ZYMO RESEARCH

The Beauty of Science is to Make Things Simple

03/28/2018

Kit Components

Product code	Description
R1072	**Quick-cfDNA/cfRNA Serum & Plasma Kit**

Components:

D3001-2-A	Proteinase K
D3001-2-C	Proteinase K Storage Buffer
R1072-1-150	Quick-cfDNA/cfRNA Digestion Buffer
R1072-2-150	Quick-cfDNA/cfRNA Binding Buffer
R1072-3-20	Cell-free Recovery Buffer
R1060-2-10	RNA Prep Buffer
R1003-3-6	RNA Wash Buffer (Concentrate)
W1001-1, W1001-4, W1001-6	DNase/RNase Free Water

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/28/2018 *Reviewed on 12/07/2015*

1 Identification

· ***Product identifier***

· ***Trade name: Proteinase K***

· ***Article number:*** D3001-2-A, D3001-2-B, D3001-2-F
· ***Application of the substance / the mixture*** Laboratory Reagent

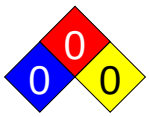
· ***Details of the supplier of the safety data sheet***
· ***Manufacturer/Supplier:***
Zymo Research Corp.
17062 Murphy Ave.
Irvine, CA 92614
USA
Phone: 1-949-679-1190 or 1-888-882-9682
sds@zymoresearch.com

· ***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***
The product is not classified according to the Globally Harmonized System (GHS).

· ***Label elements***
· ***GHS label elements*** 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

· ***Other hazards***
· ***Results of PBT and vPvB assessment***
· ***PBT:*** Not applicable.
· ***vPvB:*** Not applicable.

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Safety Data Sheet
acc. to OSHA HCS

Printing date 03/28/2018 *Reviewed on 12/07/2015*

Trade name: Proteinase K

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3 Composition/information on ingredients

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

· ***Dangerous components:*** Void

4 First-aid measures

· ***Description of first aid measures***
· ***General information:*** No special measures required.
· ***After inhalation:*** Supply fresh air; consult doctor in case of complaints.
· ***After skin contact:*** Generally the product does not irritate the skin.
· ***After eye contact:*** Rinse opened eye for several minutes under running water. Then 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.
Use fire fighting measures that suit the environment.
· ***Advice for firefighters***
· ***Protective equipment:*** Wear protective clothing.

6 Accidental release measures

· ***Personal precautions, protective equipment and emergency procedures*** Wear protective clothing.
· ***Environmental precautions:*** Dilute with plenty of water.
· ***Methods and material for containment and cleaning up:***
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
· ***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:***
None of the ingredients is listed.

· ***PAC-2:***
None of the ingredients is listed.

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Safety Data Sheet
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· ***PAC-3:***

None of the ingredients is listed.

7 Handling and storage

· ***Handling:***
· ***Precautions for safe handling*** No special measures required.
· ***Information about protection against explosions and fires:*** No special measures required.

· ***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.
· ***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 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.

· ***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:***
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.
· ***Eye protection:*** Goggles recommended during refilling.

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Safety Data Sheet
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9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Crystalline powder
Color:	Whitish
· **Odor:**	Odorless
· **Odor threshold:**	Not determined.
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
· **Flash point:**	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:**	
Lower:	Not Applicable
Upper:	Not Applicable
· **Vapor pressure:**	Not determined.
· **Density:**	Not determined.
· **Relative density**	Not determined.
· **Vapor 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.
· **Solvent content:**	
VOC content:	0.00 % 0.0 g/l / 0.00 lb/gl
Solids content:	0.0 %

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Safety Data Sheet
acc. to OSHA HCS

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· ***Other information*** 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:***
· ***Primary irritant effect:***
· ***on the skin:*** No irritant effect.
· ***on the eye:*** No irritating effect.
· ***Sensitization:*** No sensitizing effects known.
· ***Additional toxicological information:***
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· ***Carcinogenic categories***

· ***IARC (International Agency for Research on Cancer)***
None of the ingredients is listed.

· ***NTP (National Toxicology Program)***
None of the ingredients is listed.

· ***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:*** Generally not hazardous for water

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Safety Data Sheet
acc. to OSHA HCS

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· ***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:*** Smaller quantities can be disposed of with household waste.

· ***Uncleaned packagings:***
· ***Recommendation:***
Dispose of container in acoordance with local/regional/national and international recommendations.
· ***Recommended cleansing agent:*** Water, if necessary with cleansing agents.

