: Get medical advice/attention.

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 = 2 Reactivity = 0

· HMIS-ratings (scale 0 - 4)

HEALTH *2
FIRE 2
REACTIVITY 0

Health = *2

Fire = 2 Reactivity = 0

· Other hazards

· Results of PBT and vPvB assessment

· **PBT**: Not applicable.

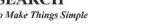
· vPvB: Not applicable.

3 Composition/information on ingredients

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

· Dangerous components:		
CAS: 68-12-2	N,N-dimethylformamide	50%
CAS: 7240-90-6	5-bromo-4-chloroindol-3-yl-\(\text{B-D-galactopyranoside} \)	2.5%

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4 First-aid measures

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

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. If required, provide artificial respiration if trained to do so. Keep patient warm. Consult doctor if symptoms persist.

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

- · After skin contact: Immediately rinse with water.
- · After eye contact:

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

- · After swallowing: Do not induce vomiting; immediately call for medical help.
- · 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.

- · Advice for firefighters
- · Protective equipment: Wear self-contained breathing apparatus for fighting fires involving this material

6 Accidental release measures

- · Personal precautions, protective equipment and emergency procedures Wear protective clothing.
- · 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.

See Section 13 for disposal information.

· Protective Action Criteria for Chemicals

· PAC-1:

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

2 ppm

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	(Contd. of page 3)
• PAC-2:	
CAS: 68-12-2 N,N-dimethylformamide	91 ppm
· PAC-3:	
CAS: 68-12-2 N,N-dimethylformamide	530 ppm

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 respiratory protective device available.
- · Conditions for safe storage, including any incompatibilities
- · Storage:
- · Requirements to be met by storerooms and receptacles: No special requirements.
- · Information about storage in one common storage facility: Not required.
- · Further information about storage conditions: Keep receptacle tightly sealed.
- · Specific end use(s) Laboratory reagent

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:

The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.

At this time, the remaining constituent has no known exposure limits.

CAS:	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: 15 mg/m³, 5 ppm Skin; BEI		

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· 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.
- · 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.

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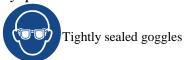


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· Eye protection:



Information on basic physical and c General Information	hemical properties	
Appearance:		
Form:	Liquid	
Color:	Clear	
Odor:	Fish-like	
Odor threshold:	Not determined.	
pH-value:	Not determined.	
Change in condition		
Melting point/Melting range:	Undetermined.	
Boiling point/Boiling range:	152 °C (305.6 °F)	
Flash point:	58 °C (136.4 °F)	
Flammability (solid, gaseous):	Not applicable.	
Ignition temperature:	440 °C (824 °F)	
Decomposition temperature:	Not determined.	
Auto igniting:	Product is not selfigniting.	
Danger of explosion:	Not determined.	
Explosion limits:		
Lower:	2.2 Vol %	
Upper:	16 Vol %	
Vapor pressure at 20 °C (68 °F):	3.5 hPa (2.6 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/wate	er): Not determined.	

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Kinematic:	Not determined.	
· Solvent content: VOC content:	0.00 % 0.0 g/l / 0.00 lb/gl	
Solids content: · Other information	2.0% No further relevant information available.	

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:		
CAS: 68-12-2 N,N-dimethylformamide		
Oral	LD50	2,800 mg/kg (rat)
Dermal	LD50	4,720 mg/kg (rabbit)
	LC50/4 h	9,400 mg/l (mouse)

- · Primary irritant effect:
- · on the skin: No irritant effect.
- · on the eye: Irritating effect.
- · Sensitization: No sensitizing effects known.
- · 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.

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· OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

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

13 Disposal considerations

- · Waste treatment methods
- · Recommendation:

Dispose of contents in accordance with local/regional/national, and international recommendations.

- · Uncleaned packagings:
- · Recommendation:

Dispose of container in acoordance with local/regional/national and international recommendations.

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14 Trans	nort in	torma	tion
		, - 1 11 100	

· UN-Number	
· DOT, IMDG, IATA	UN2265

, ,

· UN proper shipping name

 \cdot **DOT** N,N-Dimethylformamide mixture

· *IMDG*, *IATA* N,N-DIMETHYLFORMAMIDE mixture

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(Contd. of page 8) · Transport hazard class(es) $\cdot DOT$ · Class 3 Flammable liquids · Label · IMDG, IATA · Class 3 Flammable liquids · Label 3 · Packing group · DOT, IMDG, IATA III · Environmental hazards: Not applicable. Warning: Flammable liquids · Special precautions for user · Danger code (Kemler): 30 · EMS Number: F-E,S-D · Stowage Category Α · Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable. · Transport/Additional information: · 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 ml Maximum net quantity per outer packaging: 1000 ml · UN "Model Regulation": UN 2265 N,N-DIMETHYLFORMAMIDE MIXTURE, 3, III

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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

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

CAS: 7240-90-6 5-bromo-4-chloroindol-3-yl-\(\beta\)-D-galactopyranoside

- · Proposition 65
- · Chemicals known to cause cancer:

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

· 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

A4

· 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).
- · 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

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.

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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.

Wash thoroughly after handling.

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

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.

If eye irritation persists: Get medical advice/attention.

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.

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

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Department issuing SDS:

Zymo Research Corp.

Safety Department

17062 Murphy Ave.

Irvine, CA 92614

USA

Phone: 1-949-679-1190 or 1-888-882-9682

- · Contact: sds@zymoresearch.com
- · Date of preparation / last revision 08/09/2018 / -
- · 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

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

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PEL: Permissible Exposure Limit REL: Recommended Exposure Limit BEI: Biological Exposure Limit

Flam. Liq. 3: Flammable liquids – Category 3
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
Repr. 1A: Reproductive toxicity – Category 1A