SAFETY DATA SHEET

According to 29 CFR 1910.1200 Hazard Communication Standard 2012 (HazCom 2012)

SECTION 1: Identification

Product identifier

Product name: Acid Starch Indicator Powder

Product number: R-0725; R-0725-PL

Recommended use and restrictions: To be used in accordance with manufacturer instructions or under the direct guidance of the manufacturer.

Manufacturer:

Taylor Technologies, Inc.
31 Loveton Circle
Sparks, MD 21152
Phone: (410) 472-4340
Emergency phone: (800) 837-8548

SECTION 2: Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Eye damage/irritation	Category 1
	Skin corrosion/irritation	Category 1B

Environmental hazards: No data available

Label elements

Hazard pictograms

Signal word: Danger

Hazard statements: May be corrosive to metals. Causes severe skin burns and eye damage.

Precautionary statements

Prevention: Keep only in original container. Do not breathe dusts or mists. Wash skin thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection if contact is likely to occur.

Response: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (OR HAIR): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a physician or poison control center. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Immediately call a physician or poison control center.

Storage: Store in corrosive-resistant container with a corrosive-resistant inner liner. Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store locked up.

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

Hazards not otherwise classified: No data available

SECTION 3: Composition/information on ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	% w/w
Sulfamic acid	Amidosulfonic acid	5329-14-6	75–85
Starch	Maltodextrin	9050-36-6	15–25

SECTION 4: First-aid measures

If inhaled

Remove individual to fresh air. Seek medical attention if breathing becomes difficult or if respiratory irritation develops. Give oxygen or artificial respiration if needed.

In case of skin contact

Immediately flush skin with plenty of water for at least 20 minutes. If clothing comes in contact with the product, the clothing should be removed and laundered before reuse. Seek medical attention if irritation develops. Chemical burns must be treated by a physician.

In case of eye contact

Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

If swallowed

Call a physician or poison control center immediately. Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless directed by physician. If vomiting occurs, keep head low so that stomach content does not get into the lungs.

Most important symptoms and effects, both acute and delayed

Refer to section 2 and/or section 11 of the SDS for the most important known symptoms and effects.

Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep person under observation. Symptoms may be delayed.

General information

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Specific hazards arising from the substance or mixture

Fire hazard	Not flammable
Explosion hazard	Not explosive
Reactivity	May be corrosive to metals
Hazardous combustion products	Carbon oxides, hydrogen chloride, sulfur oxides. Other irritating fumes and smoke.

Advice for firefighters

Precautionary measures	Exercise caution when fighting any chemical fire; hazardous fumes will be present.
Firefighting equipment/instructions	Use water spray or fog for cooling exposed containers.
Protection during firefighting	Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	Refer to section 9 of the SDS for flammability properties.

SECTION 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during cleanup. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS

Environmental precautions

Avoid discharge into drains, watercourses, or onto the ground.

Methods and material for containment and cleaning up

Dike the spilled material where this is possible. Stop leak if it can be done without risk. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth, and place into containers. Prevent entry into waterways, sewers, basements, or confined areas. Following product recovery, flush area with water. Dilute acid with water and neutralize with dilute base. If not recoverable, dilute with water or flush to holding area and neutralize. Contaminated absorbent material may pose the same hazards as the spilled product. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Reference to other sections

For exposure controls and personal protection, refer to section 8 of the SDS. For waste disposal, refer to section 13 of the SDS.

SECTION 7: Handling and storage

Personal precautions, protective equipment, and emergency procedures

Do not breathe dust. Avoid dust formation. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. For personal protective equipment, refer to section 8 of the SDS. Keep away from incompatibles. Observe good industrial hygiene practices. Label containers appropriately.

Conditions for safe storage, including any incompatibilities

Store in corrosive-resistant container with a corrosive-resistant inner liner. Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store locked up. Store away from incompatible materials (refer to section 10 of the SDS).

SECTION 8: Exposure controls/personal protection

Occupational exposure limits

ACGIH Threshold Limit Values

Not regulated

NIOSH: Pocket Guide to Chemical Hazards

Not regulated

OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Not regulated

Biological limit values

No biological exposure limits noted for the ingredient(s)

Exposure controls

Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product.
Personal protective equipment	
Eye/face protection	Wear appropriate chemical safety goggles if contact is likely to occur.
Skin protection	Wear appropriate chemical-resistant gloves and clothing if contact is likely to occur.
Body protection	Wear appropriate protective clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure limits. Advice should be sought from respiratory protection suppliers.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Solid
Form	Powder
Color	Off-white
Odor	Odorless
Odor threshold	Not applicable
pH	Not applicable
Evaporation rate	Not applicable
Melting point	401°F (205°C)
Freezing point	Not applicable
Boiling point	Not applicable
Flash point	Not applicable
Auto-ignition temperature	Not applicable
Decomposition temperature	No data available
Flammability (solid, gas)	Not applicable
Vapor pressure	No data available
Relative vapor density	No data available
Solubility	Soluble in all proportions
Partition coefficient (n-octanol/water)	No data available
Viscosity	Not applicable
Explosive properties	Not applicable
Oxidizing properties	Not applicable

SECTION 10: Stability and reactivity

Reactivity	May be corrosive to metals
Chemical stability	Stable under recommended handling and storage conditions (refer to section 7 of the SDS)
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use
Conditions to avoid	Contact with incompatible materials. Do not use in areas without adequate ventilation.
Incompatible materials	Chlorine, metal compounds, nitric acid, oxidizing agents, reducing agents, strong bases

SECTION 11: Toxicological information

Information on toxicological effects

Inhalation	May cause irritation to the respiratory system
Skin contact	Causes severe skin burns
Eye contact	Causes serious eye damage
Ingestion	Causes digestive tract burns
Most important symptoms/effects, acute and delayed	Direct skin contact may cause corrosive skin burns, deep ulcerations, and possibly permanent scarring. Direct contact with concentrated solutions may be corrosive to the eyes and may cause severe damage, including blindness. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Inhalation of dust can cause severe respiratory irritation. Symptoms may include coughing, choking, and wheezing. Inhalation could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus, and possibly the digestive tract. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding.
Acute toxicity	This product is not classified as an acute toxicity hazard. See below for individual ingredient acute toxicity data.

Product	**Species**	**Acute Toxicity Estimate (ATE)**
Acid Starch Indicator Powder (CAS Mixture)		
Acute		
Dermal		
LD_{50}	Rabbit	No data available
Inhalation		
LC_{50}	Rat	No data available
Oral		
LD_{50}	Rat	>5000 mg/kg

Components	**Species**	**Acute Toxicity Estimate (ATE)**
Sulfamic acid (CAS 5329-14-6)		
Acute		
Dermal		
LD_{50}	Rat	No data available
Inhalation		
LC_{50}	Rat	No data available
Oral		
LD_{50}	Rat	3160 mg/kg
Starch (CAS 9050-36-6)		
Acute		
Dermal		
LD_{50}	Rat	No data available
Inhalation		
LC_{50}	Rat	No data available
Oral		
LD_{50}	Rat	No data available

Respiratory or skin sensitization No data available

Germ cell mutagenicity No data available

Carcinogenicity

IARC Monographs. Overall Evaluation of Carcinogenicity

Not classifiable

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1096)

Not regulated

US National Toxicology Program (NTP) Report on Carcinogens

Not regulated

Reproductive toxicity No data available

Specific target organ toxicity (single exposure) No data available

Specific target organ toxicity (repeated exposure) No data available

Aspiration hazard No data available

SECTION 12: Ecological information

This product is not classified as environmentally hazardous; however, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

SECTION 13: Disposal considerations

Collect and reclaim or dispose of in sealed containers at a licensed waste disposal site. Since emptied containers may retain product residue, follow label warnings even after container is emptied. This material and its container must be disposed of in a safe manner. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

DOT

UN number	UN2967
UN proper shipping name	Sulphamic acid
Transport hazard class(es)	
Class	8
Subsidiary risk	None
Label(s)	8
Packing group	III
Environmental hazards	
Marine pollutant	Not listed
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Special provisions	IB8, IP3, TP1, TP33
Packaging exceptions	154
Packaging, non-bulk	213
Packaging, bulk	240

IATA

UN number	UN2967
UN proper shipping name	Sulphamic acid
Transport hazard class(es)	
Class	8
Subsidiary risk	None
Packing group	III
Environmental hazards	
Marine pollutant	Not listed
ERG code	8L
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.

Other information	
Passenger and cargo aircraft max net quantity	25 kg
Cargo aircraft only	100 kg

IMDG

UN number	UN2967
UN proper shipping name	Sulphamic acid
Transport hazard class(es)	
Class	8
Subsidiary risk	None
Packing group	III
Environmental hazards	
Marine pollutant	Not listed
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

This substance/mixture is not intended to be transported in bulk

DOT

IATA; IMDG

SECTION 15: Regulatory information

US federal regulations

CERCLA Hazardous Substance (40 CFR 302.4)

Not regulated

OSHA Hazard Communication Standard (29 CFR 1910.1200)

Chemical name	CAS number
Sulfamic acid	5329-14-6

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1096)

Not regulated

SARA 302 Extremely Hazardous Substance (40 CFR 355 Appendices A / B)

Not regulated

SARA 304 Emergency Release Notification

Not regulated

SARA 311/312 Hazardous Chemical

Chemical name	CAS number
Sulfamic acid	5329-14-6

SARA 313 (TRI reporting)

Not regulated

TSCA Section 8(b) Chemical Inventory

All components are on the U.S. EPA TSCA Inventory list.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs)

Not regulated

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated

Safe Drinking Water Act (SDWA)

Not regulated

US state regulations

California Safe Drinking Water and Toxic Enforcement Act of 1986 (California Proposition 65)

Not regulated

Massachusetts Right-to-Know Act

Not regulated

New Jersey Worker and Community Right-to-Know Act

Chemical name	CAS number
Sulfamic acid	5329-14-6

Pennsylvania Worker and Community Right-to-Know Act

Not regulated

Rhode Island Right-to-Know Act

Not regulated

SECTION 16: Other information

NFPA Rating

Health hazard	2
Fire hazard	0
Reactivity	1
Specific	N/A

Disclaimer

The information in the Safety Data Sheet is offered for your consideration and guidance for safe handling, use, storage, transportation, disposal, and release of this product and is not considered a warranty or quality specification. Taylor Technologies, Inc., disclaims all expressed or implied warranties and assumes no responsibility for the accuracy of completeness of the data contained herein. The data in this SDS does not apply to use with any other product or in any other process.

 The information contained in this sheet is based on lab experience and the most current data available.

Issue date:

April 2015

Last revisions

November 2017

SAFETY DATA SHEET

According to 29 CFR 1910.1200 Hazard Communication Standard 2012 (HazCom 2012)

SECTION 1: Identification

Product identifier

Product name: Barium Chloride Solution 20%

Product number: R-0711; R-0711-PL

Recommended use and restrictions: To be used in accordance with manufacturer instructions or under the direct guidance of the manufacturer.

Manufacturer:

Taylor Technologies, Inc.
31 Loveton Circle
Sparks, MD 21152
Phone: (410) 472-4340
Emergency phone: (800) 837-8548

SECTION 2: Hazard(s) identification

Physical hazards: No data available

Health hazards: Acute toxicity, oral — Category 4

Environmental hazards: No data available

Label elements

Hazard pictograms

Signal word: Warning

Hazard statements: Harmful if swallowed

Precautionary statements

- Prevention: Wash skin thoroughly after handling. Do not eat, drink, or smoke when using this product.
- Response: IF SWALLOWED: Call a physician or poison control center if you feel unwell. Rinse mouth.
- Storage: Store out of direct sunlight between 36°F–85°F.
- Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazards not otherwise classified: No data available

SECTION 3: Composition/information on ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	%
Water	Dihydrogen oxide	7732-18-5	90
Barium chloride dihydrate	Not available	10326-27-9	20

SECTION 4: First-aid measures

If inhaled

Remove individual to fresh air. Seek medical attention if breathing becomes difficult or if respiratory irritation develops. Give oxygen or artificial respiration if needed.

In case of skin contact

Immediately flush skin with plenty of water for at least 20 minutes. If clothing comes in contact with the product, the clothing should be removed and laundered before reuse. Seek medical attention if irritation develops.

In case of eye contact

Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses if present and easy to do. Continue rinsing. If symptoms persist or in all cases of concern, seek medical advice.

If swallowed

Call a physician or poison control center immediately. Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless directed by physician. If vomiting occurs, keep head low so that stomach content does not get into the lungs.

Most important symptoms and effects, both acute and delayed

Refer to section 2 and/or section 11 of the SDS for the most important known symptoms and effects.

Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

General information

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Specific hazards arising from the substance or mixture

Fire hazard	Not flammable
Explosion hazard	Not explosive
Reactivity	Hazardous reactions will not occur under normal conditions.
Hazardous combustion products	No data available

Advice for firefighters

Precautionary measures	Exercise caution when fighting any chemical fire; hazardous fumes will be present.
Firefighting equipment/instructions	Use water spray or fog for cooling exposed containers.
Protection during firefighting	Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	Refer to section 9 of the SDS for flammability properties.

SECTION 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Wear appropriate protective equipment and clothing during cleanup. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

Environmental precautions

Avoid discharge into drains, watercourses, or onto the ground.

Methods and material for containment and cleaning up

Ventilate the area. Stop leak if it can be done without risk. Dike the spilled material where this is possible. Stop leak if it can be done without risk. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand, or earth and place into containers. Prevent entry into waterways, sewers, basements, or confined areas. Following product recovery, flush area with water. Never return spills to original containers for reuse. Contaminated absorbent material may pose the same hazards as the spilled product. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Reference to other sections

For exposure controls and personal protection, refer to section 8 of the SDS. For waste disposal, refer to section 13 of the SDS.

SECTION 7: Handling and storage

Personal precautions, protective equipment, and emergency procedures

Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. Wear appropriate personal protective equipment. For personal protective equipment, refer to section 8 of the SDS. Keep away from incompatibles. Observe good industrial hygiene practices. Label containers appropriately.

Conditions for safe storage, including any incompatibilities

Store out of direct sunlight between 36°F–85°F. Store away from incompatible materials (refer to section 10 of the SDS).

SECTION 8: Exposure controls/personal protection

Occupational exposure limits

ACGIH Threshold Limit Values

Components	Type	Value	Form
Barium chloride dehydrate (CAS 10326-27-9)	TWA	0.5 mg/m^3	Not applicable

NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Barium chloride dehydrate (CAS 10326-27-9)	TWA	0.5 mg/m^3	Not applicable

OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Barium chloride dihydrate (CAS 10326-27-9)	TWA	0.5 mg/m^3	Not applicable

Biological limit values No biological exposure limits noted for the ingredient(s)

Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product.

Personal protective equipment

- Eye/face protection: Wear appropriate chemical safety goggles if contact is likely to occur.
- Skin protection: Wear appropriate chemical-resistant gloves and clothing if contact is likely to occur.
- Body protection: Wear appropriate protective clothing.
- Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure limits. Advice should be sought from respiratory protection suppliers.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Liquid
Form	Liquid
Color	Clear, colorless
Odor	Odorless
Odor threshold	No data available
pH	6.7
Evaporation rate	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	212–215°F (100–101.7°C)
Flash point	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Flammability (solid, gas)	No data available
Vapor pressure	17 mm Hg
Relative vapor density	0.6
Solubility	Soluble in all proportions
Partition coefficient (n-octanol/water)	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

SECTION 10: Stability and reactivity

Reactivity Hazardous reactions will not occur under normal conditions.

Chemical stability Stable under recommended handling and storage conditions (refer to section 7 of the SDS)

Possibility of hazardous reactions No dangerous reaction known under conditions of normal use

Conditions to avoid Contact with incompatible materials. Do not use in areas without adequate ventilation.

Incompatible materials Strong oxidizing agents

SECTION 11: Toxicological information

Information on toxicological effects

Inhalation: May cause irritation to the respiratory system

Skin contact	May cause slight or mild transient irritation
Eye contact	May cause slight or mild transient irritation
Ingestion	May cause irritation, nausea, vomiting, and diarrhea
Most important symptoms/effects, acute and delayed	Direct skin contact may cause slight or mild transient irritation. Symptoms may include redness and itching.
	Direct eye contact may cause slight or mild transient irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.
	Inhalation of dust can cause respiratory irritation. Symptoms may include coughing and breathing difficulties.
	Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea.
Acute toxicity	Harmful if swallowed. See below for acute toxicity estimate (ATE) and individual ingredient acute toxicity data.

Mixture	**Species**	**Test Results**
Barium Chloride Solution 20% (CAS Mixture)		
Acute		
Oral		
LD_{50}	Rat	750.02 mg/kg

Components	**Species**	**Test Results**
Barium chloride dihydrate (CAS 10326-27-9)		
Acute		
Oral		
LD_{50}	Rat	150 mg/kg

Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
Specific target organ toxicity (single exposure)	No data available
Specific target organ toxicity (repeated exposure)	No data available
Aspiration hazard	No data available

SECTION 12: Ecological information

This product is not classified as environmentally hazardous; however, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

SECTION 13: Disposal considerations

Collect and reclaim or dispose of in sealed containers at a licensed waste disposal site. Since emptied containers may retain product residue, follow label warnings even after container is emptied. This material and its container must be disposed of in a safe manner. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

DOT	Not regulated as a dangerous good
IATA	Not regulated as a dangerous good
IMDG	Not regulated as a dangerous good

SECTION 15: Regulatory information

U.S. federal regulations

This product is a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA 313 (TRI Reporting)

Barium chloride dihydrate (CAS 10326-27-9)

U.S. state regulations

New Jersey Worker and Community Right-to-Know Act

Barium chloride dihydrate (CAS 10326-27-9)

Pennsylvania Worker and Community Right-to-Know Act

Barium chloride dihydrate (CAS 10326-27-9)

SECTION 16: Other information

NFPA Rating

Health hazard	1
Fire hazard	0
Reactivity	0
Specific	N/A

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Issue date:
May 2015

Last revisions
July 2016

SAFETY DATA SHEET

According to 29 CFR 1910.1200 Hazard Communication Standard 2012 (HazCom 2012)

SECTION 1: Identification

Product identifier

Product name: Calcium Buffer

Product number: R-0653-2; R-0653-2-PL

Recommended use and restrictions: To be used in accordance with manufacturer instructions or under the direct guidance of the manufacturer.

Manufacturer:
Taylor Technologies, Inc.
31 Loveton Circle
Sparks, MD 21152
Phone: (410) 472-4340
Emergency phone: (800) 837-8548

SECTION 2: Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Eye damage/irritation	Category 1
	Skin corrosion/irritation	Category 1B

Environmental hazards: No data available

Label elements

Hazard pictograms

Signal word: Danger

Hazard statements: May be corrosive to metals. Causes severe skin burns and eye damage.

Precautionary statements

Prevention: Keep only in original container. Do not breathe dusts or mists. Wash skin thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection if contact is likely to occur.

Response: Absorb spillage to prevent material damage. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (OR HAIR): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a physician or poison control center. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Immediately call a physician or poison control center.

Storage: Store in corrosive-resistant container with a corrosive-resistant inner liner. Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store locked up.

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

Hazards not otherwise classified: No data available

SECTION 3: Composition/information on ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	%
Water	Dihydrogen oxide	7732-18-5	70–80
Sodium hydroxide	Caustic soda	1310-73-2	20–30

SECTION 4: First-aid measures

If inhaled

Remove individual to fresh air. Seek medical attention if breathing becomes difficult or if respiratory irritation develops. Give oxygen or artificial respiration if needed.

In case of skin contact

Immediately flush skin with plenty of water for at least 20 minutes. If clothing comes in contact with the product, the clothing should be removed and laundered before reuse. Seek medical attention if irritation develops. Chemical burns must be treated by a physician.

In case of eye contact

Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

If swallowed

Call a physician or poison control center immediately. Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless directed by physician. If vomiting occurs, keep head low so that stomach content does not get into the lungs.

Most important symptoms and effects, both acute and delayed

Refer to section 2 and/or section 11 of the SDS for the most important known symptoms and effects.

Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep person under observation. Symptoms may be delayed.

General information

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Specific hazards arising from the substance or mixture

Fire hazard	Not flammable
Explosion hazard	Not explosive
Reactivity	May be corrosive to metals
Hazardous combustion products	Sodium oxides

Advice for firefighters

Precautionary measures	Exercise caution when fighting any chemical fire; hazardous fumes will be present.
Firefighting equipment/instructions	Use water spray or fog for cooling exposed containers.
Protection during firefighting	Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	Refer to section 9 of the SDS for flammability properties.

SECTION 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during cleanup. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

Environmental precautions

Avoid discharge into drains, watercourses, or onto the ground.

Methods and material for containment and cleaning up

Dike the spilled material where this is possible. Stop leak if it can be done without risk. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth, and place into containers. Prevent entry into waterways, sewers, basements, or confined areas. Following product recovery, flush area with water. Never return spills to original containers for reuse. Dilute base with water and neutralize with dilute acid. If not recoverable, dilute with water or flush to holding area and neutralize. Contaminated absorbent material may pose the same hazards as the spilled product. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Reference to other sections

For exposure controls and personal protection, refer to section 8 of the SDS. For waste disposal, refer to section 13 of the SDS.

SECTION 7: Handling and storage

Personal precautions, protective equipment, and emergency procedures

Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. For personal protective equipment, refer to section 8 of the SDS. Keep away from incompatibles. Observe good industrial hygiene practices. Label containers appropriately.

Conditions for safe storage, including any incompatibilities

Store in corrosive-resistant container with a corrosive-resistant inner liner. Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store locked up. Store away from incompatible materials (refer to section 10 of the SDS).

SECTION 8: Exposure controls/personal protection

Occupational exposure limits

ACGIH Threshold Limit Values

Components	Type	Value	Form
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m^3	Not applicable

NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m^3	Not applicable

OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Sodium hydroxide (CAS 1310-73-2)	PEL	2 mg/m^3	Not applicable

Biological limit values No biological exposure limits noted for the ingredient(s)

Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product.

Personal protective equipment

- Eye/face protection: Wear appropriate chemical safety goggles if contact is likely to occur.
- Skin protection: Wear appropriate chemical-resistant gloves and clothing if contact is likely to occur.
- Body protection: Wear appropriate protective clothing.
- Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure limits. Advice should be sought from respiratory protection suppliers.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Liquid
Form	Liquid
Color	Clear, colorless
Odor	Odorless
Odor threshold	No data available
pH	13.4
Evaporation rate	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	2150°F (102°C)
Flash point	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Flammability (solid, gas)	No data available
Vapor pressure	17 mm Hg
Relative vapor density	0.6
Solubility	Soluble in all proportions
Partition coefficient (n-octanol/water)	No data available
Viscosity	No data available
Explosive properties	No data available

Oxidizing properties	No data available

SECTION 10: Stability and reactivity

Reactivity	May be corrosive to metals
Chemical stability	Stable under recommended handling and storage conditions (refer to section 7 of the SDS)
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use
Conditions to avoid	Contact with incompatible materials. Do not use in areas without adequate ventilation.
Incompatible materials	Metal compounds, nitromethane, oxidizing agents, strong acids, and sugars

SECTION 11: Toxicological information

Information on toxicological effects

Inhalation	May cause irritation to the respiratory system
Skin contact	Causes severe skin burns
Eye contact	Causes serious eye damage
Ingestion	Causes digestive tract burns

Most important symptoms/effects, acute and delayed

Direct skin contact may cause corrosive skin burns, deep ulcerations, and possibly permanent scarring.

Direct contact with concentrated solutions may be corrosive to the eyes and may cause severe damage, including blindness. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Inhalation of mists can cause severe respiratory irritation. Symptoms may include coughing, choking, and wheezing. Inhalation could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed.

Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus, and possibly the digestive tract. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding.

Acute toxicity

This product is not classified as an acute toxicity hazard. See below for individual ingredient acute toxicity data.

Components	Species	Test Results
Sodium hydroxide (CAS 1310-73-2)		
Acute		
Oral		
LD_{50}	Rat	140–340 mg/kg

Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
Specific target organ toxicity (single exposure)	No data available
Specific target organ toxicity (repeated exposure)	No data available
Aspiration hazard	No data available

SECTION 12: Ecological information

This product is not classified as environmentally hazardous; however, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

SECTION 13: Disposal considerations

Collect and reclaim or dispose of in sealed containers at a licensed waste disposal site. Since emptied containers may retain product residue, follow label warnings even after container is emptied. This material and its container must be disposed of in a safe manner. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

DOT

UN number	UN1824
UN proper shipping name	Sodium hydroxide solution

Transport hazard class(es)	
Class	8
Subsidiary risk	Not listed
Label(s)	8
Packing group	II
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Special provisions	A6, T14, TP2, TP27
Packaging exceptions	Not listed
Packaging, non-bulk	201
Packaging, bulk	243

IATA

UN number	UN1824
UN proper shipping name	Sodium hydroxide solution
Transport hazard class(es)	
Class	8
Subsidiary risk	Not listed
Packing group	II
Environmental hazards	Not listed
ERG code	8L
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed
Cargo aircraft only	Allowed

IMDG

UN number	UN1824
UN proper shipping name	Sodium hydroxide solution
Transport hazard class(es)	
Class	8
Subsidiary risk	Not listed
Packing group	II
Environmental hazards	
Marine pollutant	Not listed
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: This substance/mixture is not intended to be transported in bulk

DOT

IATA; IMDG

SECTION 15: Regulatory information

U.S. federal regulations

This product is a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance (40 CFR 302.4)
Sodium hydroxide (CAS 1310-73-2)

U.S. state regulations

Massachusetts Right-to-Know Act
Sodium hydroxide (CAS 1310-73-2)

New Jersey Worker and Community Right-to-Know Act
Sodium hydroxide (CAS 1310-73-2)

Pennsylvania Worker and Community Right-to-Know Act
Sodium hydroxide (CAS 1310-73-2)

Rhode Island Right-to-Know Act
Sodium hydroxide (CAS 1310-73-2)

SECTION 16: Other information

NFPA Rating

Health hazard	3
Fire hazard	0
Reactivity	1
Specific	N/A

Disclaimer

The information in the Safety Data Sheet is offered for your consideration and guidance for safe handling, use, storage, transportation, disposal, and release of this product and is not considered a warranty or quality specification. Taylor Technologies, Inc., disclaims all expressed or implied warranties and assumes no responsibility for the accuracy of completeness of the data contained herein. The data in this SDS does not apply to use with any other product or in any other process.