14 Transport information

· ***UN-Number***	
· ***DOT, ADN, IMDG, IATA***	not regulated
· ***UN proper shipping name***	
· ***DOT, ADN, IMDG, IATA***	not regulated
· ***Transport hazard class(es)***	
· ***DOT, ADN, IMDG, IATA***	
· ***Class***	not regulated
· ***Packing group***	
· ***DOT, IMDG, IATA***	not regulated
· ***Environmental hazards:***	Not applicable.
· ***Special precautions for user***	Not applicable.
· ***Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code***	Not applicable.
· ***UN "Model Regulation":***	not regulated

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.

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· ***Section 313 (Specific toxic chemical listings):***
None of the ingredients is listed.

· ***TSCA (Toxic Substances Control Act):***
None of the ingredients is listed.

· ***Proposition 65***

· ***Chemicals known to cause cancer:***
None of the ingredients is listed.

· ***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)***
None of the ingredients is listed.

· ***NIOSH-Ca (National Institute for Occupational Safety and Health)***
None of the ingredients is listed.

· ***GHS label elements*** Void
· ***Hazard pictograms*** Void
· ***Signal word*** Void
· ***Hazard statements*** Void
· ***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*** 03/28/2018 / -
· ***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)

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Trade name: Proteinase K

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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)
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
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/28/2018 *Reviewed on 11/13/2015*

1 Identification

· ***Product identifier***

· ***Trade name: Proteinase K Storage Buffer***

· ***Article number:*** D3001-2-C, D3001-2-D, D3001-2-E
· ***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***
The product is not classified according to the Globally Harmonized System (GHS).

· ***Label elements***
· ***GHS label elements*** 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 = 0
Fire = 1
Reactivity = 0

· ***Other hazards***
· ***Results of PBT and vPvB assessment***
· ***PBT:*** Not applicable.
· ***vPvB:*** Not applicable.

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/28/2018 *Reviewed on 11/13/2015*

Trade name: Proteinase K Storage Buffer

(Contd. of page 1)

3 Composition/information on ingredients

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

· ***Dangerous components:***

CAS: 56-81-5	glycerol	50%

4 First-aid measures

· ***Description of first aid measures***
· ***General information:*** No special measures required.
· ***After inhalation:*** Supply fresh air; consult doctor in case of complaints.
· ***After skin contact:*** Generally the product does not irritate the skin.
· ***After eye contact:*** Rinse opened eye for several minutes under running water. Then 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:*** Use fire fighting measures that suit the environment.
· ***Advice for firefighters***
· ***Protective equipment:*** Wear protective clothing.

6 Accidental release measures

· ***Personal precautions, protective equipment and emergency procedures*** Wear protective clothing.
· ***Environmental precautions:***
Dilute with plenty of water.
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).
· ***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: 56-81-5	glycerol	45 mg/m³

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Safety Data Sheet
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· **PAC-2:**		
CAS: 56-81-5	glycerol	180 mg/m³

· **PAC-3:**		
CAS: 56-81-5	glycerol	1,100 mg/m³

7 Handling and storage

· **Handling:**
· **Precautions for safe handling** No special measures required.
· **Information about protection against explosions and fires:** No special measures required.

· **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.
· **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:**	
CAS: 56-81-5 glycerol	
PEL	Long-term value: 15* 5** mg/m³ 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.

· **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:**
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.

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Safety Data Sheet
acc. to OSHA HCS

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· ***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.
· ***Eye protection:*** Goggles recommended during refilling.

9 Physical and chemical properties

· ***Information on basic physical and chemical properties***	
· ***General Information***	
· ***Appearance:***	
Form:	Liquid
Color:	Clear
· ***Odor:***	Odorless
· ***Odor threshold:***	Not determined.
· ***pH-value:***	Not determined.
· ***Change in condition***	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	290 °C (554 °F)
· ***Flash point:***	160 °C (320 °F)
· ***Flammability (solid, gaseous):***	Not applicable.
· ***Ignition temperature:***	400 °C (752 °F)
· ***Decomposition temperature:***	Not determined.
· ***Auto igniting:***	Product is not selfigniting.
· ***Danger of explosion:***	Product does not present an explosion hazard.
· ***Explosion limits:***	
Lower:	0,9 Vol %
Upper:	0,0 Vol %
· ***Vapor pressure at 20 °C (68 °F):***	0.1 hPa (0.1 mm Hg)
· ***Density:***	Not determined.
· ***Relative density***	Not determined.
· ***Vapor 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.

