

SDS ID No.: AMNS-0004

## Safety Data Sheet (SDS)

### Section 1 – Identification

**1(a) Product Identifier used on Label:** Grinder Swarf

**1(b) Other means of identification:** Roll Grinder Sludge, AMNS-0004

**1(c) Recommended use of the chemical and restrictions on use:** None

**1(d) Name, address, and telephone number:**

AM/NS Calvert LLC

Phone number: 251-289-3000

P.O. Box 456



Calvert, AL 36513

**1(e) Emergency phone number:** 1-760-476-3962 (Verisk 3E Company Code: 333211) or CHEMTREC (Day or Night): 1-800-424-9300

### Section 2 – Hazard(s) Identification

**2(a) Classification of the Chemical:** Grinder Swarf is considered a hazardous material according to the criteria specified in REACH [REGULATION (EC) No 1907/2006] and CLP [REGULATION (EC) No 1272/2008] and OSHA 29 CFR 1910.1200 Hazard Communication Standard. The categories of Health Hazards as defined in “GLOBALY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELING OF CHEMICALS (GHS), Third revised edition ST/SG/AC.10/30/Rev. 3” United Nations, New York and Geneva, 2009 have been evaluated. Refer to Section 3, 8 and 11 for additional information.

**2(b) Signal word, hazard statement(s), symbols and precautionary statement(s):**

Hazard Symbol	Hazard Classification	Signal Word	Hazard Statement(s)
	Carcinogenicity - 1A Reproductive Toxicity - 2 Single Target Organ Toxicity (STOT) Single Exposure - 2 STOT Repeat Exposure - 1	<b>DANGER</b>	May cause cancer. Suspected of damaging fertility or the unborn child. May cause damage to the respiratory system.
	Skin Sensitization - 1 Skin Irritation - 2 Eye Irritation - 2A		Causes damage to lungs and central nervous system through prolonged or repeated inhalation exposure. May cause an allergic skin reaction. Causes skin irritation. Causes serious eye irritation.

**Precautionary Statement(s):**

Prevention	Response	Storage/Disposal
Do not breathe dusts, mists or sprays. Wear protective gloves / protective clothing / eye protection / face protection. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product.	If exposed, concerned or feel unwell: Get medical advice/attention. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue Rinsing. If eye irritation persists: Get medical advice/attention. If on skin: Wash with plenty of water. Take off contaminated clothing and wash before reuse. If skin irritation or rash occurs: Get medical advice/attention.	Dispose of contents in accordance with federal, state and local regulations. Store locked up.

**2(c) Hazards not otherwise classified:** None Known

**2(d) Unknown acute toxicity statement (mixture):** None Known

### Section 3 – Composition/Information on Ingredients

**3(a-c) Chemical name, common name (synonyms), CAS number and other identifiers, and concentration:**

Chemical Name	CAS Number	EC Number	% weight
Iron & Iron Oxides	1345-25-1 1309-38-2 1309-37-1 7439-89-6	215-721-8 215-169-8 215-168-2 231-096-4	55-80
Chromium & Chromium Oxides	7440-47-3 1308-38-9	231-157-5 215-160-9	4-15
Carbon	7440-44-0	231-153-3	0.5-8

### Section 3 – Composition/Information on Ingredients (continued)

#### 3(a-c) Chemical name, common name (synonyms), CAS number and other identifiers, and concentration (continued):

Chemical Name	CAS Number	EC Number	% weight
Silicon & Silicon Dioxides	14808-60-7 7631-86-9 7440-21-3	231-878-4 231-545-4 231-130-8	3-7
Aluminum Oxide	1344-28-1	215-691-6	0.5-4
Nickel	7440-02-0	231-111-4	0.01-2.3
Molybdenum	7439-98-7	231-107-2	0-1.6
Moisture	Varies	Varies	1-40

EC - European Community

CAS - Chemical Abstract Service

### Section 4 – First-aid Measures

**4(a) Description of necessary measures:** If exposed, concerned or feel unwell: Get medical advice/attention.

- **Inhalation:** If inhaled: Remove person to fresh air and keep comfortable for breathing.
- **Eye Contact:** If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue Rinsing. If eye irritation persists: Get medical advice/attention.
- **Skin Contact:** If on skin: Wash with plenty of water. Take off contaminated clothing and wash before reuse. If skin irritation or rash occurs: Get medical advice/attention.
- **Ingestion:** Call a doctor/physician if you feel unwell.

#### 4(b) Most important symptoms/effects, acute and delayed (chronic):

- **Inhalation:** Excessive exposure to high concentrations of dust may cause irritation to the mucous membranes of the upper respiratory tract.
- **Eye:** Particles of iron or iron compounds may become imbedded in the eye. Excessive exposure to high concentrations of dust may cause irritation to the eyes.
- **Skin:** Skin contact with dusts may cause irritation or sensitization, possibly leading to dermatitis. Skin contact with metallic dusts may cause physical abrasion.
- **Ingestion:** Ingestion of dust may cause nausea and/or vomiting.

#### Chronic Effects:

Individuals with chronic respiratory disorders (i.e., asthma, chronic bronchitis, emphysema, etc.) may be adversely affected by any airborne particulate matter exposure. Persons with pre-existing skin disorders may be more susceptible to dermatitis.

