



Material Safety Data Sheet

Organic Bonded Abrasives, Type 2

1. Product and company identification

Product name	: Organic Bonded Abrasives, Type 2
Trade name	: Cut-Off-Wheels EH (flat type), EHT (depressed center type), T, PT; Steel Core Wheels; Reinforced Grinding Wheels E; Cup Wheels ETT
Material uses	: Organic bonded abrasives, Type 2 are used for the grinding/cutting of different kinds of materials.
Supplier/Manufacturer	: PFERD INC. 30 Jytek Drive Leominster, MA 01453 Tel: (978) 840-6420 Fax: (978) 840-6421 Email: Jim.Haglund@pferdusa.com
MSDS #	: 11
Validation date	: 09/15/2008
Responsible name	: Atrion Regulatory Services, Inc.
Emergency telephone number (with hours of operation)	: 978-790-3249 Contact Person: Mr. Mark Leblanc 8.00 am to 17.30 p.m. Eastern Time

2. Hazards identification

Physical state	: Solid. [Grinding-, Cut-off and Cup-Wheels.]
OSHA/HCS status	: This product is a manufactured product under the Canadian WHMIS and an Article under the United States Hazard Communication System. Therefore it is EXEMPTED from the regulatory requirements under WHMIS and HCS.
Emergency overview	: Most dust generated will be from the workpiece and not from the abrasive. Breathing dust generated during grinding may cause respiratory irritation. The a/m tools are manufactured Articles and as such are not considered to be controlled products under O.S.H.A and under W.H.M.I.S. when used in accordance with industry safety standards.
Potential acute health effects	
Inhalation	: Breathing dust generated during grinding may cause respiratory irritation.
Ingestion	: No known significant effects or critical hazards.
Skin	: Prolonged contact with dust from product may cause irritation.
Eyes	: Dust generated during grinding may irritate eyes.
Potential chronic health effects	
Chronic effects	: Contains material that can cause target organ damage.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.
Target organs	: Contains material which causes damage to the following organs: blood, kidneys, lungs, heart, gastrointestinal tract, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea. Contains material which may cause damage to the following organs: stomach.
Over-exposure signs/symptoms	

2. Hazards identification

- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Ingestion** : Adverse symptoms may include the following:
stomach pains
- Skin** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Eyes** : Adverse symptoms may include the following:
pain
watering
redness
- Medical conditions aggravated by over-exposure** : Some grinding operations may cause noise or vibration irritation. Prolonged exposure to elevated noise levels during operations may affect hearing. Most of the dust generated during grinding is from the base material being ground and the potential hazard from this exposure must be evaluated.

See toxicological information (section 11)

3. Composition/information on ingredients

United States

Name	CAS number	%
Aluminum Oxide	1344-28-1	<95
Silicon carbide	409-21-2	<95
Zirconium dioxide	1314-23-4	<25
Aluminum potassium fluoride	60304-36-1	<16
Fibre glass	65997-17-3	<13
Cryolite	13775-53-6	<12
Calcium Carbonate	471-34-1	<10
Manganese(II) chloride	7773-01-5	<7
Calcium fluoride	7789-75-5	<4
Manganese carbonate	598-62-9	<4
Barium chloride	10361-37-2	<3
Potassium Chloride	7447-40-7	<2
Carbon Black	1333-86-4	<2
Sodium chloride	7647-14-5	<2
Titanium dioxide	13463-67-7	<2

Canada

Name	CAS number	%
Aluminum Oxide	1344-28-1	<95
Silicon carbide	409-21-2	<95
Zirconium dioxide	1314-23-4	<25
Aluminum potassium fluoride	60304-36-1	<16
Fibre glass	65997-17-3	<13
Cryolite	13775-53-6	<12
Calcium Carbonate	471-34-1	<10
Manganese(II) chloride	7773-01-5	<7
Calcium fluoride	7789-75-5	<4
Manganese carbonate	598-62-9	<4
Barium chloride	10361-37-2	<3
Carbon Black	1333-86-4	<2

3. Composition/information on ingredients

Titanium dioxide	13463-67-7	<2
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The tools may be comprised of 1 or more of the above abrasives and ingredients.

