

C41 Developer - Part A



Material Safety Data Sheet

Date of issue: 08/03/2021 Revision date: N/A Supersedes: N/A Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : White powder
Substance name : C41 Developer - Part A
Chemical name : N/A - Mixture
CAS-No : N/A - Mixture
Brand : Flic Film Inc.

1.2. Recommended use and restrictions on use

Use of the substance/mixture : For photographic use only.
Recommended use : Photographic chemicals
Restrictions on use : Not for food, drug or household use

1.3. Supplier

Flic Film Inc.
10B Morrison Road, Longview, Alberta,
Canada T0L 1H0
T +1-403-982-4272

1.4. Emergency telephone number

Emergency number : +1-403-982-4272

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture GHS classification

Based on potassium carbonate content

GHS Classification

Skin irritation : Category 2
Eye irritation : Category 2A
Carcinogenicity : Not identified
Specific target organ toxicity
- repeated exposure : Category 3 (Respiratory System)

2.2. GHS Label elements, including precautionary statements

GHS labelling

Hazard pictograms (GHS) :



GHS07

Signal word (GHS) : Warning
Hazard statements (GHS) : H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H335 - May cause respiratory irritation.
Precautionary statements (GHS) : P261 - Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 - Wash skin thoroughly after handling.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective gloves/ eye protection/ face protection.
P302 + P352 - IF ON SKIN: Wash with plenty of water.

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P304 + P340 + P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P332 + P313 - If skin irritation occurs: Get medical advice/ attention.

P337 + P313 - If eye irritation persists: Get medical advice/ attention.

P362 + P364T- Take off contaminated clothing and wash it before reuse.

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.

P405 - Store locked up.

P501 - Dispose of contents/ container to an approved waste disposal plant.

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification : None under normal conditions.

2.4. Unknown acute toxicity (GHS)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type : Multi-constituent

Name	Product identifier	% w/w
Potassium carbonate	(CAS-No.) 584-08-07	>80
Sodium sulfite	(CAS-No.) 7757-83-7	5-10
Potassium bromide	(CAS-No.) 7758-02-3	<10

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Allow victim to breathe fresh air. Allow the victim to rest. If breathing is difficult, give oxygen. Get medical attention

First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor / physician.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a POISON CENTER or doctor/physician if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects : Respiratory tract irritation. Upper airway irritation, may cause cough, redness of mouth and upper airways.

Symptoms/effects after skin contact : May cause skin irritation.

Symptoms/effects after eye contact : May causes severe eye irritation and redness to the eye lids, conjunctiva. There is potential for permanent and severe eye damage if not treated immediately.

Symptoms/effects after ingestion : Swallowing a small quantity may cause severe gastrointestinal irritation with nausea, vomiting and diarrhea. Ingestion of large quantities may cause ulceration, vomiting, shock and death.

4.3. Immediate medical attention and special treatment, if necessary

Obtain medical assistance.

SECTION 5: Fire-fighting measures

Negligible fire hazard due to non combustible properties of the mixture.

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Use extinguishing medium as appropriate for the surrounding fire.

Unsuitable extinguishing media : Not identified.

5.2. Specific hazards arising from the chemical

Oxides of sodium and potassium. Sulfur dioxide. Carbon dioxide. Carbon monoxide. Bromine.

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5.3. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : Generally, exercise caution when fighting any chemical fire.
Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid contact with skin and eyes. Avoid breathing dust. Avoid dust formation. Wash thoroughly after handling. Wear correct personal protective equipment.

6.1.1. For non-emergency personnel

- Protective equipment : Safety glasses. Protective clothing. Gloves. Dust mask.
Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
Emergency procedures : Ventilate area.

6.2. Environmental precautions

This material is harmful to aquatic life. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- Spills : Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering the area. Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of dust build up. Avoid breathing dust. Avoid contact with skin and eyes. Obtain special instructions before use. Use personal protective equipment as required. Do not handle until all safety precautions have been read and understood.
- Hygiene measures : Do not eat, drink or smoke when using this product. Wash exposed skin thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep container closed when not in use. Store in a cool, dry, well-ventilated area.
- Incompatible products : Acids, lime, Prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or other alkali sensitive metals or alloys.
- Incompatible materials : The powder is hygroscopic and will absorb water from the atmosphere. Store protected from moisture. Note: Solutions of potassium carbonate are corrosive to aluminium.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Component	Occupational Exposure Limits
Potassium carbonate	ACGIH TWA 5mg/m ³ (8 hour). OSHA Final PEL TWA 15mg/m ³ (Total) / 5 mg/m ³ (Respirable)
Sodium sulfite	ACGIH TWA 5mg/m ³ (8 hour).
Potassium bromide	ACGIH TWA 10mg/m ³ (8 hour). OSHA Final PEL TWA 15mg/m ³ (Total)

8.2. Appropriate engineering controls

- Appropriate engineering controls : Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation. Material should be handled using local exhaust ventilation (LEV) or laboratory hood whenever possible.