**4(c) Immediate Medical Attention and Special Treatment:** Treat symptomatically.

### Section 5 – Fire-fighting Measures

**5(a) Suitable (and unsuitable) Extinguishing Media:** Use extinguishers appropriate for surrounding materials.

**5(b) Specific Hazards arising from the chemical:** When burned, toxic smoke, fume and vapor may be emitted.

**5(c) Special protective equipment and precautions for fire-fighters:** Self-contained NIOSH approved respiratory protection and full protective clothing should be worn when fumes and/or smoke from fire are present. Heat and flames cause emittance of acrid smoke and fumes. Do not release runoff from fire control methods to sewers or waterways. Firefighters should wear full face-piece self-contained breathing apparatus and chemical protective clothing with thermal protection. Direct water stream will scatter and spread flames and, therefore, should not be used.

### Section 6 - Accidental Release Measures

**6(a) Personal Precautions, Protective Equipment and Emergency Procedures:** For spills involving finely divided particles, clean-up personnel should be protected against contact with eyes and skin. If material is in a dry state, avoid inhalation of dust.

**6(b) Methods and materials for containment and clean up:** Collect material in appropriate, labeled containers for recovery or disposal in accordance with federal, state, and local regulations. Follow applicable OSHA regulations (29 CFR 1910.120) and all other pertinent state and federal requirements.

### Section 7 - Handling and Storage

**7(a) Precautions for safe handling:** Do not breathe dusts, mists or sprays. Wear protective gloves / protective clothing / eye protection / face protection. Wash thoroughly after handling. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Practice good housekeeping. Do not eat, drink or smoke when using this product.

**7(b) Conditions for safe storage, including any incompatibilities:** Store away from acids and incompatible materials. Whenever feasible, store locked up.

## Section 8 - Exposure Controls / Personal Protection

**8(a) Occupational Exposure Limits (OELs):** The following exposure limits are offered as reference for an experienced industrial hygienist to review.

Ingredients	OSHA PEL <sup>1</sup>	ACGIH TLV <sup>2</sup>	NIOSH REL <sup>3</sup>	IDLH <sup>4</sup>
Iron & Iron Oxides	10 mg/m <sup>3</sup> (iron oxide fume)	5.0 mg/m <sup>3</sup> (iron oxide, respirable fraction <sup>5</sup> )	5.0 mg/m <sup>3</sup> (iron oxide dust and fume)	2,500 mg/m <sup>3</sup> (as Fe)
Chromium & Chromium Oxides	0.5 mg/m <sup>3</sup> (as Cr II & III, inorganic compounds) 1.0 mg/m <sup>3</sup> (as Cr, metal) 0.005 mg/m <sup>3</sup> (as Cr VI, inorganic compounds, water soluble & insoluble) “AL” 0.0025 mg/m <sup>3</sup> (as Cr VI, inorganic compounds, water soluble & insoluble)	0.003 mg/m <sup>3</sup> (as Cr III, inorganic compounds, inhalable fraction <sup>6</sup> ) “DSEN & RSEN” “water-soluble” compounds only 0.5 mg/m <sup>3</sup> (as Cr, metal, inhalable fraction) 0.0002 mg/m <sup>3</sup> (as Cr VI, inorganic compounds, water insoluble & insoluble) “STEL” 0.0005 mg/m <sup>3</sup> (as Cr VI, inorganic compounds, water insoluble & insoluble)	0.5 mg/m <sup>3</sup> (as Cr II & III, inorganic compounds & metal) 0.0002 mg/m <sup>3</sup> (as Cr VI, inorganic compounds, water insoluble & insoluble)	250 mg/m <sup>3</sup> (as Cr II & metal) 25 mg/m <sup>3</sup> (as Cr III) 15 mg/m <sup>3</sup> (as Cr VI, Ca)
Carbon	NE	NE	NE	NE
Crystalline Silica (as Quartz)	0.05 mg/m <sup>3</sup> “AL” 0.025 mg/m <sup>3</sup>	0.025 mg/m <sup>3</sup> (as respirable fraction)	0.05 mg/m <sup>3</sup> (as respirable dust), Ca	50 mg/m <sup>3</sup> (as quartz, Tripoli) 25 mg/m <sup>3</sup> (as cristobalite, tridymite), Ca
Silicon & Silicon Dioxides (amorphous)	15 mg/m <sup>3</sup> (as silicon, total dust) 5.0 mg/m <sup>3</sup> (as silicon, respirable fraction) 80 mg/m <sup>3</sup> / % SiO <sub>2</sub> (as amorphous)	NE	10 mg/m <sup>3</sup> (as total dust) 5.0 mg/m <sup>3</sup> (as respirable dust)	3,000 mg/m <sup>3</sup> (as amorphous)
Aluminum Oxide	15 mg/m <sup>3</sup> (as Al aluminum oxide, metal & insoluble compounds, total dust) 5.0 mg/m <sup>3</sup> (as Al aluminum oxide, metal & insoluble compounds, respirable fraction)	1.0 mg/m <sup>3</sup> (as metal & insoluble compounds, respirable fraction)	10 mg/m <sup>3</sup> (as metal & insoluble compounds, total dust) 5.0 mg/m <sup>3</sup> (as metal & insoluble compounds, respirable fraction) 5.0 mg/m <sup>3</sup> (as Al, welding fumes & pyro powders)	NE
Nickel	1.0 mg/m <sup>3</sup> (metal, insoluble & soluble compounds, as Ni)	1.5 mg/m <sup>3</sup> (metal, as Ni, as inhalable fraction) 0.2 mg/m <sup>3</sup> (insoluble compounds, as Ni, inhalable fraction, inorganic only) 0.1 mg/m <sup>3</sup> (soluble compounds, as Ni, inhalable fraction, inorganic only)	0.015 mg/m <sup>3</sup> (metal & insoluble and soluble compounds, as Ni)	10 mg/m <sup>3</sup> (as Ni)
Molybdenum	15 mg/m <sup>3</sup> (as Mo insoluble compounds, total dust) 5.0 mg/m <sup>3</sup> (as Mo soluble compounds, respirable fraction)	10 mg/m <sup>3</sup> (as Mo insoluble compounds, inhalable fraction) 3.0 mg/m <sup>3</sup> (as Mo insoluble compounds, respirable fraction) 0.5 mg/m <sup>3</sup> (as Mo soluble compounds, respirable fraction)	NE	NE