This product is a manufactured product under the Canadian WHMIS and an Article under the United States Hazard Communication System. Therefore it is EXEMPTED from the regulatory requirements under WHMIS and HCS.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

- Eye contact** : Check for and remove any contact lenses. In case of contact with eyes, rinse immediately with plenty of water. Get medical attention if symptoms occur.
- Skin contact** : Wash with soap and water. Get medical attention if symptoms occur.
- Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms appear.
- Ingestion** : Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. Fire-fighting measures

- Flammability of the product** : No specific fire or explosion hazard.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
 - Not suitable** : None known.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
sulfur oxides
halogenated compounds
metal oxide/oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

- Personal precautions** : Keep unnecessary and unprotected personnel from entering. Provide adequate ventilation. Put on appropriate personal protective equipment (see section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up** : Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see section 8). Avoid breathing dusts. Do not dry sweep dust. Wet dust with water before sweeping or use a HEPA vacuum to collect dust and clean equipment. Do not use compressed air for cleaning. Wash hands thoroughly after handling.
- Storage** : Store in accordance with ANSI B7.1.

8. Exposure controls/personal protection

	United States
Product name	Exposure limits
Aluminum Oxide	<p>NIOSH REL (United States, 12/2001). TWA: 5 mg/m³, (as Al) 10 hour(s).</p> <p>OSHA PEL (United States, 11/2006). TWA: 5 mg/m³ 8 hour(s). Form: Respirable fraction TWA: 15 mg/m³ 8 hour(s). Form: Total dust</p> <p>ACGIH TLV (United States). TWA: 10 mg/m³, (Al) 10 hour(s).</p>
Silicon carbide	<p>ACGIH TLV (United States, 1/2008). TWA: 10 mg/m³ 8 hour(s). Form: Inhalable fraction TWA: 3 mg/m³ 8 hour(s). Form: Respirable fraction</p> <p>NIOSH REL (United States, 12/2001). TWA: 5 mg/m³ 10 hour(s). Form: Respirable fraction</p> <p>OSHA PEL (United States, 11/2006). TWA: 5 mg/m³ 8 hour(s). Form: Respirable fraction TWA: 15 mg/m³ 8 hour(s). Form: Total dust</p>
Zirconium dioxide	<p>ACGIH TLV (United States, 1/2008). STEL: 10 mg/m³, (as Zr) 15 minute(s). TWA: 5 mg/m³, (as Zr) 8 hour(s).</p> <p>NIOSH REL (United States, 12/2001). STEL: 10 mg/m³, (as Zr) 15 minute(s). TWA: 5 mg/m³, (as Zr) 10 hour(s).</p> <p>OSHA PEL (United States, 11/2006). TWA: 5 mg/m³, (as Zr) 8 hour(s).</p>
Aluminum potassium fluoride	<p>ACGIH TLV (United States, 1/2008). TWA: 2.5 mg/m³, (as F) 8 hour(s).</p> <p>OSHA PEL Z2 (United States, 11/2006). TWA: 2.5 mg/m³ 8 hour(s). Form: Dust</p> <p>NIOSH REL (United States, 12/2001). TWA: 2 mg/m³, (as Al) 10 hour(s).</p> <p>OSHA PEL (United States, 11/2006). TWA: 2.5 mg/m³, (as F) 8 hour(s).</p>
Fibre glass	<p>ACGIH TLV (United States). TWA: 10 mg/m³ Form: Total dust TWA: 5 mg/m³ Form: Respirable</p> <p>OSHA PEL (United States). TWA: 15 mg/m³ Form: Total dust TWA: 5 mg/m³ Form: Respirable</p> <p>NIOSH REL (United States). TWA: 5 mg/m³ Form: Total dust</p>
Cryolite	<p>ACGIH TLV (United States). TWA: 2.5 mg/m³</p>
Calcium Carbonate	<p>OSHA PEL (United States, 11/2006). TWA: 5 mg/m³ 8 hour(s). Form: Respirable fraction TWA: 15 mg/m³ 8 hour(s). Form: Total dust</p>
Manganese(II) chloride	<p>ACGIH TLV (United States, 1/2008). TWA: 0.2 mg/m³, (as Mn) 8 hour(s).</p> <p>NIOSH REL (United States, 12/2001).</p>