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8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Chemical resistant apron. Gloves. Face shield. Protective clothing. Safety glasses. Respirator.



Hand protection:

Wear protective gloves

Eye protection:

Chemical goggles or safety glasses

Respiratory protection:

Wear respiratory protection.

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid.
Appearance	: Power / crystalline.
Colour	: White.
Odour	: Slight sulfurous / acidic smell.
Odour threshold	: No data available.
pH	: No data available.
Melting point	: No data available.
Freezing point	: No data available.
Boiling point	: No data available.
Flash point	: No data available.
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: No data available.
Relative vapour density at 20 °C	: No data available.
Relative density	: No data available.
Specific gravity / density	: No data available.
Molecular mass	: N/A - Mixture.
Solubility	: Easily soluble in cold water, hot water. Very slightly soluble in alcohols, glycerol and diethyl ether (ethoxyethane).
Auto-ignition temperature	: No data available.
Decomposition temperature	: No data available.
Viscosity, kinematic	: No data available.
Viscosity, dynamic	: No data available.
Explosion limits	: No data available.
Explosive properties	: No data available.
Oxidizing properties	: No data available.
Hygroscopic	: Yes (due to potassium carbonate)

9.2. Other information

No additional information available

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SECTION 10: Stability and reactivity

10.1. Reactivity

The mixture is stable.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Potassium carbonate is hygroscopic and will absorb moisture from the atmosphere. Moisture can also hydrolyze sodium sulfite to liberate sulfur dioxide which is a highly irritating and corrosive gas.

10.4. Conditions to avoid

Direct sunlight. Possible emission of gaseous decomposition products may lead to a dangerous pressure build. Exposure to moisture. Elevated temperatures. Store protected from moisture.

10.5. Incompatible materials

Lime. Strong acids. Prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or other alkali sensitive metals or alloys. Potassium carbonate can be basic enough to catalyze decomposition of nitro-compounds perhaps leading to explosion. Avoid contact with lime to prevent corrosive potassium hydroxide. Avoid strong acids to prevent generation of highly irritant and corrosive sulfur dioxide gas.

10.6. Hazardous decomposition products

Oxides of sodium and potassium. Sulfur dioxide. Carbon dioxide. Carbon monoxide. Bromine.

11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure : Inhalation; Skin and eye contact.
Acute toxicity : Oral: Harmful if swallowed.

C41 Developer - Part A mixture (Toxicological data provided for potassium carbonate - greatest concentration)	
LD50 Oral	1,870 mg/kg (rat)
LD50 Dermal	>2,000 mg/kg (rabbit)
LC50 Inhalation	>4.96 mg/l (rat/4.5 hour)
Skin corrosion/irritation	: Causes skin irritation, redness.
Serious eye damage/irritation	: Causes serious eye irritation.
Respiratory or skin sensitization	: May cause an allergic skin reaction. Sodium sulfite may cause severe or deadly allergic reactions in some asthmatics and sulfite sensitive individuals. Possible signs and symptoms of allergic reactions include bronchoconstriction, sweating, flushing, hives, rapid heart rate, decreased blood pressure and anaphylaxis. Repeated or prolonged contact may cause dermatitis.
Germ cell mutagenicity	: Not classified as a mutagen.
Carcinogenicity	: Not classified as a carcinogen.
Reproductive toxicity	: Not classified.
Specific target organ toxicity – single exposure	: Not classified
Specific target organ toxicity – repeated exposure	: Based on available data, the classification criteria are not met. Harmful if swallowed.
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: The substance or mixture is not classified as specific target organ toxicant. Prolonged or chronic ingestion may cause bromism characterised by disturbances to the central nervous system.
Symptoms/effects after skin contact	: May cause skin irritation and/or dermatitis.
Symptoms/effects after eye contact	: May cause irreversible eye damage.
Symptoms/effects after ingestion	: Swallowing a small quantity of this material will result in serious health hazard. Prolonged or chronic ingestion may cause bromism characterised by disturbances to the central nervous system.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water : Harmful to aquatic life.

12.2. Persistence and degradability

C41 Developer - Part A mixture	
Persistence and degradability	The material is inorganic and not subject to biodegradation and not to persist in the environment.

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12.3. Bioaccumulative potential

C41 Developer - Part A mixture

Bioaccumulative potential : This material is believed not to bioaccumulate..

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local / national regulations. Dispose of contents / container to comply with local, state and federal regulations.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT) : No transport restrictions for small packages, i.e. these are small quantity kits and not regulated.

In accordance with DOT Transport document description : Not applicable.

UN-No.(DOT) : UN3082

Proper Shipping Name (DOT) : Environmentally hazardous substances, liquid, n.o.s.

