



MATERIAL SAFETY DATA SHEET

BRUENING ROCK PRODUCTS, INC.

900 MONTGOMERY STREET, P.O. BOX 127
DECORAH, IOWA 52101
(563) 382-2933

I - IDENTIFICATION

CHEMICAL NAME Natural Sand or Gravel	CHEMICAL FORMULA Not Applicable	MOLECULAR WEIGHT Not Applicable
TRADE NAME Sand or Gravel		
SYNONYMS	DOT IDENTIFICATION NO. None	

II - PRODUCT AND COMPONENT DATA

COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO.	% (Approx)	ACGIH TLV-TWA
Natural Sand* or Gravel*	None	100	See Section VI
*Quartz (crystalline silica) content typically greater than 1%.	14808-60-7		

III - PHYSICAL DATA

APPEARANCE AND ODOR Angular or round multicolored particles. No odor.	SPECIFIC GRAVITY 2.55 - 2.80
BOILING POINT Not applicable	VAPOR DENSITY IN AIR (Air = 1) Not Applicable
VAPOR PRESSURE 0	% VOLATILE, BY VOLUME 0%
EVAPORATION RATE 0	SOLUBILITY IN WATER Negligible

IV - REACTIVITY DATA

STABILITY Stable	CONDITIONS TO AVOID None Known
INCOMPATIBILITY: (Materials to avoid) None Known	
HAZARDOUS DECOMPOSITION PRODUCTS None Known	
HAZARDOUS POLYMERIZATION Will not occur	

V - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)
Not Flammable

FLAMMABLE LIMITS IN AIR
Not Flammable

EXTINGUISHING AGENTS
None Required

UNUSUAL FIRE AND EXPLOSION HAZARDS

None Known

VI - TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the TLV must be defined in the workplace.)

Exposure limits vary with the % Quartz in dust. All limits are for 8-hr. TWA exposures.
Total Dust (ACGIH & MSHA) = $30\text{mg}/\text{M}^3 \div (\% \text{ Quartz} + 3)$; Total Dust (OSHA) = $30\text{mg}/\text{M}^3 \div (\% \text{ Quartz} + 2)$
Respirable Dust (ACGIH, MSHA & OSHA) = $10\text{mg}/\text{M}^3 \div (\% \text{ Quartz} + 2)$

Effects described in this section are believed not to occur if exposures are maintained at or below appropriate TLVs.
Because of the wide variation in individual susceptibility, TLVs may not be applicable to all persons and those with medical conditions listed below.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Inhaling respirable dust may aggravate existing respiratory system disease(s) and/or dysfunctions.
Exposure to dust may aggravate existing skin and/or eye conditions.

ACUTE TOXICITY Primary route(s) of exposure: Inhalation Skin Absorption Ingestion

Exposure to dust may irritate respiratory system, eyes, and skin.

Use of natural sand and gravel for construction purposes is believed not to have caused acute toxic effects. Exposure to quartz-containing dust in excess of appropriate TLVs during sandblasting and foundry operations has caused acute silicosis. Symptoms of acute silicosis may include (but are not limited to) shortness of breath, coughing, fever, and weight loss. Acute silicosis can occur in less than one year and can be fatal.

FIRST AID

Dust in eyes: Flush eyes with running water for 15 minutes. Contact a physician if irritation persists.

Dust on previously irritated skin: Wash with soap and water. Contact a physician if irritation is aggravated.

Dust inhalation: Remove to fresh air.

Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists.

CHRONIC TOXICITY

Chronic exposure to respirable quartz-containing dust in excess of appropriate TLVs has caused silicosis, a progressive pneumoconiosis.

Symptoms of Silicosis: Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis is progressive, and symptoms can appear at any time, even years after exposures have ceased. Symptoms of silicosis may include (but are not limited to): Shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Sand and gravel are not listed as carcinogens on the NTP, IARC, or OSHA lists of carcinogens.

VII - PERSONAL PROTECTION AND CONTROLS

RESPIRATORY PROTECTION

NIOSH-MSHA approved dust respirators for conditions where dust levels exceed or are likely to exceed appropriate TLVs. Respirator use must comply with applicable standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements. NIOSH-MSHA approved air-supplied hood must be used when sandblasting.

VENTILATION

Local exhaust or general ventilation adequate to maintain exposures below appropriate TLVs.

SKIN PROTECTION

See "Hygiene" section below.

EYE PROTECTION

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

HYGIENE

Wash dust-exposed skin with soap and water. Wash work clothes after each use.

OTHER CONTROL MEASURES

Respirable dust levels should be monitored regularly. Dust levels in excess of appropriate TLVs should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

VIII - STORAGE AND HANDLING PRECAUTIONS

Respirable dust may be generated during processing, handling, and storage. The controls identified in Section VII of this MSDS should be applied as appropriate.

This product is not recommended and should not be used for sandblasting, nor in foundry operations (or other operations during which dust is generated in excess of appropriate TLVs) unless and until fully adequate measures have been taken to reduce dust exposure levels below appropriate TLVs. The controls identified in Section VII of this MSDS should be applied as appropriate.

IX - SPILL LEAK AND DISPOSAL PRACTICES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Spilled materials, where dust can be generated, may overexpose cleanup personnel to respirable dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary.

WASTE DISPOSAL METHOD

Pickup and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

X - TRANSPORTATION

DOT HAZARD CLASSIFICATION

None

PLACARD REQUIRED

None

LABEL REQUIRED

Label as required by applicable state and local regulations.

For Further Information

DATE OF PREPARATION

NOTICE: Company believes that the information contained on this Material Safety Data Sheet is accurate. The suggested procedures are based on experience as of the date of publication. They are not necessarily all-inclusive nor fully adequate in every circumstance. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulations, rules or insurance requirements.

NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE IS MADE.



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900 MONTGOMERY STREET, P.O. BOX 127
DECORAH, IOWA 52101
(563) 382-2933

I - IDENTIFICATION

CHEMICAL NAME Limestone	CHEMICAL FORMULA Not Applicable	MOLECULAR WEIGHT Not Applicable
TRADE NAME Crushed Stone	DOT IDENTIFICATION NO. None	
SYNONYMS Aggregate, Aggregate, Fluiding Agent, Manufactured Sand		

II - PRODUCT AND COMPONENT DATA

COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO.	% (Approx)	ACGIH TLV-TWA
Limestone*	1317-65-3*	100	See Section VI
*Composition Varies Naturally - May Contain Quartz			
*EPA TSCA Inventory (Same CAS No. As Calcium Carbonate)			

III - PHYSICAL DATA

APPEARANCE AND ODOR Angular grey, white and tan particles ranging in size from powder to boulders. No odor.	SPECIFIC GRAVITY 2.6 - 2.75
BOILING POINT Not applicable	VAPOR DENSITY IN AIR (AIR = 1) Not Applicable
VAPOR PRESSURE Not Applicable	% VOLATILE, BY VOLUME 0%
EVAPORATION RATE 0	SOLUBILITY IN WATER 0

IV - REACTIVITY DATA

STABILITY Stable	CONDITIONS TO AVOID None Known
INCOMPATIBILITY (Materials to avoid) None Known	
HAZARDOUS DECOMPOSITION PRODUCTS None Known	
HAZARDOUS POLYMERIZATION	

V - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)

Not Flammable

FLAMMABLE LIMITS IN AIR

Not Flammable

EXTINGUISHING AGENTS

None Required

USUAL FIRE AND EXPLOSION HAZARDS

None Known

VI - TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the TLV must be defined in the workplace.)

Exposure limits vary with the % Quartz in dust. All limits for 8-hr. TWAs in mg/M^3 .
 Dust < 1% Quartz: Total (ACGIH & MSHA) = 10 (OSHA=15); Respirable (ACGIH, MSHA & OSHA) = 5.
 Dust \geq 1% Quartz: Total (ACGIH & MSHA) = $30 \div (\% \text{ Quartz} + 3)$; Total (OSHA) = $30 \div (\% \text{ Quartz} + 2)$.
 Respirable (ACGIH, MSHA & OSHA) = $10 \div (\% \text{ Quartz} + 2)$

Effects described in this section are believed not to occur if exposures are maintained at or below appropriate TLVs. Because of the wide variation in individual susceptibility, TLVs may not be applicable to all persons and those with medical conditions listed below.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Inhaling respirable dust may aggravate existing respiratory system disease(s) and/or dysfunctions.
 Exposure to dust may aggravate existing skin and/or eye conditions.

ACUTE TOXICITY

Primary route(s) of exposure:

Inhalation

Skin Absorption

Ingestion

Exposure to dust may irritate respiratory system, eyes, and skin.

FIRST AID

Dust in eyes: Flush eyes with running water for 15 minutes. Contact a physician if irritation persists.

Dust on previously irritated skin: Wash with soap and water. Contact a physician if irritation is aggravated.

Dust inhalation: Remove to fresh air.

Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists.

CHRONIC TOXICITY

Chronic exposure to respirable limestone dust in excess of appropriate TLVs has caused pneumoconiosis (Dusty Lung).

