THE HARRIS PRODUCTS GROUP

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Safety Data Sheet

1 IDENTIFICATION

Product identifier

Trade name: Harris American LFB/FC
Other means of identification: Formerly Welco 15 and Welco 15FC – Metal Alloy

SDS # 0124

Recommended use and restriction on use
Recommended use: Metal Brazing
Restrictions on use: No further relevant information available.

Manufacturer/Importer/Supplier/Distributor information
Importer:
Harris Products Group
14 Queensland Rd
Darra, QLD, Australia 4076
(07) 33753670
Safety Data Sheet Questions: sales@hgea.com.au
Website: http://www.harrisproductsgroup.com.au

Poisons Information Centre/Helpline (24 hours) Australia 13 11 26

2 HAZARD(S) IDENTIFICATION

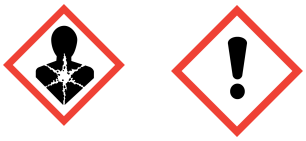
GHS classification of the substance/mixture.
Classified according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture
The product is classified as hazardous according to the Globally Harmonized System (GHS)
EMERGENCY OVERVIEW. This product consists of bare or coated, odourless, solid bronze rods. There are no immediate health hazards associated with this product. This product is not flammable nor reactive. If involved in a fire, this product may generate irritating fumes and a variety of metal oxides. Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

GHS Classification(s)	Health:	Category 2
	Skin Sens.	Category 1
	Repr.	Category 1B
	Specific target organ toxicity, repeated exposure: Category 1	

Label elements
Signal word **DANGER**

Hazard pictograms



Hazard Statement(s)
H317 May cause an allergic skin reaction.

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H351 Suspected of causing cancer.
H360 May damage fertility or the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.

Prevention Statement(s):
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing should not be allowed out of the workplace.
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P231 Specific treatment (see on this label).

Response statement(s):
P308 + P313. IF exposed or concerned: Get medical advice/ attention
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P314 Get medical advice/attention if you feel unwell.
P302 + P352 IF ON SKIN: Wash with plenty of water.
P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage Statement(s):
P405 Store Locked Up

Disposal Statement(s):
P501 Dispose of contents/container in accordance with relevant regulations.

Other Hazards No information provided

Additional information:
Other hazards which do not result in GHS classification:
Heat rays (infrared radiation) from flame or hot metal can injure eyes. Overexposure to brazing fumes and gases can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product.
Hazard description:
WHMIS-symbols: Not hazardous under WHMIS.
SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: During brazing operations, the most significant route of over-exposure is via inhalation of fumes.
INHALATION: Inhalation is not anticipated to be a significant route of over-exposure to the rods. Inhalation of large amounts of particulates generated by this product during metal processing operations may result in irritation. Inhalation of copper oxide and zinc oxide fumes can cause metal fume fever. Initial symptoms of metal fume fever can include a metallic or sweet taste in the mouth, dryness or irritation of the throat, and coughing. Later symptoms (after 4-48 hours) can include sweating, shivering, headache, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, and tiredness. Repeated over-exposures, via inhalation, to the dusts or fumes generated by this product during brazing operations may have adverse effects on the lungs with possible pulmonary Edema and emphysema (life-threatening lung injuries). Chronic over-exposure to Copper dust may cause tiredness, stuffiness, diarrhoea, and vomiting. Refer to Section 10 (Stability and Reactivity) for information on the specific composition of brazing fumes and gases.
CONTACT WITH SKIN or EYES: Contact of the rod form of these products with the skin is not anticipated to be irritating. Rare cases of allergic contact dermatitis have been reported in people working with copper dust. Contact with the rod form of these products can be physically damaging to the eye (i.e. foreign object). Fumes generated during brazing operations can be irritating to the skin and eyes. Due to the presence of Nickel, prolonged exposure of the eyes may result in sensitization resulting in conjunctivitis (inflammation of the mucous membranes of the eyes). Symptoms of skin over-exposure may include irritation and redness; prolonged or repeated skin over-exposures may lead to allergic contact dermatitis. Contact with the molten rods will burn contaminated skin or eyes.

