

Material Safety Data Sheet
H.O.T. Spiral Wound Gasket
Revised September 16th, 2004

exempted from the OSHA Hazard Communication standard. However, during abnormal use such as abrasive grinding, welding, machining, drilling, etc., this product may release hazardous chemicals and should then be included in the site's OSHA Hazard Communication Program.

SECTION 3: COMPOSITION HAZARDS IDENTIFICATION

Component	CAS #	% by Weight
Graphite	7782-42-5	< 13
Mica*	12001-26-2	< 13
Nickel	7440-02-0	< 15
Chromium	7440-47-3	< 18
Molybdenum	7439-98-7	< 4
Silica, Crystalline Quartz	14808-60-7	< 1

* Mica contains less than 1% crystalline silica quartz.

SECTION 4: FIRST AID MEASURES

Inhalation: Move to fresh air if inhaled high concentrations of dust or metal fumes; monitor for delayed symptoms of nickel fume exposure for several hours after exposure. Obtain medical attention. See Section 8 for exposure limits.

Eyes: Immediately flush with clean water for least 15 minutes, occasionally lifting upper and lower eyelids to remove particulates or dust; obtain medical attention.

Skin: Wash thoroughly with soap and water. If persistent irritation develops, obtain medical attention.

Ingestion: Obtain medical attention.

SECTION 5: FIRE FIGHTING MEASURES

Suitable Extinguishing Media: Material in or near fires should be cooled with a water spray or fog. Extinguishing media may include carbon dioxide, chemical or foam.

Products of combustion: Thermal decomposition or combustion may produce dense smoke, oxides of carbon, metal fumes, and low molecular weight organic compounds whose composition has not been characterized.

Protection of Firefighters: A NIOSH-approved self-contained breathing apparatus, operating in positive pressure mode and full fire-fighting turnout gear should be worn for combating fires.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: If a release of dust occurs during conditions of abnormal use (e.g. abrasive grinding, cutting, abrading, sawing, etc.) remove dust by collecting with a HEPA vacuum. Do not use compressed air to blow dust away from release site. Personnel in the release site should don personal protective equipment per recommendations of Section 8. Isolate the release site and prevent entry of unnecessary and unprotected personnel.

Disposal Precautions: Collected dust should be placed in airtight and sealed poly bags or containers and disposed properly in accordance to federal and state laws. Do not permit airborne releases of collected dust into the breathing zone or environment. See Section 13, "Disposal Considerations".

SECTION 7: HANDLING AND STORAGE

Handling: Avoid aggressive actions which would result in generation of dust. Such actions would include abrading, chipping, etc.

Storage: Shipping and storage may result in accumulation of dust within shipping containers and boxes. If this should occur, dispose container in airtight and sealed polyethylene bags or remove dust using a HEPA vacuum. Do not use compressed air to blow dust from the container or box. See Section 13, "Disposal Considerations". Personnel cleaning dust should don personal protective equipment per recommendations in Section 8.

General hygiene recommendation: Wash hands thoroughly after handling the product, its shipping boxes, or its collected waste or dust. Hand washing should occur before eating, smoking, and grooming.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

During normal use of the product, releases of product's hazardous constituents are not expected. The manufacturing process results in a solid, infusible binding that renders the product inert during its normal use. The hazardous constituents present in quantities greater than 1% (0.1% for carcinogens) may be released during abnormal use or fire conditions including burning, machining, abrasive grinding, torch cutting, sawing, abrading, drilling or riveting. Personal exposure limits to the hazardous constituents are as follows:

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Personal Exposure Limits:				
Component	OSHA PEL	ACGIH [®] TLV [®]	NIOSH REL	Units
Nickel	1.0	1.5	0.015	mg/m ³ TWA
Chromium	1.0	0.5	0.5	mg/m ³ TWA
Molybdenum	15 ----	10 3	None ----	mg/m ³ TWA mg/m ³ TWA, R
Silica, Crystalline Quartz	10 ÷ (%SiO ₂ + 2)	0.05	0.05	mg/m ³ TWA, R
Graphite	15 mppcf	2	2.5	mg/m ³ TWA, R
Mica	20 mppcf	3	3	mg/m ³ TWA, R

OSHA: United States regulatory agency enforcing the Permissible Exposure Limits (PELs)
ACGIH: American Conference of Governmental Industrial Hygienists. Developer of the exposure guidelines—Threshold Limit Values or TLVs[®].
NIOSH: National Institute of Occupational Safety and Health of the U.S. Dept. of Health and Human Services. Developer of the exposure guidelines—Recommended Exposure Limits.
TWA = time weighted average for 8 hours of exposure for the PELs and TLVs. For the RELs, exposure time allowance is 10 hours.
mg/m³ = milligrams of contaminant per cubic meter of air.
mppcf = million particles per cubic foot of air.
R = respirable dust fraction, particulates less than 10 microns (µm) mean particle diameter.
N.E. = Not Established.

Engineering Controls: No specific engineering controls are needed during normal product use and handling.

Personal Protective Equipment (PPE): No PPE required during normal product use and handling.