NE - None Established

1. OSHA PELs (Permissible Exposure Limits) are 8-hour TWA (time-weighted average) concentrations unless otherwise noted. A (“C”) designation denotes a ceiling limit, which should not be exceeded during any part of the working exposure unless otherwise noted. A Short Term Exposure Limit (STEL) is defined as a 15-minute exposure, which should not be exceeded at any time during a workday. An Action level (AL) is used by OSHA and NIOSH to express a health or physical hazard. They indicate the level of a harmful or toxic substance/activity, which requires medical surveillance, increased industrial hygiene monitoring, or biological monitoring. Action Levels are generally set at one half of the PEL but the actual level may vary from standard to standard. The intent is to identify a level at which the vast majority of randomly sampled exposures will be below the PEL.
2. Threshold Limit Values (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH) are 8-hour TWA concentrations unless otherwise noted. ACGIH TLVs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes. DSEN – May cause dermal sensitization. This notation is used to indicate the potential for dermal sensitization resulting from the interaction of an absorbed agent and ultraviolet light (i.e. photosensitization). RSEN – May cause respiratory sensitization.
3. The National Institute for Occupational Safety and Health Recommended Exposure Limits (NIOSH-REL)- Compendium of Policy and Statements. NIOSH, Cincinnati, OH (1992). NIOSH is the federal agency designated to conduct research relative to occupational safety and health. As is the case with ACGIH TLVs, NIOSH RELs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes.
4. The “immediately dangerous to life or health air concentration values (IDLHs)” are used by NIOSH as part of the respirator selection criteria and were first developed in the mid-1970s by NIOSH. The Documentation for Immediately Dangerous to Life or Health Concentrations (IDLHs) is a compilation of the rationale and sources of information used by NIOSH during the original determination of 387 IDLHs and their subsequent review and revision in 1994. Ca is designated as carcinogen.
5. Respirable fraction. The concentration of respirable dust for the application of this limit is to be determined from the fraction passing a size-selector with the characteristics defined in ACGIH 2018 TLVs<sup>®</sup> and BEIs<sup>®</sup> Appendix D, paragraph C.
6. Inhalable fraction. The concentration of inhalable particulate for the application of this TLV is to be determined from the fraction passing a size-selector with the characteristics defined in the ACGIH 2018 TLVs<sup>®</sup> and BEIs<sup>®</sup> (Biological Exposure Indices) Appendix D, paragraph A.

**8(b) Appropriate Engineering Controls:** Use controls as appropriate to minimize exposure to metal fumes and dusts during handling operations. Provide general or local exhaust ventilation systems to minimize airborne concentrations. Local exhaust is necessary for use in enclosed or confined spaces. Provide sufficient general/local exhaust ventilation in pattern/volume to control inhalation exposures below current exposure limits.

## Section 8 - Exposure Controls / Personal Protection (continued)

## 8(c) Individual Protection Measures:

- **Respiratory Protection (continued):** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, use only a NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. Concentration in air of the various contaminants determines the extent of respiratory protection needed. Half-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying full-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 50 times the exposure limit. Protection by air-purifying negative-pressure and powered air respirators is limited. Use a positive-pressure-demand, full-face, supplied air respirator or self-contained breathing apparatus (SCBA) for concentrations above 50 times the exposure limit. If exposure is above the IDLH (Immediately dangerous to life or health) for any of the constituents, or there is a possibility of an uncontrolled release or exposure levels are unknown, then use a positive-demand, full-face, supplied air respirator with escape bottle or SCBA.

**Warning!** Air-purifying respirators both negative-pressure and powered-air do not protect workers in oxygen-deficient atmospheres.

- **Eyes:** Wear eye protection/face protection. Chemical goggles, face shields or glasses should be worn to prevent eye contact. Contact lenses should not be worn where industrial exposure to this material is likely.
- **Skin:** Persons handling this product should wear appropriate clothing to prevent skin contact. Take off contaminated clothing and wash before reuse. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves.
- **Other protective equipment:** An eyewash fountain and deluge shower should be readily available in the work area.

