

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/28/2024

Reviewed on 06/28/2024

1 Identification

- **Product identifier**
- **Trade name:** Bial's Reagent Solution
(for pentoses)
- **Article number:** B2000
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Aqua Solutions, Inc.
6913 Highway 225
DEER PARK, TX 77536
USA
800-256-2586
- **Information department:**
Technical Coordinator
Sherman Nelson shermann@aquasolutions.org
- **Emergency telephone number:**
Chemtrec: 800-424-9300
Canutec: 613-996-6666



2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS02 Flame

Flammable Liquids 2

H225 Highly flammable liquid and vapor.



GHS08 Health hazard

Specific Target Organ Toxicity - Single Exposure 2 H371 May cause damage to the central nervous system and the visual organs.



GHS07

Eye Irritation 2A

H319 Causes serious eye irritation.

Specific Target Organ Toxicity - Single Exposure 3 H336 May cause drowsiness or dizziness.

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



GHS02



GHS07



GHS08

- **Signal word** Danger
- **Hazard-determining components of labeling:**
Isopropanol
Methanol

(Contd. on page 2)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/28/2024

Reviewed on 06/28/2024

Trade name: Bial's Reagent Solution
(for pentoses)

(Contd. of page 1)

- **Hazard statements**

Highly flammable liquid and vapor.

Causes serious eye irritation.

May cause damage to the central nervous system and the visual organs.

May cause drowsiness or dizziness.

- **Precautionary statements**

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

Ground/bond container and receiving equipment.

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

Use only non-sparking tools.

Take precautionary measures against static discharge.

Do not breathe dust/fume/gas/mist/vapors/spray.

Wash thoroughly after handling.

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

Use only outdoors or in a well-ventilated area.

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

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.

IF exposed or concerned: Call a poison center/doctor.

Call a poison center/doctor if you feel unwell.

If eye irritation persists: Get medical advice/attention.

In case of fire: Use CO₂, powder or water spray to extinguish.

Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.

Store locked up.

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

- **Classification system:**

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

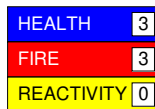


Health = 2

Fire = 3

Reactivity = 0

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



Health = 3

Fire = 3

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: 67-63-0	Isopropanol	88.763%
--------------	-------------	---------

(Contd. on page 3)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/28/2024

Reviewed on 06/28/2024

Trade name: Bial's Reagent Solution
(for pentoses)

(Contd. of page 2)

CAS: 67-56-1	Methanol	4.714%
CAS: 64-17-5	Ethyl Alcohol, Absolute 200 Proof	4.701%
CAS: 10025-77-1	Ferric Chloride Hexahydrate	1.131%
· Table of Nonhazardous Ingredients		
CAS: 6153-39-5	Orcinol, Monohydrate	0.691%

4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Immediately rinse with water.
- **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** If symptoms persist consult doctor.
- **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.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards arising from the substance or mixture**
During heating or in case of fire poisonous gases are produced.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
- **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).
Dispose contaminated material as waste according to section 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: 67-63-0	Isopropanol	400 ppm
--------------	-------------	---------

(Contd. on page 4)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/28/2024

Reviewed on 06/28/2024

Trade name: Bial's Reagent Solution
(for pentoses)

(Contd. of page 3)

CAS: 67-56-1	Methanol	530 ppm
CAS: 64-17-5	Ethyl Alcohol, Absolute 200 Proof	1,800 ppm
CAS: 10025-77-1	Ferric Chloride Hexahydrate	15 mg/m ³
· PAC-2:		
CAS: 67-63-0	Isopropanol	2000* ppm
CAS: 67-56-1	Methanol	2,100 ppm
CAS: 64-17-5	Ethyl Alcohol, Absolute 200 Proof	3300* ppm
CAS: 10025-77-1	Ferric Chloride Hexahydrate	39 mg/m ³
· PAC-3:		
CAS: 67-63-0	Isopropanol	12000** ppm
CAS: 67-56-1	Methanol	7200* ppm
CAS: 64-17-5	Ethyl Alcohol, Absolute 200 Proof	15000* ppm
CAS: 10025-77-1	Ferric Chloride Hexahydrate	240 mg/m ³

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.
Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store in a cool location.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
- **Specific end use(s)** No further relevant information available.

