



ZYMO RESEARCH

The Beauty of Science is to Make Things Simple

03/23/2017

Kit Components

Product code	Description
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P2001	His-Spin Protein Miniprep, 10 Preps.
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Components:

P2003-2	His-Affinity Gel
P2003-3	His-Binding Buffer
P2003-4	His-Wash Buffer
P2003-5	His-Elution Buffer



Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/11/2016

1 Identification

- **Product identifier**
- **Trade name:** His-Affinity Gel
- **Article number:** P2003-2
- **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**



GHS02 Flame

Flam. Liq. 3 H226 Flammable liquid and vapor.



GHS08 Health hazard

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.



GHS09 Environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Skin Sens. 1 H317 May cause an allergic skin reaction.

Aquatic Acute 2 H401 Toxic to aquatic life.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms** GHS02, GHS07, GHS08, GHS09

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Trade name: His-Affinity Gel

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Signal word Danger

Hazard-determining components of labeling:

Nickel sulfate hexahydrate

Hazard statements

Flammable liquid and vapor.

Harmful if swallowed.

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May cause an allergic skin reaction.

Toxic to aquatic life.

Toxic to aquatic life with long lasting effects.

Precautionary statements

Keep away from heat/sparks/open flames/hot surfaces. No smoking.

Use explosion-proof electrical/ventilating/lighting/equipment.

[In case of inadequate ventilation] wear respiratory protection.

Avoid breathing dust/fume/gas/mist/vapors/spray

Wear protective gloves / eye protection / face protection.

Ground/bond container and receiving equipment.

Keep container tightly closed.

Use only non-sparking tools.

Avoid release to the environment.

Take precautionary measures against static discharge.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Contaminated work clothing must not be allowed out of the workplace.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

Specific treatment (see on this label).

If experiencing respiratory symptoms: Call a POISON CENTER/doctor.

IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.

Wash contaminated clothing before reuse.

If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.

If skin irritation or rash occurs: Get medical advice/attention.

Rinse mouth.

In case of fire: Use for extinction: CO2, powder or water spray.

Collect spillage.

Store in a well-ventilated place. Keep cool.

Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

NFPA ratings (scale 0 - 4)



Health = 1

Fire = 3

Reactivity = 0

HMIS-ratings (scale 0 - 4)



Health = *1

Fire = 3

Reactivity = 0

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Trade name: His-Affinity Gel

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- 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:

Table with 3 columns: CAS number, Component name, and Concentration. Rows include ethanol (CAS: 64-17-5, ≤30%) and Nickel sulfate hexahydrate (CAS: 10101-97-0, ≤20%).

4 First-aid measures

- Description of first aid measures
After inhalation: Supply fresh air and to be sure call for a doctor.
After skin contact: Immediately wash with water and soap and rinse thoroughly.
After eye contact: Rinse opened eye for several minutes under running water.
After swallowing: Do not induce vomiting; immediately call for medical help.
Information for doctor:
Most important symptoms and effects, both acute and delayed
Indication of any immediate medical attention and special treatment needed

5 Fire-fighting measures

- Extinguishing media
Suitable extinguishing agents: CO2, extinguishing powder or water spray.
For safety reasons unsuitable extinguishing agents: Water with full jet
Advice for firefighters
Protective equipment: Wear protective clothing.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
Environmental precautions: Do not allow product to reach sewage system or any water course.

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Trade name: His-Affinity Gel

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- Do not allow to enter sewers/ surface or ground water.
Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
Do not flush with water or aqueous cleansing agents
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

Table with 3 columns: CAS number, chemical name, and concentration. Rows include PAC-1, PAC-2, and PAC-3 for ethanol and Nickel sulfate hexahydrate.

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:
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
Conditions for safe storage, including any incompatibilities
Storage:
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility: Not required.
Further information about storage conditions: Keep receptacle tightly sealed.
Specific end use(s) Laboratory reagent

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.

