SAFETY DATA SHEET

This Safety Data Sheet complies with the Canadian Hazardous Product Regulations, the United States Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR 1910 (OSHA HCS), and the European Union Directives.

1. Product and Supplier Identification

1.1 Product: **Coghlan's Safety Matches #1250**

1.2 Other Means of Identification: Book Matches, Matchbooks. Found in Coghlan's 9850 Survival Kit.

1.3 Product Use: Waterproof matches

1.4 Restrictions on Use: None known

1.5 Producer: **Coghlan's Ltd.,**
121 Irene Street,
Winnipeg, Manitoba
Canada, R3T 4C7

Telephone: +1(204) 284-9550
Facsimile: +1(204) 475-4127

Supplier: **As above**

1.6 Emergencies: +1(877) 264-4526

2. Hazards Identification

2.1 Classification of product or mixture

Note to reader: The information provided in this Safety Data Sheet applies solely to the match head and not the fibre portion onto which the match head is attached.

This product in an untested mixture and GHS classification is based on the classification of the ingredients and their concentrations. Proprietary ingredients, if any, do NOT exhibit any health effects not listed in this SDS.

GHS Classification:
Flammable Solid, Category 2
Acute Toxicity, Oral, Category 4
Acute Toxicity, Inhalation, Category 4
Acute Aquatic Toxicity, Category 1
Chronic Aquatic Toxicity, Category 1

2.2 GHS Label Elements, including precautionary statements

Pictogram:

Signal Word: Warning

GHS Hazard Statements:

H228: Flammable Solid
H302: Harmful if swallowed.
H332: Harmful if inhaled.
H401: Very toxic to aquatic life.
H411: Very toxic to aquatic life with long lasting effects.

GHS Precautionary Statements:

Prevention:

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response:

P370+P378: In case of fire use water as first choice. Sand, earth, dry chemical, foam or CO_2 may be used to extinguish.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330: Rinse mouth
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P391: Collect spillage. Do not leave spilled matches in the environment.

Storage:

Store in a cool, dry, well-ventilated area away from sources of ignition, oxidizing agents, food stuffs, clothing, direct sunlight and children.

Disposal:

P501: Dispose of contents/container in accordance with local regulations, following product label directions.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS: When striking matches, danger of skin burns may occur.

2.4 Additional Information

Primary Routes of Entry:

Skin Contact:	Yes
Skin Absorption:	No
Eye Contact:	Yes
Ingestion:	No
Inhalation:	Yes

Emergency Overview: When striking these matches, care must be taken to prevent injury by burns to skin and eyes. Striking matches will release gaseous compounds that are irritating to the respiratory tract.

Effects of Short-Term (Acute) Exposure:

Inhalation: Striking matches will release gaseous compounds that are irritating to the respiratory tract.

Skin Contact: These matches contain compounds which may cause skin sensitization. Irritation may occur causing a rash. Skin contact with a burning match will cause significant burns. Strike matches away from face to prevent sparks form touching skin or entering eyes. Skin rash may occur in persons predisposed to skin problems. Wash hands after handling matches to prevent residue from being ingested by touching mouth.

Eye Contact: Smoke or vapours from the burning matches may cause transient eye discomfort. Accidental entry of sparks into the eye may cause permanent eye damage.

Ingestion: Accidental ingestion is unlikely due to form of product. If matches are ingested, compounds in the striking material are toxic. Immediately contact a POISON CONTROL CENTER, doctor or nearest hospital for treatment advice.

Effects of Long-Term (Chronic) Exposure: No adverse health effects are indicated. Acute health effects are more serious.