 The information contained in this sheet is based on lab experience and the most current data available.

Issue date:
May 2015

Last revisions
May 2016

SAFETY DATA SHEET

According to 29 CFR 1910.1200 Hazard Communication Standard 2012 (HazCom 2012)

SECTION 1: Identification

Product identifier

Product name: Chromate Indicator

Product number: R-0630; R-0630-PL

Recommended use and restrictions: To be used in accordance with manufacturer instructions or under the direct guidance of the manufacturer.

Manufacturer:

Taylor Technologies, Inc.
31 Loveton Circle
Sparks, MD 21152
Phone: (410) 472-4340
Emergency phone: (800) 837-8548

SECTION 2: Hazard(s) identification

Physical hazards: No data available

Health hazards

Carcinogenicity	Category 1
Eye damage/irritation	Category 2A
Germ cell mutagenicity	Category 1
Skin corrosion/irritation	Category 2
Specific target organ toxicity, single exposure	Category 3 Respiratory tract irritation

Environmental hazards: No data available

Label elements

Hazard pictograms

Signal word: Danger

Hazard statements: May cause cancer. May cause genetic defects. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation.

Precautionary statements

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing mist or vapor. Use only outdoors or in a well-ventilated area. Wash skin thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection if contact is likely to occur.

Response: IF EXPOSED OR CONCERNED: Get medical advice/attention. IF ON SKIN: Wash with plenty of water. IF SKIN IRRITATION OCCURS: Get medical advice/attention. Take off all contaminated clothing and wash it before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. IF EYE IRRITATION PERSISTS: Get medical advice/attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a physician or poison control center if you feel unwell.

Storage: Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store locked up. Store in a well-ventilated place. Keep container tightly closed.

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

Hazards not otherwise classified: No data available

SECTION 3: Composition/information on ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	%
Water	Dihydrogen oxide	7732-18-5	90–99
Potassium chromate	Not available	7789-00-6	0.1–10

SECTION 4: First-aid measures

If inhaled

Remove individual to fresh air. Seek medical attention if breathing becomes difficult or if respiratory irritation develops. Give oxygen or artificial respiration if needed.

In case of skin contact

Immediately flush skin with plenty of water for at least 20 minutes. If clothing comes in contact with the product, the clothing should be removed and laundered before reuse. Seek medical attention if irritation develops.

In case of eye contact

Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses if present and easy to do. Continue rinsing. If symptoms persist or in all cases of concern, seek medical advice.

If swallowed

Immediately call a physician or poison control center. Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless directed by physician. If vomiting occurs, keep head low so that stomach content does not get into the lungs.

Most important symptoms and effects, both acute and delayed

Refer to section 2 and/or section 11 of the SDS for the most important known symptoms and effects.

Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

General information

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Specific hazards arising from the substance or mixture

Fire hazard	Not flammable
Explosion hazard	Not explosive
Reactivity	Hazardous reactions will not occur under normal conditions.
Hazardous combustion products	No data available

Advice for firefighters

Precautionary measures	Exercise caution when fighting any chemical fire; hazardous fumes will be present.
Firefighting equipment/instructions	Use water spray or fog for cooling exposed containers.
Protection during firefighting	Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	Refer to section 9 of the SDS for flammability properties.

SECTION 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during cleanup. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

Environmental precautions

Avoid discharge into drains, watercourses, or onto the ground.

Methods and material for containment and cleaning up

Ventilate the area. Dike the spilled material where this is possible. Stop leak if it can be done without risk. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth, and place into containers. Prevent entry into waterways, sewers, basements, or confined areas. Following product recovery, flush area with water to remove residual contamination. Never return spills to original containers for reuse. Contaminated absorbent material may pose the same hazards as the spilled product. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Reference to other sections

For exposure controls and personal protection, refer to section 8 of the SDS. For waste disposal, refer to section 13 of the SDS.

SECTION 7: Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. For personal protective equipment, refer to section 8 of the SDS. Keep away from incompatibles. Observe good industrial hygiene practices. Label containers appropriately.

Conditions for safe storage, including any incompatibilities

Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store locked up. Store in a well-ventilated place. Keep container tightly closed. Store away from incompatible materials (refer to section 10 of the SDS).

SECTION 8: Exposure controls/personal protection

Occupational exposure limits

ACGIH Threshold Limit Values

Components	Type	Value	Form
Potassium chromate (CAS 7789-00-6)	TWA	0.05 mg/m^3	Not applicable

NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Potassium chromate (CAS 7789-00-6)	TWA	0.002 mg/m^3	Not applicable

OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Potassium chromate (CAS 7789-00-6)	Ceiling	0.1 mg/m^3	Not applicable

Biological limit values No biological exposure limits noted for the ingredient(s)

Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product.

Personal protective equipment

- Eye/face protection: Wear appropriate chemical safety goggles if contact is likely to occur.
- Skin protection: Wear appropriate chemical-resistant gloves and clothing if contact is likely to occur.
- Body protection: Wear appropriate protective clothing.
- Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure limits. Advice should be sought from respiratory protection suppliers.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Liquid
Form	Liquid
Color	Light yellow
Odor	Odorless
Odor threshold	No data available
pH	9.1
Evaporation rate	No data available
Melting point	No data available
Freezing point	No data available

Boiling point	212–215°F (100–101.67°C)
Flash point	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Flammability (solid, gas)	No data available
Vapor pressure	17 mm Hg
Relative vapor density	0.64
Solubility	Soluble in all proportions
Partition coefficient (n-octanol/water)	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

SECTION 10: Stability and reactivity

Reactivity Hazardous reactions will not occur under normal conditions.

Chemical stability Stable under recommended handling and storage conditions (refer to section 7 of the SDS)

Possibility of hazardous reactions No dangerous reaction known under conditions of normal use

Conditions to avoid Contact with incompatible materials. Do not use in areas without adequate ventilation.

Incompatible materials Organic materials, powdered metals, strong oxidizing agents

SECTION 11: Toxicological information

Information on toxicological effects

Inhalation	May cause irritation to the respiratory system
Skin contact	Causes skin irritation
Eye contact	Causes serious eye irritation
Ingestion	May cause irritation, nausea, vomiting, and diarrhea

Most important symptoms/effects, acute and delayed

Direct skin contact may cause slight or mild transient irritation. Symptoms may include redness and itching.

Direct eye contact may cause serious irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Inhalation of mists can cause respiratory irritation. Symptoms may include coughing and breathing difficulties.

Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea.

Possible germ cell hazard. May cause heritable genetic damage, based on animal data.

Possible cancer hazard. May cause cancer, based on animal data.

Acute toxicity This product is not classified as an acute toxicity hazard. See below for individual ingredient acute toxicity data.

Components	Species	Test Results
Potassium chromate (CAS 7789-00-6)		
Acute		
Oral		
LD_{50}	Mouse	180 mg/kg

Respiratory or skin sensitization No data available

Germ cell mutagenicity May cause genetic defects

Carcinogenicity May cause cancer

IARC Monographs Overall Evaluation of Carcinogenicity

Potassium chromate (CAS 7789-00-6)	1 Carcinogenic to humans

National Toxicology Program (NTP) Report on Carcinogens

Potassium chromate (CAS 7789-00-6)	Known to be human carcinogen

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1096)

Potassium chromate (CAS 7789-00-6)	Cancer

Reproductive toxicity	No data available
Specific target organ toxicity (single exposure)	No data available
Specific target organ toxicity (repeated exposure)	No data available
Aspiration hazard	No data available

SECTION 12: Ecological information

This product is not classified as environmentally hazardous; however, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

SECTION 13: Disposal considerations

Collect and reclaim or dispose of in sealed containers at a licensed waste disposal site. Since emptied containers may retain product residue, follow label warnings even after container is emptied. This material and its container must be disposed of in a safe manner. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

DOT

UN number	UN3082
UN proper shipping name	Environmentally hazardous substances, liquid, N.O.S. (Potassium chromate)
Transport hazard class(es)	
Class	9
Subsidiary risk	Not listed
Label(s)	9
Packing group	III
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Special provisions	8, 146, 335, IB3, T4, TP1, TP29
Packaging exceptions	155
Packaging, non-bulk	203
Packaging, bulk	241

IATA

UN number	UN3082
UN proper shipping name	Environmentally hazardous substances, liquid, N.O.S. (Potassium chromate)
Transport hazard class(es)	
Class	9
Subsidiary risk	Not listed
Packing group	III
Environmental hazards	Yes
ERG code	9L
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed
Cargo aircraft only	Allowed

IMDG

UN number	UN3082
UN proper shipping name	Environmentally hazardous substances, liquid, N.O.S. (Potassium chromate)
Transport hazard class(es)	
Class	9
Subsidiary risk	Not listed
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-A, S-F
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	This substance/mixture is not intended to be transported in bulk.

DOT; IATA; IMDG

Marine pollutant

SECTION 15: Regulatory information

U.S. federal regulations

This product is a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

California Proposition 65 - CRT: Listed date/Carcinogenic substance
Potassium chromate (7789-00-6) (Listed February 27, 1987)

California Proposition 65 - CRT: Listed date/Developmental toxin
Potassium chromate (7789-00-6) (Listed December 19, 2008)

California Proposition 65 - CRT: Listed date/Female reproductive toxin
Potassium chromate (7789-00-6) (Listed December 19, 2008)

California Proposition 65 - CRT: Listed date/Male reproductive toxin
Potassium chromate (7789-00-6) (Listed December 19, 2008)

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)
WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

CERCLA Hazardous Substance (40 CFR 302.4)
Potassium chromate (CAS 7789-00-6)

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAP)
Potassium chromate (CAS 7789-00-6)

SARA 313 (TRI Reporting)
Potassium chromate (CAS 7789-00-6)

U.S. state regulations

Massachusetts Right-to-Know Act
Potassium chromate (CAS 7789-00-6)

New Jersey Worker and Community Right-to-Know Act
Potassium chromate (CAS 7789-00-6)

Pennsylvania Worker and Community Right-to-Know Act
Potassium chromate (CAS 7789-00-6)

SECTION 16: Other information

NFPA Rating

Health hazard	3
Fire hazard	0
Reactivity	3
Specific	N/A

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 The information contained in this sheet is based on lab experience and the most current data available.

Issue date:
May 2015

Last revisions
August 2016

SAFETY DATA SHEET

According to 29 CFR 1910.1200 Hazard Communication Standard 2012 (HazCom 2012)

SECTION 1: Identification

Product identifier

Product name	Calcium Indicator Powder
Product number	R-0011P; R-0011P-PL
Recommended use and restrictions	To be used in accordance with manufacturer instructions or under the direct guidance of the manufacturer.
Manufacturer	Taylor Technologies, Inc. 31 Loveton Circle Sparks, MD 21152 Phone: (410) 472-4340 Emergency phone: (800) 837-8548

SECTION 2: Hazard(s) identification

Physical hazards	Not applicable
Health hazards	Not applicable
Environmental hazards	Not currently regulated by OSHA. For additional information, refer to section 12 of the SDS.

Label elements

Precautionary statements

Prevention	Avoid contact with skin, eyes, or clothing. For contact with skin or eyes, flush 20 minutes with water. If ingested, contact physician or local poison control center. Treat symptoms as needed.
Response	This reagent is not defined as a hazardous chemical per OSHA's Hazard Communication Standard 2012; however, use care when handling.
Storage	Keep tightly capped. Store out of direct sunlight between 36°F–85°F.
Disposal	Not applicable
Hazards not otherwise classified	Not applicable

SECTION 3: Composition/information on ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	% w/w
Potassium chloride	Not available	7447-40-7	99–100
Other components below reportable levels	Not applicable	Not applicable	0.1–1

SECTION 4: First-aid measures

If inhaled

Remove individual to fresh air. Seek medical advice/attention if breathing becomes difficult or if respiratory irritation develops. Give oxygen or artificial respiration if needed.