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Safety Data Sheet
acc. to OSHA HCS

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· **Solvent content:**	
Organic solvents:	50.0 %
VOC content:	0.00 % 0.0 g/l / 0.00 lb/gl
Solids content:	0.0 %
· **Other information**	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:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.

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Safety Data Sheet
acc. to OSHA HCS

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· ***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:*** Smaller quantities can be disposed of with household waste.

· ***Uncleaned packagings:***
· ***Recommendation:***
Dispose of container in acoordance with local/regional/national and international recommendations.
· ***Recommended cleansing agent:*** Water, if necessary with cleansing agents.

14 Transport information

· ***UN-Number***	
· ***DOT, ADN, IMDG, IATA***	not regulated
· ***UN proper shipping name***	
· ***DOT, ADN, IMDG, IATA***	not regulated
· ***Transport hazard class(es)***	
· ***DOT, ADN, IMDG, IATA***	
· ***Class***	not regulated
· ***Packing group***	
· ***DOT, IMDG, IATA***	not regulated
· ***Environmental hazards:***	Not applicable.
· ***Special precautions for user***	Not applicable.
· ***Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code***	Not applicable.
· ***UN "Model Regulation":***	not regulated

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Safety Data Sheet
acc. to OSHA HCS

Printing date 03/28/2018 *Reviewed on 11/13/2015*

Trade name: Proteinase K Storage Buffer

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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):**
None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients is listed.

· **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)**
None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

· **GHS label elements** Void
· **Hazard pictograms** Void
· **Signal word** Void
· **Hazard statements** Void
· **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

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Safety Data Sheet
acc. to OSHA HCS

Printing date 03/28/2018 *Reviewed on 11/13/2015*

Trade name: Proteinase K Storage Buffer

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Phone: 1-949-679-1190 or 1-888-882-9682
· ***Contact:*** sds@zymoresearch.com
· ***Date of preparation / last revision*** 03/28/2018 / -
· ***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)
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
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/28/2018 *Reviewed on 03/27/2018*

1 Identification

· ***Product identifier***

· ***Trade name: Quick-cfDNA/cfRNA Digestion Buffer***

· ***Article number:*** R1072-1-150
· ***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***

GHS05 Corrosion

Skin Corr. 1C	H314	Causes severe skin burns and eye damage.
Eye Dam. 1	H318	Causes serious eye damage.

GHS07

Acute Tox. 4	H302	Harmful if swallowed.
Aquatic Chronic 3	H412	Harmful to aquatic life with long lasting effects.

· ***Label elements***
· ***GHS label elements*** The product is classified and labeled according to the Globally Harmonized System (GHS).
· ***Hazard pictograms*** GHS05, GHS07
· ***Signal word*** Danger

· ***Hazard-determining components of labeling:***
guanidinium thiocyanate
· ***Hazard statements***
Harmful if swallowed.
Causes severe skin burns and eye damage.
Harmful to aquatic life with long lasting effects.
· ***Precautionary statements***
Do not breathe dusts or mists.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.

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Avoid release to the environment.
Wear protective gloves / eye protection / face protection.
If swallowed: Call a poison center/doctor if you feel unwell.
If on skin: Wash with plenty of water.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Specific treatment (see on this label).
Rinse mouth.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

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

Health = 3
Fire = 0
Reactivity = 0

· ***HMIS-ratings (scale 0 - 4)***

Health = *3
Fire = 0
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: consisting of the following components.

· ***Dangerous components:***		
CAS: 593-84-0	guanidinium thiocyanate	30-50%

4 First-aid measures

· ***Description of first aid measures***
· ***General information:***
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

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· ***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 wash with water and soap and rinse thoroughly.
· ***After eye contact:*** Rinse opened eye for several minutes under running water. Then consult a doctor.
· ***After swallowing:***
Rinse mouth
DO NOT induce vomiting.
· ***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:*** Use fire fighting measures that suit the environment.
· ***Special hazards arising from the substance or mixture***
Products of thermal decomposition of this material would include hydrogen cyanide, ammonia, and oxides of carbon, nitrogen and sulfur.
· ***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 self-contained breathing apparatus for responding to non-incidental release of this material in which there is the potential for inhalation of vapors, mists or sprays
Wear protective equipment. Keep unprotected persons away.
· ***Environmental precautions:***
Dilute with plenty of water.
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).
Use neutralizing agent.
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: 593-84-0	guanidinium thiocyanate	0.98 mg/m³

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· **PAC-2:**		
CAS: 593-84-0	guanidinium thiocyanate	11 mg/m³

· **PAC-3:**		
CAS: 593-84-0	guanidinium thiocyanate	65 mg/m³

7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
· **Information about protection against explosions and fires:** No special measures required.