Medical Conditions Aggravated By Exposure: None known

3. Composition

3.1 Mixture composition

Component	% (w/w)	GHS Classification
Potassium Chlorate CAS No 3811-04-9 EINECS No 223-289-7	50	Oxidizing Solid, Category 1 Acute Toxicity, Oral, Category 4 Acute Toxicity, Inhalation, Category 4 Acute Aquatic Toxicity, Category 2 Chronic Aquatic Toxicity, Category 2
Bone Glue (Gelatin) CAS No 9000-70-8 EINECS No 232-554-6	12	No classification
Quartz Powder CAS No 14808-60-7 EINECS No 238-878-4	20	Carcinogenicity, Category 1A Specific Target Organ Toxicity, Repeat Exposure, Inhalation, Category 1 (Lungs)
Zinc Oxide CAS No 1314-13-2 EINECS No 215-222-5	5	Acute Aquatic Toxicity, Category 1 Chronic Aquatic Toxicity, Category 1
Boric Acid CAS No 10043-35-3 EINECS No 233-139-2	1	Reproductive Toxicity, Category 1B
Starch CAS No 9005-25-8 EINECS No 232-679-6	2	Combustible powder, May form combustible dust concentrations in air.
Aluminum Hydroxide CAS No 21645-51-2 EINECS No	1	No classification
Red Phosphorus CAS No 7723-14-0 EINECS No 231-768-7	1 - 5	Flammable Solid, Category 1 Acute and Chronic Aquatic Toxicity, Category 3
Tin (IV) Oxide CAS No 18282-10-5 EINECS No 242-159-0	0.01 – 1.0	No classification
Non-hazardous ingredients or those below disclosure requirements	3	N/p

4. First Aid Measures

4.1 Description of First Aid Measures

General advice: If ingested, immediately call a POISON CONTROL CENTER, doctor or nearest hospital for treatment advice. For burns, seek medical advice. Wash hands after handling. Do not eat drink or smoke until washing the hands.

In case of eye contact: Immediately flush eyes with plenty of water. If irritation occurs or persists, flush eyes with plenty of fresh water, holding eyelids open. Remove contact lenses if easy to do. Call a physician if an irritation persists.

In case of skin contact: Wash hands immediately with soap and water after handling. Do not eat, drink or smoke until hands are thoroughly washed. If irritation occurs or persists seek medical advice.

If inhalation: Inhalation is a route of entry. Move victim to fresh air. If breathing is labored, give artificial respiration. Seek medical attention if breathing is difficult or discomfort occurs.

If ingestion: This product is orally toxic if ingested. If ingested immediately call a POISON CONTROL CENTER, doctor or nearest hospital for treatment advice. Provided that patient is conscious, rinse mouth with water. Do NOT give anything to an unconscious person. Do not induce vomiting unless instructed to do so by a physician or the poison control center. If spontaneous vomiting occurs, have victim lean forward with head between knees to avoid aspirating vomitus, Rinse mouth and give 2 – 4 cups water, if conscious.

4.2 Most important symptoms and effects, both acute and delayed

Effects of Short-Term (Acute) Exposure:

Inhalation: Striking matches will release gaseous compounds that are irritating to the respiratory tract.

Skin Contact: These matches contain compounds which may cause skin sensitization. Irritation may occur causing a rash. Skin contact with a burning match will cause significant burns. Strike matches away from face to prevent sparks form touching skin or entering eyes. Skin rash may occur in persons predisposed to skin problems. Wash hands after handling matches.

Eye Contact: Smoke or vapours from the burning matches may cause transient eye discomfort. Accidental entry of sparks into the eye may cause permanent eye damage.

Ingestion: Accidental ingestion is unlikely due to form of product. If matches are ingested, compounds in the striking material are toxic. Immediately contact a POISON CONTROL CENTER, doctor or nearest hospital for treatment advice.

Effects of Long-Term (Chronic) Exposure: No adverse health effects are indicated. Acute health effects are more serious.

Medical Conditions Aggravated By Exposure: None known

4.3 Indication of any immediate medical attention and special treatment needed

In the case of accidental ingestion, it is important to get treatment immediately.

5. Fire Fighting Measures

5.1 Extinguishing Media

Suitable extinguishing media: Product is flammable. When ignited, blow out and immerse in water if safe to do without burning the skin. Cover with sand and then wet the sand. For larger quantities, use water or water spray or carbon dioxide.

5.2 Special hazards arising from mixture: None

Advice for firefighters: In any fire situation, firefighters should wear full protective clothing including self contained breathing apparatus. Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

5.3 Further Information:

Sensitivity to Impact: No
Sensitivity to Static Discharge: Yes

HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS) HAZARD INDEX:

HEALTH: 1

FLAMMABILITY: 2

REACTIVITY: 1

PERSONAL PROTECTION: None

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

All spill responders involved in a cleanup of this product must follow good industrial hygiene practices. A small spill can be handled routinely. Wear suitable protective equipment and eye protection to prevent skin and eye contact. Extinguish all sources of ignition and remove matches if safe to do so.

