

I. PRODUCT IDENTIFICATION: pH 4.01 Buffer

Orion 910104 & 910460 & 9104CB

PRODUCT USE: Buffer

NFPA RATINGS: HEALTH: 1 FLAMMABILITY: 0 REACTIVITY: 0

II. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT		%	LD ₅₀ mg/kg
Potassium Hydrogen Phthalate (KHP)			
CAS NO.	877-24-7	1	None found
Amaranth Red Dye (C ₂₀ H ₁₁ N ₂ O ₁₀ S ₃ Na ₂)			
CAS NO.	915-67-3	<0.01	1000 (IRP-MUS)
Deionized Water			
CAS NO.	7732-18-5	99	190,000 (IPR-MUS)

III. HAZARDS IDENTIFICATION

Low hazard fro normal usage.
Harmful if swallowed. May irritate eyes and skin.
TARGET ORGANS: Skin.
ACUTE TOXICITY: Low hazards because of low concentration of salts.
CHRONIC TOXICITY: Possible skin irritation from prolonged exposure.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Disease of the skin.

IV. FIRST AID MEASURES

EYE AND SKIN CONTACT: Wash off with large amounts of water.
INGESTION: Give large amounts of water. Consult physician.
INHALATION: Not hazardous

V. FIRE FIGHTING MEASURES

FLASH POINT: NA AUTOIGNITION POINT: NA
FLAMMABILITY LIMITS: UPPER: NA LOWER: NA
EXTINGUISHING MEDIA: Water, CO₂, dry chemical or foam.

VI. ACCIDENTAL RELEASE MEASURES

Take up with absorbent materials. Place in small containers for disposal. Wash spill site after material pick up is complete.

VII. HANDLING AND STORAGE

Always wear eye protection and gloves when working with this product.
Avoid contact with eyes, skin or clothing. Avoid ingestion.

VIII. EXPOSURE CONTROLS/ PERSONAL PROTECTION

OSHA & ACGIH THRESHOLD LIMIT: None listed.
PROTECTIVE EQUIPMENT: Safety glasses, lab coat and gloves.

IX. PHYSICAL AND CHEMICAL PROPERTIES

STATE: Light red liquid ODOR THRESHOLD: None
SENSITIVITY TO MECHANICAL IMPACT: None
SENSITIVITY TO STATIC DISCHARGE: None
COEFFICIENT OF OIL/WATER DISTRIBUTION: None
SOLUBILITY IN WATER: Soluble pH: 4.01
SPECIFIC GRAVITY: 1.0
BOILING POINT: 100°C MELTING POINT: Not determined
VAPOR DENSITY: Not determined

X. STABILITY AND REACTIVITY

Product is stable. Hazardous polymerization will not occur.
Incompatibles: Nitric acid.
Hazardous decomposition product: None.

XI. TOXICOLOGICAL INFORMATION

Route of Exposure: May irritate skin. May be harmful if swallowed.
Teratogen Status: None
Mutagen Status: None
Reproductive Toxicity: None
Carcinogen Status: None

XII. ECOLOGICAL INFORMATION

None available.

XIII. DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with Federal, State and Local Regulations.

XIV. TRANSPORT INFORMATION

Product is not hazardous for transport.

XV. REGULATORY INFORMATION

EUROPEAN INFORMATION:

None

US/ CANADA INFORMATION

SARA/Title III: Not listed.
Cal. Proposition 65: Ingredients not listed.
US TSCA Inventory: Ingredients are listed
CPR Class: None.
TDG Class: None.
MSDS discloses elements required by the CPR.

XVI. OTHER INFORMATION

THE ABOVE INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. ALL PRODUCTS ARE OFFERED IN ACCORDANCE WITH THE MANUFACTURER'S CURRENT PRODUCTION SPECIFICATIONS AND ARE INTENDED SOLELY FOR USE IN ANALYTICAL TESTING. THE MANUFACTURER SHALL IN NO EVENT BE LIABLE FOR ANY INJURY, LOSS OR DAMAGE RESULTING FROM THE HANDLING, USE OR MISUSE OF THESE PRODUCTS.

MSDS prepared by Quality Assurance Group.

