

07/21/2015

### Kit Components

Product code	Description
<b>V3861</b>	<b>AKT2 Kinase Enzyme System</b>

Components:

Turnkey2	Active Enzyme (G)
Turnkey5	Kinase Substrate
Turnkey4	5x Reaction Buffer A
Turnkey10	0.1M DTT





## Safety Data Sheet acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

### 1: Identification

#### 1.1 Product identifier

Trade name: Active Enzyme (G)

Article number: Turnkey2

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

No further relevant information available.

Application of the substance / the mixture Laboratory chemicals

#### 1.3 Details of the supplier of the safety data sheet

##### Manufacturer/Supplier:

Promega Corporation  
2800 Woods Hollow Road  
Madison, WI 53711  
U.S.A.  
1-800-356-9526 or (608)-274-4330

Information department: SDS author: [Regulatory.Affairs@promega.com](mailto:Regulatory.Affairs@promega.com)

#### 1.4 Emergency telephone number:

For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300

Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

### 2: Hazard(s) identification

#### 2.1 Classification of the substance or mixture

Classification according to the Hazard Communication Standard (HCS)

The product is not classified as hazardous according to the HCS regulation.

#### 2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 Void

Hazard pictograms Void

Signal word Void

Hazard statements Void

Classification system:

NFPA ratings (scale 0 - 4)

Health = 0

Fire = 1

Reactivity = 0

HMIS-ratings (scale 0 - 4)

Health = 1

Fire = 1

Reactivity = 0

OSHA Hazard Overview (Criteria according to 29CFR1910.1200): Not applicable

Target Organ(s): May cause Kidney damage (Nephrotoxin)

#### 2.3 Other hazards

This mixture has not been tested to determine the overall health hazard; therefore in accordance with 29CFR1910.1200, the data reported above pertains to the hazardous ingredients of this mixture.

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# Safety Data Sheet

## acc. to OSHA HCS

Printing date 07/21/2015

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Trade name: Active Enzyme (G)

(Contd. of page 1)

**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.

### 3: Composition/information on ingredients

**3.2 Chemical characterization: Mixtures****Description:**

The product is a mixture of the hazardous substances listed below along with unlisted nonhazardous substances. The exact concentration percentages of the hazardous substances are withheld as a Promega Corp. trade secret.

**Dangerous components:**

56-81-5	glycerol	20-25%
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**Additional information:** For the wording of the listed risk phrases refer to section 15.

### 4: First-aid measures

**4.1 Description of first aid measures****General information:** No special measures required.**After inhalation:** If the patient feels unwell or is concerned, obtain medical advice.**After skin contact:** Generally the product does not irritate the skin.**After eye contact:** Rinse opened eye for several minutes under running water.**After swallowing:** If the patient feels unwell or is concerned, obtain medical advice.**4.2 Most important symptoms and effects, both acute and delayed** None**4.3 Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

### 5: Fire-fighting measures

**5.1 Extinguishing media****Suitable extinguishing agents:**CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.**5.2 Special hazards arising from the substance or mixture** None known**5.3 Advice for firefighters**

No special advice

No special advice

**Protective equipment:** No special measures required.

### 6: Accidental release measures

**6.1 Personal precautions, protective equipment and emergency procedures** Not required.**6.2 Environmental precautions:**

Dilute with plenty of water.

Do not allow to enter sewers/ surface or ground water.

**6.3 Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

**6.4 Reference to other sections**

No dangerous substances are released.

See Section 7 for information on safe handling.

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Trade name: Active Enzyme (G)

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See Section 13 for disposal information.

## 7: Handling and storage

**7.1 Precautions for safe handling** No special measures required.

**Information about protection against explosions and fires:** No special measures required.

**7.2 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:** None.

**7.3 Specific end use(s)** No further relevant information available.

## 8: Exposure controls/personal protection

### 8.1 Control parameters

**Components with limit values that require monitoring at the workplace:**

**56-81-5 glycerol**

PEL Long-term value: 15\* 5\*\* mg/m<sup>3</sup>  
mist; \*total dust \*\*respirable fraction

TLV TLV withdrawn-insufficient data human occup. exp.

**Additional information:** The lists that were valid during the creation were used as basis.

### 8.2 Exposure controls

**Personal protective equipment:**

**General protective and hygienic measures:**

The usual precautionary measures for handling chemicals should be followed.

**Breathing equipment:** Not required.

**Protection of hands:** Not required.

**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.

**Eye protection:** Not required.

## 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

#### General Information

#### Appearance:

<b>Form:</b>	Fluid
<b>Color:</b>	Colorless
<b>Odor:</b>	Not determined
<b>Odour threshold:</b>	Not determined.