Respiratory Protection: To avoid inhaling smoke/vapours, use self-contained breathing apparatus.

Skin protection: Wear suitable protective equipment to prevent skin contact.

Eye and Face Protection: Wear chemical goggles or full face protection.

Footwear: No specific recommendation.

Other: None

6.2 Environmental precautions

This product may cause damage to the aquatic environment. Ensure that spilled material does not enter sewers or natural waterways. If spill catches fire, the water used to extinguish the fire may contain a chemical that is toxic to aquatic life.

6.3 Methods and materials for containment and cleanup

Clean up spills immediately to protect human health and the environment. Scoop or sweep up material, keeping dust to a minimum and place in an appropriate container for disposal. If on soil, skim top layer of contaminated soil and place in an appropriate container for disposal. Once the spill has been remediated, arrange for disposal of the containers. Properly label containers to identify contents.

Remedial Measures: Do not use unprotected hands to collect spilled material. Ensure proper protective equipment is used to prevent contact with skin and eyes. Avoid the creation of dust.

Large Spills: Shovel spilled product into adequate compatible containers, skimming soil as well to ensure all released product and contaminated soil is recovered. Properly close and label all containers for disposal.

Small Spills: Scoop or sweep up spilled contents and place in appropriate containers for disposal.

6.4 Reference to other sections

For disposal, see Section 13.

7. Handling and Storage

7.1 Precautions for safe handling

Handling Procedures: While handling matches, a residue on skin may be transferred to mouth by accident. Wash thoroughly and immediately after handling this product and before eating, drinking, smoking or using the toilet.

7.2 Conditions for safe storage, including incompatibilities

Storage: ***Keep out of reach of children and animals***. Keep container closed when not in use and store in a cool, dry, well-ventilated area away from heat, flame, sources of ignition, direct sunlight, foodstuffs and clothing. Protect from sparks, heat or flame. Empty containers may contain residues which are hazardous. Always keep matches in the container sold with them. Store away from incompatible materials such as strong oxidizers, strong acids or alkalis.

In bulk storage areas, post "NO SMOKING" signs. Have appropriate fire extinguishers located in an accessible place near storage area. Keep containers closed when not in use. Prevent static discharges and use proper grounding procedures. Do not stack pallets more than three high.

7.3 Specific end use(s)

No other uses except those mentioned in Section 1.2

8. Exposure Controls, Personal Protection

8.1 Control parameters

Components with workplace control parameters

Zinc Oxide, CAS No 1314-13-2	TLV-TWA:2.0 mg/m^3, TLV-STEL:10 mg/m^3
Quartz, CAS No 14808-60-7	TLV-TWA: 0.025 mg/m^3 ACGIH
	OSHA Table Z-1 Limits for air contaminants
	TWA: 0.05 mg/m^3
Boric Acid, CAS No 10043-35-3	TLV-TWA: 2.0 mg/m^3 ACGIH
Starch, CAS No 9005-25-8	TLV-TWA: 10 mg/m^3 ACGIH
Tin (IV) Oxide, CAS No 18282-10-5	TLV-TWA: 2.0 mg/m^3 ACGIH
	OSHA Table Z-1 Limits for air contaminants
	TWA: 2.0 mg/m^3
Red Phosphorus, CAS No 7723-14-0	OSHA Table Z-1 Limits for air contaminants
	TWA: 0.10 mg/m^3

* ACGIH: American Conference of Governmental Industrial Hygienists. Exposure limits may vary from time to time and from one jurisdiction to another. OSHA: Occupational Safety and Health Administration. Check with local regulatory agency for the exposure limits in your area.

8.2 Exposure Controls

Engineering Controls: Avoid breathing dust, vapours or smoke from burning these matches.

Respiratory Protection: Not applicable for consumers provided package instructions are followed. In circumstances of high concentration of smoke, a NIOSH approved air purifying respirator with N, P or R95 or HE filter and an organic vapour cartridge may be permissible.

Skin protection: Not applicable for consumers following product directions. In bulk situations or when handling is prolonged use adequate skin protection.

Eye and Face Protection: Not applicable for consumers following product directions. Strike matches away from face.

Footwear: No specific recommendation.