Chronic exposure to respirable quartz-containing limestone dust in excess of appropriate TLVs has caused silicosis, a progressive pneumoconiosis.

Symptoms of Silicosis: Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis is progressive, and symptoms can appear at any time, even years after exposures have ceased. Symptoms of silicosis may include (but are not limited to): shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Limestone is not listed as a carcinogen on the NTP, IARC, or OSHA lists of carcinogens.

VII - PERSONAL PROTECTION AND CONTROLS

RESPIRATORY PROTECTION

NIOSH-MSHA approved dust respirators for conditions where dust levels exceed or are likely to exceed appropriate exposure limits. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

VENTILATION

Local exhaust or general ventilation adequate to maintain exposures below appropriate TLVs.

SKIN PROTECTION

See "Hygiene" section below.

EYE PROTECTION

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

HYGIENE

Wash dust-exposed skin with soap and water. Wash work clothes after each use.

OTHER CONTROL MEASURES

Respirable dust levels should be monitored regularly. Dust levels in excess of appropriate TLVs should be reduced by all feasible engineering controls, including (but not limited to) wet suppression,

VIII - STORAGE AND HANDLING PRECAUTIONS

Respirable dust may be generated during processing, handling, and storage. The controls identified in Section VII of the MSDS should be applied as appropriate.

IX - SPILL LEAK AND DISPOSAL PRACTICES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Spilled materials, where dust can be generated, may overexpose cleanup personnel to respirable dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary.

WASTE DISPOSAL METHOD

Pickup and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

X - TRANSPORTATION

DOT HAZARD CLASSIFICATION

None

PLACARD REQUIRED

None

LABEL REQUIRED

Label as required by applicable state and local regulations.

For Further Information

DATE OF PREPARATION:

NOTICE:

believes that the information contained on this Material Safety Data Sheet is accurate. The suggested procedures are based on experience as of the date of publication. They are not necessarily all-inclusive nor fully adequate in every circumstance. Also, the suggestions should not be confused with nor followed in

2/7/2012

M A T E R I A L S A F E T Y D A T A S H E E T

TEXAS REFINERY CORP.

840 N. Main Street

Fort Worth, Texas 76164

(817) 332-1161

24 Hr. Emergency Telephone No.: CHEMTREC 800-424-9300

Preparation/Revision Date - February, 2012

Supersedes - September, 2011

***** I. PRODUCT IDENTIFICATION *****

TRADE NAME - #880 CROWN & CHASSIS GREASE
CHEMICAL FAMILY - Petroleum Hydrocarbons

NLGI - #2

PRODUCT CODE: 8455/8456

***** II. HAZARDOUS INGREDIENTS *****

1. Heavy paraffinic distillates (petroleum) (oil mist)
CAS# 64742-54-7 PEL: 5mg/m³ TLV: 5mg/m³ WT.% 75-90

2. Antimony Compound*
CAS# N/A PEL: 0.5mg/m³ TLV: 0.5mg/m³ WT.% < 2

* This product contains a toxic chemical(s) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Each regulated chemical is present at a concentration that does not exceed the above specified upper bound concentration value.

***** III. PHYSICAL/CHEMICAL DATA *****

BOILING POINT (°F/C): > 600/316 SPECIFIC GRAVITY (H₂O=1): 0.97
VAPOR PRESSURE (mm Hg): < 1 VAPOR DENSITY (Air=1): N/A
PERCENT VOLATILE BY VOL.: Negligible SOLUBILITY IN WATER: Negligible
EVAPORATION RATE (Butyl Acetate=1): N/A
APPEARANCE AND ODOR - Red Grease with mineral oil odor

**** IV. FIRE AND EXPLOSION HAZARD DATA *****

FLASH POINT (°F/C): > 410/210 (COC)
FLAMMABLE LIMITS: Not determined
EXTINGUISHING MEDIA: CO₂, Foam, Dry Chemical
SPECIAL FIRE FIGHTING PROCEDURES: Firefighters, use air-supplied breathing equipment. Cool exposed containers with water spray.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Do not store with strong oxidants.
NFPA: HEALTH: 0 FLAMMABILITY: 1 REACTIVITY: 0
HMIS: HEALTH: 0 FLAMMABILITY: 1 REACTIVITY: 0

***** V. HEALTH HAZARD DATA *****

TLV/PEL: Not established for product - See Section II
PRINCIPAL ROUTES OF EXPOSURE - Skin
CARCINOGENS - None known
EFFECTS OF OVEREXPOSURE - Prolonged contact may cause mild skin and eye irritation. The primary hazard associated with grease is in high pressure grease guns. If injected under the skin, necrosis could result. Ingestion may cause irritation, nausea or diarrhea.

2/7/2012

EMERGENCY AND FIRST AID PROCEDURES - Flush eyes with large amounts of water for at least 15 minutes. Wash skin with soap and water. If injected under the skin, get medical attention immediately. In case of ingestion, DO NOT induce vomiting; lubricant may be aspirated into the lungs; call a physician immediately.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE - None known

NOTES TO PHYSICIAN - None

***** VI. REACTIVITY DATA *****

STABILITY - Stable

CONDITIONS TO AVOID - N/A

INCOMPATIBILITY (Materials to Avoid) - Strong Oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS - Carbon Monoxide, Carbon Dioxide

HAZARDOUS POLYMERIZATION - Will not occur

***** VII. PRECAUTIONS FOR SAFE HANDLING AND USE *****

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED - Clean up mechanically.

WASTE DISPOSAL METHOD - Federal, State and/or Local approved disposal

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE - Normal for greases

OTHER PRECAUTIONS - None

***** VIII. CONTROL MEASURES *****

RESPIRATORY PROTECTION - None

VENTILATION - N/A

PROTECTIVE GLOVES - Not required

EYE PROTECTION - Not required

OTHER PROTECTIVE EQUIPMENT - Not required

WORK/HYGIENIC PRACTICES - Observe good personal hygiene practice when handling this lubricant.

***** IX. TRANSPORTATION DATA *****

DOT SHIPPING NAME - N/A

DOT HAZARD CLASS - N/A

FREIGHT CLASSIFICATION - Petroleum, lubricating grease
(NMFC 155250 SUB 2 CLASS 65)

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FOR ADDITIONAL INFORMATION CONTACT: Regulatory Affairs Office
(800) 827-0711 Ext. 277

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THIS INFORMATION IS BEING SUPPLIED TO YOU UNDER OSHA "RIGHT TO KNOW" REGULATION 29 CFR 1910.1200 AND IS OFFERED IN GOOD FAITH. THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE TRUE AND ACCURATE. NO WARRANTY, EXPRESSED OR IMPLIED, REGARDING THE ACCURACY OF THIS DATA, THE HAZARDS CONNECTED WITH THE USE OF THE MATERIAL, OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, IS MADE. TEXAS REFINERY CORP. ASSUMES NO RESPONSIBILITY FOR DAMAGE OR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.



This Material Safety Data Sheet (MSDS) is for U.S. manufactured or distributed welding consumables and related products and may be used to comply with OSHA's Hazard Communication standard, 29 CFR 1910.1200, and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499. The OSHA standard must be consulted for specific requirements. This Safety Data Sheet complies with European Commission Directive 89/106/EEC, 91/155/EEC, ISO 11014-1 and ANSI Z400.1. This document is translated in several languages and available on our website at www.hobartbrothers.com, from your sales representative or by calling customer service at 1 (937) 332-4000.

SECTION 1 - IDENTIFICATION

Manufacturer Name: HOBART BROTHERS COMPANY
Address: 101 TRADE SQUARE EAST, TROY, OH 45373
Website: www.hobartbrothers.com
Telephone No: 1 (937) 332-4000
Emergency No: 1 (800) 424-9300

Products Type: TUBULAR ARC WELDING ELECTRODES FOR FLUX CORED, METAL CORED AND COMPOSITE SUBMERGED ARC WELDING
GROUP A: Product For: Gas Shielded Carbon and Low Alloy Steel
Trade Name: ECLIPSE RXR-XLS, ULTIMET 716; EXCEL-ARC 71; FABCO 80D2, 82HD, 85, 87, 90, 825, E70T-1C, E70T-9C H8, HORNET, RXR, RXR-XLS, TR70, XL-71; FABCOR 80XLS, 86R, 96, 702; FABDUAL T9M, T91M; FLUX-COR 2, 3, 7, 7XR, 9XT, 37, 80A1, 90D3; GALVACOR; GALVALLOY; HOBART E71T-GS; METAL-COR 3, 3S, 6, 6L, 6XC, 8, 80D2, EH14S, EL12KS, EM12KS, EN-VISION; METALLOY 70, 70R, 70X, 71, 76, 80D2, A1S, A3S, CO2, EH14S, EL12KS, EM12KS, X-CEL; PIPEMASTER MC70; SPEED-ALLOY 70, 71, 71A, 71A1, 71-V, 719, 75, 95D2, 105D2; SPEED-COR 6; SUPER-COR; SUPER TUF-COR; TM-11, 22, 37, 55, 71 XTR, 72, 73, 75A1, 81A1, 91D3, 95D2, 105D2, 711M, 791, 811A1, RX7; TRIPLE-7, 8; TUF-COR 1, 5, 75A1, 95D2, 105D2; VERSATILE; VERTI-COR I, II, III, 71, 81A1; VISION AP70, HiDep 70, MetCOR 70