#### Change in condition

<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	100 °C (212 °F)
<b>Flash point:</b>	> 100 °C (> 212 °F)

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# Safety Data Sheet

## acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

Trade name: Active Enzyme (G)

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<b>Flammability (solid, gaseous):</b>	Not applicable.
<b>Ignition temperature:</b>	400 °C (752 °F)
<b>Decomposition temperature:</b>	Not determined.
<b>Auto igniting:</b>	Product is not selfigniting.
<b>Danger of explosion:</b>	Product does not present an explosion hazard.
<b>Explosion limits:</b>	
<b>Lower:</b>	0.9 Vol %
<b>Upper:</b>	Not determined.
<b>Vapor pressure at 20 °C (68 °F):</b>	0.1 hPa
<b>Density:</b>	Not determined.
<b>Relative density</b>	Not determined.
<b>Vapour density</b>	Not determined.
<b>Evaporation rate</b>	Not determined.
<b>Solubility in / Miscibility with</b>	
<b>Water:</b>	Fully miscible.
<b>Partition coefficient (n-octanol/water):</b>	Not determined.
<b>Viscosity:</b>	
<b>Dynamic:</b>	Not determined.
<b>Kinematic:</b>	Not determined.
<b>Organic solvents:</b>	25.0 %
<b>Water:</b>	73.0 %
<b>Solids content:</b>	1.7 %
<b>9.2 Other information</b>	No further relevant information available.

\*

### 10: Stability and reactivity

**10.1 Reactivity** No further relevant information available.

**10.2 Chemical stability**

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

**10.3 Possibility of hazardous reactions** No dangerous reactions known.

**10.4 Conditions to avoid** No further relevant information available.

**10.5 Incompatible materials:** No further relevant information available.

**10.6 Hazardous decomposition products:** No dangerous decomposition products known.

\*

### 11: Toxicological information

**11.1 Information on toxicological effects**

**Acute toxicity:**

**LD/LC50 values that are relevant for classification:** No data available

**Primary irritant effect:**

**on the skin:** Based on available data, the classification criteria are not met.

**on the eye:** Based on available data, the classification criteria are not met.

**Sensitization:** Based on available data, the classification criteria are not met.

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Trade name: Active Enzyme (G)

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**Additional toxicological information:****Carcinogenic categories****IARC (International Agency for Research on Cancer)**

None of the ingredients are listed.

**NTP (National Toxicology Program)**

None of the ingredients are listed.

**OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients are listed.

## 12: Ecological information

**12.1 Toxicity****Aquatic toxicity:** Not harmful to the aquatic environment**12.2 Persistence and degradability** Not available**12.3 Bioaccumulative potential** Not known**12.4 Mobility in soil** No further relevant information available.**Ecotoxicological effects:****Remark:** Not 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.

**12.5 Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**12.6 Other adverse effects** No further relevant information available.

## 13: Disposal considerations

**13.1 Waste treatment methods****Recommendation:**

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

Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

**Uncleaned packagings:****Recommendation:** Disposal must be made according to official regulations.**Recommended cleansing agent:** Water, if necessary with cleansing agents.

## 14: Transport information

**14.1 UN-Number**

Not hazardous for transportation

**DOT, ADR, ADN, IMDG, IATA**

Void

**14.2 UN proper shipping name**

None

**DOT, ADR, ADN, IMDG, IATA**

Void

**14.3 Transport hazard class(es)**

None

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Trade name: Active Enzyme (G)

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**DOT, ADR, ADN, IMDG, IATA**  
**Class**

Void

**14.4 Packing group**

None

**DOT, ADR, IMDG, IATA**

Void

**14.5 Environmental hazards:**  
**Marine pollutant:**

No

**14.6 Special precautions for user**

Not applicable.

**14.7 Transport in bulk according to Annex II of**  
**MARPOL73/78 and the IBC Code**

Not applicable.

**UN "Model Regulation":**

Void

## 15: Regulatory information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**  
**Sara**

**Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

**Section 313 (Specific toxic chemical listings):**

None of the ingredients are listed.

**TSCA (Toxic Substances Control Act):**

All ingredients are listed.

**Proposition 65**

**Chemicals known to cause cancer:**

None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

**Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

**Carcinogen categories**

**EPA (Environmental Protection Agency)**

None of the ingredients are listed.

**TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients are listed.

**MAK (German Maximum Workplace Concentration)**

None of the ingredients are listed.

**NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients are listed.

**National regulations:**

**Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

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# Safety Data Sheet

## acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

Trade name: Active Enzyme (G)

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**15.2 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:**

Promega Corporation  
Environmental Health and Safety Department  
2800 Woods Hollow Road  
Madison, WI  
Ph: (608) 274-4330

#### **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
ICAO: International Civil Aviation Organization  
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  
GHS: Globally Harmonized System of Classification and Labeling of Chemicals  
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)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
vPvB: very Persistent and very Bioaccumulative

**\* Data compared to the previous version altered.**

US



## Safety Data Sheet acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

### 1: Identification

#### 1.1 Product identifier

Trade name: Kinase Substrate

Article number: Turnkey5

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

No further relevant information available.

Application of the substance / the mixture Laboratory chemicals

#### 1.3 Details of the supplier of the safety data sheet

##### Manufacturer/Supplier:

Promega Corporation  
2800 Woods Hollow Road  
Madison, WI 53711  
U.S.A.  
1-800-356-9526 or (608)-274-4330

Information department: SDS author: [Regulatory.Affairs@promega.com](mailto:Regulatory.Affairs@promega.com)

#### 1.4 Emergency telephone number:

For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300

Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

### 2: Hazard(s) identification

#### 2.1 Classification of the substance or mixture

Classification according to the Hazard Communication Standard (HCS)

The product is not classified as hazardous according to the HCS regulation.

#### 2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 Void

Hazard pictograms Void

Signal word Void

Hazard statements Void

Classification system:

NFPA ratings (scale 0 - 4)

Health = 0

Fire = 0

Reactivity = 0

HMIS-ratings (scale 0 - 4)

Health = 0

Fire = 0

Reactivity = 0

OSHA Hazard Overview (Criteria according to 29CFR1910.1200): Not applicable

Target Organ(s): Not applicable or unknown

#### 2.3 Other hazards

This mixture has not been tested to determine the overall health hazard; therefore in accordance with 29CFR1910.1200, the data reported above pertains to the hazardous ingredients of this mixture.

(Contd. on page 2)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

Trade name: Kinase Substrate

(Contd. of page 1)

**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.

## 3: Composition/information on ingredients

**3.2 Chemical characterization: Mixtures****Description:**

The product is a mixture of the hazardous substances listed below along with unlisted nonhazardous substances. The exact concentration percentages of the hazardous substances are withheld as a Promega Corp. trade secret.

**Dangerous components:** Void**Additional information:** For the wording of the listed risk phrases refer to section 15.

## 4: First-aid measures

**4.1 Description of first aid measures****General information:** No special measures required.**After inhalation:** If the patient feels unwell or is concerned, obtain medical advice.**After skin contact:** Generally the product does not irritate the skin.**After eye contact:** Rinse opened eye for several minutes under running water.**After swallowing:** If the patient feels unwell or is concerned, obtain medical advice.**4.2 Most important symptoms and effects, both acute and delayed** None**4.3 Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

## 5: Fire-fighting measures

**5.1 Extinguishing media****Suitable extinguishing agents:**CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.**5.2 Special hazards arising from the substance or mixture** None known**5.3 Advice for firefighters** No special advice**Protective equipment:** No special measures required.

## 6: Accidental release measures

**6.1 Personal precautions, protective equipment and emergency procedures** Not required.**6.2 Environmental precautions:** Dilute with plenty of water.**6.3 Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

**6.4 Reference to other sections**

No dangerous substances are released.

See Section 7 for information on safe handling.

See Section 13 for disposal information.

## 7: Handling and storage

**7.1 Precautions for safe handling** No special measures required.

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US

# Safety Data Sheet

acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

Trade name: Kinase Substrate

(Contd. of page 2)

**Information about protection against explosions and fires:** The product is not flammable.

## 7.2 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:** None.

**7.3 Specific end use(s)** No further relevant information available.

## 8: Exposure controls/personal protection

### 8.1 Control parameters

**Components with limit values that require monitoring at the workplace:**

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

**Additional information:** The lists that were valid during the creation were used as basis.

### 8.2 Exposure controls

**Personal protective equipment:**

**General protective and hygienic measures:**

The usual precautionary measures for handling chemicals should be followed.

**Breathing equipment:** Not required.

**Protection of hands:** Not required.

**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.

**Eye protection:** Not required.

## 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

#### General Information

#### Appearance:

<b>Form:</b>	Fluid
<b>Color:</b>	Colorless
<b>Odor:</b>	Not determined
<b>Odour threshold:</b>	Not determined.

#### Change in condition

<b>Melting point/Melting range:</b>	0 °C (32 °F)
<b>Boiling point/Boiling range:</b>	100 °C (212 °F)
<b>Flash point:</b>	Not applicable.

