SAFETY DATA SHEET
FOR
THORN SMITH LABORATORIES

SECTION 1 - IDENTIFICATION

Trade Name:	**Steel "G" for Ni, Cr, Si**
Catalog Number:	80-1685 (Vials) / 80-1686 (100g)
Product Description:	Analyzed Quantitative Unknowns
Manufacturer:	Auric Enterprises, Inc. d/b/a Thorn Smith Laboratories
Address:	7755 Narrow Gauge Road Beulah, MI 49617
Phone Number:	231-882-4672
SDS Number:	TSL-031

SECTION 2 – HAZARDS IDENTIFICATION

Classification of Substance or Mixture: Not a hazardous substance or mixture as packaged in 10g student vials or 100g containers.

GHS Label Elements, including precautionary statements: Not a hazardous substance or mixture as packaged in 10g student vials or 100g containers.

Hazards not otherwise classified (HNOC) or not covered by GHS: None

Potential Health Effects:

Eye Contact: Dusts or particulates may cause mechanical irritation including pain, tearing and redness. Scratching of the cornea can occur if eye is rubbed. Fumes may be irritating. Contact with the heated material may cause thermal burns.

Skin Contact: Dusts or particulates may cause mechanical irritation due to abrasion. Coated steel may cause skin irritation in sensitive individuals. Some components in this product are capable of causing allergic reaction, possibly resulting in burning, itching and skin eruptions. Contact with heated material may cause thermal burns.

Inhalation: Dusts may cause irritation of the nose, throat, and lungs. Excessive inhalation of metallic fumes and dusts may result in metal fume fever, an influenza-like illness. It is characterized by a sweet or metallic taste in the mouth, accompanied by dryness and irritation of the throat, cough, shortness of breath, pulmonary edema, general malaise, weakness, fatigue, muscle and joint pains, blurred vision, fever and chills. Typical symptoms last from 12 to 48 hours.

Ingestion: Ingestion of small amounts not to be acutely toxic via ingestion based on the physical and chemical properties of the product. Swallowing of excessive amounts of alloys containing copper or nickel may cause irritation, nausea, stomach pain and diarrhea.

Chronic or Special Toxic Effects:
Repeated exposure to fine dusts may inflame the nasal mucosa and cause changes of the lung. In addition, a red-brown pigmentation of the eye and/or skin may occur. Welding fumes have been associated with adverse health effects. Contains components that may cause cancer or reproductive effects.

Target Organs:
Over exposure to specific components of this product that are generated in dusts or fumes may cause adverse effects to the following organs or systems: eyes, skin, liver, kidney, central nervous system, cardiovascular system, respiratory system.

Medical Conditions Possibly Aggravated by Exposure:
Diseases of the skin such as eczema may be aggravated by exposure. Also, disorders of the respiratory system including asthma, bronchitis, and emphysema. Long-term inhalation exposure to agents that cause pneumonconiosis (e.g. dust) may act synergistically with inhalation of oxide fumes or dusts of this product.

SECTION 3 – COMPOSITION AND INFORMATION ON INGREDIENTS

Base Metal:

Iron 60-88%

CAS No.:	7439-89-6
Synonyms:	Iron filings, iron shavings, iron powdered, iron reduced.
OSHA PEL:	10
ACGIV TLV	5 mg/m^3 (as Iron Oxide)
OTHER LIMITS:	N/A

Alloying Elements:

Chromium 10-30%

CAS No.:	7440-47-3
OSHA PEL:	1
ACGIH TLV:	.5 mg/m^3
OTHER LIMITS:	N/A

Nickel 0-27%

CAS No.:	7440-02-0
OSHA PEL:	1
ACGIH TLV:	1 mg/m^3
OTHER LIMITS:	N/A

Manganese	<6%	Sulfur	<2%	Silicon	<2%
Molybdenum	<6%	Carbon	<2%	Cobalt	<2%
Phosphorus	<2%	Copper	<6%	Niobium	<2%
Titanium	<6%			Tin	<2%

SECTION 4 – FIRST AID MEASURES

Eye Contact: Do not rub eye(s). Flush with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Obtain medical attention if irritation persists. Thermal burns should be treated as medical emergencies.

Skin Contact: In case of overexposure to dusts of fumes, wipe off excess from skin. Immediately wash skin with soap and water for at least 15 minutes. Obtain medical attention if irritation develops or persists. If thermal burn occurs, flush area with cold water and get immediate medical attention.

Inhalation: If a person breathes in large amounts, move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention if symptoms described in this SDS develop.

Ingestion: Never give anything by mouth to an unconscious person. Contact a poison control center with the information from this SDS and the Technical Data Sheet on the composition of the ingested material. Unless poison control advises otherwise, give the person one or two glasses of water, then induce vomiting. After first aid have the person see a physician for follow up care.

SECTION 5 – FIRE FIGHTING MEASURES

Flammability: Non-Flammable
Flash Points: Not Applicable
Auto-Iginition: None reported for alloy but metal powders can burn and form explosive mixtures in air.
Flammable Limits: No LEL reported for alloy but some component powders do have reported limits.
No UEL reported.

Extinguishing Media: Do not use water or halon. Use dry sand, dry dolomite or dry graphite powder or other dry chemical extinguishing agent formulated for metal fires.

Special Fire Fighting Procedures: Do not use water on molten metal. Do not use Carbon Dioxide (CO_2). Firefighters should not enter confined spaces without wearing NIOSH/MSHA approved positive pressure breathing apparatus (SCBA) with full face mask and full protective equipment.