I. PRODUCT IDENTIFICATION: pH 7.00 Buffer

Orion 910107 & 910760 & 9107CB

PRODUCT USE: Buffer

NFPA RATINGS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0

II. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT		%	LD ₅₀ mg/kg
Potassium Dihydrogen Phosphate (KH ₂ PO ₄)	CAS NO. 7778-77-0	<1	None found
Disodium Hydrogen Phosphate (Na ₂ HPO ₄)	CAS NO. 7558-79-4	<1	298 LD ₅₀ (INV-DOG)
5-Bromo-5-Nitro-1,3-Dioxane	CAS NO. 30007-47-7	<1	455 (ORL-RAT)
FD&C Yellow #5	CAS NO. 1934-21-0	<0.01	12,750 (ORL-MUS)
Deionized Water	CAS NO. 7732-18-5	99	190,000 (IPR-MUS)

III. HAZARDS IDENTIFICATION

Low hazard for normal usage.
Harmful if swallowed. May irritate eyes and skin.
TARGET ORGANS: Skin.
ACUTE TOXICITY: Low hazard.
CHRONIC TOXICITY: May irritate skin after prolonged exposure.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Disease of the skin.

IV. FIRST AID MEASURES

EYE AND SKIN CONTACT: Wash off with large amounts of water.
INGESTION: Give large amounts of water. Consult physician.
INHALATION: Not hazardous

V. FIRE FIGHTING MEASURES

FLASH POINT: NA AUTOIGNITION POINT: NA
FLAMMABILITY LIMITS: UPPER: NA LOWER: NA
EXTINGUISHING MEDIA: Water, CO₂, dry chemical or foam.

VI. ACCIDENTAL RELEASE MEASURES

Take up with absorbent materials. Place in small containers for disposal. Wash spill site after material pick up is complete.

VII. HANDLING AND STORAGE

Always wear eye protection and gloves when working with this product.
Avoid contact with eyes, skin or clothing. Avoid ingestion.

VIII. EXPOSURE CONTROLS/ PERSONAL PROTECTION

OSHA THRESHOLD LIMIT: NONE
ACGIH THRESHOLD LIMIT: NONE
PROTECTIVE EQUIPMENT: Safety glasses, lab coat and gloves.

IX. PHYSICAL AND CHEMICAL PROPERTIES

STATE: Light yellow liquid ODOR THRESHOLD: None
SENSITIVITY TO MECHANICAL IMPACT: None
SENSITIVITY TO STATIC DISCHARGE: None
COEFFICIENT OF OIL/WATER DISTRIBUTION: None
SOLUBILITY IN WATER: Soluble pH: 7.00
SPECIFIC GRAVITY: 1.0
BOILING POINT: 100°C MELTING POINT: Not determined
VAPOR DENSITY: Not determined

X. STABILITY AND REACTIVITY

Product is stable. Hazardous polymerization will not occur.
Incompatibles: Magnesium and sodium salts.
Hazardous decomposition product: Fumes from phosphates.

XI. TOXICOLOGICAL INFORMATION

Route of Exposure: May irritate skin. May be harmful if swallowed.
Teratogen Status: None
Mutagen Status: None
Reproductive Toxicity: None
Carcinogen Status: None

XII. ECOLOGICAL INFORMATION

None available.

XIII. DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with Federal, State and Local Regulations.

XIV. TRANSPORT INFORMATION

Product is not hazardous for transport.

XV. REGULATORY INFORMATION

EUROPEAN INFORMATION:

None

US/ CANADA INFORMATION

SARA/Title III: Regulated under Section 302.
Cal. Proposition 65: Ingredients not listed.
US TSCA Inventory: Ingredients are listed.
CPR Class: None.
TDG Class: None.
MSDS discloses elements required by the CPR.

XVI. OTHER INFORMATION

THE ABOVE INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. ALL PRODUCTS ARE OFFERED IN ACCORDANCE WITH THE MANUFACTURER'S CURRENT PRODUCTION SPECIFICATIONS AND ARE INTENDED SOLELY FOR USE IN ANALYTICAL TESTING. THE MANUFACTURER SHALL IN NO EVENT BE LIABLE FOR ANY INJURY, LOSS OR DAMAGE RESULTING FROM THE HANDLING, USE OR MISUSE OF THESE PRODUCTS.