· **Conditions for safe storage, including any incompatibilities**
Store in cool, dry place. Store in well-ventilated location.
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Do not store together with acids or strong oxidizers
· **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**
Work under a chemical fume hood when using this product. Ensure eyewash station and safety showers are readily accessible.
· **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.

· **Exposure controls**
The appropriate protective equipment under anticipated circumstances of use include lab-coat, safety glasses with side-shields and gloves.
· **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.
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.

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· **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.

· **Eye protection:**

Tightly sealed goggles

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Liquid
Color:	Colorless
· **Odor:**	Nearly odorless
· **Odor threshold:**	Not determined.
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
· **Flash point:**	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.

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· **Explosion limits:**	
Lower:	Not Applicable
Upper:	Not Applicable
· **Vapor pressure:**	Not determined.
· **Density:**	Not determined.
· **Relative density**	Not determined.
· **Vapor 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.
· **Solvent content:**	
VOC content:	0.00 % 0.0 g/l / 0.00 lb/gl
Solids content:	0.0 %
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability** This product is normally stable under anticipated circumstances of use and storage.
· **Thermal decomposition / conditions to be avoided:**
Products of thermal decomposition of this material would include hydrogen cyanide, ammonia, and oxides of carbon nitrogen and sulfur.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** Avoid exposing product to extreme temperatures or incompatible chemicals
· **Incompatible materials:** Acids and strong oxidizers
· **Hazardous decomposition products:**
Product will not undergo self-decomposition, so no such products will be generated.

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**		
CAS: 593-84-0 guanidinium thiocyanate		
Oral	LD50	593 mg/kg (rat)

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· ***Primary irritant effect:***
· ***on the skin:*** Caustic effect on skin and mucous membranes.
· ***on the eye:***
Strong caustic effect.
Irritating to eyes.
· ***Sensitization:*** No sensitizing effects known.
· ***Additional toxicological information:***
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Corrosive
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

· ***Carcinogenic categories***

· ***IARC (International Agency for Research on Cancer)***
None of the ingredients is listed.

· ***NTP (National Toxicology Program)***
None of the ingredients is listed.

· ***OSHA-Ca (Occupational Safety & Health Administration)***
None of the ingredients is listed.

12 Ecological information

· ***Toxicity***

· ***Aquatic toxicity:***	
CAS: 593-84-0 guanidinium thiocyanate	
EC50	42.4 mg/kg (daphnia)

· ***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:***
Do not allow product to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
Danger to drinking water if even small quantities leak into the ground.
· ***Results of PBT and vPvB assessment***
· ***PBT:*** Not applicable.
· ***vPvB:*** Not applicable.
· ***Other adverse effects*** No further relevant information available.

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

14 Transport information

· **UN-Number**	
· **DOT, IMDG, IATA**	UN1760
· **UN proper shipping name**	
· **IMDG, IATA**	CORROSIVE LIQUID, N.O.S. (guanidinium thiocyanate)
· **Transport hazard class(es)**	
· **DOT**	
· **Class**	8 Corrosive substances
· **Label**	8
· **IMDG, IATA**	
· **Class**	8 Corrosive substances
· **Label**	8
· **Packing group**	
· **DOT, IMDG, IATA**	III
· **Environmental hazards:**	Not applicable.
· **Special precautions for user**	Warning: Corrosive substances
· **Danger code (Kemler):**	80
· **EMS Number:**	F-A,S-B
· **Stowage Category**	A
· **Stowage Code**	SW2 Clear of living quarters.

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· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	
· **DOT**	
· **Quantity limitations**	On passenger aircraft/rail: 5 L On cargo aircraft only: 60 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 1760 CORROSIVE LIQUIDS, N.O.S. (GUANIDINIUM THIOCYANATE), 8, III

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):**
None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients is listed.

· **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)**
None of the ingredients is listed.