**Flammability (solid, gaseous):** Not applicable.

#### Ignition temperature:

**Decomposition temperature:** Not determined.

**Auto igniting:** Product is not selfigniting.

**Danger of explosion:** Product does not present an explosion hazard.

#### Explosion limits:

<b>Lower:</b>	Not determined.
<b>Upper:</b>	Not determined.

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# Safety Data Sheet

## acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

Trade name: Kinase Substrate

(Contd. of page 3)

**Vapor pressure:** Not determined.

**Density:** Not determined.

**Relative density** Not determined.

**Vapour density** Not determined.

**Evaporation rate** Not determined.

**Solubility in / Miscibility with**

**Water:** Fully miscible.

**Partition coefficient (n-octanol/water):** Not determined.

**Viscosity:**

**Dynamic:** Not determined.

**Kinematic:** Not determined.

**Organic solvents:** 0.0 %

**Water:** 99.9 %

**Solids content:** 0.1 %

**9.2 Other information** No further relevant information available.

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## 10: Stability and reactivity

**10.1 Reactivity** No further relevant information available.

**10.2 Chemical stability**

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

**10.3 Possibility of hazardous reactions** No dangerous reactions known.

**10.4 Conditions to avoid** No further relevant information available.

**10.5 Incompatible materials:** No further relevant information available.

**10.6 Hazardous decomposition products:** No dangerous decomposition products known.

\*

## 11: Toxicological information

**11.1 Information on toxicological effects**

**Acute toxicity:**

**LD/LC50 values that are relevant for classification:** No data available

**Primary irritant effect:**

**on the skin:** Based on available data, the classification criteria are not met.

**on the eye:** Based on available data, the classification criteria are not met.

**Sensitization:** Based on available data, the classification criteria are not met.

**Additional toxicological information:**

**Carcinogenic categories**

**IARC (International Agency for Research on Cancer)**

None of the ingredients are listed.

**NTP (National Toxicology Program)**

None of the ingredients are listed.

**OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients are listed.

US

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# Safety Data Sheet

acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

Trade name: Kinase Substrate

(Contd. of page 4)

## 12: Ecological information

### 12.1 Toxicity

**Aquatic toxicity:** Not harmful to the aquatic environment

**12.2 Persistence and degradability** Not available

**12.3 Bioaccumulative potential** Not known

**12.4 Mobility in soil** No further relevant information available.

**Ecotoxicological effects:**

**Remark:** Not available

**Additional ecological information:**

**General notes:** Generally not hazardous for water.

### 12.5 Results of PBT and vPvB assessment

**PBT:** Not applicable.

**vPvB:** Not applicable.

**12.6 Other adverse effects** No further relevant information available.

## 13: Disposal considerations

### 13.1 Waste treatment methods

**Recommendation:**

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

Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

**Uncleaned packagings:**

**Recommendation:** Disposal must be made according to official regulations.

**Recommended cleansing agent:** Water, if necessary with cleansing agents.

## 14: Transport information

### 14.1 UN-Number

DOT, ADR, ADN, IMDG, IATA

Not hazardous for transportation

Void

### 14.2 UN proper shipping name

DOT, ADR, ADN, IMDG, IATA

None

Void

### 14.3 Transport hazard class(es)

DOT, ADR, ADN, IMDG, IATA

Class

None

Void

### 14.4 Packing group

DOT, ADR, IMDG, IATA

None

Void

### 14.5 Environmental hazards:

**Marine pollutant:**

No

### 14.6 Special precautions for user

Not applicable.

### 14.7 Transport in bulk according to Annex II of

MARPOL73/78 and the IBC Code

Not applicable.

UN "Model Regulation":

Void

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# Safety Data Sheet

acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

Trade name: Kinase Substrate

(Contd. of page 5)

## 15: Regulatory information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**  
Sara

**Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

**Section 313 (Specific toxic chemical listings):**

None of the ingredients are listed.

**TSCA (Toxic Substances Control Act):**

7732-18-5 | water

**Proposition 65**

**Chemicals known to cause cancer:**

None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

**Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

**Carcinogenicity categories**

**EPA (Environmental Protection Agency)**

None of the ingredients are listed.

**TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients are listed.

**MAK (German Maximum Workplace Concentration)**

None of the ingredients are listed.

**NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients are listed.

**National regulations:**

**Water hazard class:** Generally not hazardous for water.

**15.2 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:**

Promega Corporation

Environmental Health and Safety Department

2800 Woods Hollow Road

Madison, WI

Ph: (608) 274-4330

**Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

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# Safety Data Sheet

acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

**Trade name: Kinase Substrate**

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*ICAO: International Civil Aviation Organization**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**GHS: Globally Harmonized System of Classification and Labeling of Chemicals**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)**LC50: Lethal concentration, 50 percent**LD50: Lethal dose, 50 percent**PBT: Persistent, Bioaccumulative and Toxic**vPvB: very Persistent and very Bioaccumulative***\* Data compared to the previous version altered.**

US





## Safety Data Sheet acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

### 1: Identification

#### 1.1 Product identifier

**Trade name:** 5x Reaction Buffer A

**Article number:** Turnkey4

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

No further relevant information available.