Unusual Fire/Explosion Hazards: Steel products do not present fire or explosion hazards under normal conditions.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures: Utilize recommended protective clothing and equipment. Clean spills in a manner that does not disperse dust into the air. Sweep or vacuum up spillage and collect in a suitable container for disposal.

SECTION 7 – HANDLING AND STORAGE

Storage Temperatures: Stable under normal temperatures and pressures.
Shelf Life: Unlimited in tightly closed container.
Precautions to be taken in handling and storage: Store away from acids, caustics, halogenated compounds and oxidizers. Do not store near combustible materials. Store in accordance with all local, state, and federal environmental regulations.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Operations with potential for generating high concentrations of airborne particles or fumes should evaluated and controlled as necessary.

Respiratory Protection (Specify Type): NIOSH/MSHA approved dust/fume/mist respirator should be used to avoid excessive exposure.

Protective Gloves: Wear protective gloves.

Eye Protection: Wear chemical safety glasses.

Skin – Appropriate protective gloves should be worn as necessary. Good personal hygiene practices should be followed including cleansing exposed skin several times daily with soap and water, and laundering or dry cleaning soiled work clothing.

Ventilation To Be Used: Use adequate general or local exhaust ventilation to keep fume or dust levels as low as possible.
__X__ Local Exhaust __X__ Mechanical (General) _____ Special
_____ Other (Specify)

Other Protective Clothing and Equipment: Wear clean body-covering clothing.

Hygienic Work Practices: Avoid contact with eyes, skin, and clothing. Avoid breathing dust. Keep container closed when not in use. Use with adequate ventilation. Wash thoroughly after handling.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical Form: Fine shavings, filings, powder.
Color: Gray
Odor: Odorless

Boiling Point: N/A
Specific Gravity (H_2O=1)**:** 7.5 – 9.3
Melting Point: >2500ºF
Solubility in Water: Insoluble in water.
Water Reactive: N/A
Vapor Pressure (mm Hg and Temperature): No information found.
Vapor Density (Air-1): N/A
Evaporation Rate (-1): N/A

SECTION 10 – STABILITY AND REACTIVITY

STABILITY: __X__ Stable _____ Unstable
Conditions to Avoid: Contamination from other materials.
Incompatibility (Materials to avoid): Reacts with strong acids and caustics to form Hydrogen gas. Contact with sulfur may cause evolution of heat. Contact with halogenated compounds and oxidizers may produce violent reactions and fires.
Hazardous Decomposition Products: Toxic metal oxides, carbon and nitrogen oxides may be produced during a fire involving metal alloys. Alloys with nickel may also produce poisonous nickel carbonyl.

HAZARDOUS POLYMERIZATION: _____ May Occur __X__ Will Not Occur

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SECTION 11 – TOXICOLOGICAL INFORMATION

Routes of Exposure: Inhalation.

Toxicological data is not available for most pure metals and metal powders. Information may be available for metal compounds. Refer to toxicological reference sources such as NIOSH RTECS for information. Select metal powders are listed below:

Carbon	Acute oral, small lab animals LD_{LO} = > 5 gm/kg
Chromium	Acute oral effect, human LD_{Lo} = 71 mg/kg
Cobalt	Acute oral, human LD_{Lo} = 0.28 mg/kg
Copper	Acute oral, human TD_{Lo} = 0.1 mg/kg
Iron	Acute oral, human 20-60 ug/kg
Manganese	Acute inhalation, human TC_{Lo} = 2300 ug/m^3
Molybdenum	Acute oral, rat TD_{Lo} = 5800 ug/kg
Nickel	Acute oral, guinea pig LD_{Lo} = 5 mg/kg
Nickel	Acute inhalation, guinea pig TC_{Lo} = 15 mg/m^3
Silicon	Acute oral, rat LD = 3160 mg/kg
Tungsten	Acute intraperitoneal, rat LD = 5 gm/kg
Vanadium	Acute inhalation, human TC_{LO} = 346 mg/m^3

Extremely Hazardous Substance: No
CERCLA Hazardous Substance: Cr (5000 lbs), Cu (5000 lbs), Ni (100 lbs)
SARA 313 Toxic Chemicals: No
TSCA Inventory: Yes

SECTION 12 – ECOLOGICAL INFORMATION

No specific information available for metal or metal powder. Metal powders may cause ecological damage through Silting or sedimentation effect in water depriving organisms of habitat and mobility, and/or fouling of gills, lungs and skin thus limiting oxygen intake. Metal powders in soil may form metal oxides and other metal compounds that could become bioavailable and harm aquatic or terrestrial organisms. Metal powder would be relatively immobile in soils but some metal compounds may be transported with ground water.

SECTION 13 – DISPOSAL CONSIDERATIONS

Dispose of in accordance with all applicable local, state and federal environmental regulations.

SECTION 14 – TRANSPORTATION INFORMATION

Domestic (D.O.T.)
Proper Shipping Name: Chemicals, n.o.s.

International (T.M.O.)
Proper Shipping Name: Chemicals, n.o.s.

Air (I.C.A.O.)
Proper Shipping Name: Chemicals, n.o.s.

SECTION 15 – REGULATORY INFORMATION

No specific information available for this product.

SECTION 16 – OTHER INFORMATION

Hazard Label Rating Systems:

NFPA Code:	H=0	F=0	R=0		
HMIS Code:	H=1	F=0	R=0	PPE: See Section 8	Other: *

*Denotes possible chronic hazard if airborne dusts or fumes are generated.

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