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· ***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*** GHS05, GHS07
· ***Signal word*** Danger

· ***Hazard-determining components of labeling:***
guanidinium thiocyanate
· ***Hazard statements***
Harmful if swallowed.
Causes severe skin burns and eye damage.
Harmful to aquatic life with long lasting effects.
· ***Precautionary statements***
Do not breathe dusts or mists.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Avoid release to the environment.
Wear protective gloves / eye protection / face protection.
If swallowed: Call a poison center/doctor if you feel unwell.
If on skin: Wash with plenty of water.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Specific treatment (see on this label).
Rinse mouth.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
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*** 03/28/2018 / -
· ***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

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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
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute Tox. 4: Acute toxicity Category 4
Skin Corr. 1C: Skin corrosion/irritation Category 1C
Eye Dam. 1: Serious eye damage/eye irritation Category 1
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard Category 3

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1 Identification

· ***Product identifier***

· ***Trade name: Quick-cfDNA/cfRNA Binding Buffer***

· ***Article number:*** R1072-2-150
· ***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***

GHS05 Corrosion

Skin Corr. 1C	H314	Causes severe skin burns and eye damage.
Eye Dam. 1	H318	Causes serious eye damage.

GHS07

Acute Tox. 4	H302	Harmful if swallowed.
Acute Tox. 4	H312	Harmful in contact with skin.
Acute Tox. 4	H332	Harmful if inhaled.
Aquatic Chronic 3	H412	Harmful to aquatic life with long lasting effects.

· ***Label elements***
· ***GHS label elements*** The product is classified and labeled according to the Globally Harmonized System (GHS).
· ***Hazard pictograms*** GHS05, GHS07
· ***Signal word*** Danger

· ***Hazard-determining components of labeling:***
guanidinium thiocyanate
· ***Hazard statements***
Harmful if swallowed, in contact with skin or if inhaled.
Causes severe skin burns and eye damage.
Harmful to aquatic life with long lasting effects.

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Trade name: Quick-cfDNA/cfRNA Binding Buffer

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· ***Precautionary statements***
Do not breathe mist/vapours/spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.
If swallowed: Call a poison center/doctor if you feel unwell.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Immediately call a poison center/doctor.
Specific treatment (see on this label).
Take off contaminated clothing and wash it before reuse.
Wash contaminated clothing before reuse.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.
· ***Classification system:***
· ***NFPA ratings (scale 0 - 4)***

Health = 3
Fire = 0
Reactivity = 0

· ***HMIS-ratings (scale 0 - 4)***

Health = *3
Fire = 0
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: 593-84-0	guanidinium thiocyanate	70%
CAS: 9002-93-1	Polyethylene glycol octylphenol ether	5%
CAS: 137-16-6	N-Lauroylsarcosine, Sodium salt	5%

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4 First-aid measures

· ***Description of first aid measures***
· ***General information:***
Immediately remove any clothing soiled by the product.
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 wash with water and soap and rinse thoroughly.
· ***After eye contact:*** Rinse opened eye for several minutes under running water. Then consult a doctor.
· ***After swallowing:***
Rinse mouth
DO NOT induce vomiting.
· ***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.
Use fire fighting measures that suit the environment.
· ***Special hazards arising from the substance or mixture***
Products of thermal decomposition of this material would include hydrogen cyanide, ammonia, and oxides of carbon, nitrogen and sulfur.
· ***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 self-contained breathing apparatus for responding to non-incidental release of this material in which there is the potential for inhalation of vapors, mists or sprays
Wear protective equipment. Keep unprotected persons away.
· ***Environmental precautions:***
Dilute with plenty of water.
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).
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.

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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: 593-84-0	guanidinium thiocyanate	0.98 mg/m³

· ***PAC-2:***		
CAS: 593-84-0	guanidinium thiocyanate	11 mg/m³

· ***PAC-3:***		
CAS: 593-84-0	guanidinium thiocyanate	65 mg/m³

7 Handling and storage

· ***Handling:***
· ***Precautions for safe handling***
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
· ***Information about protection against explosions and fires:*** No special measures required.

· ***Conditions for safe storage, including any incompatibilities***
Store in cool, dry place. Store in well-ventilated location.
· ***Storage:***
· ***Requirements to be met by storerooms and receptacles:*** No special requirements.
· ***Information about storage in one common storage facility:*** Do not store together with acids or strong oxidizers
· ***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***
Work under a chemical fume hood when using this product. Ensure eyewash station and safety showers are readily accessible.
· ***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.