8 . Exposure controls/personal protection

Calcium fluoride	STEL: 3 mg/m ³ , (as Mn) 15 minute(s). TWA: 1 mg/m ³ , (as Mn) 10 hour(s). OSHA PEL (United States, 11/2006). CEIL: 5 mg/m ³ , (as Mn) ACGIH TLV (United States, 1/2008). TWA: 2.5 mg/m ³ , (as F) 8 hour(s). OSHA PEL (United States, 11/2006). TWA: 2.5 mg/m ³ , (as F) 8 hour(s). OSHA PEL Z2 (United States, 11/2006). TWA: 2.5 mg/m ³ 8 hour(s). Form: Dust
Manganese carbonate	ACGIH TLV (United States, 1/2008). TWA: 0.2 mg/m ³ , (as Mn) 8 hour(s). NIOSH REL (United States, 12/2001). STEL: 3 mg/m ³ , (as Mn) 15 minute(s). TWA: 1 mg/m ³ , (as Mn) 10 hour(s). OSHA PEL (United States, 11/2006). CEIL: 5 mg/m ³ , (as Mn)
Barium chloride	ACGIH TLV (United States, 1/2008). TWA: 0.5 mg/m ³ , (as Ba) 8 hour(s). NIOSH REL (United States, 12/2001). TWA: 0.5 mg/m ³ , (as Ba) 10 hour(s). OSHA PEL (United States, 11/2006). TWA: 0.5 mg/m ³ , (as Ba) 8 hour(s).
Carbon Black	ACGIH TLV (United States, 1/2008). TWA: 3.5 mg/m ³ 8 hour(s). NIOSH REL (United States, 12/2001). TWA: 3.5 mg/m ³ 10 hour(s). TWA: 0.1 mg of PAHs/cm ³ 10 hour(s). OSHA PEL (United States, 11/2006). TWA: 3.5 mg/m ³ 8 hour(s).
Titanium dioxide	ACGIH TLV (United States, 1/2008). TWA: 10 mg/m ³ 8 hour(s). OSHA PEL (United States, 11/2006). TWA: 15 mg/m ³ 8 hour(s). Form: Total dust

Canada

Product name

Aluminum Oxide

Exposure limits

CA Alberta Provincial (Canada, 10/2006).

 8 hrs OEL: 10 mg/m³ 8 hour(s).

CA British Columbia Provincial (Canada, 7/2007).

 TWA: 10 mg/m³ 8 hour(s). Form: Total dust

 TWA: 3 mg/m³ 8 hour(s). Form: Respirable dust

CA Ontario Provincial (Canada, 3/2007).

 TWAEV: 10 mg/m³ 8 hour(s). Form: Total dust

CA Quebec Provincial (Canada, 12/2006).

 TWAEV: 10 mg/m³, (as Al) 8 hour(s). Form: Total dust.

Silicon carbide

CA Alberta Provincial (Canada, 10/2006).

 8 hrs OEL: 10 mg/m³ 8 hour(s).

CA British Columbia Provincial (Canada, 7/2007).

 TWA: 10 mg/m³ 8 hour(s). Form: Inhalable

 TWA: 3 mg/m³ 8 hour(s). Form: Respirable

CA Ontario Provincial (Canada, 3/2007).

 TWAEV: 10 mg/m³ 8 hour(s).

CA Quebec Provincial (Canada, 12/2006).

 TWAEV: 10 mg/m³ 8 hour(s). Form: Total dust.