During abnormal use such as abrasive grinding, torch cutting, welding, machining, abrading, etc. the following protective measures should be employed.

Engineering Controls during abnormal operations:

- Operations producing dust or fumes should be provided with exhaust ventilation equipped with a HEPA filter for removing hazardous constituents from breathing zone.

PPE during abnormal operations:

- *Respiratory protection.* If exposure to the above hazardous constituents is expected to be equal or greater than 50% of their exposure limits or if exposure concentrations are

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unknown, don a NIOSH-approved air-purifying respirator fitted with N95 or P95 particulate filters (i.e. approved as 95% filter efficiency).

- *Eye protection.* Wear safety glasses during the above abnormal operations. For abrasive grinding, wear safety glasses and a face shield. Safety eyewear should meet requirements of ANSI Z87.1-2003, “American National Standard Practice for Occupational and Educational Personal Eye Protective Devices”.
- *Skin and hair protection against metal exposures.* For dust generating activities, wear disposable and dry particulate, impermeable coveralls such as Tyvek[®] or equivalent.

Firefighting: For combating fires don a NIOSH-approved self-contained breathing apparatus, operating in positive pressure mode and full fire-fighting turnout gear. For additional fire fighting measures, see Section 5.

General Hygiene Considerations: Wash hands thoroughly after normal handling and before eating, smoking, and grooming. Hand washing is recognized as a common and good hygiene practice when handling metal products.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Color: Black/Brown	Odor: None
Odor threshold: Not applicable	Physical state: solid
pH: Not applicable	Freezing point: Not applicable
Boiling point: Not applicable	Flash point: Not applicable
Evaporation rate: Not applicable	
Flammability: Not applicable; product is inherently flame resistant	
Upper flammability Limit: Not applicable	
Lower Flammability Limit: Not applicable	
Vapor pressure and density: Not applicable	Specific gravity: 0.7
Solubility in water: Insoluble	
Partition coefficient (n-octanol/water): Not applicable	
Auto-Ignition Temperature: Not applicable; product inherently flame resistant.	
Percent volatile, wt %: 0%	

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable at normal temperatures and storage conditions

Conditions to avoid: Keep away from flames and melting of stainless steel.

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Hazardous decomposition products: Toxic metal fumes of nickel and chromium from melting of stainless steel spirals during fire.

Possibility of hazardous reactions: Stable under conditions of normal use; no expectations of hazardous reactions.

SECTION 11: TOXICOLOGICAL INFORMATION

Possible Hazards during abnormal use or fire conditions. Although several of the ingredients used to formulate this product may be hazardous in their raw state, the manufacturing process results in a solid, infusible binding otherwise rendering the product inert. Hazardous constituents present in quantities greater than 1% (0.1% for carcinogens) may be released during abnormal use or fire conditions including overheating, torch cutting, machining, grinding, sawing, abrading, drilling or riveting.

Under abnormal use conditions, exposure to individual components of this product may result in the following symptoms and health effects.

Graphite (C, < 13%):

Inhalation hazards: Acute exposure may cause coughing, dyspnea (breathing difficulty), black sputum. Repeated and prolonged exposure may cause graphite pneumoconiosis or lung fibrosis. Pre-existing diseases of the respiratory and cardiovascular system may be aggravated by exposure. Immediately Dangerous to Life and Health (IDLH) at air-borne concentration of 1250 mg/m³.

Mica (a.k.a. Muscovite, < 13%):

Inhalation hazards: Acute exposure may cause coughing, dyspnea (breathing difficulty), and lassitude (weakness and exhaustion). Repeated and prolonged exposure may cause mica pneumoconiosis (lung fibrosis), lassitude, and weight loss. Pre-existing diseases of the respiratory and cardiovascular system may be aggravated by exposure. Immediately Dangerous to Life and Health (IDLH) at air-borne concentration of 1500 mg/m³.

Skin and eye contact: Mechanical irritation to eye. Repeated or prolonged exposure to skin may cause skin irritation and sensitization.

Chromium Metal (Cr, < 18%):

Inhalation hazards: Acute exposure may result in cough and irritation of respiratory system. Prolonged exposure may cause histologic fibrosis of the lungs. Immediately Dangerous to Life and Health (IDLH) at air-borne concentration of 250 mg/m³.

Skin and eye contact: Repeated or prolonged exposure may cause skin and eye irritation and sensitization.

Ingestion: Poisonous by ingestion; may cause severe gastrointestinal irritation.

Nickel Metal (Ni, < 15%):

Inhalation hazards: Repeated or acute inhalation of nickel metal fumes may cause pneumonitis and/or pulmonary asthma. Symptoms often do not manifest until a few hours after exposure;

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symptoms are aggravated by physical effort. Anyone showing symptoms of asthma due to nickel exposure should avoid further exposure to this substance. Nickel dusts and fumes may cause mechanical irritation to nasal cavities. Nickel is listed by the IARC (International Agency for Research on Cancer) as a Group 2B carcinogen—possibly carcinogenic to humans and by the NTP (National Toxicology Program) as *reasonably anticipated to be human carcinogen*. Immediately Dangerous to Life and Health (IDLH) at air-borne concentration of 10 mg/m³.