## Section 9 - Physical and Chemical Properties

<b>9(a) Appearance (physical state, color, etc):</b> Gray particulate	<b>9(j) Upper/lower Flammability or Explosive Limits:</b> NA
<b>9(b) Odor:</b> metallic/musty odor	<b>9(k) Vapor Pressure:</b> NA
<b>9(c) Odor Threshold:</b> NA	<b>9(l) Vapor Density (Air = 1):</b> NA
<b>9(d) pH:</b> NA	<b>9(m) Relative Density:</b> 1.3-1.8 g/cm <sup>3</sup>
<b>9(e) Melting Point/Freezing Point:</b> >2500°F	<b>9(n) Solubility(ies):</b> Limited in water
<b>9(f) Initial Boiling Point and Boiling Range:</b> ND	<b>9(o) Partition Coefficient n-octanol/water:</b> ND
<b>9(g) Flash Point:</b> NA	<b>9(p) Auto-ignition Temperature:</b> NA
<b>9(h) Evaporation Rate:</b> NA	<b>9(q) Decomposition Temperature:</b> ND
<b>9(i) Flammability (solid, gas):</b> Non-flammable, non-combustible	<b>9(r) Viscosity:</b> NA

NA - Not Applicable




ND - Not Determined for product as a whole

## Section 10 - Stability and Reactivity

- 10(a) Reactivity:** Not Determined (ND)
- 10(b) Chemical Stability:** Grinder Swarf is stable under normal storage and handling conditions.
- 10(c) Possibility of hazardous reaction:** None Known
- 10(d) Conditions to Avoid:** Storage with strong acids or calcium hypochlorite.
- 10(e) Incompatible Materials:** Will react with strong acids to form hydrogen. Iron oxide dusts in contact with calcium hypochlorite evolve oxygen and may cause an explosion.
- 10(f) Hazardous Decomposition Products:** Thermal oxidative decomposition of steel products can produce fumes containing oxides of iron as well as other alloying elements.





## Section 11 - Toxicological Information

**11 Information on toxicological effects:** The following toxicity data has been determined for **Grinder Swarf** using the information available for its components applied to the guidance on the preparation of an SDS under the GHS requirements of OSHA and the EU CPL:

Hazard Classification	Hazard Category		Hazard Symbols	Signal Word	Hazard Statement
	EU	OSHA			
<b>Skin Irritation</b> (covers Categories 1A, 1B, 1C, and 2)	NR	2 <sup>b</sup>		Warning	Causes skin irritation.
<b>Eye Damage/ Irritation</b> (covers Categories 1, 2A and 2B)	2	2A <sup>c</sup>		Warning	Causes serious eye irritation.
<b>Skin/Dermal Sensitization</b> (covers Category 1)	1	1 <sup>d</sup>		Warning	May cause an allergic skin reaction

## Section 11 - Toxicological Information (continued)

## 11 Information on toxicological effects (continued):

Hazard Classification	Hazard Category		Hazard Symbols	Signal Word	Hazard Statement
	EU	OSHA			
<b>Carcinogenicity</b> (covers Categories 1A, 1B and 2)	2	1A <sup>g</sup>		<b>Danger</b>	May cause cancer.
<b>Toxic Reproduction</b> (covers Categories 1A, 1B and 2)	NR	2 <sup>h</sup>		<b>Danger</b>	Suspected of damaging fertility or the unborn child.
<b>Specific Target Organ Toxicity (STOT) Following Single Exposure</b> (covers Categories 1-3)	2	2 <sup>i</sup>		<b>Warning</b>	Causes damage to the respiratory system.
<b>STOT following Repeated Exposure</b> (covers Categories 1 and 2)	1	1 <sup>j</sup>		<b>Danger</b>	Causes damage to lungs and central nervous system through prolonged or repeated inhalation exposure.

\* NR Not Rated - Available data does not meet criteria for classification.

Toxicological data listed below are presented regardless to classification criteria. Individual hazard classification categories where the toxicological information has met or exceeded a classification criteria threshold are listed above.

a. No LC<sub>50</sub> or LD<sub>50</sub> has been established for **Grinder Swarf**. The following data has been determined for the components:

- **Iron:** Rat LD<sub>50</sub> = 98.6 g/kg (REACH)  
Rat LD<sub>50</sub> = 1060 mg/kg (IUCLID)  
Rat LD<sub>50</sub> = 984 mg/kg (IUCLID)  
Rabbit LD<sub>50</sub> = 890 mg/kg (IUCLID)
- **Carbon:** LD<sub>50</sub> = >10,000 mg/kg (Oral/ Rat)
- **Silicon:** LD<sub>50</sub> = 3160 mg/kg (Oral/Rat)
- **Silica:** LD<sub>50</sub> = 500 mg/kg (Oral/ Rat)
- **Nickel:** LD<sub>50</sub> >9000 mg/kg (Oral/Rat)

b. No Skin (Dermal) Irritation data available for **Grinder Swarf** as a mixture. The following Skin (Dermal) Irritation information was found for the components:

- **Iron Oxide:** Moderately irritating.
- **Molybdenum:** May cause skin irritation.

c. No Eye Irritation data available for **Grinder Swarf** as a mixture. The following Eye Irritation information was found for the components:

- **Iron and Molybdenum:** Causes eye irritation.
- **Iron Oxide:** Severely irritating; may cause burns. Human Corrosive (IUCLID).
- **Silicon:** Slight eye irritation in rabbit protocol.
- **Nickel:** Slight eye irritation from particulate abrasion only.

d. No Skin (Dermal) Sensitization data available for **Grinder Swarf** as a mixture or its components. The following Skin (Dermal) Sensitization information was found for the components:

- **Nickel:** May cause allergic skin sensitization.

e. No Respiratory Sensitization data available for **Grinder Swarf** as a mixture or its components.

f. No Germ Cell Mutagenicity data available for **Grinder Swarf** as a mixture. The following Mutagenicity and Genotoxicity information was found for the components:

- **Iron:** IUCLID has found some positive and negative findings in vitro.
- **Iron Oxide:** Both positive and negative data.
- **Nickel:** EU RAR has found positive results in vitro and in vivo but insufficient data for classification.

g. Carcinogenicity: IARC, NTP, and OSHA do not list **Grinder Swarf** as carcinogens. The following Carcinogenicity information was found for the components:

- **Chromium (as metal and trivalent chromium compounds)** – IARC-3 (organic & inorganic compounds), unclassifiable as to carcinogenicity in humans; ACGIH TLV-A4, not classifiable as a human carcinogen; EPA-D, not classifiable as to human carcinogenicity (CBD, cannot be determined).
- **Chromium (hexavalent):** IARC-1, carcinogen to humans; ACGIH TLV-A1, confirmed human carcinogen; NIOSH-Ca, potential occupational carcinogen; NTP-K, known to be a carcinogen; EPA-A, human carcinogen (by inhalation route of entry), EPA-K, cannot be determined, not classifiable as to human carcinogenicity.
- **Silicon Dioxide:** IARC-1 (silica, crystalline), carcinogen to humans; ACGIH TLV-A2 (silica, crystalline), suspected human carcinogen; NTP-K, known to be a carcinogen; NIOSH-Ca, potential occupational carcinogen; OSHA-Ca, carcinogen.
- **Nickel and certain nickel compounds** – IARC-1 (compounds), carcinogen to humans; IARC-2B (elemental & alloys), possibly carcinogenic to humans; ACGIH TLV-A1 (insoluble compounds, as Ni), confirmed human carcinogen; TLV-A5 (elemental), not suspected as a human carcinogen; NTP-K, known to be a carcinogen; NIOSH-Ca, potential occupational carcinogen.

h. No Toxic Reproduction data available for **Grinder Swarf** as a mixture. The following Toxic Reproductive information was found for the components:

- **Nickel:** Effects on fertility.



## Section 11 - Toxicological Information (continued)

**11 Information on toxicological effects (continued):**

- i. No Specific Target Organ Toxicity (STOT) following a Single Exposure data available for **Grinder Swarf** as a mixture. The following STOT following a Single Exposure data was found for the components:
- **Iron and Molybdenum:** Irritating to Respiratory tract.
  - **Iron Oxide:** Some pulmonary and lung effects reported from Iron oxide exposure in humans.
  - **Silicon Dioxide:** Single exposure to very high airborne levels may cause lung irritation in exposed humans.
- j. No Specific Target Organ Toxicity (STOT) following Repeated Exposure data was available for **Grinder Swarf** as a whole. The following STOT following Repeated Exposure data was found for the components:
- **Silicon Dioxide:** Repeated exposure to crystalline silica causes silicosis and kidney damage as well as increased incidence of autoimmune disorders in humans.
  - **Nickel:** Rat 4 wk inhalation LOEL 4 mg/m<sup>3</sup> Lung and Lymph node histopathology. Rat 2 yr inhalation LOEL 0.1 mg/m<sup>3</sup> Pigment in kidney, effects on hematopoiesis spleen and bone marrow and adrenal tumor. Rat 13 Week Inhalation LOAEC 1.0 mg/m<sup>3</sup> Lung weights, and Alveolar histopathology.

The above toxicity information was determined from available scientific sources to illustrate the prevailing posture of the scientific community. The scientific resources includes: The American Conference of Governmental Industrial Hygienist (ACGIH) Documentation of the Threshold Limit Values (TLVs) and Biological Exposure indices (BEIs) with Other Worldwide Occupational Exposure Values 2018, The International Agency for Research on Cancer (IARC), The National Toxicology Program (NTP) updated documentation, the World Health Organization (WHO) and other available resources, the International Uniform Chemical Information Database (IUCID), European Union Risk Assessment Report (EU-RAR), Concise International Chemical Assessment Documents (CICAD), European Union Scientific Committee for Occupational Exposure Limits (EU-SCOEL), Agency for Toxic Substances and Disease Registry (ATSDR), Hazardous Substance Data Bank (HSDB), and International Programme on Chemical Safety (IPCS), European Union Classification, Labeling and Packaging (EU CPL), Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), International Uniform Chemical Information Database (IUCID), TOXicology Data NETwork (TOXNET), European Risk Assessment Reports (EU RAR).

The following health hazard information is provided regardless to classification criteria and is based on the individual component(s):

**Acute Effects by component:**

- **IRON (IRON OXIDE):** Iron is harmful if swallowed, causes skin irritation, and causes eye irritation. Contact with iron oxide has been reported to cause skin irritation and serious eye damage. Particles of iron or iron compounds, which become imbedded in the eye, may cause rust stains unless removed fairly promptly.
- **CHROMIUM, CHROMIUM OXIDES AND HEXAVALENT CHROME:** Hexavalent chrome causes damage to gastrointestinal tract, lung, severe skin burns and eye damage, serious eye damage, skin contact may cause an allergic skin reaction. Inhalation may cause allergic or asthmatic symptoms or breathing difficulties.
- **CARBON:** Not Reported/ Not Classified
- **CRYSTALLINE SILICA (Silicon Dioxide):** Causes irritation and inflammation of the respiratory tract. May cause abrasion of the cornea. Inhalation may cause cough. A single exposure to very high airborne levels may cause lung irritation in exposed humans.
- **SILICON and SILICON OXIDES:** Not Reported/ Not Classified
- **ALUMINUM OXIDE:** Inhalation may cause cough.
- **NICKEL AND NICKEL OXIDES:** Nickel may cause allergic skin sensitization. Nickel oxide may cause an allergic skin.
- **MOLYBDENUM (MOLYBDENUM OXIDES):** Molybdenum causes skin and eye irritation. Molybdenum oxide is toxic if swallowed and causes eye irritation.