Transport hazard class(es) (DOT) : 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140

Packing group (DOT) : III - Minor Danger

Hazard labels (DOT) : 9 - Class 9 (Miscellaneous dangerous materials)



Dangerous for the environment : Yes

Marine pollutant : Yes



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DOT Special Provisions (49 CFR 172.102)	: 8 - A hazardous substance that is not a hazardous waste may be shipped under the shipping description "Other regulated substances, liquid or solid, n.o.s.", as appropriate. In addition, for solid materials, special provision B54 applies. 146 - This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in 171.8 of this subchapter, or any hazard class as defined in Part 173 of this subchapter, if it is designated as environmentally hazardous by the Competent Authority of the country of origin, transit or destination. 335 - Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as "Environmentally hazardous substances, solid, n.o.s.," UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leak-proof when used as bulk packaging. A112 - Notwithstanding the quantity limits shown in Column (9A) and (9B) for this entry, the following IBCs are authorized for transportation aboard passenger and cargo-only aircraft. Each IBC may not exceed a maximum net quantity of 1,000 kg: a. Metal: 11A, 11B, 11N, 21A, 21B and 21N b. Rigid plastics: 11H1, 11H2, 21H1 and 21H2 c. Composite with plastic inner receptacle: 11HZ1, 11HZ2, 21HZ1 and 21HZ2 d. Fiberboard: 11G e. Wooden: 11C, 11D and 11F (with inner liners) f. Flexible: 13H2, 13H3, 13H4, 13H5, 13L2, 13L3, 13L4, 13M1 and 13M2 (flexible IBCs must be sift-proof and water resistant or must be fitted with a sift-proof and water resistant liner). B54 - Open-top, sift-proof rail cars are also authorized. IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2). IP3 - Flexible IBCs must be sift-proof and water-resistant or must be fitted with a sift-proof and water-resistant liner. N20 - A 5M1 multi-wall paper bag is authorized if transported in a closed transport vehicle. T1 - 1.5 178.274(d)(2) Normal..... 178.275(d)(2) TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.
DOT Packaging Exceptions (49 CFR 173.xxx)	: 155
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: No limit
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: No limit
DOT Vessel Stowage Location	: A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.
Other information	: No supplementary information available.

SECTION 15: Regulatory information

Canadian National Regulations

C41 Developer - Part A mixture
Not listed on the Canadian DSL (Domestic Substances List)
Not listed on the Canadian IDL (Ingredient Disclosure List)

SECTION 16: Other information

Full text of H-phrases: H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H335 - May cause respiratory irritation.

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Material Safety Data Sheet

Date of issue: 08/04/2021 Revision date: N/A Supersedes: N/A Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : White powder
Substance name : C41 Developer - Part B
Chemical name : N/A - Mixture
CAS-No : N/A - Mixture
Brand : Flic Film Inc.

1.2. Recommended use and restrictions on use

Use of the substance/mixture : For photographic use only.
Recommended use : Photographic chemicals
Restrictions on use : Not for food, drug or household use

1.3. Supplier

Flic Film Inc.
10B Morrison Road, Longview, Alberta,
Canada T0L 1H0
T +1-403-982-4272

1.4. Emergency telephone number

Emergency number : +1-403-982-4272

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture GHS classification

Based on potassium carbonate content

GHS Classification

Skin irritation : Category 2
Eye irritation : Category 2A
Carcinogenicity : Not identified
Specific target organ toxicity
- repeated exposure : Category 3 (Respiratory System)

2.2. GHS Label elements, including precautionary statements

GHS labelling

Hazard pictograms (GHS) :



Signal word (GHS) :

Danger

Hazard statements (GHS) :

H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H319 - Causes serious eye irritation
H301+ H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
H290 - May be corrosive to Metals
H351 - Suspected of causing cancer
H373 - May cause damage to organs through prolonged or repeated exposure
H400 - Very toxic to aquatic life

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Precautionary statements (GHS):

PP201 - Obtain special instructions before use. P234 - Keep only in original packaging.
P202 - Do not handle until all safety precautions have been read and understood. P264 - Wash skin thoroughly after handling.
P260 - Do not breathe dust/ fume/ gas/ mist/ vapors/ spray. P273 - Avoid release to the environment.
P270 - Do not eat, drink or smoke when using this product. P308 + P313 - IF exposed or concerned: Get medical advice/ attention.
P272 - Contaminated work clothing should not be allowed out of the workplace. P333 + P313 - If skin irritation or rash occurs: Get medical advice/ attention.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P337 + P313 - If eye irritation persists: Get medical advice/ attention.
P301 + P312 + P330 - IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P302 + P352 + P312 - IF ON SKIN: Wash with plenty of water. Call a POISON CENTER / doctor if you feel unwell.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P362 + P364 - Take off contaminated clothing and wash it before reuse.
P405 - Store locked up. P501 - Dispose of contents/ container to an approved waste disposal plant. P390 - Absorb spillage to prevent material damage. P391 - Collect spillage.

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification : None under normal conditions.