· ***Exposure controls***
The appropriate protective equipment under anticipated circumstances of use include lab-coat, safety glasses with side-shields and gloves.

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· ***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.
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.
· ***Eye protection:***

Tightly sealed goggles

9 Physical and chemical properties

· ***Information on basic physical and chemical properties***	
· ***General Information***	
· ***Appearance:***	
Form:	Liquid
Color:	Light yellow
· ***Odor:***	Odorless
· ***Odor threshold:***	Not determined.
· ***pH-value:***	Not determined.
· ***Change in condition***	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.

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Trade name: Quick-cfDNA/cfRNA Binding Buffer

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· **Flash point:**	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:**	
Lower:	Not Applicable
Upper:	Not Applicable
· **Vapor pressure:**	Not determined.
· **Density:**	Not determined.
· **Relative density**	Not determined.
· **Vapor 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.
· **Solvent content:**	
VOC content:	0.00 % 0.0 g/l / 0.00 lb/gl
Solids content:	70.0 %
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability** This product is normally stable under anticipated circumstances of use and storage.
· **Thermal decomposition / conditions to be avoided:**
Products of thermal decomposition of this material would include hydrogen cyanide, ammonia, and oxides of carbon nitrogen and sulfur.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** Avoid exposing product to extreme temperatures or incompatible chemicals
· **Incompatible materials:** Acids and strong oxidizers

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· ***Hazardous decomposition products:***
Product will not undergo self-decomposition, so no such products will be generated.

11 Toxicological information

· ***Information on toxicological effects***
· ***Acute toxicity:***

· *LD/LC50 values that are relevant for classification:*		
CAS: 593-84-0 guanidinium thiocyanate		
Oral	LD50	593 mg/kg (rat)

· ***Primary irritant effect:***
· ***on the skin:*** Caustic effect on skin and mucous membranes.
· ***on the eye:*** Strong caustic effect.
· ***Sensitization:*** No sensitizing effects known.
· ***Additional toxicological information:***
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Corrosive
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

· ***Carcinogenic categories***

· *IARC (International Agency for Research on Cancer)*
None of the ingredients is listed.

· *NTP (National Toxicology Program)*
None of the ingredients is listed.

· *OSHA-Ca (Occupational Safety & Health Administration)*
None of the ingredients is listed.

12 Ecological information

· ***Toxicity***

· *Aquatic toxicity:*		
CAS: 593-84-0 guanidinium thiocyanate		
EC50	42.4 mg/kg (daphnia)	

· ***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 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.

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Must not reach bodies of water or drainage ditch undiluted or unneutralized.
Danger to drinking water if even small quantities leak into the ground.
· ***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.
· ***Recommended cleansing agent:*** Water, if necessary with cleansing agents.

14 Transport information

· ***UN-Number***	
· ***DOT, IMDG, IATA***	UN1760
· ***UN proper shipping name***	
· ***DOT***	Corrosive liquids, n.o.s. (guanidinium thiocyanate)
· ***IMDG, IATA***	CORROSIVE LIQUID, N.O.S. (guanidinium thiocyanate)
· ***Transport hazard class(es)***	
· ***DOT***	
· ***Class***	8 Corrosive substances
· ***Label***	8
· ***IMDG, IATA***	
· ***Class***	8 Corrosive substances
· ***Label***	8
· ***Packing group***	
· ***DOT, IMDG, IATA***	III

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· **Environmental hazards:**	Not applicable.
· **Special precautions for user**	Warning: Corrosive substances
· **Danger code (Kemler):**	80
· **EMS Number:**	F-A,S-B
· **Stowage Category**	A
· **Stowage Code**	SW2 Clear of living quarters.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	
· **DOT**	
· **Quantity limitations**	On passenger aircraft/rail: 5 L On cargo aircraft only: 60 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 1760 CORROSIVE LIQUIDS, N.O.S. (GUANIDINIUM THIOCYANATE), 8, III

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):**
None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients is listed.

· **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.

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· ***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)***
None of the ingredients is listed.

· ***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*** GHS05, GHS07
· ***Signal word*** Danger

· ***Hazard-determining components of labeling:***
guanidinium thiocyanate
· ***Hazard statements***
Harmful if swallowed, in contact with skin or if inhaled.
Causes severe skin burns and eye damage.
Harmful to aquatic life with long lasting effects.
· ***Precautionary statements***
Do not breathe mist/vapours/spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.
If swallowed: Call a poison center/doctor if you feel unwell.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a poison center/doctor.
Specific treatment (see on this label).
Take off contaminated clothing and wash it before reuse.
Wash contaminated clothing before reuse.
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.