**Delayed (chronic) Effects by Component:**

- **IRON (IRON OXIDE):** Chronic inhalation of excessive concentrations of iron oxide fumes or dusts may result in the development of a benign pneumoconiosis, called siderosis, which is observable as an X-ray change. No physical impairment of lung function has been associated with siderosis. Inhalation of excessive concentrations of ferric oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens. Iron oxide is listed as a Group 3 (not classifiable) carcinogen by the International Agency for Research on Cancer (IARC).
- **CHROMIUM, CHROMIUM OXIDES AND HEXAVALENT CHROME:** The health hazards associated with exposure to chromium are dependent upon its oxidation state. The metal form (chromium as it exists in this product) is of very low toxicity. The hexavalent form is very toxic. Repeated or prolonged exposure to hexavalent chromium compounds may cause respiratory irritation, nosebleed, ulceration and perforation of the nasal septum. Industrial exposure to certain forms of hexavalent chromium has been related to an increased incidence of cancer. NTP (The National Toxicology Program) Fourth Annual report on Carcinogens cites "certain Chromium compounds" as human carcinogens. ACGIH has reviewed the toxicity data and concluded that chromium metal is not classifiable as a human carcinogen. Hexavalent chromium may cause genetic defects and is suspected of damaging the unborn child. Developmental toxicity in the mouse, suspected of damaging fertility or the unborn child.
- **CARBON:** Chronic inhalation may lead to decreased pulmonary function.
- **CRYSTALLINE SILICA (Crystalline Quartz):** Inhalation of quartz is classified by IARC as a probable human carcinogen. Chronic exposure can cause silicosis, a form of lung scarring that can cause shortness of breath, reduced lung function, and in severe cases, death. Repeated exposure may cause kidney damage as well as increased incidence of autoimmune disorder.
- **SILICON and SILICON OXIDES:** Silicon dusts are a low health risk by inhalation and should be treated as a nuisance dust. Eye contact with pure material can cause particulate irritation. Skin contact with silicon dusts may cause physical abrasion.
- **ALUMINUM OXIDE:** Considered to be an inert or nuisance dust.
- **MOLYBDENUM (MOLYBDENUM OXIDES):** Certain handling operations, such as burning and welding, may generate both insoluble molybdenum compounds (metal and molybdenum dioxide) and soluble molybdenum compounds (molybdenum trioxide). Molybdenum compounds generally exhibit a low order of toxicity with the trioxide the more toxic. However, some reports indicate that the dust of the molybdenum metal, molybdenum dioxide and molybdenum trioxide may cause eye, skin, nose and throat irritation in animals. Also, it has been reported to cause induction of tumors in experimental animals, suspected of causing cancer. Molybdenum oxide is suspected of causing cancer in humans.

## Section 11 - Toxicological Information (continued)

**Delayed (chronic) Effects by Component (continued):**

- **NICKEL AND NICKEL OXIDES:** Exposure to nickel dusts and fumes can cause sensitization dermatitis, respiratory irritation, asthma, pulmonary fibrosis, edema, and may cause nasal or lung cancer in humans. Nickel causes damage to lungs through prolonged or repeated inhalation exposure. IARC lists nickel and certain nickel compounds as Group 2B carcinogens (sufficient animal data). ACGIH 2015 TLVs® and BEIs® lists insoluble nickel compounds as confirmed human carcinogens. Nickel is suspected of damaging the unborn child.

## Section 12 - Ecological Information

**12(a) Ecotoxicity (aquatic & terrestrial):** No Data Available for **Grinder Swarf**. However, individual components of the product when processed have been found to be toxic to the environment. Metal dusts may migrate into soil and groundwater and be ingested by wildlife as follows:

- **Iron Oxide:** LC<sub>50</sub>: >1000 mg/L; Fish 48 h-EC<sub>50</sub> > 100 mg/L (Currenta, 2008k); 96 h-LC<sub>0</sub> ≥ 50,000 mg/L Test substance: Bayferrox 130 red (95 – 97% Fe<sub>2</sub>O<sub>3</sub>; < 4% SiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub>) (Bayer, 1989a).
- **Nickel Oxide:** IUCLID found LC<sub>50</sub> in fish, invertebrates and algae > 100 mg/l.

**12(b) Persistence & Degradability:** No Data Available

**12(c) Bioaccumulative Potential:** No Data Available

**12(d) Mobility (in soil):** No data available. However, individual components of the product have been found to be absorbed by plants from soil.