* 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see section 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.
At this time, the remaining constituent has no known exposure limits.

CAS: 67-63-0 Isopropanol

PEL	Long-term value: 980 mg/m ³ , 400 ppm
-----	--

(Contd. on page 5)

US

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/28/2024

Reviewed on 06/28/2024

Trade name: Bial's Reagent Solution
(for pentoses)

(Contd. of page 4)

REL	Short-term value: 1225 mg/m ³ , 500 ppm Long-term value: 980 mg/m ³ , 400 ppm
TLV	Short-term value: 400 ppm Long-term value: 200 ppm BEI, A4

CAS: 67-56-1 Methanol

PEL	Long-term value: 260 mg/m ³ , 200 ppm
REL	Short-term value: 325 mg/m ³ , 250 ppm Long-term value: 260 mg/m ³ , 200 ppm Skin
TLV	Short-term value: 250 ppm Long-term value: 200 ppm Skin; BEIc

CAS: 64-17-5 Ethyl Alcohol, Absolute 200 Proof

PEL	Long-term value: 1900 mg/m ³ , 1000 ppm
REL	Long-term value: 1900 mg/m ³ , 1000 ppm
TLV	Short-term value: 1000 ppm A3

· Ingredients with biological limit values:**CAS: 67-63-0 Isopropanol**

BEI	40 mg/L LD50 Intraperitoneal: urine Time: end of shift at end of workweek LD50: Acetone (background, nonspecific)
-----	--

CAS: 67-56-1 Methanol

BEI	15 mg/L LD50 Intraperitoneal: urine Time: end of shift LD50: Methanol (background, nonspecific)
-----	--

· **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.
Avoid contact with the eyes.
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.

(Contd. on page 6)

US

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/28/2024

Reviewed on 06/28/2024

Trade name: Bial's Reagent Solution
(for pentoses)

(Contd. of page 5)

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

· **Body protection:** Protective work clothing

9 Physical and chemical properties

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

· **General Information**

· **Appearance:**

Form:	Liquid
Color:	Yellow
Odor:	Alcohol
Odor threshold:	Not determined.

· **pH-value:** Not determined.

· **Change in condition**

Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	82 °C (179.6 °F)

· **Flash point:** 13 °C (55.4 °F)

· **Flammability (solid, gaseous):** Highly flammable.

· **Auto igniting:** 425 °C (797 °F)

· **Decomposition temperature:** Not determined.

· **Ignition temperature:** Product is not selfigniting.

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

· **Explosion limits:**

Lower:	2 Vol %
Upper:	12 Vol %

· **Vapor pressure at 20 °C (68 °F):** 43 hPa (32.3 mm Hg)

· **Density at 20 °C (68 °F):** 0.79586 g/cm³ (6.64145 lbs/gal)

· **Relative density** Not determined.

· **Vapor density** Not determined.

· **Evaporation rate** Not determined.

(Contd. on page 7)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/28/2024

Reviewed on 06/28/2024

Trade name: Bial's Reagent Solution
(for pentoses)

(Contd. of page 6)

- | | |
|---|--|
| · 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: | 98.2 % |
| VOC content: | 98.18 % |
| | 781.4 g/l / 6.52 lb/gal |
| · Solids content: | 1.8 % |
| · 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:**

- **LD/LC50 values that are relevant for classification:**

ATE (Acute Toxicity Estimate)

Oral	LD50	2,066 mg/kg
Dermal	LD50	6,364 mg/kg
Inhalative	LC50/4h	63.6 mg/l

- **Primary irritant effect:**
- **on the skin:** No irritant effect.
- **on the eye:** Irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant
- **Carcinogenic categories**

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

CAS: 67-63-0	Isopropanol	3
CAS: 64-17-5	Ethyl Alcohol, Absolute 200 Proof	1

(Contd. on page 8)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/28/2024

Reviewed on 06/28/2024

Trade name: Bial's Reagent Solution
(for pentoses)

(Contd. of page 7)

· **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:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