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Printing date 03/28/2018 *Reviewed on 03/27/2018*

Trade name: Quick-cfDNA/cfRNA Binding Buffer

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· ***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*** 03/28/2018 / -
· ***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
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute Tox. 4: Acute toxicity Category 4
Skin Corr. 1C: Skin corrosion/irritation Category 1C
Eye Dam. 1: Serious eye damage/eye irritation Category 1
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard Category 3

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/28/2018 *Reviewed on 03/27/2018*

1 Identification

· ***Product identifier***

· ***Trade name: Cell-free Recovery Buffer***

· ***Article number:*** R1072-3-20
· ***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***

GHS05 Corrosion

Skin Corr. 1C	H314	Causes severe skin burns and eye damage.
Eye Dam. 1	H318	Causes serious eye damage.

GHS07

Acute Tox. 4	H302	Harmful if swallowed.
Acute Tox. 4	H312	Harmful in contact with skin.
Acute Tox. 4	H332	Harmful if inhaled.
Aquatic Chronic 3	H412	Harmful to aquatic life with long lasting effects.

· ***Label elements***
· ***GHS label elements*** The product is classified and labeled according to the Globally Harmonized System (GHS).
· ***Hazard pictograms*** GHS05, GHS07
· ***Signal word*** Danger

· ***Hazard-determining components of labeling:***
guanidinium thiocyanate
· ***Hazard statements***
Harmful if swallowed, in contact with skin or if inhaled.
Causes severe skin burns and eye damage.
Harmful to aquatic life with long lasting effects.

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Printing date 03/28/2018 *Reviewed on 03/27/2018*

Trade name: Cell-free Recovery Buffer

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· ***Precautionary statements***
Do not breathe mist/vapours/spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.
If swallowed: Call a poison center/doctor if you feel unwell.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Immediately call a poison center/doctor.
Specific treatment (see on this label).
Take off contaminated clothing and wash it before reuse.
Wash contaminated clothing before reuse.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.
· ***Classification system:***
· ***NFPA ratings (scale 0 - 4)***

Health = 3
Fire = 0
Reactivity = 0

· ***HMIS-ratings (scale 0 - 4)***

Health = *3
Fire = 0
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: 593-84-0	guanidinium thiocyanate	70%

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4 First-aid measures

· ***Description of first aid measures***
· ***General information:***
Immediately remove any clothing soiled by the product.
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 wash with water and soap and rinse thoroughly.
· ***After eye contact:*** Rinse opened eye for several minutes under running water. Then consult a doctor.
· ***After swallowing:***
Rinse mouth
DO NOT induce vomiting.
· ***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.
Use fire fighting measures that suit the environment.
· ***Special hazards arising from the substance or mixture***
Products of thermal decomposition of this material would include hydrogen cyanide, ammonia, and oxides of carbon, nitrogen and sulfur.
· ***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 self-contained breathing apparatus for responding to non-incidental release of this material in which there is the potential for inhalation of vapors, mists or sprays
Wear protective equipment. Keep unprotected persons away.
· ***Environmental precautions:***
Dilute with plenty of water.
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).
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.

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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: 593-84-0	guanidinium thiocyanate	0.98 mg/m³
· ***PAC-2:***		
CAS: 593-84-0	guanidinium thiocyanate	11 mg/m³
· ***PAC-3:***		
CAS: 593-84-0	guanidinium thiocyanate	65 mg/m³

7 Handling and storage

· ***Handling:***
· ***Precautions for safe handling***
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
· ***Information about protection against explosions and fires:*** No special measures required.

· ***Conditions for safe storage, including any incompatibilities***
Store in cool, dry place. Store in well-ventilated location.
· ***Storage:***
· ***Requirements to be met by storerooms and receptacles:*** No special requirements.
· ***Information about storage in one common storage facility:*** Do not store together with acids or strong oxidizers
· ***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***
Work under a chemical fume hood when using this product. Ensure eyewash station and safety showers are readily accessible.
· ***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.

· ***Exposure controls***
The appropriate protective equipment under anticipated circumstances of use include lab-coat, safety glasses with side-shields and gloves.

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