MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name **MANGANESE PARKERIZING SOLLUTION, 1 GALLON**

Version # 02

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CAS # Mixture

Product code 082-200-128

Manufacturer information BROWNELLS, INC.
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Montezuma, Iowa 50171 United States
(641)-623-5401
24 hour Emergency Number, Domestic: (800) 457-4280
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INFOTRAC Registrant #79335

2. Hazards Identification

Emergency overview DANGER

Corrosive. May intensify fire; oxidizer. Causes skin, eye, and respiratory tract burns. Causes severe irritation of eyes, skin, and respiratory system. Causes serious eye damage. May cause cancer. May cause an allergic skin reaction. May cause reproductive effects. May damage fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure. Prolonged exposure may cause chronic effects. Dangerous for the environment if discharged into watercourses. Harmful to aquatic organisms.

OSHA regulatory status This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects

Routes of exposure Inhalation. Skin contact. Eye contact.

Eyes Do not get this material in contact with eyes. Severely irritating to eyes. May cause irreversible eye damage including burns and blindness.

Skin Do not get this material in contact with skin. Contact with liquid may produce severe skin irritation including redness, inflammation and chemical burns. An allergic skin sensitization reaction may be caused by exposure to a nickel compound.

Inhalation Do not breathe mist/vapors/liquid/spray. Prolonged inhalation may be harmful. May cause severe respiratory irritation or burns.

Ingestion Do not ingest. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract. Components of the product may be absorbed into the body by ingestion.

Target organs Eyes. Respiratory system. Skin.

Signs and symptoms Corrosive effects. Irritation of eyes and mucous membranes. Permanent eye damage including blindness could result. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Sensitization. Prolonged exposure may cause chronic effects. Exposure may aggravate skin, eye, and respiratory disorders. Preexisting bone marrow and cardiovascular disease may be aggravated by exposure.

Potential environmental effects Components of this product are hazardous to aquatic life. Harmful to aquatic organisms. May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
PHOSPHORIC ACID, MANGANESE(2+) SALT (2:1)	18718-07-5	10 - 30
PHOSPHORIC ACID	7664-38-2	5 - 10

Components	CAS #	Percent
MANGANESE NITRATE	10377-66-9	1 - 5
IRON SULPHATE	7720-78-7	0.1 - 1
NICKEL NITRATE (2+ SALT)	13138-45-9	0.1 - 1
Other components below reportable levels		60 - 80

4. First Aid Measures

First aid procedures

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

Skin contact Take off immediately all contaminated clothing. Immediately flush skin with plenty of water. Get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Get medical attention if symptoms persist. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Ingestion Get medical attention immediately. Do not induce vomiting. Give one or two glasses of water or milk. Never give anything by mouth to a victim who is unconscious or is having convulsions. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Notes to physician Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General advice Immediate medical attention is required. In case of shortness of breath, give oxygen. Keep victim warm. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this material safety data sheet (MSDS) to the doctor in attendance.

5. Fire Fighting Measures

Flammable properties This product is an aqueous mixture which will not burn.

Extinguishing media

Suitable extinguishing media Use any media suitable for the surrounding fires.

Unsuitable extinguishing media Not available.

Protection of firefighters

Protective equipment and precautions for firefighters In case of fire: Stop leak if safe to do so. Move containers from fire area if you can do so without risk. Water runoff can cause environmental damage.

Fire fighting equipment/instructions Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, and rubber boots. Wear positive pressure self-contained breathing apparatus (SCBA).

Hazardous combustion products May include oxides of nitrogen. Irritating and toxic gases or fumes may be released during a fire.

6. Accidental Release Measures

Personal precautions Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Avoid inhalation of vapor, fumes, dust and/or mist from the spilled material. Ventilate closed spaces before entering them. Avoid contact with skin, eyes, and clothes. Wear appropriate personal protective equipment. See Section 8 of the MSDS for Personal Protective Equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Environmental precautions Avoid release to the environment. Do not contaminate water. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

Methods for containment Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas.

Methods for cleaning up

Clean up in accordance with all applicable regulations.

Large Spills: Absorb spill with vermiculite or other inert material. Shovel the material into waste container. Avoid dust formation.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. For waste disposal, see section 13 of the MSDS.

7. Handling and Storage

Handling

Do not handle until all safety precautions have been read and understood. Wear personal protective equipment. See Section 8 of the MSDS for Personal Protective Equipment. Avoid prolonged exposure. Avoid contact with eyes, skin, and clothing. Avoid breathing mists or aerosols of this product. Do not take internally Avoid contact during pregnancy/while nursing. Wash thoroughly after handling. When using, do not eat, drink or smoke. Avoid release to the environment. Do not empty into drains. Do not mix this product with material which contain AMINES; NITROSAMINE may be formed.