* 14 Transport information

- | | |
|---|---|
| <ul style="list-style-type: none"> · UN-Number · DOT, IMDG, IATA | UN1993 |
| <ul style="list-style-type: none"> · UN proper shipping name · DOT · IMDG, IATA | Flammable liquids, n.o.s. (Isopropanol, Methanol, Ethanol)
FLAMMABLE LIQUID, N.O.S. (Isopropanol, Methanol, Ethanol) |
| <ul style="list-style-type: none"> · Transport hazard class(es) · DOT |  |
| <ul style="list-style-type: none"> · Class | 3 Flammable liquids |

(Contd. on page 9)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/28/2024

Reviewed on 06/28/2024

Trade name: Bial's Reagent Solution
(for pentoses)

(Contd. of page 8)

· **Label** 3

· **IMDG, IATA**



· **Class** 3 Flammable liquids

· **Label** 3

· **Packing group**
· **DOT, IMDG, IATA** II

· **Environmental hazards:**
· **Marine pollutant:** No

· **Special precautions for user** Warning: Flammable liquids

· **Hazard identification number (Kemler code):** 33

· **EMS Number:** F-E, S-E

· **Stowage Category** B

· **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)** 1L

· **Excepted quantities (EQ)** Code: E2
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 500 ml

· **UN "Model Regulation":** UN 1993 FLAMMABLE LIQUID, N.O.S. (ISOPROPRANOL, METHANOL, ETHANOL), 3, II

15 Regulatory information

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

No further relevant information available.

· **Sara**

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

None of the ingredients is listed.

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

CAS: 67-63-0 | Isopropanol

CAS: 67-56-1 | Methanol

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

Isopropanol	ACTIVE
-------------	--------

Methanol	ACTIVE
----------	--------

Ethyl Alcohol, Absolute 200 Proof	ACTIVE
-----------------------------------	--------

(Contd. on page 10)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/28/2024

Reviewed on 06/28/2024

Trade name: Bial's Reagent Solution
(for pentoses)

(Contd. of page 9)

· **Hazardous Air Pollutants**

CAS: 67-56-1	Methanol
--------------	----------

· **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:**

CAS: 67-56-1	Methanol
--------------	----------

CAS: 64-17-5	Ethyl Alcohol, Absolute 200 Proof
--------------	-----------------------------------

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

· **TLV (Threshold Limit Value)**

CAS: 67-63-0	Isopropanol	A4
--------------	-------------	----

CAS: 64-17-5	Ethyl Alcohol, Absolute 200 Proof	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

· **Signal word** Danger

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

Isopropanol

Methanol

· **Hazard statements**

Highly flammable liquid and vapor.

Causes serious eye irritation.

May cause damage to the central nervous system and the visual organs.

May cause drowsiness or dizziness.

· **Precautionary statements**

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

Ground/bond container and receiving equipment.

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

Use only non-sparking tools.

Take precautionary measures against static discharge.

Do not breathe dust/fume/gas/mist/vapors/spray.

Wash thoroughly after handling.

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

Use only outdoors or in a well-ventilated area.

(Contd. on page 11)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/28/2024

Reviewed on 06/28/2024

Trade name: Bial's Reagent Solution
(for pentoses)

(Contd. of page 10)

Wear protective gloves/protective clothing/eye protection/face protection.
 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.
 IF exposed or concerned: Call a poison center/doctor.
 Call a poison center/doctor if you feel unwell.
 If eye irritation persists: Get medical advice/attention.
 In case of fire: Use CO₂, powder or water spray to extinguish.
 Store in a well-ventilated place. Keep container tightly closed.
 Store in a well-ventilated place. Keep cool.
 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:** Environment protection department.

- **Contact:**

Date of Preparation / Last Revision:

- **Date of preparation / last revision**

Revision 1.2 06/27/2024: Reviewed SDS for accuracy. MH/STN

Creation date for SDS 11-06-2015. STN

06/28/2024 / 1.0

- **Abbreviations and acronyms:**

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

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

BEI: Biological Exposure Limit

Flammable Liquids 2: Flammable liquids – Category 2

Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A

Specific Target Organ Toxicity - Single Exposure 2: Specific target organ toxicity (single exposure) – Category 2

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