



SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Date of issue: 05/07/2014

Version 1.0

SECTION 1. Identification

Product identifier

Product number	BI0424
Product name	Oxidizing Reagent 0.05 M Iodine in Pyridine/Water 90/10 (v/v) For DNA Synthesis Novabiochem®

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Reagent for analysis
-----------------	----------------------

Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation 290 Concord Road, Billerica, MA 01821, United States of America General Inquiries: +1-978-715-4321 Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)
---------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
---------------------	------------------------------------------------------------------------------------------------------

SECTION 2. Hazards identification

GHS Classification

Flammable liquid, Category 2, H225
Acute toxicity, Category 4, Oral, H302
Acute toxicity, Category 4, Inhalation, H332
Acute toxicity, Category 4, Dermal, H312

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms



Signal Word

Danger

Hazard Statements

H225 Highly flammable liquid and vapor.
H302 + H312 + H332 Harmful if swallowed, in contact with skin or if inhaled.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	BI0424	Version 1.0
Product name	Oxidizing Reagent 0.05 M Iodine in Pyridine/Water 90/10 (v/v) For DNA Synthesis Novabiochem®	

Precautionary Statements

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P240 Ground/bond container and receiving equipment.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

OSHA Hazards

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS and may deviate from the GHS information.

Other hazards

None known.

SECTION 3. Composition/information on ingredients

Hazardous ingredients

Chemical Name (Concentration)

CAS-No.

Pyridine (>= 70 % - < 90 %)

110-86-1

Exact percentages are being withheld as a trade secret.

Iodine (>= 1 % - < 5 %)

7553-56-2

Exact percentages are being withheld as a trade secret.

SECTION 4. First aid measures

Description of first-aid measures

Inhalation

After inhalation: fresh air. If breathing stops: mouth-to-mouth breathing or artificial respiration. Oxygen if necessary. Immediately call in physician.

Skin contact

After skin contact: wash off with plenty of water. Remove contaminated clothing. Consult a physician.

Eye contact

After eye contact: rinse out with plenty of water.

Ingestion

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

We have no description of any toxic symptoms.

Indication of any immediate medical attention and special treatment needed

No information available.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

BI0424

Version 1.0

Product name

Oxidizing Reagent 0.05 M Iodine
in Pyridine/Water
90/10 (v/v) For DNA
Synthesis Novabiochem®

SECTION 5. Fire-fighting measures

Extinguishing media

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Pay attention to flashback.

Forms explosive mixtures with air at ambient temperatures.

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

Environmental precautions

Do not let product enter drains. Risk of explosion.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.

SECTION 7. Handling and storage

Precautions for safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols.

Observe label precautions.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number BI0424 Version 1.0
Product name Oxidizing Reagent 0.05 M Iodine
in Pyridine/Water
90/10 (v/v) For DNA Synthesis Novabiochem®

Store at room temperature.

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis	Value	Threshold limits	Remarks
<i>Pyridine 110-86-1</i>			
ACGIH	Time Weighted Average (TWA):	1 ppm	
NIOSH/GUIDE	Recommended exposure limit (REL):	5 ppm 15 mg/m ³	
OSHA_TRANS	PEL:	5 ppm 15 mg/m ³	
Z1A	Time Weighted Average (TWA):	5 ppm 15 mg/m ³	
<i>Iodine 7553-56-2</i>			
ACGIH	Time Weighted Average (TWA):	0.01 ppm	Form of exposure: Inhalable fraction and vapor.
	Short Term Exposure Limit (STEL):	0.1 ppm	Form of exposure: Vapor and aerosol.
NIOSH/GUIDE	Ceiling Limit Value and Time Period (if specified):	0.1 ppm 1 mg/m ³	
OSHA_TRANS	Ceiling Limit Value:	0.1 ppm 1 mg/m ³	
Z1A	Ceiling Limit Value:	0.1 ppm 1 mg/m ³	

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

Eye/face protection

Safety glasses

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

BI0424

Version 1.0

Product name

Oxidizing Reagent 0.05 M Iodine
in Pyridine/Water
90/10 (v/v) For DNA
Synthesis Novabiochem®

Other protective equipment:

Flame retardant antistatic protective clothing

Respiratory protection

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	No strong odor known.
Odor Threshold	No information available.
pH	No information available.
Melting point	No information available.
Boiling point	No information available.
Flash point	68 °F (20 °C)
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapor pressure	No information available.
Relative vapor density	No information available.
Density	No information available.
Relative density	No information available.
Water solubility	No information available.
Partition coefficient: n-octanol/water	No information available.
Autoignition temperature	No information available.
Decomposition temperature	No information available.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	BI0424	Version 1.0
Product name	Oxidizing Reagent 0.05 M Iodine in Pyridine/Water 90/10 (v/v) For DNA Synthesis Novabiochem®	

Viscosity, dynamic	No information available.
Explosive properties	No information available.
Oxidizing properties	No information available.

SECTION 10. Stability and reactivity

Reactivity

Vapors may form explosive mixture with air.

Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

Possibility of hazardous reactions

Dangerous reactions are not expected handling the product according to its intended use.

Conditions to avoid

Warming.

Incompatible materials

no information available

Hazardous decomposition products

in the event of fire: See section 5.

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Eye contact, Skin contact

Target Organs

Eyes

Skin

Central nervous system

Liver

Kidneys

gastrointestinal tract

Respiratory system

cardiovascular system

Acute oral toxicity

Acute toxicity estimate: 1,001 mg/kg

Calculation method

Acute inhalation toxicity

Acute toxicity estimate: 19.59 mg/l; 4 h

Calculation method

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

BI0424

Version 1.0

Product name

Oxidizing Reagent 0.05 M Iodine
in Pyridine/Water
90/10 (v/v) For DNA
Synthesis Novabiochem®

Acute dermal toxicity

Acute toxicity estimate : 1,245 mg/kg

Calculation method

Specific target organ systemic toxicity - single exposure

The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ systemic toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC

No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

ACGIH

Confirmed animal carcinogen with unknown relevance to humans.

Pyridine

110-86-1

Further information

Handle in accordance with good industrial hygiene and safety practice.

Ingredients

Pyridine

Acute oral toxicity

LD50 rat: 891 mg/kg (RTECS)

Acute inhalation toxicity

LC50 rat: 17.75 mg/l; 4 h

US-EPA

Acute dermal toxicity

LD50 rabbit: 1,121 mg/kg (RTECS)

Skin irritation

rabbit

Result: slight irritation
(RTECS)

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

BI0424

Version 1.0

Product name

Oxidizing Reagent 0.05 M Iodine
in Pyridine/Water
90/10 (v/v) For DNA
Synthesis Novabiochem®

Eye irritation

rabbit

Result: Severe irritations

(Lit.)

Sensitization

Sensitization test: guinea pig

Result: negative

(Lit.)

Germ cell mutagenicity

Genotoxicity in vivo

Mutagenicity (mammal cell test): micronucleus.

Result: negative

(National Toxicology Program)

Mutagenicity (mammal cell test): chromosome aberration.

Result: negative

(National Toxicology Program)

Genotoxicity in vitro

Ames test

Result: negative

(Lit.)

Teratogenicity

Did not show teratogenic effects in animal experiments. (External MSDS)

Iodine

Acute oral toxicity

LD50 rat: 14,000 mg/kg (RTECS)

Acute inhalation toxicity

LC50 rat: > 4.588 mg/l; 4 h ; dust/mist

OECD Test Guideline 403

Acute dermal toxicity

LD50 rabbit: 1,425 mg/kg

US-EPA

Skin irritation

In vitro study

Result: non-corrosive

OECD Test Guideline 435

(ECHA)

Sensitization

In animal experiments: mouse

Result: Does not cause skin sensitization.

Method: OECD Test Guideline 429

Repeated dose toxicity

rat

female

Oral

100 d

daily

NOAEL: 3 mg/l

LOAEL: 10 mg/l

OECD Test Guideline 408

thyroid

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

BI0424

Version 1.0

Product name

Oxidizing Reagent 0.05 M Iodine
in Pyridine/Water
90/10 (v/v) For DNA
Synthesis Novabiochem®

(as aqueous solution)

rat

male and female

Oral

29 - 47 d

daily

NOAEL: 10 mg/kg

OECD Test Guideline 422

Germ cell mutagenicity

Genotoxicity in vitro

Mutagenicity (mammal cell test):

MOUSE LYMPHOMA TEST

Result: negative

Method: OECD Test Guideline 476

UDS (Unscheduled DNA synthesis assay)

Result: negative

Method: OECD Test Guideline 482

SECTION 12. Ecological information

Ecotoxicity

No information available.