2.4. Unknown acute toxicity (GHS)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type : Multi-constituent

Name	Product identifier	% w/w
Hydroxylamine sulfate	(CAS-No.) 10039-54-0	>70
p-Phenylenediamine	(CAS-No.) 106-50-3	<30

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation : Allow victim to breathe fresh air. Allow the victim to rest. If breathing is difficult, give oxygen. Get medical attention
First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor / physician.
First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a POISON CENTER or doctor/physician if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects : Respiratory tract irritation. Upper airway irritation, may cause cough, redness of mouth and upper airways.
Symptoms/effects after skin contact : May cause skin irritation.
Symptoms/effects after eye contact : May causes severe eye irritation and redness to the eye lids, conjunctiva. There is potential for permanent and severe eye damage if not treated immediately.
Symptoms/effects after ingestion : Swallowing a small quantity may cause severe gastrointestinal irritation with nausea, vomiting and diarrhea. Ingestion of large quantities may cause ulceration, vomiting, shock and death.

4.3. Immediate medical attention and special treatment, if necessary

Obtain medical assistance.

SECTION 5: Fire-fighting measures

Negligible fire hazard due to non combustible properties of the mixture.

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Use extinguishing medium as appropriate for the surrounding fire.
Unsuitable extinguishing media : Not identified.

5.2. Specific hazards arising from the chemical

Sulfur dioxide. Sulfur trioxide. Carbon dioxide. Carbon monoxide. Ammonia. Nitrogen oxides.

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5.3. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : Generally, exercise caution when fighting any chemical fire.
Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid contact with skin and eyes. Avoid breathing dust. Avoid dust formation. Wash thoroughly after handling. Wear correct personal protective equipment.

6.1.1. For non-emergency personnel

- Protective equipment : Safety glasses. Protective clothing. Gloves. Dust mask.
Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
Emergency procedures : Ventilate area.

6.2. Environmental precautions

This material is harmful to aquatic life. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- Spills : Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering the area. Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of dust build up. Avoid breathing dust. Avoid contact with skin and eyes. Obtain special instructions before use. Use personal protective equipment as required. Do not handle until all safety precautions have been read and understood.
- Hygiene measures : Do not eat, drink or smoke when using this product. Wash exposed skin thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep container closed when not in use. Store in a cool, dry, well-ventilated area. p-Phenylenediamine in powdered form is a significant dust explosion hazard.
- Incompatible products : Nitrites. Nitrates. Powdered metals. Oxidizing agents. Aldehydes. Ketones. Alkalies and bases. Acids. Acid anhydrides. Acid chlorides.
- Incompatible materials : Air sensitive. Material darkens in colour during storage due to oxidation with air. Store protected from air.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Component	Occupational Exposure Limits		
Hydroxylamine sulfate	No ACGIH, NIOSH IDLH or OSHA Vacated PELs are listed for this chemical.		
p-Phenylenediamine	ACGIH TWA 0.1mg/m ³ (8 hour).	OSHA Final PEL TWA 0.1mg/m ³ (Vacated)	NIOSH IDLH 25mg/m ³

8.2. Appropriate engineering controls

- Appropriate engineering controls : Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation. Material should be handled using local exhaust ventilation (LEV) or laboratory hood whenever possible.

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8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Chemical resistant apron. Gloves. Face shield. Protective clothing. Safety glasses. Respirator.



Hand protection:

Wear protective gloves

Eye protection:

Chemical goggles or safety glasses

Respiratory protection:

Wear respiratory protection.

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid.
Appearance	: Power / crystalline.
Colour	: White, darkens on exposure to air.
Odour	: Slight aromatic smell.
Odour threshold	: No data available.
pH	: No data available.
Melting point	: No data available.
Freezing point	: No data available.
Boiling point	: No data available.
Flash point	: No data available.
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: No data available.
Relative vapour density at 20 °C	: No data available.
Relative density	: No data available.
Specific gravity / density	: No data available.
Molecular mass	: N/A - Mixture.
Solubility	: Soluble in water, alcohols and diethyl ether (ethoxyethane).
Auto-ignition temperature	: No data available.
Decomposition temperature	: At 120 °C, hydroxylammonium sulfate begins to decompose to sulfur trioxide, nitrous oxide, water and ammonia. Metals (especially copper, its alloys and its salts) catalyse the decomposition of hydroxylammonium sulfate.
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Hygroscopic	: No

9.2. Other information

No additional information available

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SECTION 10: Stability and reactivity

10.1. Reactivity

The mixture is stable, but will darken in colour on exposure to air.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Nitrites. Nitrates. Powdered metals. Oxidizing agents. Aldehydes. Ketones. Alkalies and bases. Acids. Acid anhydrides. Acid chlorides.

10.4. Conditions to avoid

Exposure to air. Elevated temperatures. Store protected from moisture.

10.5. Incompatible materials

Nitrites. Nitrates. Powdered metals. Oxidizing agents. Aldehydes. Ketones. Alkalies and bases. Acids. Acid anhydrides. Acid chlorides.

10.6. Hazardous decomposition products

Sulfur dioxide. Sulfur trioxide. Carbon dioxide. Carbon monoxide. Ammonia. Nitrogen oxides.

11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure : Inhalation; Skin and eye contact.
Acute toxicity : Oral: Toxic if swallowed.