MSDS prepared by Quality Assurance Group.

Environmental Instruments/Water Analysis
166 Cummings Center
Beverly, MA 01915-6199 USA
Telephone 978-232-6000

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

Product Name: 1413 µS/cm, 692 ppm as NaCl Conductivity/TDS Standard	Orion No. 011007	Effective Date 1/1/04
Hazardous Shipment Labeling: DOT None	IATA None	
Prepared By Approved By <i>John E. Meserve</i>	Title Quality Assurance Manager	

II. HAZARDOUS INGREDIENTS (IDENTIFY INFORMATION)

Hazardous Components * Specific Chemical Identity: Common Name(s)	CAS NO.	%	OSHA PEL	ACGIH TLV	LD ₅₀ mg/Kg
Potassium Chloride (KCl)	7447-40-7	<1	None Listed	None Listed	383 (ORL-MUS)
***Deionized Water (H ₂ O)	7732-18-5	>99	None Listed	None Listed	190,000 (IPR-MUS)

III. PHYSICAL DATA

Boiling Point 750mm Hg	100°C	Freezing Point	0°C
Specific Gravity (H ₂ O=1)	1.0	Vapor Pressure @ 25°C	NA**
pH @ 25°C	5.0 - 7.5	Solubility In Water, % by Wt @ 25°C	Miscible
Volatiles % By Wt.	NA	Evaporation Rate (BUTYL, ACETATE = 1)	NA
Vapor Density (AIR = 1)	NA		
Appearance and Odor	Clear, odorless, colorless solution		

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method)	Not flammable		Autoignition Temperature	NA
Flammable Limits in air, % by volume:	Lower	Upper		
	NA	NA		
Extinguishing Media	Dry chemical, water, foam, or CO ₂			
Special Fire-Fighting Procedures	None			
Unusual Fire and Explosion Hazards	None			

*Chemicals which are not classified as hazardous per U.S. OSHA guidelines (29CFR Parts 1915.2 or 1916.2) or the Massachusetts Substance List (105CMR670.000 Appendix A) will not necessarily be listed on this form even though one or more may be a constituent of this product

** NA Not available/not applicable

*** Non-hazardous component

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated. Safe use of the materials is the responsibility of the user.

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Form MSDS/1192

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: 1413 $\mu\text{S}/\text{cm}$, 692 ppm as NaCl
Conductivity/TDS Standard

Orion No.: 011007

V. REACTIVITY DATA

Stability:		Conditions to Avoid	
Unstable	Stable X	None	
Incompatibility (Materials to avoid) None, suitable for any general storage.			
Hazardous Decomposition Products None			
Hazardous Polymerization:		Condition to Avoid	
May Occur	Will Not Occur X	None	

VI. HEALTH HAZARD DATA

Route(s) Of Entry:	Inhalation?	Skin?	Ingestion?
	No	No	No
Health Hazards (acute and chronic) Because of the low concentration of salt (less than 1%), this product is not considered hazardous.			
Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
Not found on these lists			
Signs and Symptoms of Exposure None reported.			
Medical Conditions Generally Aggravated by Exposure		May cause stinging or irritation in an open cut.	
Emergency And First Aid Procedures Wash off skin or eyes with water.			

VII. PRECAUTIONS (SAFE HANDLING AND USE)

Steps To be Taken In Case Material Is Released or Spilled Clean up and wash down drain.
Waste Disposal Method Wash down drain. Observe all Federal, State and local laws.
Precautions To Be Taken In Handling and Storing Store at room temperature to protect product integrity. <u>NFPA Rating:</u> Scale (0-4); Health - 0, Fire - 0, Reactivity - 0, Specific - None
Other Precautions SARA TITLE III: KCl does not appear on any of the SARA lists. Not found on <u>CAL. Prop 65</u> . Reported in EPA <u>TSCA</u> inventory.