In case of skin contact

Immediately flush skin with plenty of water for at least 20 minutes. If clothing comes in contact with the product, the clothing should be removed and laundered before reuse. Seek medical advice/attention if irritation develops.

In case of eye contact

Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If symptoms persist or in all cases of concern, seek medical advice/attention.

If swallowed

Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless directed by physician. If vomiting occurs, keep head low so that stomach content does not get into the lungs. If symptoms persist or in all cases of concern, seek medical advice/attention.

Most important symptoms and effects, both acute and delayed

Refer to section 2 and/or section 11 of the SDS for the most important known symptoms and effects.

Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

General information

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Specific hazards arising from the substance or mixture

Fire hazard	Not flammable
Explosion hazard	Not explosive
Reactivity	Hazardous reactions will not occur under normal conditions.
Hazardous combustion products	Carbon oxides, hydrogen chloride gas, potassium oxides. Other irritating fumes and smoke.

Advice for firefighters

Precautionary measures	Exercise caution when fighting any chemical fire; hazardous fumes will be present.
Firefighting equipment/instructions	Use water spray or fog for cooling exposed containers.
Protection during firefighting	Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	Refer to section 9 of the SDS for flammability properties.

SECTION 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Wear appropriate protective equipment and clothing during cleanup. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

Environmental precautions

Avoid discharge into drains, watercourses, or onto the ground.

Methods and material for containment and cleaning up

Dike the spilled material where this is possible. Stop leak if it can be done without risk. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth, and place into containers. Prevent entry into waterways, sewers, basements, or confined areas. Following product recovery, flush area with water. Never return spills to original containers for reuse. Contaminated absorbent material may pose the same hazards as the spilled product. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Reference to other sections

For exposure controls and personal protection, refer to section 8 of the SDS. For waste disposal, refer to section 13 of the SDS.

SECTION 7: Handling and storage

Personal precautions, protective equipment, and emergency procedures

Do not breathe dust. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. For personal protective equipment, refer to section 8 of the SDS. Keep away from incompatibles. Observe good industrial hygiene practices. Label containers appropriately.

Conditions for safe storage, including any incompatibilities

Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store away from incompatible materials (refer to section 10 of the SDS).

SECTION 8: Exposure controls/personal protection

Occupational exposure limits

US ACGIH Threshold Limit Values

Not regulated

US NIOSH: Pocket Guide to Chemical Hazards

Not regulated

US OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Not regulated

Biological limit values

No biological exposure limits noted for the ingredient(s)

Exposure controls

Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product.
Personal protective equipment	
Eye/face protection	Wear appropriate chemical safety goggles if contact is likely to occur.
Skin protection	Wear appropriate chemical-resistant gloves and clothing if contact is likely to occur.
Body protection	Wear appropriate protective clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure limits. Advice should be sought from respiratory protection suppliers.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Solid
Form	Crystalline
Color	Purple-brown crystals
Odor	Odorless
Odor threshold	Not applicable
pH	Not applicable
Evaporation rate	Not applicable
Melting point	No data available
Freezing point	Not applicable
Boiling point	No data available
Flash point	Not applicable
Specific gravity	No data available
Auto-ignition temperature	Not applicable
Decomposition temperature	No data available
Flammability (solid, gas)	Not applicable
Upper Flammability Limit	Not applicable
Lower Flammability Limit	Not applicable
Vapor pressure	No data available
Relative vapor density	No data available
Solubility	Soluble in all proportions
Partition coefficient (n-octanol/water)	No data available
Viscosity	No data available
Explosive properties	Not applicable
Oxidizing properties	No data available
Percent volatile	Not applicable

SECTION 10: Stability and reactivity

Reactivity	Hazardous reactions will not occur under normal conditions.
Chemical stability	Stable under recommended handling and storage conditions (refer to section 7 of the SDS)
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use
Conditions to avoid	Contact with incompatible materials. Do not use in areas without adequate ventilation.
Incompatible materials	Oxidizing agents, strong acids.
Hazardous decomposition products	No hazardous decomposition products under normal conditions.

SECTION 11: Toxicological information

Information on toxicological effects

Inhalation	May cause irritation to the respiratory system
Skin contact	May cause slight or mild transient irritation
Eye contact	May cause slight or mild transient irritation
Ingestion	May cause irritation, nausea, vomiting, and diarrhea
Most important symptoms/effects, acute and delayed	Direct skin contact may cause slight or mild transient irritation. Symptoms may include redness and itching.
	Direct eye contact may cause slight or mild transient irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.
	Inhalation of mists can cause respiratory irritation. Symptoms may include coughing and breathing difficulties.
	Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea.
Acute toxicity	This product is not classified as an acute toxicity hazard. See below for product and individual ingredient acute toxicity data.

Product	**Species**	**Acute Toxicity Estimate (ATE)**
Calcium Indicator Powder (CAS Mixture)		
Acute		
Dermal		
LD_{50}	Rat	Not available
Inhalation		
LC_{50}	Rat	Not available
Oral		
LD_{50}	Rat	>5000 mg/kg

Components	**Species**	**Acute Toxicity Data**
Potassium chloride (CAS 7681-11-0)		
Acute		
Dermal		
LD_{50}	Rat	Not available
Inhalation		
LC_{50}	Rat	Not available
Oral		
LD_{50}	Rat	3020 mg/kg

Skin corrosion/irritation	May cause slight or mild transient irritation
Serious eye damage/eye irritation	May cause slight or mild transient irritation
Respiratory sensitization	No data available
Skin sensitization	No data available
Germ cell mutagenicity	No data available

Carcinogenicity

IARC Monographs. Overall Evaluation of Carcinogenicity

Not classifiable

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1096)

Not regulated

US National Toxicology Program (NTP) Report on Carcinogens

Not regulated

Reproductive toxicity	No data available
Specific target organ toxicity (single exposure)	No data available
Specific target organ toxicity (repeated exposure)	No data available
Aspiration hazard	No data available

SECTION 12: Ecological information

Ecotoxicity	This product is not classified as environmentally hazardous.
Persistence and degradability	No data available
Bioaccumulative potential	No data available
Mobility in soil	No data available
Other adverse effects	Large or frequent spills can have a harmful or damaging effect on the environment.

SECTION 13: Disposal considerations

Collect and reclaim or dispose of in sealed containers at a licensed waste disposal site. Since emptied containers may retain product residue, follow label warnings even after container is emptied. This material and its container must be disposed of in a safe manner. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

DOT	Not regulated as dangerous goods
IATA	Not regulated as dangerous goods
IMDG	Not regulated as dangerous goods

SECTION 15: Regulatory information

US federal regulations

CERCLA Hazardous Substance (40 CFR 302.4)

Not regulated

OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not regulated

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1096)

Not regulated

SARA 302 Extremely Hazardous Substance (40 CFR 355 Appendices A / B)

Not regulated

SARA 304 Emergency Release Notification

Not regulated

SARA 311/312 Hazardous Chemical

Not regulated

SARA 313 (TRI reporting)

Not regulated

TSCA Section 8(b) Chemical Inventory

All components are on the U.S. EPA TSCA Inventory list.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs)

Not regulated

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated

Safe Drinking Water Act (SDWA)

Not regulated

US state regulations

California Safe Drinking Water and Toxic Enforcement Act of 1986 (California Proposition 65)

Not regulated

Massachusetts Right-to-Know Act

Not regulated

New Jersey Worker and Community Right-to-Know Act

Not regulated

Pennsylvania Worker and Community Right-to-Know Act

Not regulated

Rhode Island Right-to-Know Act

Not regulated

SECTION 16: Other information

NFPA Rating

Health hazard	0
Fire hazard	0
Reactivity	0
Specific	N/A

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 The information contained in this sheet is based on lab experience and the most current data available.

Issue date:

May 2015

Last revisions

September 2017

SAFETY DATA SHEET

According to 29 CFR 1910.1200 Hazard Communication Standard 2012 (HazCom 2012)

SECTION 1: Identification

Product identifier

Product name: Hardness Buffer

Product number: R-0619; R-0619B; R-0619LB; R-0619B-PL

Recommended use and restrictions: To be used in accordance with manufacturer instructions or under the direct guidance of the manufacturer.

Manufacturer:
Taylor Technologies, Inc.
31 Loveton Circle
Sparks, MD 21152
Phone: (410) 472-4340
Emergency phone: (800) 837-8548

SECTION 2: Hazard(s) identification

Physical hazards: No data available

Health hazards:

Acute toxicity, oral	Category 4
Eye damage/irritation	Category 1
Skin corrosion/irritation	Category 1

Environmental hazards: No data available

Label elements

Hazard pictograms

Signal word: Danger

Hazard statements: Causes severe skin burns and eye damage. Harmful if swallowed.

Precautionary statements

Prevention: Do not breathe dusts or mists. Wash skin thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection if contact is likely to occur. Do not eat, drink, or smoke when using this product.

Response: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Call a physician or poison control center if you feel unwell. IF ON SKIN (OR HAIR): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a physician or poison control center. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Immediately call a physician or poison control center.

Storage: Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store locked up.

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

Hazards not otherwise classified: No data available

SECTION 3: Composition/information on ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	%
Water	Dihydrogen oxide	7732-18-5	65–75
Ammonium hydroxide	Not available	1336-21-6	20–30
Ammonium chloride	Salmiac	12125-02-9	5–15
Other components below reportable levels			<1

SECTION 4: First-aid measures

If inhaled

Remove individual to fresh air. Seek medical attention if breathing becomes difficult or if respiratory irritation develops. Give oxygen or artificial respiration if needed.

In case of skin contact

Immediately flush skin with plenty of water for at least 20 minutes. If clothing comes in contact with the product, the clothing should be removed and laundered before reuse. Seek medical attention if irritation develops.

In case of eye contact

Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

If swallowed

Call a physician or poison control center immediately. Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless directed by physician. If vomiting occurs, keep head low so that stomach content does not get into the lungs.

Most important symptoms and effects, both acute and delayed

Refer to section 2 and/or section 11 of the SDS for the most important known symptoms and effects.

Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

General information

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Specific hazards arising from the substance or mixture

Fire hazard	Not flammable
Explosion hazard	Not explosive
Reactivity	Hazardous reactions will not occur under normal conditions.
Hazardous combustion products	Hydrogen chloride gas, magnesium oxides

Advice for firefighters

Precautionary measures	Exercise caution when fighting any chemical fire; hazardous fumes will be present.
Firefighting equipment/instructions	Use water spray or fog for cooling exposed containers.
Protection during firefighting	Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	Refer to section 9 of the SDS for flammability properties.

SECTION 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during cleanup. Do not breathe mists. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

Environmental precautions

Avoid discharge into drains, watercourses, or onto the ground.

Methods and material for containment and cleaning up

Dike the spilled material where this is possible. Stop leak if it can be done without risk. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth, and place into containers. Prevent entry into waterways, sewer, basements, or confined areas. Following product recovery, flush area with water. Never return spills to original containers for reuse. Contaminated absorbent material may pose the same hazards as the spilled product. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Reference to other sections

For exposure controls and personal protection, refer to section 8 of the SDS. For waste disposal, refer to section 13 of the SDS.

SECTION 7: Handling and storage

Personal precautions, protective equipment, and emergency procedures

Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. For personal protective equipment, refer to section 8 of the SDS. Keep away from incompatibles. Observe good industrial hygiene practices. Label containers appropriately.

Conditions for safe storage, including any incompatibilities

Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store locked up. Store away from incompatible materials (refer to section 10 of the SDS).

SECTION 8: Exposure controls/personal protection

Occupational exposure limits

ACGIH Threshold Limit Values

Components	Type	Value	Form
Ammonium chloride (CAS 12125-02-9)	STEL	20 mg/m^3	Not applicable
	TWA	10 mg/m^3	Not applicable
Ammonium hydroxide (CAS 1336-21-6)	STEL	35 ppm	Not applicable
	TWA	25 ppm	Not applicable

NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Ammonium chloride (CAS 12125-02-9)	STEL	20 mg/m^3	Not applicable
	TWA	10 mg/m^3	Not applicable
Ammonium hydroxide (CAS 1336-21-6)	STEL	35 ppm	Not applicable
		27 mg/m^3	Not applicable
	TWA	25 ppm	Not applicable
		18 mg/m^3	Not applicable

Biological limit values No biological exposure limits noted for the ingredient(s)

Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product.