C41 Developer - Part B mixture	
Hydroxylamine sulfate	LD50 Oral: 842 mg/kg (rat) / LD50 Dermal: 1,500 - 2,000mg/kg (rabbit)
p-Phenylenediamine	LD50 Oral: 80mg/kg (rat) / LD50 Dermal: >5,000mg/kg (rabbit) / LC50 Inhalation: 920mg/kg (rat) 4 h

Skin corrosion/irritation	: Causes skin irritation, redness, dermatitis.
Serious eye damage/irritation	: Causes serious eye irritation.
Respiratory or skin sensitization	: May cause sensitization by skin contact. Repeated or prolonged contact may cause dermatitis.
Germ cell mutagenicity	: Not classified as a mutagen.
Carcinogenicity	: Hydroxylamine sulfate is a suspected carcinogen.
Reproductive toxicity	: Not classified.
Specific target organ toxicity – single exposure	: Not classified
Specific target organ toxicity – repeated exposure	: Ingestion - May cause damage to organs through prolonged or repeated exposure - Blood.
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.
Symptoms/effects after skin contact	: Hydroxylamine sulfate is extremely destructive to tissues of the mucous membranes and upper respiratory tract, eyes and skin. Cough, shortness of breath, headache, nausea.
Symptoms/effects after eye contact	: May cause irreversible eye damage.
Symptoms/effects after ingestion	: Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water : Very toxic to aquatic life.

12.2. Persistence and degradability

C41 Developer - Part B mixture	
Persistence and degradability	Soluble in water. Persistence is unlikely based upon published literature.

C41 Developer - Part B

Material Safety Data Sheet

12.3. Bioaccumulative potential

C41 Developer - Part B mixture

Bioaccumulative potential : No information available.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local / national regulations. Dispose of contents / container to comply with local, state and federal regulations.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

: No transport restrictions for small packages, i.e. these are small quantity kits and not regulated.

In accordance with DOT Transport document description

: Not applicable.

UN-No.(DOT)

: UN 2865

Proper Shipping Name (DOT)

: Hydroxylamine sulfate

Transport hazard class(es) (DOT)

: 8

Packing group (DOT)

: III

Hazard labels (DOT)

: 9 - Class 9 (Miscellaneous dangerous materials)



SECTION 15: Regulatory information

Canadian National Regulations

C41 Developer - Part B mixture

Not listed on the Canadian DSL (Domestic Substances List)

Not listed on the Canadian IDL (Ingredient Disclosure List)

SECTION 16: Other information

Full text of H-phrases : H315 - Causes skin irritation
: H317 - May cause an allergic skin reaction
: H319 - Causes serious eye irritation
: H301+ H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
: H290 - May be corrosive to Metals
: H351 - Suspected of causing cancer
: H373 - May cause damage to organs through prolonged or repeated exposure
: H400 - Very toxic to aquatic life

C41 Bleach



Material Safety Data Sheet

Date of issue: 08/04/2021 Revision date: N/A Supersedes: N/A Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : Red powder
Substance name : C41 Bleach
Chemical name : N/A - Mixture
CAS-No : N/A - Mixture
Brand : Flic Film Inc.

1.2. Recommended use and restrictions on use

Use of the substance/mixture : For photographic use only.
Recommended use : Photographic chemicals
Restrictions on use : Not for food, drug or household use

1.3. Supplier

Flic Film Inc.
10B Morrison Road, Longview, Alberta,
Canada T0L 1H0
T +1-403-982-4272

1.4. Emergency telephone number

Emergency number : +1-403-982-4272

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture GHS classification

GHS classification based on potassium ferricyanide

GHS Classification

Skin irritation : Category 2
Eye irritation : Category 2
Carcinogenicity : Not identified
Specific target organ toxicity
- repeated exposure : Category 3

2.2. GHS Label elements, including precautionary statements

GHS labelling

Hazard pictograms (GHS) :



GHS07

Signal word (GHS) : Warning
Hazard statements (GHS) : H315 - Causes skin irritation
: H319 - Causes serious eye irritation
: H301 - May cause respiratory irritation

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Precautionary statements (GHS):

P264 Wash ... thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P321 Specific treatment (see ... on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTER/doctor if you feel unwell.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/container to

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification : None under normal conditions.

2.4. Unknown acute toxicity (GHS)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type : Multi-constituent

Name	Product identifier	% w/w
Potassium ferricyanide	(CAS-No.) 13746-66-7	78-85
Sodium bromide	(CAS-No.) 7647-15-6	12-22

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation : Allow victim to breathe fresh air. Allow the victim to rest. If breathing is difficult, give oxygen. Get medical attention. Asthmatics or hypersensitive individuals may experience difficult breathing.
First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor / physician.
First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a POISON CENTER or doctor/physician if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects : Eye irritation, respiratory irritation, dermatitis, difficulty breathing, abdominal pain, skin irritation, mucus membrane irritation, coughing, nausea, and diarrhea.
Symptoms/effects after inhalation : May cause irritation mucous membranes and to upper respiratory tract.
Symptoms/effects after skin contact : May cause skin irritation.
Symptoms/effects after eye contact : Causes severe eye irritation.
Symptoms/effects after ingestion : May cause gastrointestinal irritation.