Skin and Eyes: Contact exposure may cause allergic contact dermatitis, conjunctivitis, and inflammatory reactions around nickel-containing medical implants and prostheses. *Ingestion:* Causes gastrointestinal irritation with nausea, vomiting and diarrhea.

Molybdenum (Mo, < 4%):

Inhalation hazards: Dust may cause irritation of nasal and respiratory passages. Immediately Dangerous to Life and Health (IDLH) at air-borne concentration of 5000 mg/m³.

Skin and eye: Irritant to eyes and skin.

Ingestion: May cause diarrhea, loss of weight and damage to liver and kidney.

Silica, Crystalline Quartz (SiO₂, < 1%):

Inhalation hazards: Acute exposure to silica dust may cause paroxysmal coughing, dyspnea (breathing difficulty), and wheezing. Repeated and prolonged exposure may result in decreased pulmonary function and silicosis—a progressive respiratory illness involving lung fibrosis. Crystalline silica quartz is listed by the IARC (International Agency for Research on Cancer) as a Group 1 carcinogen—*carcinogenic to humans* and by the NTP (National Toxicology Program) as a *known human carcinogen*. Immediately Dangerous to Life and Health (IDLH) at air-borne concentration of 50 mg/m³. *Eyes:* Mechanical irritation to eyes.

Aggravation of Pre-existing Health Conditions. Persons with pre-existing respiratory or cardiopulmonary problems may be more susceptible to the effects of exposure to the above hazardous substances.

SECTION 12: ECOLOGICAL INFORMATION

No ecological test data has been developed. Impact to aquatic, terrestrial and air environmental media is judged as insignificant.

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of solid waste in accordance with federal, state and local regulations. Waste should be placed in airtight containers and properly disposed. Contact local regulatory agency for guidance.

SECTION 14: TRANSPORT INFORMATION

Not regulated as a hazardous material by DOT (United States Department of Transportation) or IMO.

Ship in sealed boxes appropriately rated for weight capacity.

SECTION 15: REGULATORY INFORMATION

OSHA:

Product is considered to be an article under normal conditions and use. During conditions of abnormal use (e.g. abrasive grinding, machining, sawing, torch cutting, etc.) the following OSHA Standards may apply: 29 Code of Federal Regulations (CFR) 1910.1200--*Hazard Communication*, 1910.1000--*Tables Z-1 and Z-3--Air Contaminants*, 1910.134--*Respiratory Protection*, 1910.132--*Personal Protective Equipment General Requirements*, and 1910.1020--*Access to Employee Exposure and Medical Records*.

SARA Title III:

Sections 302, 311 and 312: Product contains no SARA listed "extremely hazardous substances". No reporting requirements for hazardous chemicals; product considered an article. .

Section 313: This product contains nickel and chromium which are listed chemicals per 40 CFR Part 372.65. These chemicals are to be reported when facility consumption exceeds the Section 313 threshold reporting quantity

CERCLA: This product contains nickel and chromium. These substances are listed CERCLA substances when used in excess of reportable quantities (RQ) per 40 CFR 302.

TSCA: Not applicable.

CAA: This product contains no listed chemicals subject to the accident release prevention regulations of the EPA Clean Air Act, Section 112 (r).

SECTION 16: OTHER INFORMATION

National Paint and Coating Association's (NPCA) HMIS[®] III (Hazardous Materials Identification System, Third Version) Label Ratings:

Ratings based on normal use: HEALTH 0, FLAMMABILITY 0, PHYSICAL HAZARDS 0, PPE: None Required.

Ratings based on abrasive grinding, machining, and other abnormal uses: HEALTH *3, FLAMMABILITY 0, PHYSICAL HAZARDS 0, PPE rating to be supplied by user depending on specific operations and safety engineering controls available.

NOTE: HMIS[®] ratings involve data review and interpretation that may vary among operations. The HMIS[®] ratings are intended only for rapid, general identification of the magnitude of potential hazards. The ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. An asterisk (*) in the HMIS[®] health field, designates potential chronic health hazards such as cancer, reproductive effects, or chronic injury to a specific organ of the body. Further explanation and definitions HMIS[®] ratings of available at <http://www.paint.org/hmis/index.cfm>

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The data in this material safety data sheet (MSDS) relates only to the specific material designated herein and does not relate to use in combination with any other material. It is the user's responsibility to satisfy oneself as to the suitability of this information for the particular use or activity involving this product. No warranty or representation with respect to information in this MSDS is intended or given. Flexitallic, L.P. will not be responsible for damages resulting from use of or reliance upon this information.

This MSDS is intended to comply with the format of ANSI Z400.1-2004, *American National Standard for Hazardous Industrial Chemicals—Material Safety Data Sheets—Preparation* and the United States' Occupational Safety and the Hazard Communication Standard (29 CFR 1910.1200 General Industry and 29 CFR 1926.59) enforced through OSHA (Occupational Safety and Health Administration) of the U.S. Department of Labor.