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Trade name: His-Affinity Gel

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Control parameters

Components with limit values that require monitoring at the workplace:

CAS: 64-17-5 ethanol

Table with 2 columns: Limit Type (PEL, REL, TLV) and Limit Value (Long-term value: 1900 mg/m³, 1000 ppm; Short-term value: 1880 mg/m³, 1000 ppm)

CAS: 10101-97-0 Nickel sulfate hexahydrate

Table with 2 columns: Limit Type (PEL, REL, TLV) and Limit Value (Long-term value: 1 mg/m³ as Ni; 0.015 mg/m³ as Ni; 0.1 mg/m³ as Ni; inhalable fraction)

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

Exposure controls

Personal protective equipment:

General protective and hygienic measures:

- Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.

Breathing equipment:

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

Protection of hands:



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

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Trade name: His-Affinity Gel

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Eye protection:



Tightly sealed goggles

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:

- Form: Suspension
Color: Cloudy
Odor: Pungent
Odor threshold: Not determined.

pH-value: Not determined.

Change in condition

- Melting point/Melting range: Undetermined.
Boiling point/Boiling range: Undetermined.

Flash point: >30 °C (>86 °F)

Flammability (solid, gaseous): Not applicable.

Ignition temperature: 425 °C (797 °F)

Decomposition temperature: Not determined.

Auto igniting: Product is not selfigniting.

Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

Explosion limits:

- Lower: 3.5 Vol %
Upper: 15.0 Vol %

Vapor pressure at 20 °C (68 °F): 59 hPa (44 mm Hg)

- Density: Not determined.
Relative density: Not determined.
Vapor density: Not determined.
Evaporation rate: Not determined.

Solubility in / Miscibility with

Water: Not miscible or difficult to mix.

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

Viscosity:

Dynamic: Not determined.

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Table with 2 columns: Property (Kinematic, Solvent content, Organic solvents, VOC content, Other information) and Value (Not determined, 30.0 %, 30.0 %, 300.0 g/l / 2.50 lb/gl, No further relevant information available).

10 Stability and reactivity

- Reactivity, Chemical stability, Thermal decomposition / conditions to be avoided, Possibility of hazardous reactions, Conditions to avoid, Incompatible materials, Hazardous decomposition products.

11 Toxicological information

- Information on toxicological effects, Acute toxicity:

Table with 2 columns: LD/LC50 values that are relevant for classification, CAS: 10101-97-0 Nickel sulfate hexahydrate, Oral LD50 264 mg/kg (rat)

- Primary irritant effect: on the skin, on the eye; Sensitization; Additional toxicological information: The product shows the following dangers according to internally approved calculation methods for preparations: Harmful, Irritant

Carcinogenic categories

Table with 2 columns: IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) classification for CAS: 10101-97-0 Nickel sulfate hexahydrate.

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Trade name: His-Affinity Gel

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OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

12 Ecological information

- Toxicity
Aquatic toxicity: No further relevant information available.
Persistence and degradability No further relevant information available.
Behavior in environmental systems:
Bioaccumulative potential No further relevant information available.
Mobility in soil No further relevant information available.
Ecotoxicological effects:
Remark: Toxic for fish
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.
Also poisonous for fish and plankton in water bodies.
Toxic for aquatic organisms
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 accordance with local/regional/national and international recommendations.

14 Transport information

Table with 2 columns: Hazard information (UN-Number, DOT, IMDG, IATA) and corresponding values (UN1170, Ethanol, ETHANOL (ETHYL ALCOHOL), MARINE POLLUTANT, ETHANOL).

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Trade name: His-Affinity Gel

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· Transport hazard class(es)

· DOT



· Class 3 Flammable liquids
· Label 3

· IMDG



· Class 3 Flammable liquids
· Label 3

· IATA



· Class 3 Flammable liquids
· Label 3

· Packing group
· DOT, IMDG, IATA III

· Environmental hazards: Product contains environmentally hazardous substances: Nickel sulfate hexahydrate
· Marine pollutant: Symbol (fish and tree)

· Special precautions for user Warning: Flammable liquids
· Danger code (Kemler): 30
· EMS Number: F-E,S-D
· Stowage Category A

· 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: 60 L
On cargo aircraft only: 220 L

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- IMDG, Limited quantities (LQ), Excepted quantities (EQ), UN "Model Regulation": UN 1170 ETHANOL, 3, III, ENVIRONMENTALLY HAZARDOUS

15 Regulatory information

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

Section 355 (extremely hazardous substances):

None of the ingredients is listed.