**12(e) Other adverse effects:** None Known

**Additional Information:**

**Hazard Category:** Not Rated (NR)

**Signal Word:** NR

**Hazard Symbol:** NR

**Hazard Statement:** NR

## Section 13 - Disposal Considerations

**Disposal:** Dispose of in accordance with Local, State, Federal and International regulations. Observe safe handling precautions.

**Container Cleaning and Disposal:** Follow Local, State, Federal and International regulations. Observe safe handling precautions.

## Section 14 - Transport Information

**14 (a-g) Transportation Information:**

**US Department of Transportation (DOT)** under 49 CFR 172.101 may regulate **Grinder Swarf** as a hazardous material under certain circumstances. All Local, State, Federal and international regulations that apply to the transport of this type of material must be adhered to.

## Section 15 - Regulatory Information

**Regulatory Information:** The following listing of regulations relating to an AM/NS Calvert LLC product may not be complete and should not be solely relied upon for all regulatory compliance responsibilities. This product and/or its constituents are subject to the following regulations:

**OSHA Regulations:** Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-2, Z-3): The product, **Grinder Swarf** as a whole is not listed. However, individual components of the product are listed: Refer to Section 8, Exposure Controls and Personal Protection.

**EPA Regulations:** The product, **Grinder Swarf** is not listed as a whole. However, individual components of the product are listed:

Components	Regulations
Chromium	CERCLA, CWA, SARA 313, RCRA, SDWA
Nickel	CAA, CERCLA, CWA, SARA 313
Aluminum Oxide	SARA 313

**SARA 311/312 Potential Hazard Categories:** Immediate Acute Health Hazard; Delayed Chronic Health Hazard

**Regulations Key:**

CAA	Clean Air Act (42 USC Sec. 7412; 40 CFR Part 61 [As of: 8/18/06])
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (42 USC Secs. 9601(14), 9603(a); 40 CFR Sec. 302.4, Table 302.4, Table 302.4 and App. A)
CWA	Clean Water Act (33 USC Secs. 1311; 1314(b), (c), (e), (g); 136(b), (c); 137(b), (c) [as of 8/2/06])
RCRA	Resource Conservation Recovery Act (42 USC Sec. 6921; 40 CFR Part 261 App VIII)
SARA	Superfund Amendments and Reauthorization Act of 1986 Title III Section 302 Extremely Hazardous Substances (42 USC Secs. 11023, 13106; 40 CFR sec. 372.65) and Section 313 Toxic Chemicals (42 USC Secs. 11023, 13106; 40 CFR Sec. 372.65 [as of 6/30/05])
TSCA	Toxic Substance Control Act (15 U.S.C. s/s 2601 et seq. [1976])
SDWA	Safe Drinking Water Act (42 U.S.C. s/s 300f et seq. [1974])

**Section 313 Supplier Notification:** The product, **Grinder Swarf** contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-to-Know Act and 40 CFR part 372:

CAS #	Chemical Name	Percent by Weight
7440-47-3	Chromium	15 max
1344-28-1	Aluminum Oxide	4 max
7440-02-0	Nickel	2.3 max

## Section 15 - Regulatory Information (continued)

**State Regulations:** The product, **Grinder Swarf** as a whole is not listed in any state regulations. However, individual components of the product are listed in various state regulations:

Pennsylvania Right to Know: Contains regulated material in the following categories:

- Hazardous Substances: Iron Oxide, Chromium, Chromium Oxide, Silicon, Aluminum Oxide, Nickel
- Environmental Hazards: Chromium, Aluminum Oxide, Nickel
- Special Hazardous Substance: Chromium, Chromium Oxide, Nickel

California Prop.  
65:



This product can expose you to chemicals including silica, crystalline (airborne particles of respirable size), chromium (hexavalent chromium compounds) and nickel (metallic) which is known to the State of California to cause cancer; and chromium (hexavalent chromium compounds) which is known to the State of California to cause reproductive toxicity. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

New Jersey: Contains regulated material in the following categories:

- Hazardous Substance: Iron Oxide, Chromium, Chromium Oxide, Silicon, Silicon Dioxide, Aluminum Oxide, Nickel
- Environmental Hazards: Chromium, Aluminum Oxide, Nickel
- Special Hazardous Substance: Chromium, Silicon, Silicon Dioxide, Aluminum (dust and fume)

Minnesota: Iron Oxide (fume), Chromium, Silicon Dioxide, Aluminum Oxide, Nickel

Massachusetts: Iron Oxide, Chromium, Chromium Oxide, Nickel, Silicon, Silicon Dioxide, Aluminum Oxide, Nickel (compounds)

### Other Regulations:

**WHMIS Classification (Canadian):** The product, **Grinder Swarf** is not listed as a whole. However individual components are listed.

Ingredients	WHMIS Classification
Chromium	Combustible dusts*
Silicon	Flammable solids - Category 2 (The classification "Flammable solids" refers to the amorphous form of silicon powder); Combustible dusts**
Silicon Dioxide (Quartz)	Carcinogenicity - Category 1A; Specific target organ toxicity - repeated exposure - Category 1
Nickel	Skin sensitization - Category 1; Carcinogenicity - Category 2; Specific target organ toxicity - repeated exposure - Category 1

\* This product could belong to the hazard class "Combustible dust", based on various factors related to the combustibility and explosiveness of its dust, including composition, shape and size of the particles

\*\* This product belongs to the hazard class "Combustible dust" if 5% or more by weight of its composition has a particle size < 500 µm.