Personal protective equipment

- Eye/face protection: Wear appropriate chemical safety goggles if contact is likely to occur.
- Skin protection: Wear appropriate chemical-resistant gloves and clothing if contact is likely to occur.
- Body protection: Wear appropriate protective clothing.
- Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure limits. Advice should be sought from respiratory protection suppliers.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Liquid
Form	Liquid
Color	Clear, colorless to yellow
Odor	Sulfidic/ammonical
Odor threshold	No data available
pH	10.6
Evaporation rate	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	120–140°F (48.9–60°C)
Flash point	LEL 16% as NH_3; UEL 27% as NH_3
Auto-ignition temperature	No data available
Decomposition temperature	No data available

Flammability (solid, gas)	No data available
Vapor pressure	143 mm Hg
Relative vapor density	0.6
Solubility	Soluble in all proportions
Partition coefficient (n-octanol/water)	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

SECTION 10: Stability and reactivity

Reactivity	Hazardous reactions will not occur under normal conditions.
Chemical stability	Stable under recommended handling and storage conditions (refer to section 7 of the SDS)
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use
Conditions to avoid	Contact with incompatible materials. Do not use in areas without adequate ventilation.
Incompatible materials	Copper, iron, strong acids, strong bases, strong oxidizing agents, zinc

SECTION 11: Toxicological information

Information on toxicological effects

Inhalation	May cause irritation to the respiratory system
Skin contact	Causes severe skin burns
Eye contact	Causes serious eye damage
Ingestion	Harmful if swallowed
Most important symptoms/effects, acute and delayed	Direct skin contact may cause corrosive skin burns, deep ulcerations, and possibly permanent scarring. Direct eye contact may cause serious damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Inhalation of mists can cause severe respiratory irritation. Symptoms may include coughing, choking, and wheezing. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus, and possibly the digestive tract. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding.
Acute toxicity	Harmful if swallowed. See below for acute toxicity estimate (ATE) and individual ingredient acute toxicity data.

Product	**Species**	**Test Results**
Hardness Buffer (CAS Mixture)		
Acute		
Oral		
LD_{50}	Rat	1360.54 mg/kg

Components	**Species**	**Test Results**
Ammonium chloride (CAS 12125-02-9)		
Acute		
Oral		
LD_{50}	Rat	1650 mg/kg
Ammonium hydroxide (CAS 1336-21-6)		
Acute		
Oral		
LD_{50}	Rat	350 mg/kg

Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available

Specific target organ toxicity (single exposure)	No data available
Specific target organ toxicity (repeated exposure)	No data available
Aspiration hazard	No data available

SECTION 12: Ecological information

This product is not classified as environmentally hazardous; however, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

SECTION 13: Disposal considerations

Collect and reclaim or dispose of in sealed containers at a licensed waste disposal site. Since emptied containers may retain product residue, follow label warnings even after container is emptied. This material and its container must be disposed of in a safe manner. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

DOT

UN number	UN2672
UN proper shipping name	Ammonia solution
Transport hazard class(es)	
Class	8
Subsidiary risk	Not listed
Label(s)	8
Packing group	III
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Special provisions	IB3, IP8, T7, TP1
Packaging exceptions	154
Packaging, non-bulk	203
Packaging, bulk	241

IATA

UN number	UN2672
UN proper shipping name	Ammonia solution
Transport hazard class(es)	
Class	8
Subsidiary risk	Not listed
Packing group	III
Environmental hazards	Yes
ERG code	8L
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	852
Cargo aircraft only	856

IMDG

UN number	UN2672
UN proper shipping name	Ammonia solution
Transport hazard class(es)	
Class	8
Subsidiary risk	Not listed
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

DOT

IATA; IMDG

Marine pollutant

SECTION 15: Regulatory information

U.S. federal regulations

This product is a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. state regulations

Massachusetts Right-to-Know Act

Ammonium chloride (CAS 12125-02-9)
Ammonium hydroxide (CAS 1336-21-6)

New Jersey Worker and Community Right-to-Know Act

Ammonium chloride (CAS 12125-02-9)
Ammonium hydroxide (CAS 1336-21-6)

Pennsylvania Worker and Community Right-to-Know Act

Ammonium chloride (CAS 12125-02-9)
Ammonium hydroxide (CAS 1336-21-6)

SECTION 16: Other information

NFPA Rating

Health hazard	3
Fire hazard	1
Reactivity	2
Specific	N/A

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Issue date:

May 2015

Last revisions

August 2016

SAFETY DATA SHEET

According to 29 CFR 1910.1200 Hazard Communication Standard 2012 (HazCom 2012)

SECTION 1: Identification

Product identifier

Product name	Hardness Indicator Powder
Product number	R-0620; R-0620B; R-0620LB; R-0620B-PL
Recommended use and restrictions	To be used in accordance with manufacturer instructions or under the direct guidance of the manufacturer.
Manufacturer	Taylor Technologies, Inc. 31 Loveton Circle Sparks, MD 21152 Phone: (410) 472-4340 Emergency phone: (800) 837-8548

SECTION 2: Hazard(s) identification

Physical hazards	No data available
Health hazards	No data available
Environmental hazards	No data available
Label elements	
Hazard pictograms	No data available
Signal word	No data available
Hazard statements	No data available
Precautionary statements	
Prevention	No data available
Response	No data available
Storage	Keep tightly capped. Store out of direct sunlight between 36°F–85°F.
Disposal	No data available
Hazards not otherwise classified	Avoid contact with skin, eyes, or clothing. For contact with skin or eyes, flush 20 minutes with water. If ingested, contact physician or local poison control center. Treat symptoms as needed.

SECTION 3: Composition/information on ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	%
Sucrose	Sugar	57-50-1	>99
Other components below reportable levels			<1

SECTION 4: First-aid measures

If inhaled

Remove individual to fresh air. Seek medical attention if breathing becomes difficult or if respiratory irritation develops. Give oxygen or artificial respiration if needed.

In case of skin contact

Immediately flush skin with plenty of water for at least 20 minutes. If clothing comes in contact with the product, the clothing should be removed and laundered before reuse. Seek medical attention if irritation develops.

In case of eye contact

Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses if present and easy to do. Continue rinsing. If symptoms persist or in all cases of concern, seek medical advice.

If swallowed

Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless directed by physician. If vomiting occurs, keep head low so that stomach content does not get into the lungs. If symptoms persist or in all cases of concern, seek medical advice.

Most important symptoms and effects, both acute and delayed

Refer to section 2 and/or section 11 of the SDS for the most important known symptoms and effects.

Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

General information

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Specific hazards arising from the substance or mixture

Fire hazard	Not flammable
Explosion hazard	Not explosive
Reactivity	Hazardous reactions will not occur under normal conditions.
Hazardous combustion products	No data available

Advice for firefighters

Precautionary measures	Exercise caution when fighting any chemical fire; hazardous fumes will be present.
Firefighting equipment/instructions	Use water spray or fog for cooling exposed containers.
Protection during firefighting	Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	Refer to section 9 of the SDS for flammability properties.

SECTION 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Wear appropriate protective equipment and clothing during cleanup. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

Environmental precautions

Avoid discharge into drains, watercourses, or onto the ground.

Methods and material for containment and cleaning up

Sweep up or vacuum up spillage and collect in suitable container for later disposal. Never return spills to original containers for reuse. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Reference to other sections

For exposure controls and personal protection, refer to section 8 of the SDS. For waste disposal, refer to section 13 of the SDS.

SECTION 7: Handling and storage

Personal precautions, protective equipment, and emergency procedures

Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. Wear appropriate personal protective equipment. For personal protective equipment, refer to section 8 of the SDS. Keep away from incompatibles. Observe good industrial hygiene practices. Label containers appropriately.

Conditions for safe storage, including any incompatibilities

Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store away from incompatible materials (refer to section 10 of the SDS).

SECTION 8: Exposure controls/personal protection

Occupational exposure limits

ACGIH Threshold Limit Values

Components	Type	Value	Form
Sucrose (CAS 57-50-1)	TWA	10 mg/m^3	Not applicable

OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Sucrose (CAS 57-50-1)	PEL	15 mg/m^3	Total dust
		5 mg/m^3	Respirable fraction

Biological limit values No biological exposure limits noted for the ingredient(s)

Exposure controls

Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product.
Personal protective equipment	
Eye/face protection	Wear appropriate chemical safety goggles if contact is likely to occur.
Skin protection	Wear appropriate chemical-resistant gloves and clothing if contact is likely to occur.
Body protection	Wear appropriate protective clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure limits. Advice should be sought from respiratory protection suppliers.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Solid
Form	Powder
Color	Purple
Odor	Odorless
Odor threshold	No data available
pH	No data available
Evaporation rate	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	No data available
Flash point	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Flammability (solid, gas)	No data available
Vapor pressure	No data available
Relative vapor density	No data available
Solubility	Soluble in all proportions
Partition coefficient (n-octanol/water)	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

SECTION 10: Stability and reactivity

Reactivity	Hazardous reactions will not occur under normal conditions.
Chemical stability	Stable under recommended handling and storage conditions (refer to section 7 of the SDS)
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use
Conditions to avoid	Contact with incompatible materials. Do not use in areas without adequate ventilation.
Incompatible materials	Nitric acid, oxidizers, and sulfuric acid

SECTION 11: Toxicological information

Information on toxicological effects

Inhalation	May cause irritation to the respiratory system
Skin contact	May cause slight or mild transient irritation
Eye contact	May cause slight or mild transient irritation
Ingestion	May cause irritation, nausea, vomiting, and diarrhea

Most important symptoms/effects, acute and delayed	Direct skin contact may cause slight or mild transient irritation. Symptoms may include redness and itching. Direct eye contact may cause slight or mild transient irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Inhalation of dust can cause respiratory irritation. Symptoms may include coughing and breathing difficulties. Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea.
Acute toxicity	This product is not classified as an acute toxicity hazard. See below for individual ingredient acute toxicity data.

Components	**Species**	**Test Results**
Sucrose (CAS 57-50-1)		
Acute		
Oral		
LD_{50}	Rat	29700 mg/kg

Acute toxicity	No data available
Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
Specific target organ toxicity (single exposure)	No data available
Specific target organ toxicity (repeated exposure)	No data available
Aspiration hazard	No data available

SECTION 12: Ecological information

This product is not classified as environmentally hazardous; however, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

SECTION 13: Disposal considerations

Collect and reclaim or dispose of in sealed containers at a licensed waste disposal site. Since emptied containers may retain product residue, follow label warnings even after container is emptied. This material and its container must be disposed of in a safe manner. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

No data available

SECTION 15: Regulatory information

No data available

SECTION 16: Other information

NFPA Rating

Health hazard	0
Fire hazard	0
Reactivity	0
Specific	N/A

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 The information contained in this sheet is based on lab experience and the most current data available.

Issue date:
May 2015

Last revisions
May 2016

SAFETY DATA SHEET

According to 29 CFR 1910.1200 Hazard Communication Standard 2012 (HazCom 2012)

SECTION 1: Identification

Product identifier

Product name: Hydrochloric Acid .12N

Product number: R-0724; R-0724-PL

Recommended use and restrictions: To be used in accordance with manufacturer instructions or under the direct guidance of the manufacturer.

Manufacturer:

Taylor Technologies, Inc.
31 Loveton Circle
Sparks, MD 21152
Phone: (410) 472-4340
Emergency phone: (800) 837-8548

SECTION 2: Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Eye damage/irritation	Category 1
	Skin corrosion/irritation	Category 1B
	Specific target organ toxicity, single exposure	Category 3 Respiratory tract irritation

Environmental hazards: No data available

Label elements

Hazard pictograms

Signal word: Danger

Hazard statements: May be corrosive to metals. Causes severe skin burns and eye damage. May cause respiratory irritation.

Precautionary statements

Prevention: Keep only in original container. Do not breathe dusts or mists. Wash skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection if contact is likely to occur.

Response: Absorb spillage to prevent material damage. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (OR HAIR): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a physician or poison control center. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Immediately call a physician or poison control center.

Storage: Store in corrosive-resistant container with a corrosive-resistant inner liner. Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store in a well ventilated place. Store locked up.

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

Hazards not otherwise classified: No data available

SECTION 3: Composition/information on ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	%
Water	Dihydrogen oxide	7732-18-5	>99
Hydrochloric acid	Not available	7647-01-0	<1

SECTION 4: First-aid measures

If inhaled

Remove individual to fresh air. Seek medical attention if breathing becomes difficult or if respiratory irritation develops. Give oxygen or artificial respiration if needed.

In case of skin contact

Immediately flush skin with plenty of water for at least 20 minutes. If clothing comes in contact with the product, the clothing should be removed and laundered before reuse. Seek medical attention if irritation develops. Chemical burns must be treated by a physician.

In case of eye contact

Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

If swallowed

Call a physician or poison control center immediately. Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless directed by physician. If vomiting occurs, keep head low so that stomach content does not get into the lungs.