Section 313 (Specific toxic chemical listings):

CAS: 10101-97-0 Nickel sulfate hexahydrate

TSCA (Toxic Substances Control Act):

CAS: 64-17-5 ethanol

Proposition 65

Chemicals known to cause cancer:

CAS: 10101-97-0 Nickel sulfate hexahydrate

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

Carcinogenic categories

EPA (Environmental Protection Agency)

None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH)

CAS: 64-17-5 ethanol

A3

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

None of the ingredients is listed.

GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms GHS02, GHS07, GHS08, GHS09

Signal word Danger

Hazard-determining components of labeling:

Nickel sulfate hexahydrate

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Trade name: His-Affinity Gel

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· **Hazard statements**

- Flammable liquid and vapor.
- Harmful if swallowed.
- May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- May cause an allergic skin reaction.
- Toxic to aquatic life.
- Toxic to aquatic life with long lasting effects.

· **Precautionary statements**

- Keep away from heat/sparks/open flames/hot surfaces. No smoking.
 - Use explosion-proof electrical/ventilating/lighting/equipment.
 - [In case of inadequate ventilation] wear respiratory protection.
 - Avoid breathing dust/fume/gas/mist/vapors/spray
 - Wear protective gloves / eye protection / face protection.
 - Ground/bond container and receiving equipment.
 - Keep container tightly closed.
 - Use only non-sparking tools.
 - Avoid release to the environment.
 - Take precautionary measures against static discharge.
 - Wash thoroughly after handling.
 - Do not eat, drink or smoke when using this product.
 - Contaminated work clothing must not be allowed out of the workplace.
 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 - Specific treatment (see on this label).
 - If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
 - IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
 - Wash contaminated clothing before reuse.
 - If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.
 - If skin irritation or rash occurs: Get medical advice/attention.
 - Rinse mouth.
 - In case of fire: Use for extinction: CO₂, powder or water spray.
 - Collect spillage.
 - Store in a well-ventilated place. Keep cool.
 - 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

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The Beauty of Science is to Make Things Simple

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Trade name: His-Affinity Gel

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· **Date of preparation / last revision** 03/23/2017 / -

· **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

Flam. Liq. 3: Flammable liquids – Category 3

Acute Tox. 4: Acute toxicity – Category 4

Resp. Sens. 1: Respiratory sensitisation – Category 1

Skin Sens. 1: Skin sensitisation – Category 1

Aquatic Acute 2: Hazardous to the aquatic environment - acute aquatic hazard – Category 2

Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2

US



Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/03/2016

1 Identification

- **Product identifier**
- **Trade name:** His-Binding Buffer
- **Article number:** P2003-3
- **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**



GHS08 Health hazard

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



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms** GHS07, GHS08
- **Signal word** Danger
- **Hazard-determining components of labeling:**
imidazole
- **Hazard statements**
Causes skin irritation.
Causes serious eye irritation.
May damage fertility or the unborn child.
- **Precautionary statements**
Wear protective gloves/protective clothing/eye protection/face protection.
Wash thoroughly after handling.
Obtain special instructions before use.

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Trade name: His-Binding Buffer

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Do not handle until all safety precautions have been read and understood.
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).
IF exposed or concerned: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
IF ON SKIN: Wash with plenty of water.
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)



HMIS-ratings (scale 0 - 4)



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:

Table with 2 columns: CAS: 288-32-4 | imidazole and ≤2.5%

4 First-aid measures

Description of first aid measures

- 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.

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Trade name: His-Binding Buffer

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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.
Advice for firefighters
Protective equipment: Wear protective clothing.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
Environmental precautions
Methods and material for containment and cleaning up
Reference to other sections
Protective Action Criteria for Chemicals

PAC-1:

Table with 3 columns: CAS number, chemical name, and concentration (0.66 mg/m3)

PAC-2:

Table with 3 columns: CAS number, chemical name, and concentration (7.3 mg/m3)

PAC-3:

Table with 3 columns: CAS number, chemical name, and concentration (44 mg/m3)

7 Handling and storage

- Handling
Precautions for safe handling
Information about protection against explosions and fires
Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and receptacles
Information about storage in one common storage facility
Further information about storage conditions

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Trade name: His-Binding Buffer

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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: Wash hands before breaks and at the end of work.
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.