Zirconium dioxide

CA Alberta Provincial (Canada, 10/2006).

 8 hrs OEL: 5 mg/m³, (as Zr) 8 hour(s).

8 . Exposure controls/personal protection




Aluminum potassium fluoride	15 min OEL: 10 mg/m ³ , (as Zr) 15 minute(s). CA British Columbia Provincial (Canada, 7/2007). TWA: 5 mg/m ³ , (as Zr) 8 hour(s). STEL: 10 mg/m ³ , (as Zr) 15 minute(s). CA Ontario Provincial (Canada, 3/2007). TWAEV: 5 mg/m ³ , (zirconium) 8 hour(s). STEV: 10 mg/m ³ , (zirconium) 15 minute(s). CA Quebec Provincial (Canada, 12/2006). TWAEV: 5 mg/m ³ , (as Zr) 8 hour(s). STEV: 10 mg/m ³ , (as Zr) 15 minute(s). CA Alberta Provincial (Canada, 10/2006). 8 hrs OEL: 2.5 mg/m ³ , (as F) 8 hour(s). CA British Columbia Provincial (Canada, 7/2007). TWA: 2 mg/m ³ , (as Al) 8 hour(s). CA Ontario Provincial (Canada, 3/2007). TWAEV: 2 mg/m ³ 8 hour(s). CA Quebec Provincial (Canada, 12/2006). TWAEV: 2 mg/m ³ , (as Al) 8 hour(s).
Fibre glass	ACGIH TLV (United States). TWA: 10 mg/m ³ Form: Total dust TWA: 5 mg/m ³ Form: Respirable
Calcium Carbonate	CA Alberta Provincial (Canada, 10/2006). 8 hrs OEL: 10 mg/m ³ 8 hour(s). CA Ontario Provincial (Canada, 3/2007). TWAEV: 10 mg/m ³ 8 hour(s). CA Quebec Provincial (Canada, 12/2006). TWAEV: 10 mg/m ³ 8 hour(s). Form: Total dust.
Manganese(II) chloride	CA Alberta Provincial (Canada, 10/2006). 8 hrs OEL: 1 mg/m ³ , (as Mn) 8 hour(s). CA British Columbia Provincial (Canada, 7/2007). TWA: 0.2 mg/m ³ , (as Mn) 8 hour(s). CA Ontario Provincial (Canada, 3/2007). TWAEV: 0.2 mg/m ³ , (manganese) 8 hour(s). CA Quebec Provincial (Canada, 12/2006). TWAEV: 5 mg/m ³ , (as Mn) 8 hour(s). Form: Total dust.
Calcium fluoride	CA Alberta Provincial (Canada, 10/2006). 8 hrs OEL: 2.5 mg/m ³ , (as F) 8 hour(s). CA British Columbia Provincial (Canada, 7/2007). TWA: 2.5 mg/m ³ , (as F) 8 hour(s). CA Ontario Provincial (Canada, 3/2007). TWAEV: 2.5 mg/m ³ , (as fluoride) 8 hour(s). CA Quebec Provincial (Canada, 12/2006). TWAEV: 2.5 mg/m ³ , (as F) 8 hour(s).
Manganese carbonate	CA Alberta Provincial (Canada, 10/2006). 8 hrs OEL: 1 mg/m ³ , (as Mn) 8 hour(s). CA British Columbia Provincial (Canada, 7/2007). TWA: 0.2 mg/m ³ , (as Mn) 8 hour(s). CA Ontario Provincial (Canada, 3/2007). TWAEV: 0.2 mg/m ³ , (manganese) 8 hour(s). CA Quebec Provincial (Canada, 12/2006). TWAEV: 5 mg/m ³ , (as Mn) 8 hour(s). Form: Total dust.
Barium chloride	CA Alberta Provincial (Canada, 10/2006). 8 hrs OEL: 0.5 mg/m ³ , (as Ba) 8 hour(s). CA British Columbia Provincial (Canada, 7/2007). TWA: 0.5 mg/m ³ , (as Ba) 8 hour(s). CA Ontario Provincial (Canada, 3/2007). TWAEV: 0.5 mg/m ³ , (barium) 8 hour(s). CA Quebec Provincial (Canada, 12/2006).