Most important symptoms and effects, both acute and delayed

Refer to section 2 and/or section 11 of the SDS for the most important known symptoms and effects.

Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep person under observation. Symptoms may be delayed.

General information

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Specific hazards arising from the substance or mixture

Fire hazard	Not flammable
Explosion hazard	Not explosive
Reactivity	May be corrosive to metals
Hazardous combustion products	Hydrogen chloride gas

Advice for firefighters

Precautionary measures	Exercise caution when fighting any chemical fire; hazardous fumes will be present.
Firefighting equipment/instructions	Use water spray or fog for cooling exposed containers.
Protection during firefighting	Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	Refer to section 9 of the SDS for flammability properties.

SECTION 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during cleanup. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

Environmental precautions

Avoid discharge into drains, watercourses, or onto the ground.

Methods and material for containment and cleaning up

Dike the spilled material where this is possible. Stop leak if it can be done without risk. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth, and place into containers. Prevent entry into waterways, sewers, basements, or confined areas. Following product recovery, flush area with water. Dilute acid with water and neutralize with dilute base. If not recoverable, dilute with water or flush to holding area and neutralize. Contaminated absorbent material may pose the same hazards as the spilled product. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Reference to other sections

For exposure controls and personal protection, refer to section 8 of the SDS. For waste disposal, refer to section 13 of the SDS.

SECTION 7: Handling and storage

Personal precautions, protective equipment, and emergency procedures

Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. For personal protective equipment, refer to section 8 of the SDS. Keep away from incompatibles. Observe good industrial hygiene practices. Label containers appropriately.

Conditions for safe storage, including any incompatibilities

Store in corrosive-resistant container with a corrosive-resistant inner liner. Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store in a well ventilated place. Store locked up. Store away from incompatible materials (refer to section 10 of the SDS).

SECTION 8: Exposure controls/personal protection

Occupational exposure limits

ACGIH Threshold Limit Values

Components	Type	Value	Form
Hydrochloric acid (CAS 7647-01-0)	Ceiling	2 ppm	Not applicable

NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Hydrochloric acid (CAS 7647-01-0)	Ceiling	7 mg/m^3	Not applicable
		5 ppm	Not applicable

OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Hydrochloric acid (CAS 7647-01-0)	Ceiling	7 mg/m^3	Not applicable
		5 ppm	Not applicable

Biological limit values No biological exposure limits noted for the ingredient(s)

Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product.

Personal protective equipment

- Eye/face protection: Wear appropriate chemical safety goggles if contact is likely to occur.
- Skin protection: Wear appropriate chemical-resistant gloves and clothing if contact is likely to occur.
- Body protection: Wear appropriate protective clothing.
- Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure limits. Advice should be sought from respiratory protection suppliers.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Liquid
Form	Liquid
Color	Clear, colorless
Odor	Odorless
Odor threshold	No data available
pH	1.1
Evaporation rate	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	212°F (100°C)
Flash point	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Flammability (solid, gas)	No data available

Vapor pressure	17 mm Hg
Relative vapor density	1.3
Solubility	Soluble in all proportions
Partition coefficient (n-octanol/water)	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

SECTION 10: Stability and reactivity

Reactivity	May be corrosive to metals
Chemical stability	Stable under recommended handling and storage conditions (refer to section 7 of the SDS)
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use
Conditions to avoid	Contact with incompatible materials. Do not use in areas without adequate ventilation.
Incompatible materials	Cesium carbide, metals, and sodium

SECTION 11: Toxicological information

Information on toxicological effects

Inhalation	May cause irritation to the respiratory system
Skin contact	Causes severe skin burns
Eye contact	Causes serious eye damage
Ingestion	Causes digestive tract burns

Most important symptoms/effects, acute and delayed

Direct skin contact may cause corrosive skin burns, deep ulcerations, and possibly permanent scarring.

Direct contact with concentrated solutions may be corrosive to the eyes and may cause severe damage, including blindness. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Inhalation of mists can cause severe respiratory irritation. Symptoms may include coughing, choking, and wheezing. Inhalation could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed.

Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus, and possibly the digestive tract. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding.

Acute toxicity

This product is not classified as an acute toxicity hazard. See below for individual ingredient acute toxicity data.

Components	Species	Test Results
Hydrochloric acid (CAS 7647-01-0)		
Acute		
Dermal		
LD_{50}	Mouse	1449 mg/kg
Inhalation		
LC_{50}	Mouse	1108 ppm, 1 hour
LC_{50}	Rat	3124 ppm, 1 hour
Oral		
LD_{50}	Rabbit	900 mg/kg
LD_{50}	Rat	238–277 mg/kg

Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
Specific target organ toxicity (single exposure)	May cause respiratory irritation
Specific target organ toxicity (repeated exposure)	No data available

Aspiration hazard No data available

SECTION 12: Ecological information

This product is not classified as environmentally hazardous; however, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

SECTION 13: Disposal considerations

Collect and reclaim or dispose of in sealed containers at a licensed waste disposal site. Since emptied containers may retain product residue, follow label warnings even after container is emptied. This material and its container must be disposed of in a safe manner. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

DOT

UN number	UN1789
UN proper shipping name	Hydrochloric acid
Transport hazard class(es)	
Class	8
Subsidiary risk	Not listed
Label(s)	8
Packing group	II
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Special provisions	A3, A6, B3, B15, IB2, N41, T8, TP2, TP12
Packaging exceptions	154
Packaging, non-bulk	202
Packaging, bulk	242

IATA

UN number	UN1789
UN proper shipping name	Hydrochloric acid
Transport hazard class(es)	
Class	8
Subsidiary risk	Not listed
Packing group	II
Environmental hazards	Not listed
ERG code	8L
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed
Cargo aircraft only	Allowed

IMDG

UN number	UN1789
UN proper shipping name	Hydrochloric acid
Transport hazard class(es)	
Class	8
Subsidiary risk	Not listed
Packing group	II
Environmental hazards	
Marine pollutant	Not listed
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code This substance/mixture is not intended to be transported in bulk.

DOT

IATA; IMDG

SECTION 15: Regulatory information

U.S. federal regulations

This product is a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance (40 CFR 302.4)
Hydrochloric acid (CAS 7647-01-0)

SARA 302 Extremely Hazardous Substance
Hydrochloric acid (CAS 7647-01-0)

SARA 304 Emergency Release Notification
Hydrochloric acid (CAS 7647-01-0)

U.S. state regulations

Massachusetts Right-to-Know Act
Hydrochloric acid (CAS 7647-01-0)

New Jersey Worker and Community Right-to-Know Act
Hydrochloric acid (CAS 7647-01-0)

Pennsylvania Worker and Community Right-to-Know Act
Hydrochloric acid (CAS 7647-01-0)

Rhode Island Right-to-Know Act
Hydrochloric acid (CAS 7647-01-0)

SECTION 16: Other information

NFPA Rating

Health hazard	1
Fire hazard	0
Reactivity	0
Specific	N/A

Disclaimer

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 The information contained in this sheet is based on lab experience and the most current data available.

Issue date:
May 2015

Last revisions
July 2016

SAFETY DATA SHEET

According to 29 CFR 1910.1200 Hazard Communication Standard 2012 (HazCom 2012)

SECTION 1: Identification

Product identifier

Product name	Hardness Reagent
Product number	R-0683; R-0683-PL
Recommended use and restrictions	To be used in accordance with manufacturer instructions or under the direct guidance of the manufacturer.
Manufacturer	Taylor Technologies, Inc. 31 Loveton Circle Sparks, MD 21152 Phone: (410) 472-4340 Emergency phone: (800) 837-8548

SECTION 2: Hazard(s) identification

Physical hazards	No data available
Health hazards	No data available
Environmental hazards	No data available

Label elements

Hazard pictograms	No data available
Signal word	No data available
Hazard statements	No data available
Precautionary statements	
Prevention	No data available
Response	No data available
Storage	Keep tightly capped. Store out of direct sunlight between 36°F–85°F.
Disposal	No data available
Hazards not otherwise classified	Avoid contact with skin, eyes, or clothing. For contact with skin or eyes, flush 20 minutes with water. If ingested, contact physician or local poison control center. Treat symptoms as needed.

SECTION 3: Composition/information on ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	%
Water	Dihydrogen oxide	7732-18-5	95–99
Ethylenediaminetetraacetic acid	EDTA	60-00-4	0.1–5
Other components below reportable levels			0.01–0.1

SECTION 4: First-aid measures

If inhaled

Remove individual to fresh air. Seek medical attention if breathing becomes difficult or if respiratory irritation develops. Give oxygen or artificial respiration if needed.

In case of skin contact

Immediately flush skin with plenty of water for at least 20 minutes. If clothing comes in contact with the product, the clothing should be removed and laundered before reuse. Seek medical attention if irritation develops.

In case of eye contact

Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses if present and easy to do. Continue rinsing. If symptoms persist or in all cases of concern, seek medical advice.

If swallowed

Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless directed by physician. If vomiting occurs, keep head low so that stomach content does not get into the lungs. If symptoms persist or in all cases of concern, seek medical advice.

Most important symptoms and effects, both acute and delayed

Refer to section 2 and/or section 11 of the SDS for the most important known symptoms and effects.

Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

General information

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Specific hazards arising from the substance or mixture

Fire hazard	Not flammable
Explosion hazard	Not explosive
Reactivity	Hazardous reactions will not occur under normal conditions.
Hazardous combustion products	Hydrogen chloride gas and magnesium oxide

Advice for firefighters

Precautionary measures	Exercise caution when fighting any chemical fire; hazardous fumes will be present.
Firefighting equipment/instructions	Use water spray or fog for cooling exposed containers.
Protection during firefighting	Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	Refer to section 9 of the SDS for flammability properties.

SECTION 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Wear appropriate protective equipment and clothing during cleanup. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

Environmental precautions

Avoid discharge into drains, watercourses, or onto the ground.

Methods and material for containment and cleaning up

Dike the spilled material where this is possible. Stop leak if it can be done without risk. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth, and place into containers. Prevent entry into waterways, sewers, basements, or confined areas. Following product recover, flush area with water. Never return spills to original containers for reuse. Contaminated absorbent material may pose the same hazards as the spilled product. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Reference to other sections

For exposure controls and personal protection, refer to section 8 of the SDS. For waste disposal, refer to section 13 of the SDS.

SECTION 7: Handling and storage

Personal precautions, protective equipment, and emergency procedures

Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. For personal protective equipment, refer to section 8 of the SDS. Keep away from incompatibles. Observe good industrial hygiene practices. Label containers appropriately.

Conditions for safe storage, including any incompatibilities

Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store away from incompatible materials (refer to section 10 of the SDS).

SECTION 8: Exposure controls/personal protection

Occupational exposure limits	No occupational exposure limits noted for the ingredient(s)
Biological limit values	No biological exposure limits noted for the ingredient(s)

Exposure controls

Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product.

Personal protective equipment	
Eye/face protection	Wear appropriate chemical safety goggles if contact is likely to occur.
Skin protection	Wear appropriate chemical-resistant gloves and clothing if contact is likely to occur.
Body protection	Wear appropriate protective clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure limits. Advice should be sought from respiratory protection suppliers.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Liquid
Form	Liquid
Color	Clear, colorless or nearly colorless
Odor	Odorless
Odor threshold	No data available
pH	8.1
Evaporation rate	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	212°F (100°C)
Flash point	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Flammability (solid, gas)	No data available
Vapor pressure	17 mm Hg
Relative vapor density	0.6
Solubility	Soluble in all proportions
Partition coefficient (n-octanol/water)	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

SECTION 10: Stability and reactivity

Reactivity	Hazardous reactions will not occur under normal conditions.
Chemical stability	Stable under recommended handling and storage conditions (refer to section 7 of the SDS)
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use
Conditions to avoid	Contact with incompatible materials. Do not use in areas without adequate ventilation.
Incompatible materials	Acids, metals, and strong oxidizing agents

SECTION 11: Toxicological information

Information on toxicological effects

Inhalation	May cause irritation to the respiratory system
Skin contact	May cause slight or mild transient irritation
Eye contact	May cause slight or mild transient irritation
Ingestion	May cause irritation, nausea, vomiting, and diarrhea
Most important symptoms/effects, acute and delayed	Direct skin contact may cause slight or mild transient irritation. Symptoms may include redness and itching. Direct eye contact may cause slight or mild transient irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Inhalation of mists can cause respiratory irritation. Symptoms may include coughing and breathing difficulties.

Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea.

Acute toxicity This product is not classified as an acute toxicity hazard. See below for individual ingredient acute toxicity data.

