



D-Fructose/D-Glucose Assay Kit Information Sheet

Company Name: Megazyme International Ireland
Address: Bray Business Park,
 Bray, Co. Wicklow, Ireland.
Contact: Dr. Barry McCleary, PhD, DScAgr
Tel: +353-1-2861220
Fax: +353-1-2861264
E-mail: cs@megazyme.com

Product Name : D-Fructose/D-Glucose Assay Kit
Catalogue Number: K-FRGLQR

This kit is for laboratory use only. Not for drug, household or other uses.

This product is a kit which consists of several independently packaged components. One or more of these components includes a substance or preparation that is subject to classification according to 1272/2008 and 1999/45/EC. An SDS for each of these components is included. **Please do not separate any component SDS from this cover page.**

This kit should be handled in accordance with good laboratory practices and appropriate personal protective equipment should be used. For more information refer to the K-FRGLQR booklet.

General appearance: This kit contains one glass vials and two plastic containers.
Storage: The contents of this kit are stable as specified on the individual containers when stored under the recommended storage conditions.

**The hazards identified with this kit are those associated with the following components.
 For additional information, please refer to the included individual material safety data sheet(s).
 For more information refer to the K-FRGLQR booklet.**

Contents:

Name	Description	Classification
Bottle 1*	Buffer (44 mL) containing :- Imidazole	Acute tox. 4 (Oral), Skin corr. 1B, Reprod. tox. 1B; H302, H314, H360 R22, R34, R61 NA NA
Bottle 2**	Buffer (22 mL) containing :- MOPS	Skin Irrit. 2; Eye Irrit. 2; STOT SE 3; H315, H319, H335 Xi, R36/37/38 NA NA
	Hexokinase	NA
	Glucose-6-phosphate dehydrogenase	NA
<p>*Contains sodium azide (0.08% w/v) as a preservative. Contact with acids may form toxic gases. **Contains sodium azide (0.05% w/v) as a preservative. Contact with acids may form toxic gases.</p>		

No substance or preparation included in the following kit components is subject to classification according to 1272/2008 and 1999/45/EC and therefore the requirements of 453/2010 do not apply. For more information refer to the K-FRGLQR booklet.

Name	Description	Classification
Bottle 3*	Suspension containing :- Phosphoglucose isomerase	
Bottle 4*	D-Glucose plus D-Fructose Standard	2 mL, 3 g/L of each sugar
*Contains sodium azide (0.05% w/v) as a preservative. Contact with acids may form toxic gases.		

THE FOLLOWING INFORMATION IS GIVEN AS GENERAL ADVICE

As a general rule, in cases of accident, if you feel unwell when using this product, if in doubt, or if any symptoms persist, seek medical advice. Show the label where possible.

SAFE HANDLING

- Handle according to good hygiene, laboratory and safety practices.
- Use personal protective equipment that is clean and has been properly maintained, including: – Approved safety glasses with side shields, protective gloves (e.g. nitrile) and suitable laboratory clothing.
- Use only in areas with adequate ventilation, keep away from heat and sources of ignition. Avoid ingesting, breathing dust or vapours, contact with eyes, skin and clothing.
- Spillages should be cleaned up immediately (avoid raising dust or aerosol) and placed in a suitable container for disposal. Clean area using detergent and water only.

FIRST AID

Inhalation	Move to fresh air. If breathing becomes difficult immediately seek medical advice.
Eye contact	Remove contact lenses if fitted and easy to do. Flush eyes with plenty of water for at least 15 minutes. Seek medical advice.
Skin contact	Immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Wash clothing and clean shoes before re-use. Seek medical advice.
Ingestion	If person is conscious immediately flush mouth with plenty of water. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Seek medical advice.

FIRE-FIGHTING MEASURES

In case of fire, toxic and irritant fumes (nitrogen oxides, carbon monoxide, carbon dioxide) may be produced. Use dry chemical powder, water spray, carbon dioxide or foam to extinguish fire.

FURTHER INFORMATION

Precautions

Since the user's working conditions are not known by us, the information supplied in this kit information sheet is based on our current level of knowledge. It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations. This kit must not be used for any purpose other than those specified.

Disclaimer

The information and recommendations contained herein are to the best of our knowledge reliable. However, Megazyme International Ireland does not guarantee the accuracy or completeness of the information and, as such, this document should be used as a guide only. In addition, nothing herein is to be construed as a warranty or representation in respect of safety in use, suitability and efficiency or otherwise, including freedom from patent infringements. Users should make their own tests for their particular purpose. We cannot accept any liability for any loss, damage or infringement arising from the use of the information or recommendations contained herein.



Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Product Identification:

Product Name: Imidazole
Synonym: 1,3-diazacyclopenta-2,4-diene, 1,3-diazole
Catalogue Number: NA

1.2 Relevant identified uses of the product and uses advised against:

For laboratory use only. Not for drug, household or other uses.

1.3 Details of company:

Company Name: Megazyme International Ireland
Address: Bray Business Park,
 Bray, Co. Wicklow, Ireland.
Contact: Dr. Barry McCleary, PhD, DScAgr
Tel: +353-1-2861220
Fax: +353-1-2861264
E-mail: cs@megazyme.com

1.4 Emergency phone number:

+353-1-2861220 - Available from 9am to 5.30pm (local time Ireland).

2. HAZARD IDENTIFICATION

2.1 Classification of product:

Classification according to EC 1272/2008

Acute toxicity, Oral (Category 4)
 Skin corrosion (Category 1B)
 Reproductive toxicity (Category 1B)

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Harmful if swallowed. Causes burns. May cause harm to the unborn child.

2.2 Labelling:

Labelling according EC 1272/2008 [CLP]

Pictogram



Signal Word

Danger

Hazard Statements

H302 Harmful if swallowed.
 H314 Causes severe skin burns and eye damage.
 H360 May damage the unborn child.

Precautionary Statements

P201 Obtain special instructions before use.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P310 Immediately call a POISON CENTER or doctor/physician.

Supplemental Hazard Statements

None

Labelling according to EU Directives 67/548/EEC, 1999/45/EC

Hazard Symbols



R-phrase

R22 Also harmful if swallowed.
R34 Causes burns.
R61 May cause harm to the unborn child.

S-phrase

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S53 Avoid exposure - obtain special instructions before use.

2.3 Other Hazards:

None

3. INFORMATION ON PRODUCT COMPONENTS

3.1 Components:

Name	CAS #	EC #	Classification
Imidazole	288-32-4	206-019-2	Acute tox. 4 (Oral), Skin corr. 1B, Reprod. tox. 1B; H302, H314, H360 R22, R34, R61

Synonyms

3.2 Mixtures:

Composition:

Name	CAS #	EC #	Classification

4. FIRST AID

4.1 General information:

The information in this section is given as general advice. As a general rule seek medical advice in cases of accident, if you feel unwell when using this product, if in doubt, or if symptoms persist. Show the label where possible.

Inhalation Move to fresh air. If breathing becomes difficult immediately seek medical advice.
Eye contact Remove contact lenses if fitted. Flush eyes with plenty of water for at least 15 minutes. Get medical advice.
Skin contact Immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Wash clothing and clean shoes before re-use. Get medical advice.
Ingestion If person is conscious immediately flush mouth with plenty of water. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Get medical advice.

4.2 Most important symptoms and effects, both acute and delayed:

No data available.

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

No data available.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media:

Suitable means of extinction

Dry chemical powder, water spray, carbon dioxide or foam.

Unsuitable methods of extinction

Water jet.

5.2 Special hazards arising from the substance or mixture:

Burning may produce toxic and irritant fumes (nitrogen oxides, carbon monoxide, carbon

dioxide).

5.3 Advice for fire-fighters:

Fire Fighting Procedure

Wear breathing apparatus and full protective clothing.

5.4 Further information:

None

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

Use personal protective equipment, avoid breathing dust or vapours, avoid contact with skin and eyes.

6.2 Environmental precautions:

Do not flush product into drains.

6.3 Methods and materials for containment and cleaning up:

All spillages should be dealt with immediately. Use personal protective equipment and sweep or mop up (avoid raising dust or aerosol) and place in a suitable container for disposal. Ventilate area and carefully wash any contaminated surfaces using detergent and water, do not use solvents. Wash all contaminated clothing.

6.4 Reference to other sections:

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling:

Handle according to good hygiene, laboratory and safety practices. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use only in areas with adequate ventilation. Keep away from heat and sources of ignition.

7.2 Conditions for safe storage, including any incompatibilities:

Stable as specified on the individual container when stored under the recommended storage conditions.

7.3 Specific end uses:

No data available.

8. EXPOSURE CONTROLS /PERSONAL PROTECTION

8.1 Control parameters:

Occupational exposure limits

No data available.

8.2 Exposure Controls:

Engineering measures

Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Use personal protective equipment that is clean and has been properly maintained.