GROUP B: Product For: Self-Shielded Carbon Steel
Trade Name: FABSHIELD 4, 21B, 23, 31, 55, 120C, 7027, HSR; SELF-SHIELD 3, 4, 7, 11, 11GS; SPEED-SHIELD 11, GS; TM- 33R, 44, 77, 121, 123, 133
GROUP C: Product For: Carbon and Low Alloy Steel
Trade Name: DURASHIELD 8-11; EDGE; FABCO 81K2-C, 83, 91, 91K2-C, 107G, 110, 110K3-M, 115, 803, HICOR, XTREME 120, B2, B3; FABCOR 209, 1100; FABSHIELD 3Ni1, 71K6, 79T8, 81N1, 81N1+, 81N2, 811K6, 7018, OFFSHORE 71Ni, XLNT-6, XLR-8, X80; FLUX-COR 80B2, 80Ni1, 80Ni2, 80W, 90B3, 90K2, 90Ni2, 100K3, 110K3; FORMULA XL8Ni1, XL8Ni1-C, XL525, XL550, GD5; HOBART CBC-1; MATRIX; MEGAZORD; METAL-COR 80B2, 80Ni1, 80Ni2, 80Ni3, 90, 90B3, 100, 110, B2S, B3S, F2S, MAXIM, N1S, N2S, N3S, N4S, WS; METALLOY 80B2, 80N1, 80N2, 80N3, 80W, 90, 90B3, 100, 100G, 110, 120S, B2S, B3S, F2S, N1S, N2S, N3S, N4S, VANTAGE, VANTAGE CVN, VANTAGE D2, VANTAGE Ni1, WS; PREMIER 70; PW-201; PIPEMASTER F100-K2, F101-K2, F110-N1, F71, FS71-K6, FS71Ni1, FS 81-Ni2, MC90, MC100; SELF-SHIELD 8; SPEED-ALLOY 71-VC, 81B2L-V, 81Ni1-V, 81Ni2-V, 81W, 81W-V, 85, 85C1, 85C2, 85C3, 91B3, 91B3L, 91B3L-V, 91B3-V, 91-V, 92S, 95, 100F3-S, 111-V, 112-S, 115, 125, 712, 712M, 790, 4130-V; TM-78K6, 81B2, 81N1, 81N2, 81W, 85B2L, 85N1, 85N2, 85N3, 91B3, 91B3L, 91K2, 91N2, 95K2, 95M-B3, 101K3, 105K3, 111K3, 115, 125K4, 770, 771, 71HYN, 772, 811B2, 811N1, 811N2, 811N3, 811W, 880, 881K2, 910, 911B3, 911N2, 991K2, 101, 101K3-C, 1101K3-M, 4130; TUF-COR 85B2L, 85Ni1, 85Ni2, 85Ni3, 95B3, 95K2, 105K3, 115, 125K4; VERTI-COR 70, 72, 81B2, 81Ni1, 81Ni2, 81W, 91B3, 91K2, 91Ni2, 110K3-M, 1101K3-C, IINI1

GROUP D: Product For: Corrosion Resisting Steel
Trade Name: ARC STAR 409; FABCOR 409; FABLOY 409, 409T, 439; FABTUF 250, 960; METAL-COR 409, 409Cb, 439; METALLOY 18CrCb, 409, 409Cb, MCW430NbL, 439; POWERCORE 91; RSC-409; SPEED-ALLOY 5055; TM B6, B9

SECTION 2 - IDENTIFICATION OF HAZARDS

IMPORTANT - This section covers the hazardous materials from which this product is manufactured. The fumes and gases produced during welding with normal use of this product are also addressed in Section 8. The term "hazardous" in this section should be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200).

HAZARDOUS INGREDIENT	CAS	EINECS [†]	REGULATORY HAZARD CLASSIFICATION/DESIGNATION 67/548/EEC [‡]	IARC [§]	NTP [¶]	OSHA	65 [°]
ALUMINUM	7429-90-5	231-072-3	F - R10, R15, R17	---	---	---	---
ANTIMONY TRIOXIDE	1309-64-4	215-175-0	Carc 3 [Ⓛ] - R40	2B	---	---	X
BARIUM FLOURIDE	7787-32-8	232-108-0	None	---	---	---	---
CALCIUM CARBONATE	1317-65-3	215-279-6	None	---	---	---	---
CERIUM OXIDE	1306-38-3	215-150-4	None	---	---	---	---
CHROMIUM	7440-47-3	231-157-5	O - R9; Carc 1 [Ⓛ] - R45; Muta 2 - R46; Repr 3 - R62; T+ - R26; T - R24/25, R48/23 C - R35, R42/43; N - R50, R53 [Ⓢ]	1 ²² , 3 ²	K ²²	X ²²	X ²²
COBALT	7440-48-4	231-158-0	Xn; R42/43, R53	2B	---	X	X
FLUORSPAR	7789-75-5	232-188-7	None	---	---	---	---
IRON	7439-89-6	231-096-4	None	---	---	---	---
IRON OXIDE	1309-37-1	215-168-2	None	---	---	---	---
LITHIUM CARBONATE	554-13-2	209-062-5	F - R14/15; C - R34 [†]	3	---	---	---
LITHIUM FLUORIDE	7789-24-4	232-152-0	F - R14/15; C - R34 [†]	---	---	---	---
LITHIUM OXIDE	12057-24-8	235-019-5	F - R14/15; C - R34 [†]	---	---	---	---
MAGNESIUM	7439-95-4	231-104-6	F - R11, R15, R17	---	---	---	---
MAGNESIUM OXIDE	1309-48-4	215-171-9	None	---	---	---	---
MANGANESE	7439-96-5	231-105-1	Xn - R20/22 [†]	---	---	---	---
MOLYBDENUM	7439-98-7	231-107-2	Xn - R48/20/22; Xi - R36/37 [†]	---	---	---	---
NICKEL	7440-02-0	231-111-4	Carc 3 [Ⓛ] - R40; T - R43, R48/23	1	K	X	X
SILICA	14808-60-7	238-878-4	Xn - R48/20, R40/20	1 [Ⓢ]	K	X	X
(Amorphous Silica Fume)	69012-64-2	273-761-5	None	3	K	---	X
SILICON	7440-21-3	231-130-8	None	---	---	---	---
STRONTIUM FLUORIDE	7783-48-4	232-000-3	None	---	---	---	---
TITANIUM	7440-32-6	231-142-3	None	---	---	---	---
TITANIUM DIOXIDE	13463-67-7	236-675-5	None	2B	---	---	---

† - European Inventory of Existing Chemical Substances Number Δ - European Union Directive 67/548/EEC - Annex 1 E - International Agency for Research on Cancer (1 - Human Carcinogen, 2A - Probably Carcinogenic to Humans, 2B - Possibly Carcinogenic to Humans, 3 - Unclassifiable as to Carcinogenicity in Humans, 4 Probably Not Carcinogenic to Humans) Z - US National Toxicology Program (K - Known Carcinogen, S - Suspected Carcinogen) H - OSHA Known Carcinogen List ⊖ - California Proposition 65 (X - On Proposition 65 list) --- Dashes indicate the ingredient is not listed with the IARC, NTP, OSHA or 65 ⊕ - Carcinogen, Mutagen or Reproductive Category per European Council Directive 67/548/EEC Annex I Σ - Metal and Chromium III Compounds ΣΣ - Chromium VI Compounds ΣΣΣ - Chromium (VI) Trioxide EU 67/548/EEC Classification/Designation Y - Manganese Dioxide EU 67/548/EEC Classification/Designation X - Molybdenum Trioxide EU 67/548/EEC Classification/Designation T - Lithium EU 67/548/EEC Classification/Designation Ψ - Silica Crystalline α-Quartz

The following symbols correspond with the EU 67/548/EEC column above are in European Union Directive 67/548/EEC Annex 1 and EC 1272/2008 Annex VI - Table 3.2:

F - Flammable	Xn - Harmful	Xi - Irritant	O - Oxidizer
C - Corrosive	N - Dangerous for the Environment	T - Toxic	T+ - Extremely Toxic

WARNING! - Avoid breathing welding fumes and gases, they may be dangerous to your health. Always use adequate ventilation. Always use appropriate personal protective equipment.

PRIMARY ROUTES OF ENTRY: Respiratory System, Eyes and/or Skin.

ELECTRIC SHOCK: Arc welding and associated processes can kill. See Section 8.

ARC RAYS: The welding arc can injure eyes and burn skin.

FUMES AND GASES: Can be dangerous to your health.

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrode used. Most fume ingredients are present as complex oxides and compounds and not as pure metals. When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization reaction or oxidation of the materials shown in this section, plus those from the base metal and coating, etc., as noted above. Monitor for the materials identified in the list within this section.