**Application of the substance / the mixture** Laboratory chemicals

#### 1.3 Details of the supplier of the safety data sheet

##### Manufacturer/Supplier:

Promega Corporation  
2800 Woods Hollow Road  
Madison, WI 53711  
U.S.A.  
1-800-356-9526 or (608)-274-4330

**Information department:** SDS author: [Regulatory.Affairs@promega.com](mailto:Regulatory.Affairs@promega.com)

#### 1.4 Emergency telephone number:

For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300

Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

### 2: Hazard(s) identification

#### 2.1 Classification of the substance or mixture

**Classification according to the Hazard Communication Standard (HCS)**

The product is not classified as hazardous according to the HCS regulation.

#### 2.2 Label elements

**Labelling according to Regulation (EC) No 1272/2008** Void

**Hazard pictograms** Void

**Signal word** Void

**Hazard statements** Void

**Classification system:**

**NFPA ratings (scale 0 - 4)**

Health = 0

Fire = 0

Reactivity = 0

**HMIS-ratings (scale 0 - 4)**

Health = 0

Fire = 0

Reactivity = 0

**OSHA Hazard Overview (Criteria according to 29CFR1910.1200):** Not applicable

**Target Organ(s):** Not applicable or unknown

#### 2.3 Other hazards

This mixture has not been tested to determine the overall health hazard; therefore in accordance with 29CFR1910.1200, the data reported above pertains to the hazardous ingredients of this mixture.

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# Safety Data Sheet

## acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

Trade name: 5x Reaction Buffer A

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**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.\* **3: Composition/information on ingredients****3.2 Chemical characterization: Mixtures****Description:**

The product is a mixture of the hazardous substances listed below along with unlisted nonhazardous substances. The exact concentration percentages of the hazardous substances are withheld as a Promega Corp. trade secret.

**Dangerous components:** Void**Additional information:** For the wording of the listed risk phrases refer to section 15.\* **4: First-aid measures****4.1 Description of first aid measures****General information:** No special measures required.**After inhalation:** If the patient feels unwell or is concerned, obtain medical advice.**After skin contact:** Generally the product does not irritate the skin.**After eye contact:** Rinse opened eye for several minutes under running water.**After swallowing:** If the patient feels unwell or is concerned, obtain medical advice.**4.2 Most important symptoms and effects, both acute and delayed** None**4.3 Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

\* **5: Fire-fighting measures****5.1 Extinguishing media****Suitable extinguishing agents:**CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.**5.2 Special hazards arising from the substance or mixture** None known**5.3 Advice for firefighters**

No special advice

No special advice

**Protective equipment:** No special measures required.\* **6: Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures** Not required.**6.2 Environmental precautions:**

Dilute with plenty of water.

Do not allow to enter sewers/ surface or ground water.

**6.3 Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

**6.4 Reference to other sections**

No dangerous substances are released.

See Section 7 for information on safe handling.

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Trade name: 5x Reaction Buffer A

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See Section 13 for disposal information.

## 7: Handling and storage

**7.1 Precautions for safe handling** No special measures required.

**Information about protection against explosions and fires:** The product is not flammable.

**7.2 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:** None.

**7.3 Specific end use(s)** No further relevant information available.

## 8: Exposure controls/personal protection

**8.1 Control parameters**

**Components with limit values that require monitoring at the workplace:**

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

**Additional information:** The lists that were valid during the creation were used as basis.

**8.2 Exposure controls**

**Personal protective equipment:**

**General protective and hygienic measures:**

The usual precautionary measures for handling chemicals should be followed.

**Breathing equipment:** Not required.

**Protection of hands:** Not required.

**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.

**Eye protection:** Not required.

## 9: Physical and chemical properties

**9.1 Information on basic physical and chemical properties**

**General Information**

**Appearance:**

<b>Form:</b>	Fluid
<b>Color:</b>	Colorless
<b>Odor:</b>	Not determined
<b>Odour threshold:</b>	Not determined.

**Change in condition**

<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	100 °C (212 °F)
<b>Flash point:</b>	Not applicable.

**Flammability (solid, gaseous):** Not applicable.

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# Safety Data Sheet

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Printing date 07/21/2015

Reviewed on 07/21/2015

Trade name: 5x Reaction Buffer A

(Contd. of page 3)

**Ignition temperature:****Decomposition temperature:** Not determined.**Auto igniting:**

Product is not selfigniting.