Other: None

Control of environmental exposure

None

9. Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance:	Solid. Red match head, woody matchstick
Odour:	None
Odour Threshold:	Not applicable
pH:	<4.7
Melting Point/Freezing Point:	Not determined
Initial Boiling Point:	Not determined
Flash Point:	Not applicable
Evaporation Rate:	Not available
Flammability:	Flammable
Upper Explosion Limit:	Not available
Lower Explosion Limit:	Not available
Vapour Pressure:	Not available
Vapour Density:	Not available
Relative Density:	1.3
Solubility:	Insoluble in water or alcohol
Partition Coefficient:	Not available
Autoignition Temperature:	Not determined
Decomposition Temperature:	Not available
Viscosity:	Not available
Explosive Properties:	Not available
Oxidizing Properties:	Not available
Percent Volatiles:	Not available

9.2 Other safety information: None

10. Stability and Reactivity

10.1 Reactivity
May be reactive under conditions of heat.

10.2 Chemical Stability
Stable under recommended storage conditions. Storage should be in a dry, cool, well-ventilated area away from incompatible materials, sources of ignition and heat, out of direct sunlight.

10.3 Possibility of hazardous reactions
No known hazardous reactions

10.4 Conditions to avoid
Heat, sparks, flames, sources of ignition which may cause matches to light. During fire, irritating and possible toxic gases may be generated by thermal decomposition or combustion.

10.5 Incompatible materials
Strong oxidizing agents, strong acids and alkalis.

10.6 Hazardous decomposition products
Oxides of sulphur and carbon as well as unknown irritation gases may be generated by thermal decomposition or combustion.

11. Toxicological Information

11.1 Information on toxicological effects

Acute toxicity
Acute toxicity, Oral. Category 4, H302: Harmful if swallowed.
Acute toxicity, Inhalation, Category 4, H332: Harmful if inhaled

Skin corrosion/irritation
No GHS classification

Serious eye damage/eye irritation
No GHS classification

Respiratory or skin sensitization
No GHS classification

Germ Cell Mutagenicity
No GHS classification

Carcinogenicity
No GHS classification

Reproductive toxicity
No GHS classification

Specific Target Organ Toxicity – Single exposure
No GHS classification

Specific Target Organ Toxicity – Repeated exposure
No GHS classification

Aspiration Hazard
No GHS classification

Aquatic Toxicity
Acute Aquatic Toxicity, Category 2: H401: Toxic to aquatic life.
Chronic Aquatic Toxicity, Category 2: H411: Toxic to aquatic life with long lasting effects.

Additional information

Component	LD_{50}	LC_{50}
Potassium Chlorate CAS No 3811-04-9	1870 mg/kg (oral/rat) >2000 mg/kg (dermal/rabbit)	>5.1 mg/l (inhalation, rat/ 4 hr)
Tin (IV) Oxide CAS No 18282-10-5	>20,000 mg/kg (oral rat)	N/d
Boric Acid CAS No 10043-35-3	2660 mg/kg (oral/rat)	N/d
Zinc Oxide CAS No 1314-13-2	7950 mg/kg (oral/mouse)	2500 mg/m3 (inh, mouse/ 4hr)
Red Phosphorus CAS No 7723-14-0	15,000 mg/kg (oral/ female rat) Dermal N/d	N/d
Starch CAS No 9005-25-8	6,600 mg/kg (dermal/mouse, intraperitoneal)	N/d

ABBREVIATION KEY: N/p: not published, N/d: not determined, N/ap: not applicable, N/av: not available

12. Ecological Information

12.1 Toxicity

Aquatic, Acute Aquatic Toxicity, Category 1: H400: Very toxic to aquatic life

Aquatic, Chronic Aquatic Toxicity, Category 1: H410: Very toxic to aquatic life with long lasting effects

Data:

Potassium Chlorate:	*Toxicity to algae*, static test EC_{50}: Nitzschia Closterium, 2.8 mg/l, 72 hour
Red Phosphorus:	*Toxicity to fish*, static test LC_{50}, Danio rerio (Zebra Fish), 33.2 mg/l, 96 hour *Toxicity to daphnia and other aquatic invertebrates*, EC_{50}, Daphnia magna (water flea), 10.5 mg/l, 48 hour *Toxicity to algae*, static test EC50: Desmodesmus subspicatus (Green Algae), 18.3 mg/l, 72 hour
Zinc Oxide:	*Toxicity to fish*, LC_{50}: Oncorhynchus mykiss (Rainbow Trout), 1.1 mg/l, 96 hours *Toxicity to daphnia and other aquatic invertebrates*, EC_{50}, Daphnia magna (water flea), 0.098 mg/l, 48 hours
Boric Acid:	*Toxicity to fish*, LC_{50}: Ptychocheilus Lucius, 279 mg/l, 96 hours *Toxicity to daphnia and other aquatic invertebrates*, EC_{50}, Daphnia magna (water flea), 53.2 mg/l, 21 days