Store personal protective equipment in a clean place, away from the work area.

Never eat, drink or smoke during use. Remove and wash contaminated clothing before reusing.

Eye / face protection

Avoid contact with eyes.

Wear safety glasses with side shields conforming to standard EN 166 - prescription glasses are not considered as protection.

Provide eyewash stations in facilities where the product is handled constantly.

Hand protection

Use suitable protective gloves which conform to standard EN 374.

Body protection

Avoid contact with skin.

Wear suitable laboratory coat or any other protective clothing designed to minimise skin contact. All parts of the body that contact the product must be washed with soap and water.

Respiratory protection

Avoid breathing dust, vapours or aerosols.

A protective dust mask which meets the EN 143 standard is advisable to avoid breathing particulates when a powdered form of the product is being handled.

Use an approved respirator when aerosol, vapour or dust is generated.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

General information

Appearance	Off white crystalline solid
Solubility	Soluble in water (6.8 g/L at 20°C)
pH	9.5 – 11.0 (6.8 g/L at 25°C)
Odour	Amine-like
Melting point	88 – 91°C
Boiling point	256°C
Density	1.03 g/mL

9.2 Other information:

None

10. STABILITY AND REACTIVITY

10.1 Reactivity:

No data available.

10.2 Chemical stability:

This product is stable when stored under the recommended handling and storage conditions.

10.3 Possibility of hazardous reactions:

No data available.

10.4 Conditions to avoid:

No data available.

10.5 Incompatible materials:

Strong oxidising agents, acids and acid anhydrides.

10.6 Hazardous decomposition products:

May produce toxic and irritant fumes (nitrogen oxides, carbon monoxide, carbon dioxide) on burning.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects:

To the best of our knowledge, the chemical, physical and toxicological properties of this product have not been fully investigated.

Mixture

No data available for the mixture.

Acute toxicity

LD50 Oral (rat - 970 mg/kg).

Skin corrosion/skin irritation

Skin - Corrosive (rabbit).

Serious damage to eyes/eye irritation

Risk of serious damage to eyes (rabbit).

Respiratory or skin sensitisation

No data available.

Reproductive toxicity

May damage the unborn child.

POTENTIAL HEALTH EFFECTS

Inhalation May be harmful if inhaled. Extremely destructive to mucous membranes and upper respiratory tract.

Ingestion Harmful if swallowed. Causes burns.

Skin May be harmful if absorbed through skin. Causes skin burns.

Eyes Causes eye burns.

Signs and Symptoms of Exposure

No data available.

Additional Information

RTECS: NI3325000

12. ECOLOGICAL INFORMATION

12.1 Toxicity:

Toxicity to fish

LC50 - Golden orfe (*Leuciscus idus*) - 280 mg/L, 48 h.

Toxicity to daphnia and other aquatic invertebrates

EC50 - Daphnia – 341.5 mg/L, 48 h.

Toxicity to algae

EC50 - Green algae (*Scenedesmus quadricauda*) - 133 mg/L, 72 h.

12.2 Persistence and degradability:

Readily biodegradable.

12.3 Bioaccumulative potential:

No data available.

12.4 Mobility in soil:

No data available.

12.5 Results of PBT and vPvB assessment:

No data available.

12.6 Other adverse effects:

No data available.

13. DISPOSAL CONSIDERATIONS

Unused product and packaging may be disposed of in approved landfill sites, incineration or other method in accordance with local, state and federal regulations.

14. TRANSPORT INFORMATION

14.1 UN number

RID/ADR 3263

IMDG 3263

IATA 3263

14.2 UN proper shipping name

RID/ADR Corrosive solid, basic, organic, n.o.s. (Imidazole)

IMDG Corrosive solid, basic, organic, n.o.s. (Imidazole)

IATA Corrosive solid, basic, organic, n.o.s. (Imidazole)

14.3 Transport hazard class

RID/ADR 8

IMDG 8

IATA 8

14.4 Packaging group

RID/ADR II

IMDG II

IATA II

14.5 Environmental hazards

RID/ADR No data available.

IMDG No

IATA No

14.6 Special precautions for user

No data available.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the product:

No data available.

15.2 Chemical safety assessment:

No data available.

16. FURTHER INFORMATION

Precautions

Since the user's working conditions are not known by us, the information supplied on this safety data sheet is based on our current level of knowledge. It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations.

This product must not be used for any other uses than those specified in section 1.