**Danger of explosion:**

Product does not present an explosion hazard.

**Explosion limits:****Lower:** Not determined.**Upper:** Not determined.**Vapor pressure:**

Not determined.

**Density at 20 °C (68 °F):**0.99739 g/cm<sup>3</sup> (8.323 lbs/gal)**Relative density**

Not determined.

**Vapour density**

Not determined.

**Evaporation rate**

Not determined.

**Solubility in / Miscibility with****Water:** Fully miscible.**Partition coefficient (n-octanol/water):** Not determined.**Viscosity:****Dynamic:** Not determined.**Kinematic:** Not determined.**Organic solvents:**

0.0 %

**Water:**

94.8 %

**Solids content:**

5.2 %

**9.2 Other information**

No further relevant information available.

\*

**10: Stability and reactivity****10.1 Reactivity** No further relevant information available.**10.2 Chemical stability****Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.**10.3 Possibility of hazardous reactions** No dangerous reactions known.**10.4 Conditions to avoid** No further relevant information available.**10.5 Incompatible materials:** No further relevant information available.**10.6 Hazardous decomposition products:** No dangerous decomposition products known.

\*

**11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity:****LD/LC50 values that are relevant for classification:** No data available**Primary irritant effect:****on the skin:** Based on available data, the classification criteria are not met.**on the eye:** Based on available data, the classification criteria are not met.**Sensitization:** Based on available data, the classification criteria are not met.**Additional toxicological information:****Carcinogenic categories****IARC (International Agency for Research on Cancer)**

None of the ingredients are listed.

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Trade name: 5x Reaction Buffer A

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**NTP (National Toxicology Program)**

None of the ingredients are listed.

**OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients are listed.

## 12: Ecological information

**12.1 Toxicity***Aquatic toxicity:* Not harmful to the aquatic environment**12.2 Persistence and degradability** Not available**12.3 Bioaccumulative potential** Not known**12.4 Mobility in soil** No further relevant information available.**Ecotoxical effects:****Remark:** Not 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.

**12.5 Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**12.6 Other adverse effects** No further relevant information available.

## 13: Disposal considerations

**13.1 Waste treatment methods****Recommendation:**

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

Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

**Uncleaned packagings:****Recommendation:** Disposal must be made according to official regulations.**Recommended cleansing agent:** Water, if necessary with cleansing agents.

## 14: Transport information

**14.1 UN-Number**

Not hazardous for transportation

**DOT, ADR, ADN, IMDG, IATA**

Void

**14.2 UN proper shipping name**

None

**DOT, ADR, ADN, IMDG, IATA**

Void

**14.3 Transport hazard class(es)**

None

**DOT, ADR, ADN, IMDG, IATA****Class**

Void

**14.4 Packing group**

None

**DOT, ADR, IMDG, IATA**

Void

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Trade name: 5x Reaction Buffer A

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**14.5 Environmental hazards:****Marine pollutant:** No**14.6 Special precautions for user** Not applicable.**14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.**UN "Model Regulation":** Void**15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**  
Sara**Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

**Section 313 (Specific toxic chemical listings):**

None of the ingredients are listed.

**TSCA (Toxic Substances Control Act):**

All ingredients are listed.

**Proposition 65****Chemicals known to cause cancer:**

None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

**Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

**Carcinogenicity categories****EPA (Environmental Protection Agency)**

None of the ingredients are listed.

**TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients are listed.

**MAK (German Maximum Workplace Concentration)**

None of the ingredients are listed.

**NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients are listed.

**National regulations:****Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.**15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

US

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Reviewed on 07/21/2015

**Trade name: 5x Reaction Buffer A**

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## 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:***Promega Corporation**Environmental Health and Safety Department**2800 Woods Hollow Road**Madison, WI**Ph: (608) 274-4330***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**GHS: Globally Harmonized System of Classification and Labeling of Chemicals**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)**LC50: Lethal concentration, 50 percent**LD50: Lethal dose, 50 percent**PBT: Persistent, Bioaccumulative and Toxic**vPvB: very Persistent and very Bioaccumulative***\* Data compared to the previous version altered.**

US

**Safety Data Sheet**  
**acc. to OSHA HCS**

Printing date 07/21/2015

Reviewed on 07/21/2015

**1: Identification****1.1 Product identifier****Trade name:** 0.1M DTT**Article number:** Turnkey10**1.2 Relevant identified uses of the substance or mixture and uses advised against**

No further relevant information available.