8 . Exposure controls/personal protection

Carbon Black	<p>TWAEV: 0.5 mg/m³, (as Ba) 8 hour(s). CA Alberta Provincial (Canada, 10/2006). 8 hrs OEL: 3.5 mg/m³ 8 hour(s). CA British Columbia Provincial (Canada, 7/2007). TWA: 3.5 mg/m³ 8 hour(s). CA Ontario Provincial (Canada, 3/2007). TWAEV: 3.5 mg/m³ 8 hour(s). CA Quebec Provincial (Canada, 12/2006). TWAEV: 3.5 mg/m³ 8 hour(s).</p>
Titanium dioxide	<p>CA Alberta Provincial (Canada, 10/2006). 8 hrs OEL: 10 mg/m³ 8 hour(s). CA British Columbia Provincial (Canada, 7/2007). TWA: 10 mg/m³ 8 hour(s). Form: Total dust TWA: 3 mg/m³ 8 hour(s). Form: Respirable dust CA Ontario Provincial (Canada, 3/2007). TWAEV: 10 mg/m³ 8 hour(s). Form: total dust CA Quebec Provincial (Canada, 12/2006). TWAEV: 10 mg/m³ 8 hour(s). Form: Total dust.</p>

Consult local authorities for acceptable exposure limits.

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location. Use of this product may create elevated sound levels. Hearing protection should be worn where required.
- Personal protection**
 - Eyes** : Safety glasses.
 - Skin** : Lab coat.
 - Respiratory** : Respirators are required when airborne contaminant levels exceed the TLV(s).
 - Hands** : Cotton gloves.
- Personal protective equipment (Pictograms)** :




- HMIS Code/Personal protective equipment** : B
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

- Physical state** : Solid. [Grinding-, Cut-off and Cup-Wheels.]
Color : Various colors

10 . Stability and reactivity

- Stability** : The product is stable.
Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid : None known.
Materials to avoid : Reactive or incompatible with the following materials: oxidizing materials and acids.
Hazardous decomposition products : Dust from grinding could contain ingredients listed in Section 2 and other, potentially more hazardous components of the base material being ground or coatings applied to the base material.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Species	Dose	Result	Exposure
Aluminum potassium fluoride	Rabbit	>2000 mg/kg	LD50 Dermal	-
	Rat	>2000 mg/kg	LD50 Oral	-
Cryolite	Rat	>5 gm/kg	LD50 Oral	-
	Rat	6450 mg/kg	LD50 Oral	-
Calcium Carbonate	Rat	250 mg/kg	LD50 Oral	-
Manganese(II) chloride	Rat	4417 mg/kg	LD50 Oral	-
Calcium fluoride	Rat	4250 mg/kg	LD50 Oral	-
	Rat	397 mg/kg	LD50 Oral	-
Barium chloride	Rat	118 mg/kg	LD50 Oral	-
	Rat	2600 mg/kg	LD50 Oral	-
Potassium Chloride	Rat	2600 mg/kg	LD50 Oral	-
Carbon Black	Rabbit	>3 g/kg	LD50 Dermal	-
	Rat	>15400 mg/kg	LD50 Oral	-
Sodium chloride	Rabbit	>10 gm/kg	LD50 Dermal	-
	Rat	3000 mg/kg	LD50 Oral	-
	Rat	>42 gm/m3	LC50 Inhalation Vapor	1 hours

Inhalation : Breathing dust generated during grinding may cause respiratory irritation.

Ingestion : No known significant effects or critical hazards.

Skin : Prolonged contact with dust from product may cause irritation.

Eyes : Dust generated during grinding may irritate eyes.