(Contd. on page 3)

SKIN ABSORPTION: Skin absorption is not known to be a significant route of over-exposure for any component of these products.
INGESTION: Ingestion of the rods is not a likely route of exposure.
INJECTION: Though not a likely route of occupational exposure for these products, injection (via punctures or lacerations in the skin) may cause local reddening, tissue swelling, and discomfort.
HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. Symptoms associated with over-exposure to these products and the fumes generated during brazing operations are as follows:
ACUTE: The chief acute health hazard associated with these products would be the potential for irritation of contaminated skin and eyes when exposed to fumes during brazing operations. Inhalation of large amounts of particulates generated by these products during brazing operations may result in irritation. Inhalation of copper oxide and zinc oxide fumes can cause metal fume fever. Inhalation of large amounts of particulates generated by these products during brazing operations can result in pneumoconiosis (a disease of the lungs). Contact with the molten material will burn contaminated skin or eyes. Severe ingestion over-exposure to Copper (a component of these products) may be fatal.
CHRONIC: Chronic skin over-exposure to the fumes of these products during brazing operations may produce dermatitis (red, inflamed skin). Chronic over-exposure to Copper dust may cause tiredness, stuffiness, diarrhoea, vomiting, discoloration of the skin and eyes, and kidney and liver disorder. Additionally, rare cases of allergic contact dermatitis have been reported in people working with copper dust. Nickel, a component of these products, is potentially carcinogenic to humans. Hypersensitivity to Nickel is common and can cause allergic contact dermatitis, pulmonary asthma, conjunctivitis and inflammatory reactions. Refer to Section 11 (Toxicological Information) for further information.
TARGET ORGANS: For fumes: ACUTE: Skin, eyes, respiratory system. CHRONIC: Skin, respiratory system, kidneys and liver.

3 Composition/information on ingredients

Chemical characterization: Mixtures
Description: These products consist of metal rods, some with a thin coating of flux on them. The exact amount of coating on each rod may vary. It can be reasonably estimated that there is less than 1% of each of the flux constituents present on any given rod when compared to the mass of the rod itself. The composition values given for the flux coating are the composition of the flux when the rods are flux-coated.

Substances/Mixtures – Metal Rods		
CAS	Ingredient	Proportion
7440-50-8	Copper	56-62
7440-66-6	Zinc	Balance
7440-31-5	Tin	0.30-1.5
7439-96-5	Manganese	0.5
1309-37-1	Iron	1.0
7440-21-3	Silicon	0.50
Substances/Mixtures – Flux Coating on Rods		
CAS	Ingredient	Proportion
10043-35-3	Boric Acid	50-80
	Methacrylate/Aliphatic & Naphthenic Hydrocarbon Compound	Proprietary
1303-96-4	Borax Glass	10-30

Additional information:
For the listed ingredient(s), the identity and exact percentage(s) are being withheld as a trade secret.
Composition comments:
The term “Dangerous Components” should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a hazard. The product may contain additional nonhazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

(Contd. on page 4)

4 First-aid measures

Description of first aid measures
General information:
EMERGENCY OVERVIEW. This product consists of bare or coated, odourless, solid bronze rods. There are no immediate health hazards associated with this product. This product is not flammable nor reactive. If involved in a fire, this product may generate irritating fumes and a variety of metal oxides. Emergency responders must wear personal protective equipment suitable for the situation to which they are responding. Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take a copy of label and SDS to health professional with victim.
SKIN EXPOSURE: If fumes generated by brazing operations involving these products contaminate the skin, begin decontamination with running water. If molten material contaminates the skin, immediately begin decontamination with cold, running water. Minimum flushing is for 15 minutes. Victim must seek medical attention if any adverse reaction occurs.
EYE EXPOSURE: If fumes generated by brazing operations involving these products enter the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek immediate medical attention if any adverse effect occurs.
INHALATION: If fumes generated by brazing operations involving these products are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions.
INGESTION: Ingestion is not a likely route of exposure for the rods. If the flux is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING, unless directed by medical personnel. Have victim rinse mouth with water, if conscious. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Skin, respiratory disorders, kidney and liver disorders may be aggravated by prolonged over-exposures to the dusts or fumes generated by these products.
RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

Danger
Brazing hazards are complex and may include physical and health hazards such as but not limited to infrared radiation from flame or hot metal, physical strains, thermal burns due to hot metal or spatter and potential health effects of overexposure to brazing fume or dust. Refer to Section 11 for more information.