4.3. Immediate medical attention and special treatment, if necessary

Obtain medical assistance. Asthmatics or hypersensitive individuals may experience difficult breathing.

SECTION 5: Fire-fighting measures

Negligible fire hazard due to non combustible properties of the mixture.

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Use extinguishing medium as appropriate for the surrounding fire.
Unsuitable extinguishing media : Not identified.

5.2. Specific hazards arising from the chemical

Bromine. Oxides of potassium and sodium. Carbon monoxide. Carbon dioxide. Hydrogen cyanide. Nitrogen oxides.

C41 Bleach

Material Safety Data Sheet

5.3. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : Generally, exercise caution when fighting any chemical fire.
Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid contact with skin and eyes. Avoid breathing dust. Avoid dust formation. Wash thoroughly after handling. Wear correct personal protective equipment.

6.1.1. For non-emergency personnel

- Protective equipment : Safety glasses. Protective clothing. Gloves. Dust mask.
Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
Emergency procedures : Ventilate area.

6.2. Environmental precautions

This material is harmful to aquatic life. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- Spills : Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering the area. Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of dust build up. Avoid breathing dust. Avoid contact with skin and eyes. Obtain special instructions before use. Use personal protective equipment as required. Do not handle until all safety precautions have been read and understood.
- Hygiene measures : Do not eat, drink or smoke when using this product. Wash exposed skin thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep container closed when not in use. Store in a cool, dry, well-ventilated area. .
Incompatible products : Strong oxidizers. Strong acids. WARNING: Strong acids will liberate highly toxic hydrogen cyanide gas.
Incompatible materials : Sources of ignition. Direct sunlight.

8.1. Control parameters

Component	Occupational Exposure Limits
Potassium ferricyanide	ACGIH TWA: 1 mg/m ³ Iron salts, soluble, as Fe / NIOSH REL (TWA): 1 mg/m ³ Iron salts, soluble, as Fe
Sodium bromide	No additional information

8.2. Appropriate engineering controls

- Appropriate engineering controls : Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation. Material should be handled using local exhaust ventilation (LEV) or laboratory hood whenever possible.

C41 Bleach

Material Safety Data Sheet

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Chemical resistant apron. Gloves. Face shield. Protective clothing. Safety glasses.



Hand protection:

Wear protective gloves

Eye protection:

Chemical goggles or safety glasses

Respiratory protection:

Respiratory protection not required in normal conditions

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid.
Appearance	: Power / crystalline.
Colour	: Red-Orange.
Odour	: Odorless.
Odour threshold	: No data available.
pH	: No data available.
Melting point	: No data available.
Freezing point	: No data available.
Boiling point	: No data available.
Flash point	: No data available.
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: No data available.
Relative vapour density at 20 °C	: No data available.
Relative density	: No data available.
Specific gravity / density	: No data available.
Molecular mass	: N/A - Mixture.
Solubility	: Soluble in water.
Auto-ignition temperature	: No data available.
Decomposition temperature	: ≥ 200 °C.
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Hygroscopic	: No

9.2. Other information

No additional information available

C41 Bleach

Material Safety Data Sheet

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

WARNING: Strong acids will liberate highly toxic hydrogen cyanide gas.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids. Strong oxidizers. WARNING: Strong acids will liberate highly toxic hydrogen cyanide gas.

10.6. Hazardous decomposition products

Bromine. Oxides of potassium and sodium. Carbon monoxide. Carbon dioxide. Hydrogen cyanide. Nitrogen oxides.

11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure : Inhalation; Skin and eye contact.

Acute toxicity : Not classified.

C41 Bleach	
Potassium ferricyanide	LD50 Oral: 2970 mg/kg (rat) / ATE US (oral): 2,970 mg/kg body weight
Sodium bromide	LD50 Oral: 3,500 mg/kg (rat) / ATE US (oral): 3,500 mg/kg body weight

Skin corrosion/irritation	: Not classified.
Serious eye damage/irritation	: Not classified.
Respiratory or skin sensitization	: Not classified.
Germ cell mutagenicity	: Not classified.
Carcinogenicity	: Not classified.
Reproductive toxicity	: Not classified.
Specific target organ toxicity – single exposure	: Not classified
Specific target organ toxicity – repeated exposure	: Not classified
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

12.1. Toxicity

Potassium ferricyanide LC50 fish 1: 869 mg/l EC50 Daphnia: 1 549 mg/l

12.2. Persistence and degradability

Potassium ferricyanide or sodium bromide	
Persistence and degradability	Not established.

C41 Bleach

Material Safety Data Sheet

12.3. Bioaccumulative potential

Potassium ferricyanide or sodium bromide

Bioaccumulative potential	No information available.
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12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local / national regulations. Dispose of contents / container to comply with local, state and federal regulations.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT) : No transport restrictions for small packages, i.e. these are small quantity kits and not regulated.