VIII. CONTROL MEASURES

Respiratory Protection (specify type) None	
Ventilation	Special
Local Exhaust None	None
Ventilation	Other
Mechanical (General) None	None
Protective Gloves	Eye Protection
Not required.	Safety glasses
Other Protective Clothing Or Equipment Not required	
Work/Hygienic Practices No special requirements	

I. PRODUCT IDENTIFICATION: pH Electrode Storage Solution

Orion 910001 & 910060 & 9100CB

PRODUCT USE: Reagent

NFPA RATINGS: HEALTH: 1 FLAMMABILITY: 0 REACTIVITY: 0

II. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT		%	LD ₅₀ mg/kg
Potassium Phosphate Monobasic (KH ₂ PO ₄)			
CAS NO.	7778-77-0	<1	4,640 (SKN-RBT)
Potassium Chloride (KCl)			
CAS NO.	7447-40-7	11	2,500 (ORL-GPG)
Sodium Phosphate Dibasic (Na ₂ HPO ₄)			
CAS NO.	7558-79-4	<1	17,000 (ORL-RAT)
Deionized Water			
CAS NO.	7732-18-5	>88	190,000 (IPR-MUS)

III. HAZARDS IDENTIFICATION

TARGET ORGANS: Skin and eyes.

ACUTE TOXICITY: Not an acute hazard because of low concentration of phosphate salt. This composition is also used as a buffer in pharmaceuticals.

CHRONIC TOXICITY: Not a chronic hazard because of low concentration of phosphate salt. This composition is also used as a buffer in pharmaceuticals.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Could aggravate diseases of the skin.

IV. FIRST AID MEASURES

EYE AND SKIN CONTACT: Wash off contact area with soap and water.

INHALATION: Not hazardous.

INGESTION: Dilute with water and consult physician.

V. FIRE FIGHTING MEASURES

FLASH POINT: NA AUTOIGNITION POINT: NA
FLAMMABILITY LIMITS: UPPER: NA LOWER: NA
EXTINGUISHING MEDIA: Dry chemical, water, foam, or CO₂.

VI. ACCIDENTAL RELEASE MEASURES

Clean up and wash down drain if local law allows.

VII. HANDLING AND STORAGE

Always wear eye protection and gloves when working with this product.

Keep sealed and store at room temperature.

VIII. EXPOSURE CONTROLS/ PERSONAL PROTECTION

OSHA & ACGIH THRESHOLD LIMIT: None listed.

PROTECTIVE EQUIPMENT: Safety glasses, lab coat and gloves.

IX. PHYSICAL AND CHEMICAL PROPERTIES

STATE: Colorless liquid ODOR THRESHOLD: None

SENSITIVITY TO MECHANICAL IMPACT: None

SENSITIVITY TO STATIC DISCHARGE: None

COEFFICIENT OF OIL/WATER DISTRIBUTION: None

SOLUBILITY IN WATER: Soluble pH: 6.3 – 6.9

SPECIFIC GRAVITY: 1.05

BOILING POINT: 100°C MELTING POINT: Not determined

VAPOR DENSITY: Not determined

X. STABILITY AND REACTIVITY

Product is stable. Hazardous polymerization will not occur.

Incompatibles: Magnesium and Sodium metals.

Hazardous decomposition product: May emit toxic POx fumes if heated to decomposition.

XI. TOXICOLOGICAL INFORMATION

Route of Exposure: Irritation of skin.

Teratogen Status: None

Mutagen Status: None

Reproductive Toxicity: None

Carcinogen Status: None

XII. ECOLOGICAL INFORMATION

None available.

XIII. DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with Federal, State and Local Regulations.

XIV. TRANSPORT INFORMATION

Product is not hazardous for transport.

XV. REGULATORY INFORMATION

EUROPEAN INFORMATION:

None.

US/ CANADA INFORMATION

SARA/Title III: Na₂HPO₄ is a CERCLA hazard and regulated under Section 304.

Cal. Proposition 65: Ingredients not listed.

US TSCA Inventory: Ingredients are listed.

CPR Class: None.

TDG Class: None.

MSDS discloses elements required by the CPR.

XVI. OTHER INFORMATION

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MSDS prepared by Quality Assurance Group.