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Aluminum Oxide	A4	-	-	-	-	-
Zirconium dioxide	A4	-	-	-	-	-
Aluminum potassium fluoride	A4	3	-	-	-	-
Calcium fluoride	A4	3	-	-	-	-
Barium chloride	A4	-	-	-	-	-
Carbon Black	A4	2B	-	+	-	-
Titanium dioxide	A4	2B	-	None.	-	-

12 . Ecological information

Environmental effects : No known significant effects or critical hazards.

Aquatic ecotoxicity

Product/ingredient name	Species	Exposure	Result
Aluminum potassium fluoride Cryolite	Crustaceans	48 hours	EC50 22.8 mg/l
	Crustaceans	48 hours	Acute EC50 156 mg/l
Calcium Carbonate Manganese(II) chloride	Fish	96 hours	Acute LC50 47 mg/l
	Algae	72 hours	Chronic LC50 240 mg/l
	Fish	96 hours	Acute LC50 >56000000 ug/L
	Crustaceans	48 hours	Acute EC50 771000 to 1050000 ug/L
Barium chloride	Daphnia	48 hours	Acute EC50 4700 ug/L
	Crustaceans	48 hours	Acute LC50 51800 ug/L
	Daphnia	48 hours	Chronic NOEC 28000 ug/L
	Daphnia	48 hours	Acute EC50 14500 ug/L
Potassium Chloride	Fish	96 hours	Acute LC50 >1000000 ug/L
	Fish	96 hours	Acute LC50 1080000 ug/L
	Daphnia	48 hours	Acute EC50 93000 ug/L
	Daphnia	48 hours	Acute EC50 83000 ug/L
Sodium chloride	Fish	96 hours	Acute LC50 485000 ug/L
	Fish	96 hours	Acute LC50 435000 ug/L
	Daphnia	48 hours	Acute EC50 402600 to 469200 ug/L
	Fish	96 hours	Acute LC50 1000000 ug/L
Titanium dioxide	Crustaceans	48 hours	Acute LC50 >5600000 ug/L
	Daphnia	48 hours	Acute EC50 >1000000 ug/L
	Fish	96 hours	Acute LC50 >1000000 ug/L

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information

DOT/ TDG / IMDG/ IATA : Not regulated.

15 . Regulatory information

United States

HCS Classification : This product is an Article under the United States Hazard Communication System. Therefore it is EXEMPTED from the regulatory requirements HCS.

U.S. Federal regulations : **United States inventory (TSCA 8b)**: All components are listed or exempted.

15 . Regulatory information

SARA 302/304/311/312 extremely hazardous substances: No products were found.

SARA 302/304 emergency planning and notification: No products were found.

SARA 302/304/311/312 hazardous chemicals: Aluminum Oxide; Silicon carbide; Iron disulphide; Calcium Carbonate; Manganese(II) chloride; Calcium fluoride; Barium chloride; Potassium Chloride; Carbon Black; Sodium chloride; Titanium dioxide

SARA 311/312 MSDS distribution - chemical inventory - hazard identification

Aluminum Oxide: Immediate (acute) health hazard; Silicon carbide: Immediate (acute) health hazard; Iron disulphide: Fire hazard, Immediate (acute) health hazard; Calcium Carbonate: Immediate (acute) health hazard; Manganese(II) chloride: Delayed (chronic) health hazard; Calcium fluoride: Immediate (acute) health hazard; Barium chloride: Immediate (acute) health hazard, Delayed (chronic) health hazard; Potassium Chloride: Immediate (acute) health hazard, Delayed (chronic) health hazard; Carbon Black: Immediate (acute) health hazard, Delayed (chronic) health hazard; Sodium chloride: Immediate (acute) health hazard, Delayed (chronic) health hazard; Titanium dioxide: Delayed (chronic) health hazard