Persistence and degradability

No information available.

Bioaccumulative potential

No information available.

Mobility in soil

No information available.

Ingredients

Pyridine

Toxicity to fish

LC50 *Oncorhynchus mykiss* (rainbow trout): 4.6 mg/l; 96 h (ECOTOX Database)

Toxicity to daphnia and other aquatic invertebrates

EC5 *E.sulcatum*: 3.5 mg/l; 72 h (Lit.) (maximum permissible toxic concentration)

EC50 *Daphnia magna* (Water flea): 240 mg/l; 24 h (ECOTOX Database)

Toxicity to algae

IC5 *Scenedesmus quadricauda* (Green algae): 120 mg/l; 7 d (Lit.) (maximum permissible toxic concentration)

Toxicity to bacteria

EC5 *Pseudomonas putida*: 340 mg/l; 16 h (Lit.) (maximum permissible toxic concentration)

Iodine

Toxicity to fish

static test LC50 *Oncorhynchus mykiss* (rainbow trout): 1.67 mg/l; 96 h (ECHA)

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	BI0424	Version 1.0
Product name	Oxidizing Reagent 0.05 M Iodine in Pyridine/Water 90/10 (v/v) For DNA Synthesis Novabiochem®	

Toxicity to daphnia and other aquatic invertebrates

static test EC50 Daphnia magna (Water flea): 0.55 mg/l; 48 h (ECHA)

Toxicity to algae

Growth inhibition ErC50 Desmodesmus subspicatus (green algae): 0.13 mg/l; 72 h
OECD Test Guideline 201

Growth inhibition NOEC Desmodesmus subspicatus (green algae): 0.025 mg/l; 72 h
OECD Test Guideline 201

Toxicity to bacteria

EC50 activated sludge: 280 mg/l; 3 h
OECD Test Guideline 209

Biodegradability

The methods for determining the biological degradability are not applicable to inorganic substances.

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number	UN 1282
Proper shipping name	PYRIDINE SOLUTION
Class	3
Packing group	II
Environmentally hazardous	--

Air transport (IATA)

UN number	UN 1282
Proper shipping name	PYRIDINE SOLUTION
Class	3
Packing group	II
Environmentally hazardous	--
Special precautions for user	no

Sea transport (IMDG)

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	BI0424	Version 1.0
Product name	Oxidizing Reagent 0.05 M Iodine in Pyridine/Water 90/10 (v/v) For DNA Synthesis Novabiochem®	

UN number	UN 1282
Proper shipping name	PYRIDINE SOLUTION
Class	3
Packing group	II
Environmentally hazardous	--
Special precautions for user	yes
EmS	F-E S-D

SECTION 15. Regulatory information

United States of America

OSHA Hazards

Target organ effects

Harmful if swallowed.

Harmful by skin absorption.

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

SARA 311/312 Hazards

Acute Health Hazard

Chronic Health Hazard

SARA 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

Ingredients

Pyridine	110-86-1	89 %
----------	----------	------

SARA 302

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

DEA List I

Listed

Ingredients

Iodine	7553-56-2
--------	-----------

DEA List II

Not listed

US State Regulations

Massachusetts Right To Know

Ingredients

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

BI0424

Version 1.0

Product name

Oxidizing Reagent 0.05 M Iodine
in Pyridine/Water
90/10 (v/v) For DNA
Synthesis Novabiochem®

Pyridine

Iodine

Pennsylvania Right To Know

Ingredients

Pyridine

water

Iodine

New Jersey Right To Know

Ingredients

Pyridine

water

Iodine

California Prop 65 Components

WARNING: this product contains a chemical known in the State of California to cause cancer.

Ingredients

Pyridine

Notification status

TSCA:

All components of the product are listed in the TSCA-inventory.

DSL:

All components of this product are on the Canadian DSL.

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

Full text of H-Statements referred to under sections 2 and 3.

H225	Highly flammable liquid and vapor.
H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H332	Harmful if inhaled.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Date of issue: 05/07/2014

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

All rights reserved. Millipore and the "M" Mark are registered trademarks of Merck KGaA, Darmstadt, Germany.