Fumes from the use of this product may contain complex oxides or compounds of the following elements and molecules: amorphous silica fume, antimony trioxide, barium calcium oxide, chromium, cobalt, copper, fluorspar or fluorides, lithium, manganese, nickel, silica and strontium. Other reasonably expected constituents of the fume would include complex oxides of iron, titanium, silicon and molybdenum. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides are formed by the radiation from the arc. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities). One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1, available from the "American Welding Society", P.O. Box 351040, Miami, FL 33135. Also, from ANSI is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide", which gives additional advice on sampling.

SECTION 3 - HAZARDOUS INGREDIENTS

CONTENT PERCENTAGE BY INGREDIENTS

INGREDIENT	CAS	EINECS	GROUP AND %WEIGHT				INGREDIENT	CAS	EINECS	GROUP AND %WEIGHT			
			A	B	C	D				A	B	C	D
ALUMINUM	7429-90-5	231-072-3	<2	<5	<3 ⁽⁶⁾	---	LITHIUM OXIDE	12057-24-8	235-019-5	---	---	<2	---
ANTIMONY TRIOXIDE	1309-64-4	215-175-0	---	---	<1 ⁽¹²⁾	---	MAGNESIUM	7439-95-4	231-104-6	---	<3	<2	---
BARIUM FLOURIDE	7787-32-8	232-108-0	---	---	<12 ⁽¹⁾	<12 ⁽³⁾	MAGNESIUM OXIDE	1309-48-4	215-171-9	---	<3	<2	---
CALCIUM CARBONATE	1317-65-3	215-279-6	<2	<2 ⁽⁷⁾	---	---	MANGANESE	7439-96-5	231-105-1	<5	<2	<4	<2
CERIUM OXIDE	1306-38-3	215-150-4	---	---	<2 ⁽¹¹⁾	---	MOLYBDENUM	7439-98-7	231-107-2	<1	---	<2	<2
CHROMIUM	7440-47-3	231-157-5	---	---	<3	5-20	NICKEL	7440-02-0	231-111-4	---	---	<4	<1
COBALT	7440-48-4	231-158-0	---	---	<1 ⁽¹⁰⁾	---	SILICA	14808-60-7	238-878-4	<2	<2	<2	---
FLUORSPAR	7789-75-5	232-188-7	<5 ⁽⁵⁾	<10	<5	---	(Amorphous Silica Fume)	69012-64-2	273-761-5	---	---	---	---
IRON	7439-89-6	231-096-4	75-98	75-95	75-95	75-95	SILICON	7440-21-3	231-130-8	<4	<2 ⁽⁴⁾	<4	<2
IRON OXIDE	1309-37-1	215-168-2	---	---	<12	---	STRONTIUM FLUORIDE	7783-48-4	232-000-3	---	<2 ⁽⁸⁾	---	---
LITHIUM CARBONATE	554-13-2	209-062-5	---	---	<2	---	TITANIUM	7440-32-6	231-142-3	---	<2	<2	<2
LITHIUM FLUORIDE	7789-24-4	232-152-0	---	<2 ⁽⁹⁾	<2 ⁽⁹⁾	---	TITANIUM DIOXIDE	13463-67-7	236-675-5	<10	<4 ⁽⁴⁾	<10	<2

--- Dashes indicate the ingredient is not present within the group of products (1) Present only in FABSHIELD 21B, 23, 31, 120 C; TM 121 and 123; SELF-SHIELD 11,11GS Present only in FABCO 83, 110K3-M, FLUX-COR 80W, GALVACORE; GALVALLOY; METALLOY 80 W, WS; METAL-COR 81W; SPEED-ALLOY 81W, 81W-V; TM-81W, 811W; VERTI-COR 81W (3) Present only in DURASHIELD 8-11; FABCO XTREME 120, B2, B3; FABSHIELD 3Ni1, 7018, 71K6, 79T8, 81N1, 81N1+, 81N2, 811K6, OFFSHORE 71Ni, XLNT-6; PIPEMASTER FS71-Ni1, FS81-Ni2; SELF-SHIELD 8; TM 78K6 (4) Present only in FABSHIELD 55; SELF-SHIELD 3; TM 33, 133 (5) Present only in FABCO 85; METALLOY EM13K5; SPEED-ALLOY 75A1, 95D2, 105D2; TM 55, 75A1, 95D2, 105D2; TUF-COR 5, 75A1, 95D2, 105D2 (6) Present only in DURASHIELD 8-11; FABCO XTREME 120, B2, B3; FABSHIELD 3Ni1, 7018, 71K6, 79T8, 81N1, 81N1+, 81N2, 811K6, OFFSHORE 71Ni, XLNT-6; PIPEMASTER FS71-Ni1, FS81-Ni2; SELF-SHIELD 8; TM 78K6 (7) Present only in FABSHIELD 7018, 7027; SELF-SHIELD 8; TM 77, 133 (8) Present only in FABSHIELD 21B; TM 121 (9) Present only in DURASHIELD 8-11; FABSHIELD 3Ni1, 7018, 7027, 71K6, 79T8, 81N1, 81N1+, 81N2, 811K6; PIPEMASTER FS71-Ni1, FS81-Ni2; SELF-SHIELD 8; TM 78K6 (10) Present only in DURASHIELD 8-11; FABSHIELD 71K6, 81N1, 81N2; MEGAZORD; PIPEMASTER F110-N1, FS71-Ni1, FS81-Ni2 Present only in DURASHIELD 8-11; FABSHIELD 7018, 79T8, 81N1+, OFFSHORE 71Ni, XLNT-6; SELF-SHIELD 8 (12) Present only in MATRIX; METAL-COR MAXIM; METAL VANTAGE, VANTAGE CVN, VANTAGE D2, VANTAGE Ni1

SECTION 4 - FIRST AID MEASURES

INHALATION: If breathing is difficult provide fresh air and contact physician.

EYE/SKIN INJURIES: For radiation burns, see physician.

Section 11 of this MSDS covers the acute effects of overexposure to the various ingredients within the welding consumable. Section 8 of this MSDS lists the exposure limits covers methods for protecting yourself and your co-workers.

SECTION 5 - FIRE AND EXPLOSION HAZARD DATA

Welding consumables applicable to this sheet as shipped are nonreactive, nonflammable and essentially nonhazardous until welded. Welding arcs and sparks ignite combustibles and flammable products. Unused welding consumables may remain hot for a period of time after completion of a welding process. See American National Standard (ANSI) Z49.1 for further general safety information on the use and handling of welding consumables and associated procedures.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Solid objects can be picked up and placed into a container. Wear proper personal protective equipment while handling. Do not discard as general trash.

SECTION 7 - HANDLING AND STORAGE

HANDLING: No specific requirements in the form supplied. Handle with care to avoid cuts. Wear gloves when handling welding consumables. Avoid exposure to dust. Do ingest. Some individuals can develop an allergic reaction to certain materials. Retain all warning and product labels.

STORAGE: Keep separate from acids and strong bases to prevent possible chemical reactions.

SECTION 8 - EXPOSURE CONTROL AND PERSONAL PROTECTION

Read and understand the instructions and the labels on the packaging. Welding fumes do not have a specific OSHA PEL or ACGIH TLV. The OSHA PEL for Particulate - Otherwise Classified (PNOC) is 5 mg/m³ - Respirable Fraction, 15 mg/m³ - Total Dust. The ACGIH TLV for Particles - Not Otherwise Specified (PNOS) is 3 mg/m³ - Respirable Particles, 10 mg/m³ - Inhalable Particles. The individual complex compounds within the fume may have a lower OSHA PEL or ACGIH TLV than the OSHA Particulate - Otherwise Classified (PNOC) and ACGIH Particles - Not Otherwise Specified (PNOS). An Industrial Hygienist, the OSHA Permissible Exposure Limits for Air Contaminants (29 CFR 1910.1000), and the ACGIH Threshold Limit Values should be consulted to determine the specific fume constituents present and their respective exposure limits. European Union Occupational Exposure Limits (EU OEL) are listed with the most stringent limit among the EU member nations. All exposure limits are in milligrams per cubic meter (mg/m³).