Clean Water Act (CWA) 307: Zinc sulphide

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

SARA 313

	Product name	CAS number	Concentration
Form R - Reporting requirements	: Aluminum Oxide	1344-28-1	60 - 100
	Zinc sulphide	1314-98-3	5 - 10
	Manganese(II) chloride	7773-01-5	5 - 10
	Manganese carbonate	598-62-9	1 - 5
	Barium chloride	10361-37-2	1 - 5
Supplier notification	: Aluminum Oxide	1344-28-1	60 - 100
	Zinc sulphide	1314-98-3	5 - 10
	Manganese(II) chloride	7773-01-5	5 - 10
	Manganese carbonate	598-62-9	1 - 5
	Barium chloride	10361-37-2	1 - 5

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations	: Connecticut Carcinogen Reporting: None of the components are listed.
	Connecticut Hazardous Material Survey: None of the components are listed.
	Florida substances: None of the components are listed.
	Illinois Chemical Safety Act: None of the components are listed.
	Illinois Toxic Substances Disclosure to Employee Act: None of the components are listed.
	Louisiana Reporting: None of the components are listed.
	Louisiana Spill: None of the components are listed.
	Massachusetts Spill: None of the components are listed.
	Massachusetts Substances: The following components are listed: Aluminum Oxide; Silicon carbide; Zirconium dioxide; Carbon Black; Titanium dioxide
	Michigan Critical Material: None of the components are listed.
	Minnesota Hazardous Substances: None of the components are listed.
	New Jersey Hazardous Substances: The following components are listed: Aluminum Oxide; Silicon carbide; Zinc sulphide; Manganese(II) chloride; Calcium fluoride; Manganese carbonate; Barium chloride; Carbon Black; Titanium dioxide
	New Jersey Spill: None of the components are listed.
New Jersey Toxic Catastrophe Prevention Act: None of the components are listed.	
New York Acutely Hazardous Substances: None of the components are listed.	
New York Toxic Chemical Release Reporting: None of the components are listed.	
Pennsylvania RTK Hazardous Substances: The following components are listed:	

15 . Regulatory information

Aluminum Oxide; Silicon carbide; Aluminum potassium fluoride; Zinc sulphide; Manganese(II) chloride; Manganese carbonate; Barium chloride; Carbon Black; Titanium dioxide

Rhode Island Hazardous Substances: None of the components are listed.

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Carbon Black	Yes.	No.	No.	No.

Canada

WHMIS (Canada) : This product is a manufactured product under the Canadian WHMIS. Therefore it is EXEMPTED from the regulatory requirements under WHMIS.

Canadian lists

- CEPA Toxic substances:** The following components are listed: Aluminum potassium fluoride; Inorganic fluorides
- Canadian ARET:** None of the components are listed.
- Canadian NPRI:** The following components are listed: Aluminum oxide; Zinc sulphide; Manganese(II) chloride; Calcium fluoride; Manganese carbonate
- Alberta Designated Substances:** None of the components are listed.
- Ontario Designated Substances:** None of the components are listed.
- Quebec Designated Substances:** None of the components are listed.

Canada inventory : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

International regulations

International lists : This product, (and its ingredients) is (are) listed on national inventories, or is (are) exempted from being listed, in Australia (AICS), in Europe (EINECS/ELINCS), in Korea (TCCL), in Japan (METI), in the Philippines (RA6969).

16 . Other information

Label requirements : The a/m tools are **manufactured Articles** and as such are not considered to be controlled products under O.S.H.A and under W.H.M.I.S. when used in accordance with industry safety standards.

Hazardous Material Information System (U.S.A.)

Health	1
Fire hazard	0
Physical Hazard	0
Personal protection	B

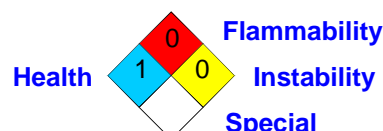
HAZARD RATINGS

- 4- Extreme
- 3- Serious
- 2- Moderate
- 1- Slight
- 0- Minimal

See section 8 for more detailed information on personal protection.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.) :



16 . Other information

References : ANSI Z400.5, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005.

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Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.