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: Undetermined.
Flash point: Not applicable.

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Table with 2 columns: Property and Value. Rows include: Flammability (solid, gaseous): Not applicable; Ignition temperature: Not determined; 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: Not miscible or difficult to mix; Partition coefficient (n-octanol/water): Not determined; Viscosity: Dynamic: Not determined, Kinematic: Not determined; Solvent content: Organic solvents: 0.0 %, VOC content: 0.0 g/l / 0.00 lb/gl; 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.



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Trade name: His-Binding Buffer

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11 Toxicological information

Information on toxicological effects

Acute toxicity:

LD/LC50 values that are relevant for classification:

CAS: 288-32-4 imidazole

Oral LD50 880 mg/kg (mouse)

Primary irritant effect:

on the skin: No irritant effect.

on the eye: No irritating effect.

Sensitization: No sensitizing effects known.

Additional toxicological information:

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: Not known to be hazardous to water.

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.

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Trade name: His-Binding Buffer

(Contd. of page 6)

- Uncleaned packagings:
Recommendation:
Dispose of container in accordance with local/regional/national and international recommendations.

14 Transport information

Table with 2 columns: Description and Regulation Status. Rows include UN-Number, DOT, ADN, IMDG, IATA; UN proper shipping name; Transport hazard class(es); Packing group; Environmental hazards; Special precautions for user; Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code; UN Model Regulation.

15 Regulatory information

Table with 2 columns: Regulation/Act and Status. Rows include Safety, health and environmental regulations; Section 355; Section 313; TSCA (Toxic Substances Control Act) with CAS numbers and chemical names; Proposition 65; Chemicals known to cause cancer.

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Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/03/2016

Trade name: His-Binding Buffer

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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 The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms GHS07, GHS08

Signal word Danger

Hazard-determining components of labeling:

imidazole

Hazard statements

Causes skin irritation.

Causes serious eye irritation.

May damage fertility or the unborn child.

Precautionary statements

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

Wash thoroughly after handling.

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

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).

IF exposed or concerned: Get medical advice/attention.

If skin irritation occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

IF ON SKIN: Wash with plenty of water.

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.

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ZYMO RESEARCH

The Beauty of Science is to Make Things Simple

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Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/03/2016

Trade name: His-Binding Buffer

(Contd. of page 8)

· **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** 03/23/2017 / -

· **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

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

Repr. 1: Reproductive toxicity – Category 1

US



Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/03/2016

1 Identification

- **Product identifier**
- **Trade name:** His-Wash Buffer
- **Article number:** P2003-4
- **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**



GHS08 Health hazard

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



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms** GHS07, GHS08
- **Signal word** Danger
- **Hazard-determining components of labeling:**
imidazole
- **Hazard statements**
Causes skin irritation.
Causes serious eye irritation.
May damage fertility or the unborn child.
- **Precautionary statements**
Wear protective gloves/protective clothing/eye protection/face protection.
Wash thoroughly after handling.
Obtain special instructions before use.

(Contd. on page 2)



Safety Data Sheet acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/03/2016

Trade name: His-Wash Buffer

(Contd. of page 1)

Do not handle until all safety precautions have been read and understood.
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).
IF exposed or concerned: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
IF ON SKIN: Wash with plenty of water.
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)



HMIS-ratings (scale 0 - 4)



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:

Table with 2 columns: CAS: 288-32-4 | imidazole and ≤2.5%

4 First-aid measures

Description of first aid measures

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.