INGREDIENT	CAS	EINECS	OSHA PEL	ACGIH TLV	EU OEL
ALUMINUM###	7429-90-5	231-072-3	5 R* (Dust)	1 R* {A4}	4 l*; 1.5 R* - Germany
ANTIMONY TRIOXIDE	1309-64-4	215-175-0	0.5 (as Sb)	0.5 (as Sb) {A2}	0.1 l*; 0.4*** - Hungary
BARIUM FLOURIDE#	7787-32-8	232-108-0	0.5 (as Ba)	0.5 (as Ba) {A4}	0.1 l* (Aerosol); 0.4*** (Aerosol) - Austria
CALCIUM CARBONATE	1317-65-3	215-279-6	5 R*, 5 (as CaO)	3 R*, 2 (as CaO)	0.5 l* (Aerosol as Ba), 4*** (Aerosol as Ba) - Germany
CERIUM OXIDE	1306-38-3	215-150-4	5 R* (Dust), 15 (Dust)	3 R* (Dust), 10 (Dust)	10 l* (Aerosol) - UK; 3 R* (Aerosol) - Switzerland
CHROMIUM#	7440-47-3	231-157-5	1 (Metal)	0.5 (Metal) {A4}	4 l*; 1.5 R* (as Dust - NOS) - Germany
			0.5 (Cr II & Cr III Cpnds)	0.5 (Cr III Cpnds) {A4}	0.1 l* (Aerosol) - Switzerland
			0.005 (Cr VI Cpnds)	0.05 (Cr VI Sol Cpnds) {A1}	0.005; 0.01*** - Denmark
				0.01 (Cr VI Insol Cpnds) {A1}	0.005 (Total Aerosol); 0.015*** (Total Aerosol) - Sweden
COBALT	7440-48-4	231-158-0	0.1 (Dust and Fume)	0.02 {A3}	0.01 l*; 0.02*** - Denmark
FLUORSPAR	7789-75-5	232-188-7	2.5 (as F)	2.5 (as F) {A4}	1 l* (Aerosol as F); 4*** (Aerosol as F) - Germany
IRON+	7439-89-6	231-096-4	5 R*	5 R* (Fe ₂ O ₃) {A4}	3 R* (Aerosol as Fe ₂ O ₃) - Switzerland
					7*** (as Fe ₂ O ₃) - Denmark
					3 R* (Aerosol as Fe ₂ O ₃) - Switzerland
					7*** (as Fe ₂ O ₃) - Denmark
IRON OXIDE	1309-37-1	215-168-2	10 (Oxide Fume)	5 R* (Fe ₂ O ₃) {A4}	4 l*; 1.5 R* (as Dust - NOS) - Germany
LITHIUM CARBONATE	554-13-2	209-062-5	5 R* (Dust), 15 (Dust)	3 R* (Dust), 10 (Dust)	2.5 - UK
LITHIUM FLUORIDE	7789-24-4	232-152-0	2.5 (as F)	2.5 (as F) {A4}	

LITHIUM OXIDE 'AGNESIUM+	12057-24-8 7439-95-4	235-019-5 231-104-6	1 ■ ■ 5 R*	3 R* (Dust), 10 (Dust) 3 R*	4 I*; 1.5 R* (as Dust - NOS) - Germany 3 R* (Aerosol) - Switzerland 4 I* (Aerosol); 1.5 R*** (Aerosol) - Germany 3 R* (Aerosol as Mg) - Switzerland 4 I* (Aerosol as Mg); 1.5 R*** (Aerosol as Mg) - Germany 0.02 R* (Aerosol); 0.16 R*** (Aerosol) - Germany 0.2 I* (Aerosol) - Germany 0.2; 0.4*** - Denmark 3 R* - Spain; 4; 10*** - Poland 0.05; 0.1*** - Denmark
MAGNESIUM OXIDE	1309-48-4	215-171-9	15 (Fume, Total Part)	10 I* {A4}	
MANGANESE#	7439-96-5	231-105-1	5 CL ** (Fume) 1, 3 STEL*** ■	0.2 I* {A4} ◆ 0.02 R* ◆, ◆◆	
MOLYBDENUM	7439-98-7	231-107-2	5 R*	3 R*; 10 I* (Ele and Insol) 0.5 R* (Sol Cpnds) {A3}	
NICKEL#	7440-02-0	231-111-4	1 (Metal) 1 (Sol Cpnds) 1 (Insol Cpnds)	1.5 I* (Ele) {A5} 0.1 I* (Sol Cpnds) {A4}	
SILICA++ (Amorphous Silica Fume)	14808-60-7 69012-64-2	238-878-4 273-761-5	0.1 R* 0.8	0.2 I* (Insol Cpnds) {A1} 0.025 R* {A2}	0.1 (Fused, Respirable Dust) - Denmark 0.2*** (Fused, Respirable Dust) - Denmark 2 I*; 4 I*** - Denmark
SILICON+	7440-21-3	231-130-8	5 R*	3 R*	4 R* (Aerosol); 10 I* (Aerosol) - Denmark
STRONTIUM FLUORIDE	7783-48-4	232-000-3	2.5 (as F)	2.5 (as F) {A4}	1 I* (Aerosol as F); 4*** (Aerosol as F) - Germany
TITANIUM+	7440-32-6	231-142-3	5 R*	3 R*	1.5 R* (as TiO ₂) - Germany
TITANIUM DIOXIDE	13463-67-7	236-675-5	15 (Dust)	10 {A4}	1.5 R* - Germany

R* - Respirable Fraction R*** - Respirable Fraction - Short Term Exposure Limit I* - Inhalable Fraction I*** - Inhalable Fraction - Short Term Exposure Limit ** - Ceiling Limit
 *** - Short Term Exposure Limit + - As a nuisance particulate covered under "Particulates Not Otherwise Regulated" by OSHA or "Particulates Not Otherwise Classified" by ACGIH
 ++ - Crystalline silica is bound within the product as it exists in the package. However, research indicates silica is present in welding fume in the amorphous (noncrystalline) form
 # - Reportable material under Section 313 of SARA ### - Reportable material under Section 313 of SARA as dust or fume ■ - NIOSH REL TWA and STEL ■■ - AIHA Ceiling Limit of 1 mg/m³ ◆ - Listed under ACGIH Notice of Intended Changes for Mn in 2010 ◆◆ - Limit of 0.02 mg/m³ is proposed for Respirable Mn in 2011 by ACGIH Ele - Element Sol - Soluble Insol - Insoluble Inorg - Inorganic Cpnds - Compounds NOS - Not Otherwise Specified {A1} - Confirmed Human Carcinogen per ACGIH {A2} - Suspected Human Carcinogen per ACGIH {A3} - Confirmed Animal Carcinogen with Unknown Relevance to Humans per ACGIH {A4} - Not Classifiable as a Human Carcinogen per ACGIH {A5} - Not Suspected as a Human Carcinogen per ACGIH (noncrystalline) form

VENTILATION: Use enough ventilation, local exhaust at the arc or both to keep the fumes and gases below the PEL/TLV/OELs in the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

RESPIRATORY PROTECTION: Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below the regulatory limits.

EYE PROTECTION: Wear helmet or use face shield with filter lens. As a rule of thumb begin with Shade Number 14. Adjust if needed by selecting the next lighter and/or darker shade number. Provide protective screens and flash goggles, if necessary, to shield others from the weld arc flash.

PROTECTIVE CLOTHING: Wear hand, head and body protection which help to prevent injury from radiation, sparks and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection as well as dark nonsynthetic clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS: Not applicable

SPECIAL PRECAUTIONS (IMPORTANT): Maintain exposure below the PEL/TLV/OEL. Use industrial hygiene monitoring to ensure that your use of this material does not create exposures which exceed PEL/TLV/OEL. Always use exhaust ventilation. Refer to the following sources for important additional information: American National Standard (ANSI) Z49.1; Safety in Welding and Cutting published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29 CFR 1910), U.S. Government Printing Office, Washington, DC 20402.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Welding consumables applicable to this sheet as shipped are nonreactive, nonflammable, nonexplosive and essentially nonhazardous until welded.

PHYSICAL STATE: Cored Wire

COLOR: Gray

ODOR: N/A

FORM: Round Wire

SECTION 10 - STABILITY AND REACTIVITY

GENERAL: Welding consumables applicable to this sheet are solid and nonvolatile as shipped. This product is only intended for use per the welding parameters it was designed for. When this product is used for welding, hazardous fumes may be created. Other factors to consider include the base metal, base metal preparation and base metal coatings. All of these factors can contribute to the fume and gases generated during welding. The amount of fume varies with the welding parameters.

STABILITY: This product is stable under normal conditions.

REACTIVITY: Contact with acids or strong bases may cause generation of gas.

SECTION 11 - TOXICOLOGICAL INFORMATION

SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS: **Welding Fumes** - May result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes. **Aluminum Oxide** - Irritation of the respiratory system. **Antimony Compounds** - Irritation of nose, throat, eyes and skin. **Barium** - Aching eyes, rhinitis, frontal headache, wheezing, laryngeal spasms, salivation or anorexia. **Calcium Oxide** - Dust or fumes may cause irritation of the respiratory system, skin and eyes. **Chromium** - Inhalation of fume with chromium (VI) compounds can cause irritation of the respiratory tract, lung damage and asthma-like symptoms. Swallowing chromium (VI) salts can cause severe injury or death. Dust on skin can form ulcers. Eyes may be burned by chromium (VI) compounds. Allergic reactions may occur in some people. **Cobalt** - Pulmonary irritation, cough, dermatitis, weight loss. **Fluorides** - Fluoride compounds evolved may cause skin and eye burns, pulmonary edema and bronchitis. **Iron, Iron Oxide** - None are known. Treat as nuisance dust or fume. **Lithium Compounds** - Overexposure may cause tremor and nausea. **Magnesium, Magnesium Oxide** - Overexposure to the oxide may cause metal fume fever characterized by metallic taste, tightness of chest and fever. Symptoms may last 24 to 48 hours following overexposure. **Manganese** - Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours of the overexposure. **Molybdenum, Cerium Oxide** - Irritation of the eyes, nose and throat. **Nickel, Nickel Compounds** - Metallic taste, nausea, tightness in chest, metal fume fever, allergic reaction. **Silica (Amorphous)** - Dust and fumes may cause irritation of the respiratory system, skin and eyes. **Strontium Compounds** - Strontium salts are generally non-toxic and are normally present in the human body. In large oral doses, they may cause gastrointestinal disorders, vomiting and diarrhea. **Titanium Dioxide** - Irritation of respiratory system.

LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS: **Welding Fumes** - Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis." **Aluminum Oxide** - Pulmonary fibrosis and emphysema. **Antimony Compounds** - Metal fume fever, dermatitis, keratitis, conjunctivitis and ulceration and perforation of the nasal septum. Avoid conditions in which fresh hydrogen will react with antimony to form stibine which is extremely toxic. **Barium** - Long term overexposure to soluble barium compounds may cause nervous disorders and may have deleterious effects on the heart, circulatory system and musculature. **Calcium Oxide** - Prolonged overexposure may cause ulceration of the skin and perforation of the nasal septum, dermatitis and pneumonia. **Chromium** - Ulceration and perforation of nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Studies have shown that chromate production workers exposed to hexavalent chromium compounds have an excess of lung cancers. Chromium (VI) compounds. **Cobalt** - Repeated overexposure to cobalt compounds can produce reduced pulmonary function, diffuse nodular fibrosis of lungs and respiratory hypersensitivity. **Fluorides** - Serious bone erosion (Osteoporosis) and mottling of teeth. **Iron, Iron Oxide Fumes** - Can cause siderosis (deposits of iron in lungs) which some researchers believe may affect pulmonary function. Lungs will clear in time when exposure to iron and its compounds ceases. Iron and magnetite (Fe₃O₄) are not regarded as fibrogenic materials. **Lithium Compounds** - May be considered as potentially teratogenic. **Magnesium, Magnesium Oxide** - No adverse long term health effects have been reported in the literature. **Manganese** - Long-term overexposure to manganese compounds may affect the central nervous system. Symptoms may be similar to Parkinson's disease and can include slowness, changes in handwriting, gait impairment, muscle spasms and cramps and less commonly, tremor and behavioral changes. Employees who are overexposed to manganese should be seen by a physician for early detection of neurologic problems. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait. **Molybdenum, Cerium Oxide** - Prolonged overexposure may result in loss of appetite, weight loss, loss of muscle coordination, difficulty in breathing and anemia. **Nickel, Nickel Compounds** - Lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers. **Silica (Amorphous)** - Research indicates that silica is present in welding fume in the amorphous form. Long term overexposure may cause pneumoconiosis.

Noncrystalline forms of silica (amorphous silica) are considered to have little fibrotic potential. **Strontium Compounds** - Strontium at high doses is known to concentrate in bone. Major signs of chronic toxicity, which involve the skeleton, have been labeled as "strontium rickets". **Titanium Dioxide** - Pulmonary irritation and slight fibrosis.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Persons with pre-existing impaired lung functions (asthma-like conditions). Persons with a pacemaker should not go near welding and cutting operations until they have consulted their doctor and obtained information from the manufacturer of the device. Respirators are to be worn only after being medically cleared by your company-designated physician.

EMERGENCY AND FIRST AID PROCEDURES: Call for medical aid. Employ first aid techniques recommended by the American Red Cross. If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY: Chromium VI compounds, nickel compounds and silica (crystalline quartz) are classified as IARC Group 1 and NTP Group K carcinogens. Titanium dioxide, antimony trioxide compounds and cobalt compounds are classified as IARC Group 2B carcinogens. Chromium VI compounds, cobalt compounds, nickel compounds, silica (crystalline quartz) and welding fumes must be considered as carcinogens under OSHA (29 CFR 1910.1200).

CALIFORNIA PROPOSITION 65: For Group C and D products: **WARNING:** This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.) For Group A and B products: **WARNING:** This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)

SECTION 12 – ECOLOGICAL INFORMATION

Welding processes can release fumes directly to the environment. Welding wire can degrade if left outside and unprotected. Residues from welding consumables and processes could degrade and accumulate in the soil and groundwater.

SECTION 13 – DISPOSAL CONSIDERATIONS

Use recycling procedures if available. Discard any product, residue, packaging, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations.

SECTION 14 – TRANSPORT INFORMATION

No international regulations or restrictions are applicable. No special precautions are necessary.

SECTION 15 – REGULATORY INFORMATION

Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label and the material safety data sheet. Observe all local and federal rules and regulations. Take all necessary precautions to protect yourself and others.

United States EPA Toxic Substance Control Act: All constituents of these products are on the TSCA inventory list or are excluded from listing.

CERCLA/SARA TITLE III: Reportable Quantities (RQs) and/or Threshold Planning Quantities (TPQs):

Ingredient name	RQ (lb)	TPQ (lb)
Products on this MSDS are a solid solution in the form of a solid article.	--	--

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center and to your Local Emergency Planning Committee.

Section 311 Hazard Class

As shipped:	Immediate	In use:	Immediate delayed
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EPCRA/SARA TITLE III 313 TOXIC CHEMICALS: The following metallic components are listed as SARA 313 "Toxic Chemicals" and potentially subject to annual SARA 312 reporting: Chromium, Copper, Manganese, Cobalt, Antimony Trioxide, Lithium Carbonate and Nickel. See Section 3 for weight percentage.

CANADIAN WHMIS CLASSIFICATION: Class D; Division 2, Subdivision A

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): All constituents of these products are on the Domestic Substance List (DSL).

SECTION 16 – OTHER INFORMATION

The following Risk and Safety Phrase Texts and Hazard Statements correspond with the columns labeled - EU 67/548/EEC within Section 2 of this material safety data sheet. Take appropriate precautions and protective measures to eliminate or limit the associated hazard.

EU Directive 67/548/EEC - Risk Phrase Texts

R9 – Explosive when mixed with combustible material

R10 – Flammable

R11 – Highly flammable

R14/15 – Reacts violently with water, liberating extremely flammable gases

R15 – Contact with water liberates extremely flammable gases

R17 – Spontaneously flammable in air

R20/22 – Harmful by inhalation and if swallowed

R24/25 – Toxic in contact with skin and if swallowed

R26 – Very toxic by inhalation

R34 – Causes burns

R35 – Causes severe burns

R36/37 – Irritating to eyes and respiratory system

R40 – Limited evidence of a carcinogenic effect

R40/20 – Harmful: possible risk of irreversible effects through inhalation

R42/43 – May cause sensitization by inhalation and skin contact

R43 – May cause sensitization by skin contact

R45 – May cause cancer

R46 – May cause heritable genetic damage

R48/20 – Harmful: danger of serious damage to health by prolonged exposure through inhalation

R48/20/22 – Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed

R48/23 – Toxic: danger of serious damage to health by prolonged exposure through inhalation

R50 – Very toxic to aquatic organisms

R53 – May cause long-term adverse effects in the aquatic environment

R62 – Possible risk of impaired fertility

For additional information please refer to the following sources:

USA: American National Standard (ANSI) Z49.1 "Safety in Welding and Cutting", ANSI/American Welding Society (AWS) F1.5 "Methods for Sampling and Analyzing Gases from Welding and Allied Processes", ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes", AWSF3.2M/F3.2 "Ventilation Guide for Weld Fume", American Welding Society, 550 North Le Jeune Road, Miami, Florida, 33135. Safety and Health Fact Sheets available from AWS at www.aws.org.

OSHA Publication 2206 (29 C.F.R. 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954.

Threshold Limit Values and Biological Exposure Indices, American Conference of Governmental Hygienists (ACGIH), 6500 Glenway Ave., Cincinnati, Ohio 45211, USA.

NFPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work" published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169.

UK: WMA Publication 236 and 237, "Hazards from Welding Fume", "The arc welder at work, some general aspects of health and safety".

Canada: CSA Standard CAN/CSA-W117.2-01 "Safety in Welding, Cutting and Allied Processes".

Hobart Brothers Company strongly recommends the users of this product study this MSDS, the product label information and become aware of all hazards associated with welding. Hobart Brothers Company believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, Hobart Brothers Company cannot make any expressed or implied warranty as to this information.



MSDS NO: 418888
REVISED: JUNE 20, 2008
TW 3384

MATERIAL SAFETY DATA SHEET

For U.S. Manufactured Welding Consumables and Related Products. May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200 and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499. Standard must be consulted for specific requirements.

SECTION 1 - IDENTIFICATION

Manufacturer/Supplier Name: HOBART BROTHERS COMPANY Telephone No: (937) 332-4000
Address: 400 TRADE SQUARE EAST, TROY, OH 45373 Emergency No: (800) 424-9300
Trade Name: "GROUP A": TUBE-ALLOY, VERTIWEAR, FABTUF, TOOL-FORGE, AND ARMORWEAR WIRES
"GROUP B": TUBE-ALLOY COBALT BASED CORED WIRES
Product Type for: HARDSURFACING AND COBALT BASED FLUX CORED AND METAL CORED WELDING WIRES

SECTION 2 - HAZARDOUS INGREDIENTS

IMPORTANT - This section covers the hazardous materials from which this product is manufactured. The fumes and gases produced during welding with normal use of this product are also addressed in Section 5. The term "hazardous" in this section should be interpreted as a term required and defined in OSHA Hazard Communication Std. (29 CFR Part 1910).