5 Fire-fighting measures

FLASH POINT: Not flammable.
AUTOIGNITION TEMPERATURE: Not flammable.
Extinguishing media
Use an extinguishing agent suitable for the surrounding fire. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO_2). Halons.
Special hazards arising from the substance or mixture
Combustion products include hazardous and irritating fumes of the constituent metals or their oxides and / or fluorides.
The molten material presents a thermal hazard.
This product is non-flammable and non-explosive.
Special Protective Equipment and Precautions for Fire Fighters:
wear safe work Australia approved self-contained breathing apparatus and full protective clothing.
Unusual Fire and Explosion Hazards: When involved in a fire, this product may generate irritating fumes and a variety of metal compounds. The molten material can present a significant thermal hazard to firefighters.

Additional information:
Read and understand the Work Safe Australia Code of Practice on Welding Processes and “Standard for Fire Prevention During Welding, Cutting and Other Hot Work” before using this product. Section 274 of the Work Health and Safety Act (the WHS Act.)

(Contd. on page 5)

6 Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures:
Wear Safe Work Australia approved respiratory protection, welder's gloves, protective clothing, apron, hat and safety boots. Evacuate all non-essential personnel from affected area. Do not breathe vapours. Ensure adequate ventilation.
Environmental Precautions:
In the event of a major spill, prevent spillage from entering drains or water courses.
Methods and Materials for Containment and Cleaning Up:
Small chips and turnings pick up mechanically. Use vacuum equipment with HEPA filters for accumulated dust. Collect in suitable containers for subsequent disposal.
Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

Precautions for Safe Handling:
Use of safe work practices are recommended to avoid eye or skin contact and inhalation of fumes or dust. Use only in a well-ventilated area.
Food, beverages and tobacco products should not be stored or consumed where this material is in use. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use. Provide eyewash fountains and safety showers in close proximity to points of potential exposure.
Conditions for Safe Storage:
Store in a cool, dry and well ventilated area. Storage in an atmosphere that is wet, moist, or highly humid may lead to corrosion of this product. Protect from extreme temperatures. Keep away from strong oxidising agents and some halogenated compounds.

8 Exposure controls/personal protection

Control parameters
Exposure Guidelines:
Refer to the Safe Environments risk management document – Welding Fume - http://www.safeenvironments.com.au/welding-fume/ The exposure standard refers to the publication by Work Safe Australia "Workplace Exposure Standard for Airborne Contaminants" with the Date of Effect being 22 December 2011. Work Safe Australia note that "exposure standards do not represent a fine dividing line between a healthy and unhealthy work environment. Natural biological variation and the range of individual susceptibilities mean that a small number of people might experience adverse health effects below the exposure standard.

Exposure Standards – Metal Rods					
CAS	Ingredient	TWA ppm	TWA mg/m^3	STEL ppm	STEL mg/m^3
7440-50-8	Copper fume		1 dust 0.2 fume		
7440-66-6	Zinc Oxide fume/dust		10 dust 5 fume		10 fume
7440-31-5	Tin		2		
7440-21-3	Silicon		10		
CAS	Ingredient	TWA ppm	TWA mg/m^3	STEL ppm	STEL mg/m^3
7439-96-5	Manganese		1		3
1309-37-1	Iron		0.5		
Exposure Standards – Flux Coating					
CAS	Ingredient	TWA ppm	TWA mg/m^3	STEL ppm	STEL mg/m^3

(Contd. on page 6)

10043-35-3	Boric Acid		2.5		
	Methacrylate/Aliphatic & Naphthenic Hydrocarbon Compound		NE		
1303-96-4	Borax Glass		5		

Refer to Worksafe Australia for standards:
http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/639/Workplace_Exposure_Standards_for_Airborne_Contaminants.pdf

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapour below occupational exposure standards.