**Application of the substance / the mixture** Laboratory chemicals**1.3 Details of the supplier of the safety data sheet****Manufacturer/Supplier:**

Promega Corporation  
2800 Woods Hollow Road  
Madison, WI 53711  
U.S.A.  
1-800-356-9526 or (608)-274-4330

**Information department:** SDS author: [Regulatory.Affairs@promega.com](mailto:Regulatory.Affairs@promega.com)**1.4 Emergency telephone number:**

For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300

Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

**2: Hazard(s) identification****2.1 Classification of the substance or mixture****Classification according to the Hazard Communication Standard (HCS)**

The product is not classified as hazardous according to the HCS regulation.

**2.2 Label elements****Labelling according to Regulation (EC) No 1272/2008** Void**Hazard pictograms** Void**Signal word** Void**Hazard statements** Void**Additional information:**

Safety data sheet available on request.

**Classification system:****NFPA ratings (scale 0 - 4)**

Health = 0

Fire = 0

Reactivity = 0

**HMIS-ratings (scale 0 - 4)**

Health = 0

Fire = 0

Reactivity = 0

**OSHA Hazard Overview (Criteria according to 29CFR1910.1200):** Not applicable**Target Organ(s):** Not applicable or unknown

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# Safety Data Sheet

## acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

**Trade name: 0.1M DTT**

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**2.3 Other hazards**

*This mixture has not been tested to determine the overall health hazard; therefore in accordance with 29CFR1910.1200, the data reported above pertains to the hazardous ingredients of this mixture.*

**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.

### 3: Composition/information on ingredients

**3.2 Chemical characterization: Mixtures****Description:**

*The product is a mixture of the hazardous substances listed below along with unlisted nonhazardous substances. The exact concentration percentages of the hazardous substances are withheld as a Promega Corp. trade secret.*

**Dangerous components:**

3483-12-3	DL-Dithiothreitol	<2.00%
	⚠ Acute Tox. 4, H302; Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335	

**Additional information:** For the wording of the listed risk phrases refer to section 15.

### 4: First-aid measures

**4.1 Description of first aid measures**

**General information:** No special measures required.

**After inhalation:** If the patient feels unwell or is concerned, obtain medical advice.

**After skin contact:** Generally the product does not irritate the skin.

**After eye contact:** Rinse opened eye for several minutes under running water.

**After swallowing:** If the patient feels unwell or is concerned, obtain medical advice.

**4.2 Most important symptoms and effects, both acute and delayed** None

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

No further relevant information available.

### 5: Fire-fighting measures

**5.1 Extinguishing media**

**Suitable extinguishing agents:**

CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**5.2 Special hazards arising from the substance or mixture** None known

**5.3 Advice for firefighters**

No special advice

No special advice

**Protective equipment:** No special measures required.

### 6: Accidental release measures

**6.1 Personal precautions, protective equipment and emergency procedures** Not required.

**6.2 Environmental precautions:**

Dilute with plenty of water.

Do not allow to enter sewers/ surface or ground water.

**6.3 Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

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acc. to OSHA HCS

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**Trade name: 0.1M DTT**

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**6.4 Reference to other sections**

No dangerous substances are released.  
See Section 7 for information on safe handling.  
See Section 13 for disposal information.

**7: Handling and storage**

**7.1 Precautions for safe handling** No special measures required.  
**Information about protection against explosions and fires:** The product is not flammable.

**7.2 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:** None.**7.3 Specific end use(s)** No further relevant information available.**8: Exposure controls/personal protection****8.1 Control parameters****Components with limit values that require monitoring at the workplace:**

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

**Additional information:** The lists that were valid during the creation were used as basis.**8.2 Exposure controls****Personal protective equipment:****General protective and hygienic measures:**

The usual precautionary measures for handling chemicals should be followed.

**Breathing equipment:** Not required.**Protection of hands:** Not required.**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.

**Eye protection:** Not required.**9: Physical and chemical properties****9.1 Information on basic physical and chemical properties****General Information****Appearance:**

<b>Form:</b>	Fluid
<b>Color:</b>	Colorless
<b>Odor:</b>	Not determined
<b>Odour threshold:</b>	Not determined.

**Change in condition**

<b>Melting point/Melting range:</b>	0 °C (32 °F)
<b>Boiling point/Boiling range:</b>	100 °C (212 °F)
<b>Flash point:</b>	Not applicable.