In accordance with DOT Transport document description : Not applicable.

SECTION 15: Regulatory information

Canadian National Regulations

Potassium ferricyanide
Listed on the Canadian DSL (Domestic Substances List)

SECTION 16: Other information

Full text of H-phrases : H315 - Causes skin irritation
: H319 - Causes serious eye irritation
: H301 - May cause respiratory irritation

C41 Fixer



Material Safety Data Sheet

Date of issue: 08/03/2021 Revision date: N/A Supersedes: N/A Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : White-yellow liquid
Substance name : C41 Fixer
Chemical name : N/A - Mixture
CAS-No : N/A - Mixture
Brand : Flic Film Inc.

1.2. Recommended use and restrictions on use

Use of the substance/mixture : For photographic use only.
Recommended use : Photographic chemicals
Restrictions on use : Not for food, drug or household use

1.3. Supplier

Flic Film Inc.
10B Morrison Road, Longview, Alberta,
Canada T0L 1H0
T +1-403-982-4272

1.4. Emergency telephone number

Emergency number : +1-403-982-4272

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture GHS classification

Based on ammonium thiosulfate content

GHS Classification

Skin irritation : Category 4
Eye irritation : Category 2A
Carcinogenicity : Not identified
Specific target organ toxicity
- repeated exposure : Category 3 (Respiratory System)

2.2. GHS Label elements, including precautionary statements

GHS labelling

Hazard pictograms (GHS) :



GHS07

Signal word (GHS) : Warning
Hazard statements (GHS) : H302 - Harmful if swallowed.
H319 - Causes serious eye irritation.
H335 - May cause respiratory irritation.
Precautionary statements (GHS) : P271 - Use only outdoors or in a well-ventilated area.
P261 - Avoid breathing mist or vapor.
P264 - Wash thoroughly after handling.
P301+P312 - If swallowed: Call a poison center/doctor if you feel unwell.
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.

C41 Fixer

Material Safety Data Sheet

- : P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- : P312 - Call a poison center/doctor if you feel unwell.
- : P330 - Rinse mouth.
- : P337+P313 - If eye irritation persists: Get medical advice/attention.

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification : None under normal conditions.

2.4. Unknown acute toxicity (GHS)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type : Multi-constituent

Name	Product identifier	% w/w
Ammonium thiosulfate	(CAS-No.) 7783-187-8	86-95
Sodium sulfite	(CAS-No.) 7757-83-7	1-5
Sodium metabisulfite	(CAS-No.) 7681-57-4	1-5

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). Asthmatics or hypersensitive individuals may experience difficult breathing.
- First-aid measures after inhalation : Allow victim to breathe fresh air. Allow the victim to rest. If breathing is difficult, give oxygen. Get medical attention
- First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
- First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor / physician.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a POISON CENTER or doctor/physician if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

- Symptoms/effects : Respiratory tract irritation. Upper airway irritation, may cause cough, redness of mouth and upper airways.
- Symptoms/effects after skin contact : May cause skin irritation.
- Symptoms/effects after eye contact : May causes severe eye irritation and redness to the eye lids, conjunctiva. There is potential for permanent and severe eye damage if not treated immediately.
- Symptoms/effects after ingestion : Swallowing a small quantity may cause severe gastrointestinal irritation with nausea, abdominal pain, faintness, weakness, vomiting and diarrhea.

4.3. Immediate medical attention and special treatment, if necessary

Obtain immediate medical assistance, if experience wheezing, chest tightness.

SECTION 5: Fire-fighting measures

Negligible fire hazard due to non combustible properties of the mixture.

5.1. Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media : Use extinguishing medium as appropriate for the surrounding fire.
- Unsuitable extinguishing media : Not identified.

5.2. Specific hazards arising from the chemical

Oxides of sodium. Sulfur dioxide. Nitrogen oxides. Heating this product will evolve ammonia.

C41 Fixer

Material Safety Data Sheet

5.3. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : Generally, exercise caution when fighting any chemical fire.
Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid contact with skin and eyes. Avoid breathing vapours. Wash thoroughly after handling. Wear correct personal protective equipment.

6.1.1. For non-emergency personnel

- Protective equipment : Safety glasses. Protective clothing. Gloves. Dust mask.
Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
Emergency procedures : Ventilate area.

6.2. Environmental precautions

This material is harmful to aquatic life. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- Spills : Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering the area. Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of dust build up. Avoid breathing dust. Avoid contact with skin and eyes. Obtain special instructions before use. Use personal protective equipment as required. Do not handle until all safety precautions have been read and understood.
- Hygiene measures : Do not eat, drink or smoke when using this product. Wash exposed skin thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep container closed when not in use. Store in a cool, dry, well-ventilated area.
Incompatible products : Strong acids. Strong alkali and bases. Strong oxidizing agents.
Incompatible materials : Store in a dry, cool and well-ventilated place. Store away from other materials

8.1. Control parameters

Component	Occupational Exposure Limits
Ammonium thiosulfate	No additional data available.
Sodium sulfite	No additional data available.
Sodium metabisulfite	OSHA TWA: 5mg/m ³

8.2. Appropriate engineering controls

- Appropriate engineering controls : Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation. Material should be handled using local exhaust ventilation (LEV) or laboratory hood whenever possible.