Disclaimer

The information and recommendations contained herein are to the best of our knowledge reliable. However, Megazyme International Ireland does not guarantee the accuracy or completeness of the information and as such this document should be used as a guide only. In addition, nothing herein is to be construed as a warranty or representation in respect of safety in use, suitability and efficiency or otherwise, including freedom from patent infringements. Users should make their own tests for their particular purpose. We cannot accept any liability for any loss, damage or infringement arising from the use of the information or recommendations contained herein.



Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Product Identification:

Product Name: MOPS
Synonym: 3-(N-Morpholino)propanesulfonic acid
 4-Morpholinepropanesulfonic acid
Catalogue Number: B-MOPS250

1.2 Relevant identified uses of the product and uses advised against:

For laboratory use only. Not for drug, household or other uses.

1.3 Details of company:

Company Name: Megazyme International Ireland
Address: Bray Business Park,
 Bray, Co. Wicklow, Ireland.
Contact: Dr. Barry McCleary, PhD, DScAgr
Tel: +353-1-2861220
Fax: +353-1-2861264
E-mail: cs@megazyme.com

1.4 Emergency phone number:

+353-1-2861220 - Available from 9am to 5.30pm (local time Ireland).

2. HAZARD IDENTIFICATION

2.1 Classification of product:

Classification according to EC 1272/2008

Skin irritation (Category 2)

Eye irritation (Category 2)

Specific target organ toxicity - single exposure (Category 3)

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Irritating to eyes, respiratory system and skin.

2.2 Labelling:

Labelling according EC 1272/2008 [CLP]

Pictogram



Signal Word

Warning

Hazard Statements

H315

Causes skin irritation.

H319

Causes serious eye irritation.

H335

May cause respiratory irritation.

Precautionary Statements

P261

Avoid breathing dust/fume/gas/mist/vapours/spray.

P305 + P351 +

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P338

Supplemental Hazard Statements

None

Labelling according to EU Directives 67/548/EEC, 1999/45/EC

Hazard Symbols



R-phrase

R36/37/38 Irritating to eyes, respiratory system and skin.

S-phrase

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36 Wear suitable protective clothing.

2.3 Other Hazards:

None

3. INFORMATION ON PRODUCT COMPONENTS

3.1 Components:

Name	CAS #	EC #	Classification
MOPS	1132-61-2	214-478-5	Skin Irrit. 2; Eye Irrit. 2; STOT SE 3; H315, H319, H335 Xi, R36/37/38

Synonyms

3-(N-Morpholino)propanesulfonic acid
4-Morpholinepropanesulfonic acid

3.2 Mixtures:

Composition:

Name	CAS #	EC #	Classification

4. FIRST AID

4.1 General information:

The information in this section is given as general advice. As a general rule seek medical advice in cases of accident, if you feel unwell when using this product, if in doubt, or if symptoms persist. Show the label where possible.

Inhalation Move to fresh air. If breathing becomes difficult immediately seek medical advice.
Eye contact Remove contact lenses if fitted. Flush eyes with plenty of water for at least 15 minutes. Get medical advice.
Skin contact Immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Wash clothing and clean shoes before re-use. Get medical advice.
Ingestion If person is conscious immediately flush mouth with plenty of water. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Get medical advice.

4.2 Most important symptoms and effects, both acute and delayed:

No data available.

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

No data available.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media:

Suitable means of extinction

Dry chemical powder, water spray, carbon dioxide or foam.

Unsuitable methods of extinction

Water jet.

- 5.2 Special hazards arising from the substance or mixture:**
Burning may produce toxic and irritant fumes (nitrogen oxides, carbon monoxide, carbon dioxide).
- 5.3 Advice for fire-fighters:**
Fire Fighting Procedure
Wear breathing apparatus and full protective clothing.
- 5.4 Further information:**
None

6. ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions, protective equipment and emergency procedures:**
Use personal protective equipment, avoid breathing dust or vapours, avoid contact with skin and eyes.
- 6.2 Environmental precautions:**
Do not flush product into drains.
- 6.3 Methods and materials for containment and cleaning up:**
All spillages should be dealt with immediately. Use personal protective equipment and sweep or mop up (avoid raising dust or aerosol) and place in a suitable container for disposal. Ventilate area and carefully wash any contaminated surfaces using detergent and water, do not use solvents. Wash all contaminated clothing.
- 6.4 Reference to other sections:**
For disposal see section 13.