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# Safety Data Sheet

## acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

Trade name: 0.1M DTT

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<b>Flammability (solid, gaseous):</b>	Not applicable.
<b>Ignition temperature:</b>	
<b>Decomposition temperature:</b>	Not determined.
<b>Auto igniting:</b>	Product is not selfigniting.
<b>Danger of explosion:</b>	Product does not present an explosion hazard.
<b>Explosion limits:</b>	
<b>Lower:</b>	Not determined.
<b>Upper:</b>	Not determined.
<b>Vapor pressure:</b>	Not determined.
<b>Density:</b>	Not determined.
<b>Relative density</b>	Not determined.
<b>Vapour density</b>	Not determined.
<b>Evaporation rate</b>	Not determined.
<b>Solubility in / Miscibility with</b>	
<b>Water:</b>	Fully miscible.
<b>Partition coefficient (n-octanol/water):</b>	Not determined.
<b>Viscosity:</b>	
<b>Dynamic:</b>	Not determined.
<b>Kinematic:</b>	Not determined.
<b>Organic solvents:</b>	0.0 %
<b>Water:</b>	98.5 %
<b>Solids content:</b>	1.5 %
<b>9.2 Other information</b>	No further relevant information available.

\*

### 10: Stability and reactivity

**10.1 Reactivity** No further relevant information available.

**10.2 Chemical stability**

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

**10.3 Possibility of hazardous reactions** No dangerous reactions known.

**10.4 Conditions to avoid** No further relevant information available.

**10.5 Incompatible materials:** No further relevant information available.

**10.6 Hazardous decomposition products:** No dangerous decomposition products known.

\*

### 11: Toxicological information

**11.1 Information on toxicological effects**

**Acute toxicity:**

**LD/LC50 values that are relevant for classification:** No data available

**Primary irritant effect:**

**on the skin:** Based on available data, the classification criteria are not met.

**on the eye:** Based on available data, the classification criteria are not met.

**Sensitization:** Based on available data, the classification criteria are not met.

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# Safety Data Sheet

acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

Trade name: 0.1M DTT

(Contd. of page 4)

**Additional toxicological information:****Carcinogenic categories****IARC (International Agency for Research on Cancer)**

None of the ingredients are listed.

**NTP (National Toxicology Program)**

None of the ingredients are listed.

**OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients are listed.

## 12: Ecological information

**12.1 Toxicity****Aquatic toxicity:** Not harmful to the aquatic environment**12.2 Persistence and degradability** Not available**12.3 Bioaccumulative potential** Not known**12.4 Mobility in soil** No further relevant information available.**Ecotoxicological effects:****Remark:** Not 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.

**12.5 Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**12.6 Other adverse effects** No further relevant information available.

## 13: Disposal considerations

**13.1 Waste treatment methods****Recommendation:**

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

Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

**Uncleaned packagings:****Recommendation:** Disposal must be made according to official regulations.**Recommended cleansing agent:** Water, if necessary with cleansing agents.

## 14: Transport information

**14.1 UN-Number**

Not hazardous for transportation

**DOT, ADR, ADN, IMDG, IATA**

Void

**14.2 UN proper shipping name**

None

**DOT, ADR, ADN, IMDG, IATA**

Void

**14.3 Transport hazard class(es)**

None

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# Safety Data Sheet

## acc. to OSHA HCS

Printing date 07/21/2015

Reviewed on 07/21/2015

**Trade name: 0.1M DTT**

(Contd. of page 5)

**DOT, ADR, ADN, IMDG, IATA**  
**Class**

Void

**14.4 Packing group**

None

**DOT, ADR, IMDG, IATA**

Void

**14.5 Environmental hazards:**  
**Marine pollutant:**

No

**14.6 Special precautions for user**

Not applicable.

**14.7 Transport in bulk according to Annex II of**  
**MARPOL73/78 and the IBC Code**

Not applicable.

**UN "Model Regulation":**

Void

### 15: Regulatory information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**  
**Sara**

**Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

**Section 313 (Specific toxic chemical listings):**

None of the ingredients are listed.

**TSCA (Toxic Substances Control Act):**

All ingredients are listed.

**Proposition 65**

**Chemicals known to cause cancer:**

None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

**Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

**Carcinogenity categories**

**EPA (Environmental Protection Agency)**

None of the ingredients are listed.

**TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients are listed.

**MAK (German Maximum Workplace Concentration)**

None of the ingredients are listed.

**NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients are listed.

**National regulations:**

**Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

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Printing date 07/21/2015

Reviewed on 07/21/2015

Trade name: 0.1M DTT

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15.2 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:

Promega Corporation  
Environmental Health and Safety Department  
2800 Woods Hollow Road  
Madison, WI  
Ph: (608) 274-4330

### Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
ICAO: International Civil Aviation Organization  
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  
GHS: Globally Harmonized System of Classification and Labeling of Chemicals  
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)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
vPvB: very Persistent and very Bioaccumulative  
Acute Tox. 4: Acute toxicity, Hazard Category 4  
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2  
Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2  
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

**\* Data compared to the previous version altered.**

US