Exposure controls

Personal protective equipment:

General protective and hygienic measures:
Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Engineering controls: No further relevant information available.

Ventilation
Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

Breathing equipment:

Where an inhalation risk exists, wear a Class P2 (Metal fume) respirator. If using product in a confined area, wear an Air-line respirator.

Protection of hands:

Wear nitrile or neoprene gloves for routine industrial use. Use triple gloves for spill response.

Eye protection:

Wear safety glasses with side shields (or goggles). When these products are used in conjunction with soldering, it is recommended that safety glasses, goggles, or face-shield with filter lens of appropriate shade number (per ANSI Z49.1-1988, “Safety in Welding and Cutting”) be worn.

Body protection: Protective work clothing

(Contd. on page 7)

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance	Bare or coated Bronze Solid Rods	**Physical State**	Solid
For Copper, a main component of this product, unless otherwise stated			
Odour	Odourless	**Flammability**	Not Available
Odour Threshold	Not Applicable	**Flash Point**	Not Available
pH	Not Applicable	**Auto Igniting**	Not Available
Melting point/range	Not Available	**Solubility water**	Insoluble
Vapour Pressure, mmHg@980^{0}C	Not Applicable	**Flash Point**	Not Applicable
Relative Vapour Density	Not Available	**Density at 20^{o}C (68^{o}F)**	Not Applicable
Boiling Point & boiling range	2595^{0}C	**Evaporation Rate**	Not Applicable
Freezing/Melting Point	1600-1900^{0}C	**Specific Gravity @200C (water = 1)**	8.3-8.5 g/cc
For Zinc, a main component of this product, unless otherwise stated			
Odour	Odourless	**Flammability**	Not Available
Odour Threshold	Not Applicable	**Flash Point**	Not Available
pH	Not Applicable	**Auto Igniting**	Not Available
Melting point/range	Not Available	**Solubility water**	Insoluble
Vapour Pressure, mmHg@980^{0}C	Not Applicable	**Flash Point**	Not Applicable
Relative Vapour Density	Not Available	**Density at 20^{o}C (68^{o}F)**	Not Applicable
Boiling Point & boiling range	907^{0}C	**Evaporation Rate**	Not Applicable
Freezing/Melting Point	149^{0}C	**Specific Gravity @200C (water = 1)**	7.14

10 Stability and reactivity

Possibility of Hazardous Reactions: Hazardous polymerisation will not occur.
Chemical Stability: Stable
Decomposition Products: Thermal decomposition products can include copper and zinc compounds and a variety of metal oxides.
Conditions to Avoid: Protect from extreme temperatures.
Incompatible Materials:
Strong acids, strong oxidizers, some halogenated compounds.
Hazardous Polymerization: Will not occur.
Brazing fumes and gases cannot be classified simply. The composition and products: quantity of both are dependent upon the metal being joined, the process, procedure and filler metals and flux used. 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 joined (such as paint, plating, or galvanizing), the number of operators and the volume of the worker area, the quality and amount of ventilation, the position of the operator's head with respect to the fume and fumes from chemical fluxes used in some brazing operations. W hen the wire or rod 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 Section 3, plus those from the base metal and coating, etc., as noted above.

(Contd. on page 8)

11 Toxicological information

Toxicity				
CAS	Ingredient	Oral Toxicity LD50	Intravenous Toxicity LD50	Inhalation Toxicity LD50
7440-50-8	Copper	0.12mg/kg Human	3.5mg/kg Mouse	
7440-66-6	Zinc	>5,000 mg/kg Mouse		
7440-31-5	Tin	Rat >2000 mg/kg	Rat >2000 mg/kg	
7439-96-5	Manganese	>2000 mg/kg		
1309-37-1	Iron Oxide Fume			
7440-21-3	Silicon	3160 gm/kg Rat		
Substances/Mixtures – Flux Coating on Rods				
10043-35-3	Boric Acid	2660 mg/kg (rat)	1240 mg/kg (mouse)	
1303-96-4	Borax Glass	2 mg/kg Mouse	1320mg/kg Mouse	