Storage

For safe storage, store at or above 40 °F (4.4 °C). Keep in a cool, well-ventilated place. Store in a tightly closed container away from incompatible materials (see Section 10 of the MSDS for incompatible materials). Keep out of the reach of children. Keep away from food, drink and animal feedingstuffs.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
MANGANESE NITRATE (CAS 10377-66-9)	TWA	0.1 mg/m3	Inhalable fraction.
		0.02 mg/m3	Respirable fraction.
PHOSPHORIC ACID, MANGANESE(2+) SALT (2:1) (CAS 18718-07-5)	TWA	0.1 mg/m3	Inhalable fraction.
		0.02 mg/m3	Respirable fraction.

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

Components	Type	Value
MANGANESE NITRATE (CAS 10377-66-9)	Ceiling	5 mg/m3
PHOSPHORIC ACID, MANGANESE(2+) SALT (2:1) (CAS 18718-07-5)	Ceiling	5 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
MANGANESE NITRATE (CAS 10377-66-9)	STEL	3 mg/m3	Fume.
	TWA	1 mg/m3	Fume.
PHOSPHORIC ACID, MANGANESE(2+) SALT (2:1) (CAS 18718-07-5)	STEL	3 mg/m3	Fume.
	TWA	1 mg/m3	Fume.

Exposure guidelines

Not available.

Engineering controls

Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product. Provide eyewash station and safety shower.

Personal protective equipment

Eye / face protection

Do not get in eyes. Chemical goggles and face shield are recommended.

Skin protection

Do not get this material in your eyes, on your skin, or on your clothing. Use of impervious boots and apron are recommended. Use chemical resistant and impermeable gloves made of neoprene or nitrile. Prolonged contact with chemical requires gloves to be tested to determine suitability.

Respiratory protection	Do not breathe dust/fume/gas/mist/vapors/spray. If ventilation is not sufficient to effectively prevent buildup of aerosols or mists, appropriate NIOSH/MSHA respiratory protection must be provided. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Contaminated work clothing should not be allowed out of the workplace.

9. Physical & Chemical Properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Green.
Odor	Bland.
Odor threshold	Not available.
pH	< 1
Vapor pressure	Not available.
Vapor density	Not available.
Boiling point	> 210 °F (> 98.89 °C) Calculated.
Melting point/Freezing point	Not available.
Solubility (water)	100 %
Specific gravity	1.29 - 1.37 at 60.08 °F (15.6 °C)
Relative density	Not available.
Flash point	320.00 °F (160.00 °C)
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Auto-ignition temperature	Not available.
VOC	Not available.
Evaporation rate	Not available.
Partition coefficient (n-octanol/water)	Not available.

10. Chemical Stability & Reactivity Information

Chemical stability	Stable at normal conditions.
Conditions to avoid	Do not mix this product with material which contain amines; nitrosamine may be formed.
Incompatible materials	This product may react with strong alkalies.
Hazardous decomposition products	Decomposes with heat to produce oxides of nitrogen. Irritating and toxic gases or fumes may be released during a fire.
Possibility of hazardous reactions	Will not occur.

11. Toxicological Information

Sensitization	May cause sensitization by inhalation. May cause sensitization by skin contact.
Acute effects	Causes burns to the skin, eyes, and respiratory system. Causes eye damage
Local effects	Causes severe irritation of eyes, skin, and respiratory system. May produce corrosive solutions on contact with water.
Chronic effects	Hazardous by OSHA criteria. Prolonged inhalation may be harmful. May cause damage to organs through prolonged or repeated exposure. Prolonged exposure may cause chronic effects.
Carcinogenicity	May cause cancer.

ACGIH Carcinogens

MANGANESE NITRATE (CAS 10377-66-9)	A4 Not classifiable as a human carcinogen.

NICKEL NITRATE (2+ SALT) (CAS 13138-45-9)	A4 Not classifiable as a human carcinogen.
PHOSPHORIC ACID, MANGANESE(2+) SALT (2:1) (CAS 18718-07-5)	A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

NICKEL NITRATE (2+ SALT) (CAS 13138-45-9)	1 Carcinogenic to humans.

US NTP Report on Carcinogens: Known carcinogen

NICKEL NITRATE (2+ SALT) (CAS 13138-45-9)	Known To Be Human Carcinogen.

Skin corrosion/irritation Hazardous by OSHA criteria. Causes severe irritation and burns to the skin. Causes severe irritation and burns to the eyes.

Epidemiology Not available.

Mutagenicity Not available.

Reproductive effects May damage fertility or the unborn child.