Components	Species	Test Results
Ethylenediaminetetraacetic acid (CAS 60-00-4)		
Acute		
Oral		
LD_{50}	Rat	4500 mg/kg

Acute toxicity	No data available
Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
Specific target organ toxicity (single exposure)	No data available
Specific target organ toxicity (repeated exposure)	No data available
Aspiration hazard	No data available

SECTION 12: Ecological information

This product is not classified as environmentally hazardous; however, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

SECTION 13: Disposal considerations

Collect and reclaim or dispose of in sealed containers at a licensed waste disposal site. Since emptied containers may retain product residue, follow label warnings even after container is emptied. This material and its container must be disposed of in a safe manner. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

No data available

SECTION 15: Regulatory information

No data available

SECTION 16: Other information

NFPA Rating

Health hazard	0
Fire hazard	0
Reactivity	0
Specific	N/A

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 The information contained in this sheet is based on lab experience and the most current data available.

Issue date:
April 2015

Last revision
June 2016

SAFETY DATA SHEET

According to 29 CFR 1910.1200 Hazard Communication Standard 2012 (HazCom 2012)

SECTION 1: Identification

Product identifier

Product name: Iodide Iodate Reagent

Product number: R-0808; R-0808-PL

Recommended use and restrictions: To be used in accordance with manufacturer instructions or under the direct guidance of the manufacturer.

Manufacturer:

Taylor Technologies, Inc.
31 Loveton Circle
Sparks, MD 21152
Phone: (410) 472-4340
Emergency phone: (800) 837-8548

SECTION 2: Hazard(s) identification

Physical hazards: No data available

Health hazards:

Eye damage/irritation	Category 2A
Skin corrosion/irritation	Category 2

Environmental hazards: No data available

Label elements

Hazard pictograms

Signal word: Warning

Hazard statements: Causes skin irritation. Causes serious eye irritation.

Precautionary statements

Prevention: Wash skin thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection if contact is likely to occur.

Response: IF ON SKIN: Wash with plenty of water. IF SKIN IRRITATION OCCURS: Get medical advice/attention. Take off all contaminated clothing and wash it before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. IF EYE IRRITATION PERSISTS: Get medical advice/attention.

Storage: Keep tightly capped. Store out of direct sunlight between 36°F–85°F.

Disposal: No data available

Hazards not otherwise classified: No data available

SECTION 3: Composition/information on ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	%
Water	Dihydrogen oxide	7732-18-5	99
Potassium hydroxide	Not available	1310-58-3	0.01–0.1
Other components below reportable levels			0.1–1

SECTION 4: First-aid measures

If inhaled

Remove individual to fresh air. Seek medical attention if breathing becomes difficult or if respiratory irritation develops. Give oxygen or artificial respiration if needed.

In case of skin contact

Immediately flush skin with plenty of water for at least 20 minutes. If clothing comes in contact with the product, the clothing should be removed and laundered before reuse. Seek medical attention if irritation develops.

In case of eye contact

Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses if present and easy to do. Continue rinsing. If symptoms persist or in all cases of concern, seek medical advice.

If swallowed

Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless directed by physician. If vomiting occurs, keep head low so that stomach content does not get into the lungs. If symptoms persist or in all cases of concern, seek medical advice.

Most important symptoms and effects, both acute and delayed

Refer to section 2 and/or section 11 of the SDS for the most important known symptoms and effects.

Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

General information

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Specific hazards arising from the substance or mixture

Fire hazard	Not flammable
Explosion hazard	Not explosive
Reactivity	Hazardous reactions will not occur under normal conditions.
Hazardous combustion products	Iodine and potassium oxide

Advice for firefighters

Precautionary measures	Exercise caution when fighting any chemical fire; hazardous fumes will be present.
Firefighting equipment/instructions	Use water spray or fog for cooling exposed containers.
Protection during firefighting	Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	Refer to section 9 of the SDS for flammability properties.

SECTION 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during cleanup. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

Environmental precautions

Avoid discharge into drains, watercourses, or onto the ground.

Methods and material for containment and cleaning up

Dike the spilled material where this is possible. Stop leak if it can be done without risk. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth, and place into containers. Prevent entry into waterways, sewers, basements, or confined areas. Following product recovery, flush area with water to remove residual contamination.

Never return spills to original containers for reuse. Contaminated absorbent material may pose the same hazards as the spilled product.

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Reference to other sections

For exposure controls and personal protection, refer to section 8 of the SDS. For waste disposal, refer to section 13 of the SDS.

SECTION 7: Handling and storage

Precautions for safe handling

Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. For personal protective equipment, refer to section 8 of the SDS. Keep away from incompatibles. Observe good industrial hygiene practices. Label containers appropriately.

Conditions for safe storage, including any incompatibilities

Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store away from incompatible materials (refer to section 10 of the SDS).

SECTION 8: Exposure controls/personal protection

Occupational exposure limits

NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Potassium hydroxide (CAS 1310-58-3)	TWA	2 mg/m^3	Not applicable

OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Potassium hydroxide (CAS 1310-58-3)	PEL	2 mg/m^3	Not applicable

Biological limit values No biological exposure limits noted for the ingredient(s)

Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product.

Personal protective equipment

- Eye/face protection: Wear appropriate chemical safety goggles if contact is likely to occur.
- Skin protection: Wear appropriate chemical-resistant gloves and clothing if contact is likely to occur.
- Body protection: Wear appropriate protective clothing.
- Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure limits. Advice should be sought from respiratory protection suppliers.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Liquid
Form	Liquid
Color	Clear, colorless
Odor	Odorless
Odor threshold	No data available
pH	12
Evaporation rate	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	212°F (100°C)
Flash point	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Flammability (solid, gas)	No data available
Vapor pressure	17 mm Hg
Relative vapor density	0.6
Solubility	Soluble in all proportions
Partition coefficient (n-octanol/water)	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

SECTION 10: Stability and reactivity

Reactivity Hazardous reactions will not occur under normal conditions.

Chemical stability	Stable under recommended handling and storage conditions (refer to section 7 of the SDS)
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use
Conditions to avoid	Contact with incompatible materials. Do not use in areas without adequate ventilation.
Incompatible materials	Strong acids

SECTION 11: Toxicological information

Information on toxicological effects

Inhalation	May cause irritation to the respiratory system
Skin contact	May cause slight or mild transient irritation
Eye contact	May cause serious irritation
Ingestion	May cause irritation, nausea, vomiting, and diarrhea

Most important symptoms/effects, acute and delayed

Direct skin contact may cause slight or mild transient irritation. Symptoms may include redness and itching.

Direct eye contact may cause slight or mild transient irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Inhalation of mists can cause respiratory irritation. Symptoms may include coughing and breathing difficulties.

Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea.

Acute toxicity

This product is not classified as an acute toxicity hazard. See below for individual ingredient acute toxicity data.

Components	Species	Test Results
Potassium hydroxide (CAS 1310-58-3)		
Acute		
Oral		
LD_{50}	Rat	273 mg/kg

Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
Specific target organ toxicity (single exposure)	No data available
Specific target organ toxicity (repeated exposure)	No data available
Aspiration hazard	No data available

SECTION 12: Ecological information

This product is not classified as environmentally hazardous; however, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

SECTION 13: Disposal considerations

Collect and reclaim or dispose of in sealed containers at a licensed waste disposal site. Since emptied containers may retain product residue, follow label warnings even after container is emptied. This material and its container must be disposed of in a safe manner. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

DOT	Not regulated as a dangerous good
IATA	Not regulated as a dangerous good
IMDG	Not regulated as a dangerous good

SECTION 15: Regulatory information

U.S. federal regulations

This product is a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance (40 CFR 302.4)

Potassium hydroxide (CAS 1310-58-3)

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Immediate hazard	Yes
Delayed hazard	No
Fire hazard	No
Pressure hazard	No
Reactivity hazard	Yes

U.S. state regulations

Massachusetts Right-to-Know Act
Potassium hydroxide (CAS 1310-58-3)

Pennsylvania Worker and Community Right-to-Know Act
Potassium hydroxide (CAS 1310-58-3)

Rhode Island Right-to-Know Act
Potassium hydroxide (CAS 1310-58-3)

SECTION 16: Other information

NFPA Rating

Health hazard	0
Fire hazard	0
Reactivity	0
Specific	N/A

Disclaimer

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 The information contained in this sheet is based on lab experience and the most current data available.

Issue date:
May 2015

Last revisions
April 2016

SAFETY DATA SHEET

According to 29 CFR 1910.1200 Hazard Communication Standard 2012 (HazCom 2012)

SECTION 1: Identification

Product identifier

Product name: Silver Nitrate Reagent

Product number: R-0807

Recommended use and restrictions: To be used in accordance with manufacturer instructions or under the direct guidance of the manufacturer.

Manufacturer:
Taylor Technologies, Inc.
31 Loveton Circle
Sparks, MD 21152
Phone: (410) 472-4340
Emergency phone: (800) 837-8548

SECTION 2: Hazard(s) identification

Physical hazards: Oxidizing liquids — Category 2

Health hazards: No data available

Environmental hazards: No data available

Label elements

Hazard pictograms

Signal word: Danger

Hazard statements: May intensify fire; oxidizer.

Precautionary statements

Prevention: Keep away from heat. Keep/store away from clothing, combustible material, and organics. Take any precaution to avoid mixing with combustibles and organics. Wear protective gloves/protective clothing/eye protection/face protection if contact is likely to occur.

Response: IN CASE OF FIRE: Use carbon dioxide, dry chemical powder, foam, or water fog to extinguish.

Storage: Keep tightly capped. Store out of direct sunlight between 36°F–85°F.

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

Hazards not otherwise classified: No data available

SECTION 3: Composition/information on ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	%
Water	Dihydrogen oxide	7732-18-5	95–99
Silver nitrate	Not available	7761-88-8	0.1–5

SECTION 4: First-aid measures

If inhaled

Remove individual to fresh air. Seek medical attention if breathing becomes difficult or if respiratory irritation develops. Give oxygen or artificial respiration if needed.

In case of skin contact

Immediately flush skin with plenty of water for at least 20 minutes. If clothing comes in contact with the product, the clothing should be removed and laundered before reuse. Seek medical attention if irritation develops.

In case of eye contact

Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses if present and easy to do. Continue rinsing. If symptoms persist or in all cases of concern, seek medical advice.

If swallowed

Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless directed by physician. If vomiting occurs, keep head low so that stomach content does not get into the lungs. If symptoms persist or in all cases of concern, seek medical advice.

Most important symptoms and effects, both acute and delayed

Refer to section 2 and/or section 11 of the SDS for the most important known symptoms and effects.

Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

General information

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Specific hazards arising from the substance or mixture

Fire hazard	May intensify fire; oxidizer.
Explosion hazard	Not explosive
Reactivity	Hazardous reactions will not occur under normal conditions.
Hazardous combustion products	Nitrogen oxides

Advice for firefighters

Precautionary measures	Exercise caution when fighting any chemical fire; hazardous fumes will be present.
Firefighting equipment/instructions	Use water spray or fog for cooling exposed containers.
Protection during firefighting	Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	Refer to section 9 of the SDS for flammability properties.

SECTION 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during cleanup. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

Environmental precautions

Avoid discharge into drains, watercourses, or onto the ground.

Methods and material for containment and cleaning up

Dike the spilled material where this is possible. Stop leak if it can be done without risk. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth, and place into containers. Prevent entry into waterways, sewers, basements, or confined areas. Following product recovery, flush area with water to remove residual contamination. Never return spills to original containers for reuse. Contaminated absorbent material may pose the same hazards as the spilled product. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Reference to other sections

For exposure controls and personal protection, refer to section 8 of the SDS. For waste disposal, refer to section 13 of the SDS.

SECTION 7: Handling and storage

Precautions for safe handling

Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. For personal protective equipment, refer to section 8 of the SDS. Keep away from incompatibles. Observe good industrial hygiene practices. Label containers appropriately.

Conditions for safe storage, including any incompatibilities

Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store away from incompatible materials (refer to section 10 of the SDS).

SECTION 8: Exposure controls/personal protection

Occupational exposure limits

ACGIH Threshold Limit Values

Components	Type	Value	Form
Silver nitrate (CAS 7761-88-8)	TWA	0.01 mg/m^3	as Ag

NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Silver nitrate (CAS 7761-88-8)	TWA	0.01 mg/m^3	Dust as Ag

OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Silver nitrate (CAS 7761-88-8)	PEL	0.01 mg/m^3	as Ag

Biological limit values No biological exposure limits noted for the ingredient(s)

Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product.