Information on toxicological effects:
Toxicity:
Acute Health Effects
Irritancy of product: This product's dusts or fumes may be irritating to contaminated skin and eyes. Fumes may be irritating to the respiratory system.
Sensitization to the product: Rare cases of allergic contact dermatitis have been reported in people working with copper dust.
Reproductive toxicity information: Listed below is information concerning the effects of this product and its components on the human reproductive system.
Mutagenicity: This product is not reported to produce mutagenic effects in humans. Animal mutation data are available for the Boric Acid component of this product; these data were obtained during clinical studies on specific animal tissues exposed to high doses of this compound.
Embryotoxicity This product is not reported to produce embryo toxic effects in humans.
Teratogenicity: This product is not reported to cause teratogenic effects in humans. Clinical studies on test animals exposed to relatively high doses of the Copper component of this product indicate teratogenic effects.
Reproductive Toxicity: This product is not reported to cause reproductive effects in humans. Clinical studies on test animals exposed to relatively high doses of the Boric Acid and Copper components of this product indicate adverse reproductive effects.
Biological exposure indices: Currently, there are no Biological Exposure Indices (BEIs) associated with the components of this product.
Medical conditions aggravated by exposure: Skin, respiratory disorders, kidney and liver disorders may be aggravated by prolonged over-exposures to the dusts or fumes generated by this product.
Recommendations to physicians: Treat symptoms and eliminate overexposure.

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12 Ecological information

Ingredient	Result	Species	Exposure
7440-50-8 Copper	58 mg/L	Fish	96 Hours
7440-66-6 Zinc	0.00272mg/L 0.04mg/L 0.04mg/L	Fish Crustacea Algae	96 Hours 48 Hours 48 Hours
7440-31-5 Tin Fume	>0.0124 mg/L	Fish	96 Hours
7439-96-5 Manganese	>3.6mg/L	Fish	96 Hours
1309-37-1 Iron Oxide Fume	14.3 mg/L	Carp	96 Hours
7440-21-3 Silicon	Not Available		

(Contd. on page 9)

Substances/Mixtures – Flux Coating on Rods			
10043-35-3 Boric Acid	Acute EC50 777 mg/L Acute EC50 226 mg/L Acute EC50 133 mg/L Acute EC50 777 to 932 ppm Fresh water Acute EC50 226 to 246 ppm Fresh water Acute LC50 >1100 mg/L Acute LC50 92.83 to 148 mg/L Marine water	Daphnia Daphnia Daphnia Daphnia – Water Flea Daphnia- Magna Daphnia– Water Flea Daphnia- Magna Fish Crustation	48 Hours 48 Hours 48 Hours 48 Hours <24 Hours 48 Hours <24 Hours 96 Hours 48 Hours
1303-96-4 Borax Glass	Not Available		

Environmental stability: The components of this product are expected to persist in the environment for an extended period of time. Copper and Zinc will react with water and air to form a variety of stable oxides.
Ecotoxicity: Limited ecotoxicity data was available for this product at the time this report was prepared. Ensure appropriate measures are taken to prevent this product from entering the environment.
Persistence and Degradability: No data is available on the degradability of this product
Bioaccumulative Potential: No data is available on the degradability of this product
Mobility in soil: No data is available on the degradability of this product
Other adverse effects: No data is available on the degradability of this product

13 Disposal considerations

Waste treatment methods
Recommendation:
Dispose of contents/container in accordance with local/regional/national/international regulations.
Uncleaned packagings: Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.
Recommendation: Disposal must be made according to official regulations.

14 Transport Information

This product is not classed as hazardous.

UN-Number DOT, ADR, ADN, IMDG, IATA	Not Regulated
UN proper shipping name DOT, ADR, ADN, IMDG, IATA	Not Regulated
Transport hazard class(es) DOT, ADR, ADN, IMDG, IATA Class	Not Regulated
Packing group DOT, ADR, IMDG, IATA	Not Regulated
Environmental hazards: Marine pollutant:	Yes
Special precautions for user	Not applicable.
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
UN "Model Regulation":	Not regulated.