C41 Fixer

Material Safety Data Sheet

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Chemical resistant apron. Gloves. Face shield. Protective clothing. Safety glasses. Respirator.



Hand protection:

Wear protective gloves

Eye protection:

Chemical goggles or safety glasses

Respiratory protection:

Wear respiratory protection.

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid.
Appearance	: Liquid.
Colour	: White-Yellow.
Odour	: Ammoniacal smell.
Odour threshold	: No data available.
pH	: No data available.
Melting point	: No data available.
Freezing point	: No data available.
Boiling point	: No data available.
Flash point	: No data available.
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: No data available.
Relative vapour density at 20 °C	: No data available.
Relative density	: No data available.
Specific gravity / density	: No data available.
Molecular mass	: N/A - Mixture.
Solubility	: Easily soluble in cold water, hot water.
Auto-ignition temperature	: No data available.
Decomposition temperature	: No data available.
Viscosity, kinematic	: No data available.
Viscosity, dynamic	: No data available.
Explosion limits	: No data available.
Explosive properties	: No data available.
Oxidizing properties	: No data available.
Hygroscopic	: No

9.2. Other information

No additional information available

C41 Fixer

Material Safety Data Sheet

SECTION 10: Stability and reactivity

10.1. Reactivity

The mixture is stable.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Strong oxidizers such as nitrates, nitrites or chlorates can cause explosive mixtures if heated to dryness. Strong acids can react with the sodium sulfite or sodium metabisulfite to liberate sulfur dioxide which is a highly irritating and corrosive gas.

10.4. Conditions to avoid

Direct sunlight. Possible emission of gaseous decomposition products may lead to a dangerous pressure build. Elevated temperatures. Temperatures above 120°F (49°C) and below 60°F (15°C).

10.5. Incompatible materials

Strong acids. Strong alkalis and bases. Strong oxidizing agents.

10.6. Hazardous decomposition products

Heating this product will evolve ammonia. Heating to dryness will produce ammonia, oxides of sodium and oxides of sulfur.

11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure : Inhalation; Skin and eye contact.
Acute toxicity : Oral: Harmful if swallowed.

C41 Fixer	
Ammonium thiosulfate	LD50 oral rat: 1,950 - 2,890 mg/kg / Inhalation-Rat LC50: > 2,260 mg/m3 (4 h).
Sodium sulfite	LD50 oral rat: 2,610 mg/kg / LC50 Inhalation rat: > 5.5 mg/l (4h).
Sodium metabisulfite	LD50 oral rat = 1,310 mg/kg / Not listed
Skin corrosion/irritation	: Causes skin irritation, redness.
Serious eye damage/irritation	: Causes serious eye irritation.
Respiratory or skin sensitization	: May cause an allergic skin reaction. Sodium sulfite or sodium metabisulfite may cause severe or deadly allergic reactions in some asthmatics and sulfite sensitive individuals. Possible signs and symptoms of allergic reactions include bronchoconstriction, sweating, flushing, hives, rapid heart rate, decreased blood pressure and anaphylaxis. Repeated or prolonged contact may cause dermatitis.
Germ cell mutagenicity	: Not classified as a mutagen.
Carcinogenicity	: Not classified as a carcinogen.
Reproductive toxicity	: Not classified.
Specific target organ toxicity – single exposure	: Not classified
Specific target organ toxicity – repeated exposure	: Based on available data, the classification criteria are not met. Harmful if swallowed.
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: The substance or mixture is not classified as specific target organ toxicant.
Symptoms/effects after skin contact	: May cause skin irritation and/or dermatitis.
Symptoms/effects after eye contact	: May cause irreversible eye damage.
Symptoms/effects after ingestion	: Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water : Harmful to aquatic life.

12.2. Persistence and degradability

C41 Fixer	
Persistence and degradability	The material is inorganic and not subject to biodegradation and not to persist in the environment.

C41 Fixer

Material Safety Data Sheet

12.3. Bioaccumulative potential

C41 Developer - Part A mixture

Bioaccumulative potential	This material is believed not to bioaccumulate..
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12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local / national regulations. Dispose of contents / container to comply with local, state and federal regulations.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT) : No transport restrictions for small packages, i.e. these are small quantity kits and not regulated.

In accordance with DOT Transport document description : Not applicable.

SECTION 15: Regulatory information

Canadian National Regulations

Ammonium thiosulfate

Listed on the Canadian DSL (Domestic Substances List)

Sodium sulfite

Listed on the Canadian DSL (Domestic Substances List)

Sodium metabisulfite

Listed on the Canadian DSL (Domestic Substances List)

SECTION 16: Other information

Full text of H-phrases: H302 - Harmful if swallowed.
H319 - Causes serious eye irritation.
H335 - May cause respiratory irritation.