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment
Not conducted

12.6 Other adverse effects
No data available

13. Disposal Considerations

13.1 Waste treatment methods

Product:

Do not reuse empty containers. Dispose of product according to all applicable local, state (provincial), and federal regulations. Offer to a licensed disposal company, properly contained and labelled.

Contaminated Packaging:

As above

14. Transport Information

Transport of Dangerous Goods (TDG and CLR): UN 1944, Matches, Safety, Class 4.1, PG III

United States Department of Transport (49CFR): UN 1944, Matches, Safety, Class 4.1, PG III

International Air Transport Association (IATA): UN 1944, Matches, Safety, Class 4.1, PG III

International Maritime Organization (IMO): UN 1944, Matches, Safety, Class 4.1, PG III
EmS No F-A, S-I, Stowage Category A

15. Regulatory Information

CANADIAN FEDERAL REGULATIONS:

CEPA, DOMESTIC SUBSTANCES LIST: Listed

AMERICAN FEDERAL REGULATIONS:

CERCLA Hazardous Substance List (40 CFR 302.4) Not regulated

SARA 302 Extremely hazardous substance: Red Phosphorus
CAS No 7723-14-0, Rev Date 1991-07-01

SARA 311/312 Hazardous chemical: Acute Health Hazard, Chronic Health Hazard

SARA 313 (TRI reporting): SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Other State Regulations:

Massachusetts Right to Know Components:

Red Phosphorus, CAS No 7723-14-0	Rev Date 1991-07-01
Potassium Chlorate, CAS No 3811-04-9	Rev Date 1993-04-24
Tin (IV) Oxide, CAS No 18282-10-5	Rev Date 2007-03-01
Quartz, CAS No 14808-60-7	Rev Date 2016-09-09

Pennsylvania Right to Know Components:

Red Phosphorus, CAS No 7723-14-0	Rev Date 1991-07-01
Potassium Chlorate, CAS No 3811-04-9	Rev Date 1993-04-24
Boric Acid, CAS No 10043-35-3	Rev Date 2009-07-17
Tin (IV) Oxide, CAS No 18282-10-5	Rev Date 2007-03-01
Aluminum Hydroxide, CAS No 21645-51-2	Rev Date Not known
Quartz, CAS No 14808-60-7	Rev Date 2016-09-09
Gelatin, CAS No 9000-70-8	Rev Date Not known

New Jersey Right to Know Components:

Red Phosphorus, CAS No 7723-14-0	Rev Date 1991-07-01
Potassium Chlorate, CAS No 3811-04-9	Rev Date 1993-04-24
Boric Acid, CAS No 10043-35-3	Rev Date 2009-07-17
Tin (IV) Oxide, CAS No 18282-10-5	Rev Date 2007-03-01
Aluminum Hydroxide, CAS No 21645-51-2	Rev Date Not known
Quartz, CAS No 14808-60-7	Rev Date 2016-09-09
Gelatin, CAS No 9000-70-8	Rev Date Not known

California Prop 65 Components: This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

OTHER:

None

16. Other Information

Original Preparation Date: May 29, 2018

Prepared by: Technical Department, Coghlan's Ltd.

Disclaimer: This Safety Data Sheet (SDS) was prepared using information provided by CCINFO, ingredient supplier SDS and other relevant sources. This product has been classified using weight of evidence, expert judgment and previous testing as per Part 1.3 of the Seventh Edition of The Globally Harmonized System of Classification and Labelling of Chemicals (GHS). The information in this SDS is offered for your consideration and guidance when exposed to this product. Coghlan's Ltd expressly disclaims all expressed or implied warranties and assumes no responsibilities for the accuracy or 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.

This Safety Data Sheet may not be changed, or altered in any way without the expressed knowledge and permission of Coghlan's Ltd.

Revisions: None