(Contd. on page 1

15 Regulatory information

Product Name: Harris American LFB/FC

Safety, health and environmental regulations/legislation specific for the substance or mixture:
Poison Schedule:
Classified as a Schedule 6 (S6) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).
Classifications:
Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.
The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Refer to the Australian Inventory of Chemical Substances – AICS at https://www.nicnas.gov.au/chemicals-on-AICS#main

Poison schedule: Classified as a Schedule 6 (S6) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP). https://www.legislation.gov.au/Details/F2016L01638

Classifications: Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.
The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

16 Other information

References
Preparation of Safety Data Sheets for Hazardous Chemicals Codie of Practice

Standard for the Uniform Scheduling of Medicines and Poisons

Australian Code for the Transport of Dangerous Goods by Road & Rail.
Modell Work Health and Safety Regulations, Schedule 10: Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

Workplace exposure standards for airborne contaminants, Safe work, Australia

American Conference of Industrial Hygienists (ACGIIH)

Globally Harmonised System of classification and labelling of chemicals.

WELDING (1): Due to the diversity of welding techniques, processes, materials used, nature of the surface being welded and the presence of contaminants, the fumes & gases associated with welding will vary in composition and quantity. When assessing a welding process, the toxic fumes generated may not only be associated with the parent metal, filler wire or electrode. The welding/cutting arc may generate nitrogen oxides, carbon monoxide & other gases, whilst UV radiation emitted from some arcs generates ozone. Ozone may irritate mucous membranes and cause pulmonary oedema & haemorrhage. Shielding gases (e.g. carbon dioxide and inert gases i.e. argon and helium) in high concentrations, in confined spaces, may reduce oxygen in the atmosphere to dangerous levels, resulting in possible asphyxiation.

(Contd. on page 11)

WELDING (2): In addition to complying with individual exposure standards for specific contaminants, where current manual welding processes are used, the fume concentration inside the welder's helmet should not exceed 5 mg/m^3 (unless otherwise classified) when collected in accordance with Australian Standard AS 3853.1: Fume from welding and allied processes - Guide to methods for the sampling and analysis of particulate matter and AS 3853.2: Fume from welding and allied processes - Guide to methods for the sampling and analysis of gases. Airway irritation and metal fume fever are the most common acute effects from welding fumes. Reported to cause reduced sperm quality in welders.

WELDING (3): Other gases and fumes associated with welding processes include: Inert shielding gases (e.g. argon, carbon dioxide, helium) which may reduce the atmospheric oxygen content in poorly ventilated areas. UV-radiation and Infra-Red radiation may decompose chlorinated degreasing agents to form highly toxic and irritating phosgene gas. This may occur if a metal has been degreased but inadequately dried or when vapours from a nearby degreasing bath enter the welding zone.

WELDING (4): Welding fumes may contain a wide variety of chemical contaminants, including oxides and salts of metals and other compounds which may be generated from electrodes, filler wire, flux materials and from the welded material (e.g. painted surfaces). Welding stainless-steel and its alloys generates nickel and chromium (VI) compounds. Welding fumes are retained in the lungs. Sparingly soluble compounds may be released slowly from the lungs. Welding fume is classified as possibly carcinogenic to humans (IARC Group 2B).

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

Disclaimer:
We urge each end user and recipient of this SDS to study it carefully. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product.
Harris Products Group cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for use, handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

WARNING: PRODUCT COMPONENTS PRESENT HEALTH AND SAFETY HAZARDS. READ AND UNDERSTAND THIS MATERIAL SAFETY DATA SHEET (M.S.DS.). ALSO, FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.
The information contained herein relates only to the specific product. If the product is combined with other materials, all component properties must be considered. **BE SURE TO CONSULT THE LATEST VERSION OF THE MSDS. MATERIAL SAFETY DATA SHEETS ARE AVAILABLE FROM HARRIS PRODUCTS GROUP** Harris Products Group, HGE PTY LTD, Brisbane | Melbourne | Perth | New Zealand, 14 Queensland Rd, Darra, QLD 4076, Phone: (07) 3375 3670 | Fax: (07) 3375 3620, Email: sales@hgea.com.au, www.harrisproductsgroup.com.au,
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[End of SDS]