I. PRODUCT IDENTIFICATION: pH 10.01 Buffer

Orion 910110 & 911060 & 9110CB

PRODUCT USE: Buffer

NFPA RATINGS: HEALTH: 1 FLAMMABILITY: 0 REACTIVITY: 0

II. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT		%	LD ₅₀ mg/kg
Sodium Bicarbonate (NaHCO ₃)	CAS NO. 144-55-8	<1	4220 (ORL-RAT)
Sodium Carbonate (Na ₂ CO ₃)	CAS NO. 497-19-8	<1	117 (IPR-MUS)
Methyl Paraben (C ₈ H ₈ O ₃)	CAS NO. 99-76-3	<0.1	3000 (ORL-DOG)
FD&C Blue (C ₃₇ H ₃₄ N ₂ O ₉ S ₃ *2Na)	CAS NO. 3844-45-9	<0.01	5.5g/Kg (SEN-RAT) LD ₅₀
Deionized Water	CAS NO. 7732-18-5	99	190,000 (IPR-MUS)

III. HAZARDS IDENTIFICATION

Low hazard for normal usage.
Harmful if swallowed. May irritate eyes and skin.
TARGET ORGANS: Skin.
ACUTE TOXICITY: Low hazard.
CHRONIC TOXICITY: May irritate skin after prolonged exposure.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Disease of the skin.

IV. FIRST AID MEASURES

EYE AND SKIN CONTACT: Wash off with large amounts of water.
INGESTION: Give large amounts of water. Consult physician.
INHALATION: Not hazardous

V. FIRE FIGHTING MEASURES

FLASH POINT: NA AUTOIGNITION POINT: NA
FLAMMABILITY LIMITS: UPPER: NA LOWER: NA
EXTINGUISHING MEDIA: Water, CO₂, dry chemical or foam.

VI. ACCIDENTAL RELEASE MEASURES

Take up with absorbent materials. Place in small containers for disposal. Wash spill site after material pick up is complete.

VII. HANDLING AND STORAGE

Always wear eye protection and gloves when working with this product.
Avoid contact with eyes, skin or clothing. Avoid ingestion.

VIII. EXPOSURE CONTROLS/ PERSONAL PROTECTION

OSHA & ACGIH THRESHOLD LIMIT: None listed.
PROTECTIVE EQUIPMENT: Safety glasses, lab coat and gloves.

IX. PHYSICAL AND CHEMICAL PROPERTIES

STATE: Light blue liquid ODOR THRESHOLD: None
SENSITIVITY TO MECHANICAL IMPACT: None
SENSITIVITY TO STATIC DISCHARGE: None
COEFFICIENT OF OIL/WATER DISTRIBUTION: None
SOLUBILITY IN WATER: Soluble pH: 10.01
SPECIFIC GRAVITY: 1.0
BOILING POINT: 100°C MELTING POINT: Not determined
VAPOR DENSITY: Not determined

X. STABILITY AND REACTIVITY

Product is stable. Hazardous polymerization will not occur.
Incompatibles: NaK alloy, NH₄H₂PO₄, Al, P₂O₅, H₂SO₄.
Hazardous decomposition product: CO₂ upon heating.

XI. TOXICOLOGICAL INFORMATION

Route of Exposure: May irritate skin. May be harmful if swallowed.
Teratogen Status: None
Mutagen Status: None
Reproductive Toxicity: None
Carcinogen Status: None

XII. ECOLOGICAL INFORMATION

None available.

XIII. DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with Federal, State and Local Regulations.

XIV. TRANSPORT INFORMATION

Product is not hazardous for transport.

XV. REGULATORY INFORMATION

EUROPEAN INFORMATION:

None

US/ CANADA INFORMATION

SARA/Title III: Not on list.
Cal. Proposition 65: FD & C Blue is listed.
US TSCA Inventory: Ingredients are listed.
CPR Class: None.
TDG Class: None.
MSDS discloses elements required by the CPR.

XVI. OTHER INFORMATION

THE ABOVE INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. ALL PRODUCTS ARE OFFERED IN ACCORDANCE WITH THE MANUFACTURER'S CURRENT PRODUCTION SPECIFICATIONS AND ARE INTENDED SOLELY FOR USE IN ANALYTICAL TESTING. THE MANUFACTURER SHALL IN NO EVENT BE LIABLE FOR ANY INJURY, LOSS OR DAMAGE RESULTING FROM THE HANDLING, USE OR MISUSE OF THESE PRODUCTS.

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