7. HANDLING AND STORAGE

- 7.1 Precautions for safe handling:**
Handle according to good hygiene, laboratory and safety practices. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use only in areas with adequate ventilation. Keep away from heat and sources of ignition.
- 7.2 Conditions for safe storage, including any incompatibilities:**
Stable as specified on the individual container when stored under the recommended storage conditions.
- 7.3 Specific end uses:**
No data available.

8. EXPOSURE CONTROLS /PERSONAL PROTECTION

- 8.1 Control parameters:**
Occupational exposure limits
No data available.
- 8.2 Exposure Controls:**
Engineering measures
Ensure adequate ventilation, especially in confined areas.
- Personal protective equipment**
Use personal protective equipment that is clean and has been properly maintained. Store personal protective equipment in a clean place, away from the work area. Never eat, drink or smoke during use. Remove and wash contaminated clothing before reusing.
- Eye / face protection**
Avoid contact with eyes.
Wear safety glasses with side shields conforming to standard EN 166 - prescription glasses are not considered as protection.
Provide eyewash stations in facilities where the product is handled constantly.
- Hand protection**
Use suitable protective gloves which conform to standard EN 374.
- Body protection**
Avoid contact with skin.
Wear suitable laboratory coat or any other protective clothing designed to minimise skin contact. All parts of the body that contact the product must be washed with soap and water.

Respiratory protection

Avoid breathing dust, vapours or aerosols.

A protective dust mask which meets the EN 143 standard is advisable to avoid breathing particulates when a powdered form of the product is being handled.

Use an approved respirator when aerosol, vapour or dust is generated.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

General information

Appearance	White powder
Solubility	Completely soluble in water at 200 g/L (20°C)
pH	2.5 - 4 at ~200 g/L (25°C)
Melting point	277°C

9.2 Other information:

None

10. STABILITY AND REACTIVITY

10.1 Reactivity:

No data available.

10.2 Chemical stability:

This product is stable when stored under the recommended handling and storage conditions.

10.3 Possibility of hazardous reactions:

No data available.

10.4 Conditions to avoid:

No data available.

10.5 Incompatible materials:

Strong oxidising agents, strong bases.

10.6 Hazardous decomposition products:

May produce toxic and irritant fumes (carbon, nitrogen and sulphur oxides) on burning.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects:

To the best of our knowledge, the chemical, physical and toxicological properties of this product have not been fully investigated.

Mixture

No data available for the mixture.

Acute toxicity

LD50 Oral > 2.0 mg/kg (rat).

Skin corrosion/skin irritation

No data available.

Serious damage to eyes/eye irritation

No data available.

Respiratory or skin sensitisation

No data available.

Reproductive toxicity

No data available.

Specific target organ toxicity - single exposure

May cause respiratory irritation on inhalation.

POTENTIAL HEALTH EFFECTS

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Ingestion	Harmful if swallowed.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes serious eye irritation.

Signs and Symptoms of Exposure

No data available.

Additional Information

RTECS: QE9104530

12. ECOLOGICAL INFORMATION

12.1 Toxicity:

Toxicity to daphnia and other aquatic invertebrates

EC50 - *Daphnia magna* (Water flea) > 100 mg/L.

12.2 Persistence and degradability:

No data available.

12.3 Bioaccumulative potential:

No data available.

12.4 Mobility in soil:

No data available.

12.5 Results of PBT and vPvB assessment:

No data available.

12.6 Other adverse effects:

No data available.

13. DISPOSAL CONSIDERATIONS

Unused product and packaging may be disposed of in approved landfill sites, incineration or other method in accordance with local, state and federal regulations.

14. TRANSPORT INFORMATION

RID/ADR

Not dangerous goods.

IMDG/IMO

Not dangerous goods.

ICAO/IATA

Not dangerous goods.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the product:

No data available.

15.2 Chemical safety assessment:

No data available.

16. FURTHER INFORMATION

Precautions

Since the user's working conditions are not known by us, the information supplied on this safety data sheet is based on our current level of knowledge. It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations.

This product must not be used for any other uses than those specified in section 1.

Disclaimer

The information and recommendations contained herein are to the best of our knowledge reliable. However, Megazyme International Ireland does not guarantee the accuracy or completeness of the information and as such this document should be used as a guide only. In addition, nothing herein is to be construed as a warranty or representation in respect of safety in use, suitability and efficiency or otherwise, including freedom from patent infringements. Users should make their own tests for their particular purpose. We cannot accept any liability for any loss, damage or infringement arising from the use of the information or recommendations contained herein.