Symptoms and target organs Burning pain and severe corrosive skin damage. Permanent eye damage including blindness could result. Phosphoric acid, manganese (2+) salt (2:1) causes health and target organ effects to the lung, nervous system, irritant, behavioral, developmental, kidney, respiratory, mutagen, blood, or reproductive. Phosphoric acid causes health and target organ effects of irritation or corrosion. Manganese nitrate causes health and target organ effects to the kidney, lung, developmental, behavioral, reproductive, cardiac, vascular, irritant, nervous system, liver, blood, respiratory, or mutagen. Iron sulphate causes health and target organ effects to the immune system, liver, developmental, some evidence of carcinogenicity, allergen, reproductive, central nervous system, sensory, irritant, corrosive, vascular mutagen, kidney, blood, cardiac, respiratory, or lung. Nickel nitrate (2+ salt) causes health and target organ effects to the kidney, lung, cardiac, vascular, corrosive, irritant, mutagen, liver, central nervous system, metabolic, or gastrointestinal.

Further information Not available.

12. Ecological Information

Ecotoxicity Harmful to aquatic life with long lasting effects. Components of this product are hazardous to aquatic life. Accumulation in aquatic organisms is expected. Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.

Environmental effects Harmful to aquatic organisms. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Aquatic toxicity May cause long-term adverse effects in the aquatic environment.

Persistence and degradability Not available.

Bioaccumulation / Accumulation Not available.

Mobility in environmental media The product is water soluble and may spread in water systems.

13. Disposal Considerations

Disposal instructions Dispose of in accordance with current, applicable local, state, and federal regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

DOT

Basic shipping requirements:

UN number	UN1805
Proper shipping name	Phosphoric acid solution
Hazard class	8
Packing group	III

Additional information:

ERG code	154

IATA

UN number	UN1805
UN proper shipping name	Phosphoric acid solution
Transport hazard class(es)	8
Packing group	III

IMDG

UN number	UN1805
UN proper shipping name	Phosphoric acid solution
Transport hazard class(es)	8
Packing group	III

DOT

IATA; IMDG

15. Regulatory Information

US federal regulations

All components are on the U.S. EPA TSCA Inventory List.
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Not listed.

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Not regulated.

DEA Exempt Chemical Mixtures Code Number

Not regulated.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

MANGANESE NITRATE (CAS 10377-66-9)	1.0 % N450
NICKEL NITRATE (2+ SALT) (CAS 13138-45-9)	0.1 % N495
PHOSPHORIC ACID, MANGANESE(2+) SALT (2:1) (CAS 18718-07-5)	1.0 % N450

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

MANGANESE NITRATE (CAS 10377-66-9)	Listed. N450
NICKEL NITRATE (2+ SALT) (CAS 13138-45-9)	Listed. N495
PHOSPHORIC ACID, MANGANESE(2+) SALT (2:1) (CAS 18718-07-5)	Listed. N450

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

Not regulated.

CERCLA (Superfund) reportable quantity

PHOSPHORIC ACID: 5000
IRON SULPHATE: 1000
NICKEL NITRATE (2+ SALT): 100

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
SARA 302 Extremely hazardous substance	No
SARA 311/312 Hazardous chemical	No

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations WARNING: This product contains a chemical known to the State of California to cause cancer. California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

NICKEL NITRATE (2+ SALT) (CAS 13138-45-9)	Listed: May 7, 2004 Carcinogenic.

US - New Jersey RTK - Substances: Listed substance

IRON SULPHATE (CAS 7720-78-7)	Listed.
MANGANESE NITRATE (CAS 10377-66-9)	Listed.
NICKEL NITRATE (2+ SALT) (CAS 13138-45-9)	Listed.
PHOSPHORIC ACID (CAS 7664-38-2)	Listed.
PHOSPHORIC ACID, MANGANESE(2+) SALT (2:1) (CAS 18718-07-5)	Listed.

US. Massachusetts RTK - Substance List

IRON SULPHATE (CAS 7720-78-7)
NICKEL NITRATE (2+ SALT) (CAS 13138-45-9)
PHOSPHORIC ACID (CAS 7664-38-2)

US. Pennsylvania RTK - Hazardous Substances

IRON SULPHATE (CAS 7720-78-7)	Listed.
NICKEL NITRATE (2+ SALT) (CAS 13138-45-9)	Listed.
PHOSPHORIC ACID (CAS 7664-38-2)	Listed.

US. Rhode Island RTK

IRON SULPHATE (CAS 7720-78-7)
MANGANESE NITRATE (CAS 10377-66-9)
PHOSPHORIC ACID (CAS 7664-38-2)
PHOSPHORIC ACID, MANGANESE(2+) SALT (2:1) (CAS 18718-07-5)

16. Other Information

Recommended use	Not available.
Recommended restrictions	Not available.
Further information	HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings	Health: 3* Flammability: 1 Physical hazard: 1
NFPA ratings	Health: 3 Flammability: 1 Instability: 1
Disclaimer	The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information, and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
This data sheet contains changes from the previous version in section(s):	Product and Company Identification: Alternate Trade Names