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Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/03/2016

Trade name: His-Wash Buffer

(Contd. of page 2)

- 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.
Advice for firefighters
Protective equipment: Wear protective clothing.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
Environmental precautions
Methods and material for containment and cleaning up
Reference to other sections
Protective Action Criteria for Chemicals

PAC-1:

Table with 3 columns: CAS number, chemical name, and concentration (0.66 mg/m3)

PAC-2:

Table with 3 columns: CAS number, chemical name, and concentration (7.3 mg/m3)

PAC-3:

Table with 3 columns: CAS number, chemical name, and concentration (44 mg/m3)

7 Handling and storage

- Handling
Precautions for safe handling
Information about protection against explosions and fires
Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and receptacles
Information about storage in one common storage facility
Further information about storage conditions

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Reviewed on 02/03/2016

Trade name: His-Wash Buffer

(Contd. of page 3)

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: Wash hands before breaks and at the end of work.
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.

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: Undetermined.
Flash point: Not applicable.

(Contd. on page 5)



Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/03/2016

Trade name: His-Wash Buffer

(Contd. of page 4)

Table with 2 columns: Property and Value. Rows include: Flammability (solid, gaseous): Not applicable; Ignition temperature: Not determined; 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: Not miscible or difficult to mix; Partition coefficient (n-octanol/water): Not determined; Viscosity: Dynamic: Not determined, Kinematic: Not determined; Solvent content: Organic solvents: 0.0 %, VOC content: 0.0 g/l / 0.00 lb/gl; Solids content: 2.0 %; 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.



Safety Data Sheet acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/03/2016

Trade name: His-Wash Buffer

(Contd. of page 5)

11 Toxicological information

Information on toxicological effects

Acute toxicity:

LD/LC50 values that are relevant for classification:

CAS: 288-32-4 imidazole

Oral LD50 880 mg/kg (mouse)

Primary irritant effect:

on the skin: No irritant effect.

on the eye: No irritating effect.

Sensitization: No sensitizing effects known.

Additional toxicological information:

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

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.

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Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/03/2016

Trade name: His-Wash Buffer

(Contd. of page 6)

- Uncleaned packagings:
Recommendation:
Dispose of container in accordance with local/regional/national and international recommendations.

14 Transport information

Table with 2 columns: Hazard/Regulation and Status. Rows include UN-Number, DOT, ADN, IMDG, IATA; UN proper shipping name; Transport hazard class(es); Packing group; Environmental hazards; Special precautions for user; Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code; UN Model Regulation.

15 Regulatory information

Table with 2 columns: Regulation and Status. Rows include Safety, health and environmental regulations/legislation specific for the substance or mixture; Section 355 (extremely hazardous substances); Section 313 (Specific toxic chemical listings); TSCA (Toxic Substances Control Act) with CAS numbers and chemical names; Proposition 65; Chemicals known to cause cancer.

(Contd. on page 8)



Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/03/2016

Trade name: His-Wash Buffer

(Contd. of page 7)

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 The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms GHS07, GHS08

Signal word Danger

Hazard-determining components of labeling:

imidazole

Hazard statements

Causes skin irritation.

Causes serious eye irritation.

May damage fertility or the unborn child.

Precautionary statements

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

Wash thoroughly after handling.

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

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).

IF exposed or concerned: Get medical advice/attention.

If skin irritation occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

IF ON SKIN: Wash with plenty of water.

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.

(Contd. on page 9)



ZYMO RESEARCH

The Beauty of Science is to Make Things Simple

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Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/03/2016

Trade name: His-Wash Buffer

(Contd. of page 8)

· **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** 03/23/2017 / -

· **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

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

Repr. 1: Reproductive toxicity – Category 1

US



Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/04/2016

1 Identification

- **Product identifier**
- **Trade name:** His-Elution Buffer
- **Article number:** P2003-5
- **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**



GHS08 Health hazard

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



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

- **Label elements**

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms** GHS07, GHS08

· **Signal word** Danger

- **Hazard-determining components of labeling:**

imidazole

- **Hazard statements**

Causes skin irritation.

Causes serious eye irritation.

May damage fertility or the unborn child.

- **Precautionary statements**

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

Wash thoroughly after handling.

Obtain special instructions before use.