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

## Section 16 - Other Information

**Prepared By:** AM/NS Calvert LLC

**Original Issue Date:** 12/09/2015

**Revised Date:** 3/15/2021

### Additional Information:

#### Hazardous Material Identification System (HMIS) Classification

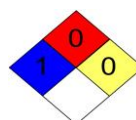
Health Hazard	1
Fire Hazard	0
Physical Hazard	0

HEALTH = 1, \* Denotes possible chronic hazard if airborne dusts or fumes are generated  
Irritation or minor reversible injury possible.

FIRE = 0, Will not burn.

PHYSICAL HAZARD = 0, Normally Stable.

#### National Fire Protection Association (NFPA)



HEALTH = 1, Exposure could cause irritation but only minor residual injury even if no treatment is given.

FIRE = 0, Will not burn.

INSTABILITY = 0, Normally Stable.

### ABBREVIATIONS/ACRONYMS:

<b>ACGIH</b>	American Conference of Governmental Industrial Hygienists	<b>NIF</b>	No Information Found
<b>BEIs</b>	Biological Exposure Indices	<b>NIOSH</b>	National Institute for Occupational Safety and Health
<b>CAS</b>	Chemical Abstracts Service	<b>NTP</b>	National Toxicology Program
<b>CERCLA</b>	Comprehensive Environmental Response, Compensation, and Liability Act	<b>ORC</b>	Organization Resources Counselors
<b>CFR</b>	Code of Federal Regulations	<b>OSHA</b>	Occupational Safety and Health Administration
<b>CNS</b>	Central Nervous System	<b>PEL</b>	Permissible Exposure Limit
<b>GI, GIT</b>	Gastro-Intestinal, Gastro-Intestinal Tract	<b>PNOR</b>	Particulate Not Otherwise Regulated
<b>HMIS</b>	Hazardous Materials Identification System	<b>PNOC</b>	Particulate Not Otherwise Classified
<b>IARC</b>	International Agency for Research on Cancer	<b>PPE</b>	Personal Protective Equipment
<b>LC50</b>	Median Lethal Concentration	<b>ppm</b>	parts per million
<b>LD50</b>	Median Lethal Dose	<b>RCRA</b>	Resource Conservation and Recovery Act



## Section 16 - Other Information (continued)

## ABBREVIATIONS/ACRONYMS (continued):

<b>LD<sub>Lo</sub></b>	Lowest Dose to have killed animals or humans	<b>RTECS</b>	Registry of Toxic Effects of Chemical Substances
<b>LEL</b>	Lower Explosive Limit	<b>SARA</b>	Superfund Amendment and Reauthorization Act
<b>LOEL</b>	Lowest Observed Effect Level	<b>SCBA</b>	Self-contained Breathing Apparatus
<b>LOAEC</b>	Lowest Observable Adverse Effect Concentration	<b>SDS</b>	Safety Data Sheet
<b>µg/m<sup>3</sup></b>	microgram per cubic meter of air	<b>STEL</b>	Short-term Exposure Limit
<b>mg/m<sup>3</sup></b>	milligram per cubic meter of air	<b>TLV</b>	Threshold Limit Value
<b>mppcf</b>	million particles per cubic foot	<b>TWA</b>	Time-weighted Average
<b>MSHA</b>	Mine Safety and Health Administration	<b>UEL</b>	Upper Explosive Limit
<b>NFPA</b>	National Fire Protection Association		

**Disclaimer:** This information is taken from sources or based upon data believed to be reliable. Our objective in sending this information is to help you protect the health and safety of your personnel and to comply with the OSHA Hazard Communication Standard and Title III of the Emergency Planning and Community Right-to-Know Act. AM/NS Calvert LLC makes no warranty as to the absolute correctness, completeness, or sufficiency of any of the foregoing, or any additional, or other measures that may not be required under particular conditions. THIS AM/NS CALVERT LLC SDS MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING OR TRADE.

# Grinder Swarf

**Signal Word: DANGER**

**Symbols:**



## HAZARD STATEMENTS:

May cause cancer.  
Suspected of damaging fertility or the unborn child.  
May cause damage to the respiratory system.  
Causes damage to lungs and central nervous system through prolonged or repeated inhalation exposure.  
May cause an allergic skin reaction.  
Causes skin irritation.  
Causes serious eye irritation.

## PRECAUTIONARY STATEMENTS

Do not breathe dusts, mists or sprays.  
Wear protective gloves / protective clothing / eye protection / face protection.  
Wash thoroughly after handling.  
Contaminated work clothing must not be allowed out of the workplace.  
Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Do not eat, drink or smoke when using this product.  
If exposed, concerned or feel unwell: Get medical advice/attention.  
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.  
Continue Rinsing. If eye irritation persists: Get medical advice/attention.  
If on skin: Wash with plenty of water. Take off contaminated clothing and wash before reuse. If skin irritation or rash occurs: Get medical advice/attention.  
Dispose of contents in accordance with federal, state and local regulations.  
Store locked up.

**SDS ID No.: AMNS-0004**

AM/NS Calvert LLC  
P.O. Box 456  
Calvert, AL 36513

**General Information: Phone: 251-289-3000**

**CHEMTREC (Day or Night): 1-800-424-9300**

**Emergency Contact: 1-760-476-3962, (Verisk 3E Company Code: 333211)**

**Original Issue Date: 12/09/2015**

**Revised: 3/15/2021**