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◆◆◆ MATERIAL SAFETY DATA SHEET ◆◆◆

**CHEMICAL NAME:** Cemented Tungsten Carbide Product with Cobalt Binder.

**TRADE NAME AND SYNONYMS:** All Saturn Industries, Inc. Tungsten Carbide Grades and all other Tungsten Carbide Grades that we purchase from other Carbide Suppliers that fall in the ANSI grade classification of C-1 to C-2.

**CHEMICAL FAMILY:** Refractory Metal Carbide.

**MOLECULAR WEIGHT:** N/A

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**PHYSICAL DATA**  
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|----|---|---------------------------|
| 1. | APPEARANCE AND ODOR:                    | Dark Gray Metal – No Odor |
| 2. | BOILING POINT:                          | N/A                       |
| 3. | VAPOR PRESSURE (mm Hg.)                 | N/A                       |
| 4. | VAPOR DENSITY (AIR=1)                   | N/A                       |
| 5. | SOLUBILITY IN WATER                     | Insoluble                 |
| 6. | SPECIFIC GRAVITY (H <sub>2</sub> O = 1) | 10.2 to 15.5              |
| 7. | PERCENT VOLATILE BY VOLUME              | 0                         |
| 8. | EVAPORATION RATE                        | N/A                       |
| 9. | HOW BEST MONITORED                      | Air Sample                |

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**HAZARDOUS INGREDIENTS**  
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<u>MATERIAL</u>	<u>% BY WEIGHT</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
1. Tungsten Carbide (Limits for Tungsten Dust)	53-97% *	-----	5mg/m3
2. Cobalt	3-25% *	0.1 mg/m3	0.1 mg/m3
3. Tantalum Carbide (Limits for Tantalum Dust)	0.0-50% *	5 mg/m3	5mg/m3
4. Chromium Carbide (Limits for Chromium (+3) dust)	0.0-5.1% *	1mg/m3	0.5mg/m3
5. Chromium (+3)	0.0-4.5% *	1mg/m3	0.5mg/m3

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**HEALTH HAZARD DATA**  
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**ROUTES OF EXPOSURE:** Grinding cemented tungsten carbide product will produce dust of potentially hazardous ingredients which can be inhaled, swallowed or come in contact with the skin or eyes.

**EFFECTS OF OVEREXPOSURE:** Inhalation – Dust from grinding can cause irritation of the nose and throat. It also has the potential for causing transient or permanent respiratory disease, including occupational asthma and interstitial fibrosis, in a small percentage of exposed individuals. It is reported that cobalt dust is the most probable cause of such respiratory diseases. Symptoms include productive cough, wheezing, shortness of breath, chest tightness and weight loss. Interstitial fibrosis (Lung Scarring) can lead to permanent disability or death. Skin Contact-Can cause irritation or an allergic skin rash due to cobalt sensitization. Eye Contact-Can cause irritation. Ingestion-Reports outside the industry suggest that the ingestion of significant amounts of cobalt has the potential for causing blood, heart and other organ problems.

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**EMERGENCY AND FIRST AID PROCEDURES**  
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**INHALATION:** Is symptoms of pulmonary involvement develop (coughing, wheezing, shortness of breath, etc.), remove from exposure and seek medical attention.

**SKIN CONTACT:** If irritation or rash occurs, thoroughly wash affected area with soap and water and isolate from exposure. If irritation or rash persists, seek medical attention.

**EYE CONTACT:** if irritation occurs, flush with copious amounts of water. If irritation persists, seek medical attention.

**INGESTION:** If substantial quantities are swallowed, dilute with large amounts of water, induce vomiting and seek medical attention.

**CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER):** None of the components of this material have been identified as known or suspected carcinogens by NTP, IARC or OSHA.

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**FIRE AND EXPLOSION HAZARD DATA**  
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**FLASH POINT:** N/A

**TEST METHOD USED:** - - **FLAMMABLE LIMITS:** N/A: - - **UEL:** - -

Hard Cemented Tungsten Carbide Product is not fire hazard. Dusts generated in grinding operations may ignite if allowed to accumulate and are subjected to an ignition source.

**EXTINGUISHING MEDIA:** For powder fires smother with Dry Sand, Dry Dolomite, ABC Type Fire Extinguisher or Flood with Water.

**SPECIAL FIRE FIGHTING PROCEDURES:** For a powder fire confined to a small area, use a respirator approved for toxic dusts and fumes. For a large fire, fire fighters should use self-contained breathing apparatus.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Dusts may present a fire or explosion hazard under rare favoring conditions of particle size, dispersion and strong ignition source. However, this is not expected to be a problem under normal handling conditions.

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**REACTIVITY DATA**  
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STABILITY: Stable

CONDITIONS TO AVOID: N/A

INCOMPATIBILITY: Contact of dust with strong oxidizers may cause fire or explosions.

MATERIAL TO AVOID: Strong Acids

HAZARDOUS DECOMPOSITION PRODUCTS: None

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: N/A

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**SPILL OR LEAK PROCEDURES**  
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STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Ventilate area of spill. Clean up using methods which avoid dust generation such as vacuum (with appropriate filter to prevent airborne dust levels, which exceed the OSH PEL or the ACGIH TLV), wet dust mop or wet clean-up. If airborne dust is generated, use an appropriate NIOSH approved respirator.

WASTE DISPOSAL METHOD: Dispose of in accordance with appropriate government regulations. May be sold as scrap for reclaim.

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**SPECIAL PROTECTION INFORMATION**  
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RESPIRATORY PROTECTION: Use an appropriate NIOSH approved respirator if airborne dust concentrations exceed the appropriate OSHA PEL or the ACGIH TLV. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

VENTILATION: Use local exhaust ventilation which is adequate to limit personal exposure to airborne dust levels which do not exceed the OSHA PEL or the ACGIH TLV. If such equipment is not available use respirators as specified above.

PROTECTIVE GLOVES: Protective Gloves or Barrier Creams are recommended when contact with dust or mist is likely. Prior to applying the Barrier Cream or use of Protective Gloves, wash skin thoroughly.

EYE PROTECTION: Safety glasses with side shields or goggles are recommended.

OTHER PROTECTIVE EQUIPMENT: N/A

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**SPECIAL PRECAUTIONS**  
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PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Maintain good house-keeping procedures to prevent dust accumulation during grinding. Avoid dust inhalation and direct skin contact with dust.

OTHER PRECAUTIONS: Clean up using methods which avoid dust generation such as vacuum (with) appropriate filter to prevent airborne dust levels which exceed the OSHA PEL or the ACGIH TLV), wet dust mop or wet clean-up. If airborne dust is generated, use an appropriate NIOSH approved respirator. Wash hands thoroughly after handling, before eating or smoking. Wash exposed skin at the end of work shift. Do not shake clothing, rags, or other items to remove dust. Dust should be removed by washing or vacuuming (with appropriate filters) the clothing, rags or other items. Periodic medical examinations are recommended for individuals regularly exposed to dust or mist.

SATURN INDUSTRIES, INC.  
John E. Lee, President

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