HAZARDOUS INGREDIENTS	% WEIGHT		CAS NO.	EXPOSURE LIMIT (mg/m ³) OSHA PEL	ACGIH TLV
	Group A	Group B			
IRON+	55-95	<5	7439-89-6	5 R*, 10 (Oxide Fume)	5 R* (Fe ₂ O ₃) {A4}
CHROMIUM#	7-35	---	7440-47-3	1 (Metal) 0.5 (Cr II & Cr III Compounds) 0.005 (Cr VI Compounds)	0.5 (Metal) {A4} 0.5 (Cr III Compounds) {A4} 0.05 (Cr VI Soluble Compounds) {A1} 0.01 (Cr VI Insoluble Compounds) {A1}
MANGANESE#	1-25	---	7439-96-5	1, 3 STEL***, 5 CL** (Fume)	0.2 (As inorganic Compounds of Mn)
COLUMBIUM+	0-10	---	7440-03-1	5 R*	3 R*
VANADIUM###	0-10	---	7440-62-2	0.1 CL** (Fume as V ₂ O ₅) 0.5 CL** (Respirable Dust as V ₂ O ₅)	0.05 R* (Fume as V ₂ O ₅) {A4} ▲, ▲▲ 0.05 R* (Dust as V ₂ O ₅) {A4} ▲, ▲▲
NICKEL#	0-10	<3	7440-02-0	1 (Metal) 1 (Soluble Compounds) 1 (Insoluble Compounds)	1 I* (Metal) {A5} 0.1 I* (Soluble Compounds) {A4} 0.2 I* (Insoluble Compounds) {A1}
TITANIUM+	0-10	---	7440-32-6	5 R*	3 R*
MOLYBDENUM	0-10	---	7439-98-7	5 R*	3 R*; 10 I* (Elemental and Insoluble)
FLUORSPAR	0-10	<5	7789-75-5	2.5 (as F)	0.5 R* (Soluble Compounds) {A3}
TITANIUM DIOXIDE	0-10	5-15	13463-67-7	15 (Dust)	2.5 (as F) {A4}
SILICON+	<5	---	7440-21-3	5 R*	10 {A4}
TUNGSTEN	0-2	0-10	7440-33-7	5 R*	3 R*
ALUMINUM##	0-2	---	7429-90-5	5 R*	5, 10 STEL*** (Insoluble compounds) 1, 3 STEL*** (Soluble compounds)
CALCIUM CARBONATE	0-2	<10	1317-65-3	5 R*, 5 (as CaO)	1 R* {A4}
BORON+	0-1	---	7440-42-8	5 R*, 15 (As B ₂ O ₃)	3 R*, 2 (as CaO)
SILICA++ (Amorphous Silica Fume)	0-5	<5	14808-80-7 69012-64-2	0.1 R* 0.8	3 R*, 10 (As B ₂ O ₃) 0.025 R* {A2}
ZIRCONIUM	0-3	---	7440-67-7	5 (Zr & Compounds)	3 R*
COPPER#	0-1	---	7440-50-8	0.1 (Fume), 1 (Dust)	5, 10 STEL*** (Zr & Compounds) {A4}
COBALT#	0-2	30-50	7440-48-4	0.1 (Dust & Fume)	0.2 (Fume), 1 (Dust) 0.02 (Dust & Fume) {A3}

R* - Respirable Fraction I* - Inhalable Fraction ** - Ceiling Limit *** - Short Term Exposure Limit +- As a nuisance particulate covered under "Particulates Not Otherwise Regulated" by OSHA or "Particulates Not Otherwise Classified" per ACGIH +- - Crystalline silica is bound within the product as it exists in the package. However, research indicates silica is present in welding fume in the amorphous (noncrystalline) form # - Reportable material under Section 313 of SARA. ## - Reportable material under Section 313 of SARA only in fibrous form ### - Reportable material under Section 313 of SARA as dust or fume {A1} - Confirmed Human Carcinogen per ACGIH {A2} - Suspected Human Carcinogen per ACGIH {A3} - Confirmed Animal Carcinogen with Unknown Relevance to Humans per ACGIH {A4} - Not Classifiable as a Human Carcinogen per ACGIH {A5} - Not Suspected as a Human Carcinogen per ACGIH ▲ - Listed under ACGIH Notice of Intended Changes in 2008 ▲▲ - ACGIH TLV limit change to 0.05 mg/m³ for V₂O₅ in 2008

The exposure limit for welding fume has been established at 5 mg/m³ with OSHA's PEL and ACGIH's TLV. The individual complex compounds within the fume may have lower exposure limits than the general welding fume PEL/TLV. An Industrial Hygienist, the OSHA Permissible Exposure Limits for Air Contaminants (29 CFR 1910.1000), and the ACGIH Threshold Limit Values should be consulted to determine the specific fume constituents present and their respective exposure limits.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

Welding consumables applicable to this sheet are solid and nonvolatile as shipped.

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Welding consumables applicable to this sheet as shipped are nonreactive, nonflammable, nonexplosive and essentially nonhazardous until welded. Welding arcs and sparks can ignite combustibles and flammable products. See American National Standard Z49.1 referenced in Section 7.

SECTION 5 - REACTIVITY DATA - HAZARDOUS DECOMPOSITION PRODUCTS

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used. **Most fume ingredients are present as complex oxides and compounds and not as pure metals.** Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities). When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 2, plus those from the base metal and coating, etc., as noted above. Reasonably expected constituents of the fume would include: Primarily - complex oxides of iron for Group A and cobalt for Group B. Secondly - complex oxides of chromium, manganese for Group A, iron for Group B, nickel, silicon, calcium, titanium, and tungsten as well as fluorides. Fumes from Group A may also contain cobalt, columbium, vanadium, molybdenum, aluminum, boron, zirconium, and copper. Monitor for the materials identified in Section 2. **Fumes from the use of these products may contain manganese, chromium, nickel, fluorides, calcium oxides, amorphous silica fume, vanadium, tungsten, copper, and cobalt whose exposure limits are lower than the 5 mg/m³ PEL/TLV for general welding fume.**

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. [See ANSI/AWS F1.1, available from the "American Welding Society", P.O. Box 351040, Miami, FL 33135. Also, from AWS is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide", which gives additional advice on sampling.]

SECTION 6 - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE:

Electric arc welding may create one or more of the following health hazards:

ARC RAYS can injure eyes and burn skin.

ELECTRIC SHOCK can kill. See Section 7.

FUMES AND GASES can be dangerous to your health.

PRIMARY ROUTES OF ENTRY are the respiratory system, eyes and/or skin.

SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS:

Welding Fumes - May result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes. **Iron, Iron Oxide** - None are known. Treat as nuisance dust or fume. **Chromium** - Inhalation of fume with chromium (VI) compounds can cause irritation of the respiratory tract, lung damage and asthma-like symptoms. Swallowing chromium (VI) salts can cause severe injury or death. Dust on skin can form ulcers. Eyes may be burned by chromium (VI) compounds. Allergic reactions may occur in some people. **Manganese** - Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours of the overexposure. **Columbium** - Dust or fumes may cause irritation of the respiratory system, skin and eyes. **Vanadium** - Overexposure to the oxide causes green tongue, cough, metallic taste, throat irritation and eczema. **Nickel, Nickel Compounds** - Metallic taste, nausea, tightness in chest, metal fume fever, allergic reaction. **Titanium Dioxide** - Irritation of respiratory system. **Molybdenum** - Irritation of the eyes, nose and throat. **Fluorides** - Fluoride compounds evolved may cause skin and eye burns, pulmonary edema and bronchitis. **Silica (Amorphous)** - Dust and fumes may cause irritation of the respiratory system, skin and eyes. **Tungsten** - Dust may cause irritation of the skin and eyes. Inhalation of dust may cause acute airways obstructive asthma which is reversible following overexposure. Symptoms are tightening chest and productive cough. **Aluminum Oxide** - Irritation of the respiratory system. **Calcium Oxide** - Dust or fumes may cause irritation of the respiratory system, skin and eyes. **Boron Oxide** - Irritation of the nose, throat, eyes and skin. **Zirconium** - May cause irritation of the eyes, nose and throat due to mechanical effects. **Copper** - Metal fume fever characterized by metallic taste, tightness of chest and fever. Symptoms may last 24 to 48 hours following overexposure. **Cobalt** - Pulmonary irritation, cough, dermatitis, weight loss.

LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS:

Welding Fumes - Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis." **Iron, Iron Oxide Fumes** - Can cause siderosis (deposits of iron in lungs) which some researchers believe may affect pulmonary function. Lungs will clear in time when exposure to iron and its compounds ceases. Iron and magnetite (Fe_3O_4) are not regarded as fibrogenic materials. **Chromium** - Ulceration and perforation of nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Studies have shown that chromate production workers exposed to hexavalent chromium compounds have an excess of lung cancers. Chromium (VI) compounds are more readily absorbed through the skin than chromium (III) compounds. Good practice requires the reduction of employee exposure to chromium (III) and (VI) compounds. **Manganese** - Long-term overexposure to manganese compounds may affect the central nervous system. Symptoms may be similar to Parkinson's disease and can include slowness, changes in handwriting, gait impairment, muscle spasms and cramps and less commonly, tremor and behavioral changes. Employees who are overexposed to manganese compounds should be seen by a physician for early detection of neurologic problems. **Columbium** - No adverse long term health effects have been reported in the literature. **Vanadium** - Prolonged overexposure to vanadium pentoxide can cause nasal catarrh or nose bleeds and chronic respiratory problems. **Nickel, Nickel Compounds** - Lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers. **Titanium Dioxide** - Pulmonary irritation and slight fibrosis. **Molybdenum** - Prolonged overexposure may result in loss of appetite, weight loss, loss of muscle coordination, difficulty in breathing and anemia. **Fluorides** - Serious bone erosion (Osteoporosis) and mottling of teeth. **Silica (Amorphous)** - Research indicates that silica is present in welding fume in the amorphous form. Long term overexposure may cause pneumoconiosis. Noncrystalline forms of silica (amorphous silica) are considered to have little fibrotic potential. **Tungsten** - Long term overexposure may cause pulmonary fibrosis characterized by a rapid onset of cough, sputum and dyspnea on exertion. **Aluminum Oxide** - Pulmonary fibrosis and emphysema. **Calcium Oxide** - Prolonged overexposure may cause ulceration of the skin and perforation of the nasal septum, dermatitis and pneumonia. **Boron Oxide** - No chronic effects are known. **Zirconium** - May cause pulmonary fibrosis and pneumoconiosis. **Copper** - Copper poisoning has been reported in the literature from exposure to high levels of copper. Liver damage can occur due to copper accumulating in the liver characterized by cell destruction and cirrhosis. High levels of copper may cause anemia and jaundice. High levels of copper may cause central nervous system damage characterized by nerve fiber separation and cerebral degeneration. **Cobalt** - Repeated overexposure to cobalt compounds can produce reduced pulmonary function, diffuse nodular fibrosis of lungs and respiratory hypersensitivity. IARC considers cobalt compounds as possibly carcinogenic to humans (GROUP 2B).

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Persons with pre-existing impaired lung functions (asthma-like conditions).

EMERGENCY AND FIRST AID PROCEDURES: Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY: Chromium VI, cobalt, and nickel compounds must be considered carcinogens according to OSHA (29 CFR 1910.1200). Chromium VI compounds are classified as IARC Group 1 and NTP Group 1 carcinogens. Nickel compounds are classified as IARC Group 1 and NTP Group 2 carcinogens. Cobalt compounds are classified as IARC Group 2B carcinogens. Welding fumes must be considered as possible carcinogens under OSHA (29 CFR 1910.1200).

CALIFORNIA PROPOSITION 65: WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING & USE/APPLICABLE CONTROL MEASURES

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1; Safety in Welding and Cutting published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Washington, DC 20402 for more detail on any of the following.

VENTILATION: Use enough ventilation, local exhaust at the arc or both to keep the fumes and gases below PEL/TLVs in the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

RESPIRATORY PROTECTION: Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below PEL/TLVs.

EYE PROTECTION: Wear helmet or use face shield with filter lens. As a rule of thumb begin with Shade Number 14. Adjust if needed by selecting the next lighter and/or darker shade number. Provide protective screens and flash goggles, if necessary, to shield others.

PROTECTIVE CLOTHING: Wear hand, head and body protection which help to prevent injury from radiation, sparks and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection as well as dark nonsynthetic clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS: Not applicable

WASTE DISPOSAL: Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with Federal, State and Local regulations.

SPECIAL PRECAUTIONS (IMPORTANT): Maintain exposure below the PEL/TLVs. Use industrial hygiene monitoring to ensure that your use of this material does not create exposures which exceed PEL/TLVs. Always use exhaust ventilation. Refer to the following sources for important additional information: ANSI Z49.1 from the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA (29 CFR 1910) from the U.S. Department of Labor, Washington, DC 20210.

Hobart Brothers Company believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, Hobart Brothers Company cannot make any expressed or implied warranty as to this information.



MANUFACTURING, INC.

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SECTION 1: GENERAL INFORMATION

Product Name Jabs
Chemical Family Alkaline

Date Prepared 3/2/2006

Product Formula 429

Supersedes Date 5/25/2000

24 HOUR EMERGENCY: Call Chemtrec at 800-424-9300

SECTION 2: PHYSICAL DATA

pH (1% wt/wt) 9.5-10.3

Specific Gravity 1.04

Solubility in Water Complete

VOC Content 24.15

Appearance & Odor Clear blue liquid with little odor.

SECTION 3: HAZARDOUS INGREDIENTS

Hazardous Compounds

WT %

TLV

Sodium Silicate

<5

25 ppm

2-Butoxyethanol

<1

25 ppm

SECTION 4: HAZARD IDENTIFICATION

Hazardous Description Not regulated by D.O.T.

NFPA®



HMIS®

Table with 2 columns: Hazard Category and Rating. Rows include HEALTH (1), FIRE (0), REACTIVITY (0), and PERSONAL PROTECTION (B).

Primary Routes of Entry Eyes, skin, and inhalation. May cause severe irritation with direct contact to eyes. May cause irritation with prolonged skin contact. May be harmful if swallowed in large quantities.

SECTION 5: FIRST AID MEASURES

- First Aid Eyes: Rinse with fresh water for 15 minutes...
First Aid Skin: Wash with plenty of fresh water...
First Aid Ingestion: Do not induce vomiting...
First Aid Inhalation: If overcome by exposure, remove victim to fresh air immediately.

SECTION 6: FIRE & EXPLOSION HAZARD DATA

Flash Point >200F (TCC)

Extinguishing Media Dry chemical; foam or carbon dioxide, water spray.

Fire Explosion Hazards No known unusual hazards in a fire/explosion situation.

Special Fire Fighting Instructions As in any fire, wear self-contained breathing apparatus pressure demand MSHA/NIOSH (approved or equivalent) and full protective gear.

Hazardous Combustion Products Carbon monoxide and carbon dioxide.

MATERIAL SAFETY DATA SHEET

429 Jabs

SECTION 7: ACCIDENTAL RELEASE MEASURES

Spill Leak Procedure Evacuate area. Ventilate area. Collect for disposal using an inert absorbent material and transfer to a container for reuse or disposal. For large spills, provide diking or other appropriate containment. Observe all personal protection equipment recommendations.

Waste Disposal Small spills may be flushed to a sanitary sewer with large amounts of water. Observe all Federal, State, and Local regulations that may apply to the clean-up of this material.

SECTION 8: EXPOSURE CONTROL & PERSONAL PROTECTION

Engineering Controls: Either local exhaust or general room ventilation is usually required. If handling results in mist/aerosol and/or high exposure, special ventilation may be required to avoid exceeding exposure standard and/or to prevent a dangerous working environment.

Personal Protection Eyes Chemical safety glasses.

Personal Protection Skin Chemical resistant nitrile gloves.

Personal Protection Respiratory None required under normal use.

Other Protection As needed to prevent contact.

Additional Remarks: Selection of appropriate safety equipment, including personal protective equipment and emergency eye wash fountains, should be based on an evaluation of the task and the conditions present. The precautions listed in this document are for room temperature handling. Use at an elevated temperature or aerosol spray applications may require added precautions.

SECTION 9: STABILITY AND REACTIVITY

Stability Stable. **Conditions to Avoid** No unusual conditions. **Polymerization** Will not occur.

Incompatibility with other materials Do not mix with other chemicals.

Hazardous Decomposition Carbon monoxide and carbon dioxide with thermal decomposition.

SECTION 10: REGULATORY INFORMATION

SARA TITLE III SUPPLIER NOTIFICATION

This product contains the following toxic chemicals subject to the reporting requirements of SARA Title III, Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR372.

CAS	CHEMICAL NAME	% wt
General	Glycol Ethers	0.6%

CARCINOGENICITY: Not listed by IARC, NTP, OR OSHA.

TSCA (Toxic Substance Control Act): All components of this product are listed on the TSCA inventory.

CALIFORNIA PROPOSITION 65: This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins which would be subject to the proposition.

Disclaimer of Responsibility:

This document is generated for the purpose of distributing health, safety and environmental data. It is not a specification sheet nor should any displayed data be construed as a specification. The information provided in this Material Safety Data Sheet has been compiled from experience and data presented in various technical publications. It is the user's responsibility to determine the suitability of this information for the adoption of safety precautions as may be necessary. We reserve the right to revise Material Safety Data Sheets at any time as new technical information becomes available. The information contained herein is furnished without warranty of any kind.