Personal protective equipment

- Eye/face protection: Wear appropriate chemical safety goggles if contact is likely to occur.
- Skin protection: Wear appropriate chemical-resistant gloves and clothing if contact is likely to occur.
- Body protection: Wear appropriate protective clothing.
- Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure limits. Advice should be sought from respiratory protection suppliers.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Liquid
Form	Liquid
Color	Clear, colorless
Odor	Odorless
Odor threshold	No data available
pH	No data available
Evaporation rate	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	212°F (100°C)
Flash point	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Flammability (solid, gas)	No data available
Vapor pressure	17 mm Hg
Relative vapor density	0.6
Solubility	Soluble in all proportions
Partition coefficient (n-octanol/water)	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

SECTION 10: Stability and reactivity

Reactivity Hazardous reactions will not occur under normal conditions.

Chemical stability Stable under recommended handling and storage conditions (refer to section 7 of the SDS)

Possibility of hazardous reactions No dangerous reaction known under conditions of normal use

Conditions to avoid Contact with incompatible materials. Do not use in areas without adequate ventilation.

Incompatible materials Combustible material and organics

SECTION 11: Toxicological information

Information on toxicological effects

Inhalation	May cause irritation to the respiratory system
Skin contact	May cause slight or mild transient irritation
Eye contact	May cause slight or mild transient irritation
Ingestion	May cause irritation, nausea, vomiting, and diarrhea

Most important symptoms/effects, acute and delayed

Direct skin contact may cause slight or mild transient irritation. Symptoms may include redness and itching.

Direct eye contact may cause slight or mild transient irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Inhalation of mists can cause respiratory irritation. Symptoms may include coughing and breathing difficulties.

Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea.

Acute toxicity

This product is not classified as an acute toxicity hazard. See below for individual ingredient acute toxicity data.

Components	Species	Test Results
Silver nitrate (CAS 7761-88-8)		
Acute		
Oral		
LD_{50}	Rat	1173 mg/kg

Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
Specific target organ toxicity (single exposure)	No data available
Specific target organ toxicity (repeated exposure)	No data available
Aspiration hazard	No data available

SECTION 12: Ecological information

This product is not classified as environmentally hazardous; however, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

SECTION 13: Disposal considerations

Collect and reclaim or dispose of in sealed containers at a licensed waste disposal site. Since emptied containers may retain product residue, follow label warnings even after container is emptied. This material and its container must be disposed of in a safe manner. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

DOT

UN number	UN3139
UN proper shipping name	Oxidizing liquid, N.O.S. (Silver nitrate)
Transport hazard class(es)	
Class	5.1
Subsidiary risk	Not listed
Label(s)	5.1
Packing group	II
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Special provisions	62, 127, A2, IB2
Packaging exceptions	152
Packaging, non-bulk	202
Packaging, bulk	242

IATA

UN number	UN3139
UN proper shipping name	Oxidizing liquid, N.O.S. (Silver nitrate)

Transport hazard class(es)	
Class	5.1
Subsidiary risk	Not listed
Packing group	II
Environmental hazards	Not listed
ERG code	5L
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed
Cargo aircraft only	Allowed

IMDG

UN number	UN3139
UN proper shipping name	Oxidizing liquid, N.O.S. (Silver nitrate)
Transport hazard class(es)	
Class	5.1
Subsidiary risk	Not listed
Packing group	II
Environmental hazards	
Marine pollutant	Not listed
EmS	F-A, S-Q
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: This substance/mixture is not intended to be transported in bulk.

DOT

IATA; IMDG

SECTION 15: Regulatory information

U.S. federal regulations

This product is a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance (40 CFR 302.4)

Silver nitrate (CAS 7761-88-8)

U.S. state regulations

Massachusetts Right-to-Know Act

Silver nitrate (CAS 7761-88-8)

New Jersey Worker and Community Right-to-Know Act

Silver nitrate (CAS 7761-88-8)

Pennsylvania Worker and Community Right-to-Know Act

Silver nitrate (CAS 7761-88-8)

Rhode Island Right-to-Know Act

Silver nitrate (CAS 7761-88-8)

SECTION 16: Other information

NFPA Rating

Health hazard	1
Fire hazard	0
Reactivity	0
Specific	OX

Disclaimer

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Issue date:

May 2015

Last revisions

May 2016

SAFETY DATA SHEET

According to 29 CFR 1910.1200 Hazard Communication Standard 2012 (HazCom 2012)

SECTION 1: Identification

Product identifier

Product name: Sulfuric Acid N

Product number: R-0686; R-0686O; R-0686O-PL; R-0686P; R-0686P-PL

Recommended use and restrictions: To be used in accordance with manufacturer instructions or under the direct guidance of the manufacturer.

Manufacturer:

Taylor Technologies, Inc.
31 Loveton Circle
Sparks, MD 21152
Phone: (410) 472-4340
Emergency phone: (800) 837-8548

SECTION 2: Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Eye damage/irritation	Category 1
	Skin corrosion/irritation	Category 1B

Environmental hazards: No data available

Label elements

Hazard pictograms

Signal word: Danger

Hazard statements: May be corrosive to metals. Causes severe skin burns and eye damage.

Precautionary statements

Prevention: Keep only in original container. Do not breathe dusts or mists. Wash skin thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection if contact is likely to occur.

Response: Absorb spillage to prevent material damage. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (OR HAIR): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a physician or poison control center. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Immediately call a physician or poison control center.

Storage: Store in corrosive-resistant container with a corrosive-resistant inner liner. Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store locked up.

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

Hazards not otherwise classified: No data available

SECTION 3: Composition/information on ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	%
Water	Dihydrogen oxide	7732-18-5	95–99
Sulfuric acid	Hydrogen sulfate	7664-93-9	0.1–5

SECTION 4: First-aid measures

If inhaled

Remove individual to fresh air. Seek medical attention if breathing becomes difficult or if respiratory irritation develops. Give oxygen or artificial respiration if needed.

In case of skin contact

Immediately flush skin with plenty of water for at least 20 minutes. If clothing comes in contact with the product, the clothing should be removed and laundered before reuse. Seek medical attention if irritation develops. Chemical burns must be treated by a physician.

In case of eye contact

Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

If swallowed

Call a physician or poison control center immediately. Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless directed by physician. If vomiting occurs, keep head low so that stomach content does not get into the lungs.

Most important symptoms and effects, both acute and delayed

Refer to section 2 and/or section 11 of the SDS for the most important known symptoms and effects.

Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep person under observation. Symptoms may be delayed.

General information

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Specific hazards arising from the substance or mixture

Fire hazard	Not flammable
Explosion hazard	Not explosive
Reactivity	May be corrosive to metals
Hazardous combustion products	Sulfur oxides

Advice for firefighters

Precautionary measures	Exercise caution when fighting any chemical fire; hazardous fumes will be present.
Firefighting equipment/instructions	Use water spray or fog for cooling exposed containers.
Protection during firefighting	Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	Refer to section 9 of the SDS for flammability properties.

SECTION 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during cleanup. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

Environmental precautions

Avoid discharge into drains, watercourses, or onto the ground.

Methods and material for containment and cleaning up

Dike the spilled material where this is possible. Stop leak if it can be done without risk. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth, and place into containers. Prevent entry into waterways, sewers, basements, or confined areas. Following product recovery, flush area with water. Small Spills: Absorb spillage with noncombustible, absorbent material. Clean surface thoroughly to remove residual contamination. Never return spills to original containers for reuse. Dilute acid with water and neutralize with dilute base. If not recoverable, dilute with water or flush to holding area and neutralize. Contaminated absorbent material may pose the same hazards as the spilled product. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Reference to other sections

For exposure controls and personal protection, refer to section 8 of the SDS. For waste disposal, refer to section 13 of the SDS.

SECTION 7: Handling and storage

Personal precautions, protective equipment, and emergency procedures

Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. For personal protective equipment, refer to section 8 of the SDS. Keep away from incompatibles. Observe good industrial hygiene practices. Label containers appropriately.

Conditions for safe storage, including any incompatibilities

Store in corrosive-resistant container with a corrosive-resistant inner liner. Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store locked up. Store away from incompatible materials (refer to section 10 of the SDS).

SECTION 8: Exposure controls/personal protection

Occupational exposure limits

ACGIH Threshold Limit Values

Components	Type	Value	Form
Sulfuric acid (CAS 7664-93-9)	TWA	0.2 mg/m^3	Thoracic function

NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Sulfuric acid (CAS 7664-93-9)	TWA	1 mg/m^3	Not applicable

OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Sulfuric acid (CAS 7664-93-9)	PEL	1 mg/m^3	Not applicable

Biological limit values No biological exposure limits noted for the ingredient(s)

Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product.

Personal protective equipment

- Eye/face protection: Wear appropriate chemical safety goggles if contact is likely to occur.
- Skin protection: Wear appropriate chemical-resistant gloves and clothing if contact is likely to occur.
- Body protection: Wear appropriate protective clothing.
- Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure limits. Advice should be sought from respiratory protection suppliers.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Liquid
Form	Liquid
Color	Clear, colorless or nearly colorless
Odor	Odorless
Odor threshold	No data available
pH	0.6
Evaporation rate	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	230°F (110°C)
Flash point	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Flammability (solid, gas)	No data available
Vapor pressure	17 mm Hg
Relative vapor density	0.6
Solubility	Soluble in all proportions

Partition coefficient (n-octanol/water)	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

SECTION 10: Stability and reactivity

Reactivity	May be corrosive to metals
Chemical stability	Stable under recommended handling and storage conditions (refer to section 7 of the SDS)
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use
Conditions to avoid	Contact with incompatible materials. Do not use in areas without adequate ventilation.
Incompatible materials	Metal compounds, nitromethane, oxidizing agents, sugars

SECTION 11: Toxicological information

Information on toxicological effects

Inhalation	May cause irritation to the respiratory system
Skin contact	Causes severe skin burns
Eye contact	Causes serious eye damage
Ingestion	Causes digestive tract burns

Most important symptoms/effects, acute and delayed

Direct skin contact may cause corrosive skin burns, deep ulcerations, and possibly permanent scarring.

Direct contact with concentrated solutions may be corrosive to the eyes and may cause severe damage, including blindness. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Inhalation of mists can cause severe respiratory irritation. Symptoms may include coughing, choking, and wheezing. Inhalation could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed.

Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus, and possibly the digestive tract. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding.

Acute toxicity

This product is not classified as an acute toxicity hazard. See below for individual ingredient acute toxicity data.

Components	Species	Test Results
Sulfuric acid (CAS 7664-93-9)		
Acute		
Inhalation		
LC_{50}	Rat	510 mg/m^3, 2 hours
Oral		
LD_{50}	Rat	2140 mg/kg

Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
Specific target organ toxicity (single exposure)	No data available
Specific target organ toxicity (repeated exposure)	No data available
Aspiration hazard	No data available

SECTION 12: Ecological information

This product is not classified as environmentally hazardous; however, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

SECTION 13: Disposal considerations

Collect and reclaim or dispose of in sealed containers at a licensed waste disposal site. Since emptied containers may retain product residue, follow label warnings even after container is emptied. This material and its container must be disposed of in a safe manner. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

DOT

UN number	UN2796
UN proper shipping name	Sulphuric acid
Transport hazard class(es)	
Class	8
Subsidiary risk	Not listed
Label(s)	8
Packing group	II
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Special provisions	A3, A7, B15, IB2, N6, N34, T8, TP2, TP12
Packaging exceptions	154
Packaging, non-bulk	202
Packaging, bulk	242

IATA

UN number	UN2796
UN proper shipping name	Sulphuric acid
Transport hazard class(es)	
Class	8
Subsidiary risk	Not listed
Packing group	II
Environmental hazards	Not listed
ERG code	8L
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed
Cargo aircraft only	Allowed

IMDG

UN number	UN2796
UN proper shipping name	Sulphuric acid
Transport hazard class(es)	
Class	8
Subsidiary risk	Not listed
Packing group	II
Environmental hazards	
Marine pollutant	Not listed
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

This substance/mixture is not intended to be transported in bulk.

DOT

IATA; IMDG

SECTION 15: Regulatory information

U.S. federal regulations

This product is a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance (40 CFR 302.4)

Sulfuric acid (CAS 7664-93-9)

SARA 302 Extremely Hazardous Substance
Sulfuric acid (CAS 7664-93-9)

SARA 304 Emergency Release Notification
Sulfuric acid (CAS 7664-93-9)

SARA 313 (TRI Reporting)
Sulfuric acid (CAS 7664-93-9)

U.S. state regulations

Massachusetts Right-to-Know Act
Sulfuric acid (CAS 7664-93-9)

New Jersey Worker and Community Right-to-Know Act
Sulfuric acid (CAS 7664-93-9)

Pennsylvania Worker and Community Right-to-Know Act
Sulfuric acid (CAS 7664-93-9)

Rhode Island Right-to-Know Act
Sulfuric acid (CAS 7664-93-9)

SECTION 16: Other information

NFPA Rating

Health hazard	3
Fire hazard	0
Reactivity	1
Specific	N/A

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 The information contained in this sheet is based on lab experience and the most current data available.

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