(Contd. on page 2)



Safety Data Sheet acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/04/2016

Trade name: His-Elution Buffer

(Contd. of page 1)

Do not handle until all safety precautions have been read and understood.
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).
IF exposed or concerned: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
IF ON SKIN: Wash with plenty of water.
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)



HMIS-ratings (scale 0 - 4)



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:

Table with 2 columns: CAS: 288-32-4 | imidazole and ≤2.5%

4 First-aid measures

Description of first aid measures

- 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.

(Contd. on page 3)



Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/04/2016

Trade name: His-Elution Buffer

(Contd. of page 2)

- 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: 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:

Table with 3 columns: CAS: 288-32-4, imidazole, 0.66 mg/m3

PAC-2:

Table with 3 columns: CAS: 288-32-4, imidazole, 7.3 mg/m3

PAC-3:

Table with 3 columns: CAS: 288-32-4, imidazole, 44 mg/m3

7 Handling and storage

- Handling:
Precautions for safe handling
No special precautions are necessary if used correctly. Avoid breathing dust, vapor, mist or gas. Avoid prolonged or repeated exposure. Use only in a chemical fume hood. Open and handle container with care. Keep ignition sources away.
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.

(Contd. on page 4)



Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/04/2016

Trade name: His-Elution Buffer

(Contd. of page 3)

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: Wash hands before breaks and at the end of work.
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.

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: 256 °C (493 °F)
Flash point: 145 °C (293 °F)

(Contd. on page 5)



Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/04/2016

Trade name: His-Elution Buffer

(Contd. of page 4)

Table with 2 columns: Property and Value. Rows include: Flammability (solid, gaseous): Not applicable; Ignition temperature: Not determined; 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: Not miscible or difficult to mix; Partition coefficient (n-octanol/water): Not determined; Viscosity: Dynamic: Not determined, Kinematic: Not determined; Solvent content: Organic solvents: 0.0 %, VOC content: 0.0 g/l / 0.00 lb/gl; Solids content: 42.0 %; 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.



Safety Data Sheet acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/04/2016

Trade name: His-Elution Buffer

(Contd. of page 5)

11 Toxicological information

Information on toxicological effects

Acute toxicity:

LD/LC50 values that are relevant for classification:

CAS: 288-32-4 imidazole

Oral LD50 880 mg/kg (mouse)

Primary irritant effect:

on the skin: No irritant effect.

on the eye: No irritating effect.

Sensitization: No sensitizing effects known.

Additional toxicological information:

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:

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

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

Other adverse effects: No further relevant information available.

13 Disposal considerations

Waste treatment methods

Recommendation:

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

(Contd. on page 7)



Safety Data Sheet acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/04/2016

Trade name: His-Elution Buffer

(Contd. of page 6)

- Uncleaned packagings:
Recommendation:
Dispose of container in accordance with local/regional/national and international recommendations.

14 Transport information

Table with 2 columns: Description and Regulation status. Rows include UN-Number, DOT, ADN, IMDG, IATA; UN proper shipping name; Transport hazard class(es); Packing group; Environmental hazards; Special precautions for user; Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code; UN Model Regulation.

15 Regulatory information

Table with 2 columns: Regulation/Act and Status. Rows include Safety, health and environmental regulations/legislation specific for the substance or mixture; Section 355 (extremely hazardous substances); Section 313 (Specific toxic chemical listings); TSCA (Toxic Substances Control Act) with CAS numbers and chemical names; Proposition 65; Chemicals known to cause cancer.

(Contd. on page 8)



Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

Reviewed on 02/04/2016

Trade name: His-Elution Buffer

(Contd. of page 7)

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 The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms GHS07, GHS08

Signal word Danger

Hazard-determining components of labeling:

imidazole

Hazard statements

Causes skin irritation.

Causes serious eye irritation.

May damage fertility or the unborn child.

Precautionary statements

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

Wash thoroughly after handling.

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

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).

IF exposed or concerned: Get medical advice/attention.

If skin irritation occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

IF ON SKIN: Wash with plenty of water.

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.

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ZYMO RESEARCH

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Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2017

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Trade name: His-Elution Buffer

(Contd. of page 8)

· **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** 03/23/2017 / -

· **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

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

Repr. 1: Reproductive toxicity – Category 1

US