



# MATERIAL SAFETY DATA SHEET

## HARRIS PRODUCTS GROUP

### STATEMENT OF HAZARDOUS NATURE

Hazardous according to the criteria of Worksafe Australia

### COMPANY DETAILS

Company: Harris Products Group  
HGE Pty Ltd

Address: 14 Queensland Road, Darra  
Queensland 4076

Telephone Number: (07) 3375 3670

### IDENTIFICATION

Product Type: Rutile type Flux Cored Arc Welding (FCAW) wires

Product Names: Dynashield, Perfect Circle

Other Names: None

Manufacturer's Product Code:

UN Number: None allocated

Dangerous Goods Class and Subsidiary Risk: None allocated

Hazchem Code: None allocated

Poisons schedule Number: None allocated

Use: Perfect Circle 71T-1 is a gas-shielded carbon steel wire for fabrication of mild and low carbon steel; structural and pressure vessel grades. This all-position wire provides optimum welding performance in argon/carbon dioxide shielding gas but is also formulated to perform very well with 100% CO<sup>2</sup>. Perfect Circle flux cored wire is formulated and manufactured to provide consistent chemistry, steady arc, low spatter and an excellent bead appearance.

#### Special Conformance

AWS A5.20, ASME SFA 5.20 E71T-1/1M, E71T-9/9M

#### Nominal Composition:

	100% CO <sup>2</sup>	75%Ar/25% CO <sup>2</sup>
Carbon	.04%max	.04%
Manganese	1.50%	1.65%
Silicon	.60%	.75%
Phosphorus	.013%	.013%
Sulfur	0.14%	.014%
Iron	remainder	remainder

### HEALTH HAZARD INFORMATION

#### Health Effects

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

#### Acute:

Swallowed: Does not present an ingestion hazard.

Eye: Arc rays can injure eyes.  
Welding fumes may be irritating to eyes.

Skin: Arc rays can harm skin.  
Electric shock can kill.

Inhaled: Fumes and gases can be dangerous to the health of welders and those in the immediate vicinity. Aggravation of pre-existing respiratory or allergic conditions may occur in some workers. Overexposure to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat or eyes. Manganese fume may cause flue-like symptoms (metal fume fever). Shielding gases (eg carbon dioxide and inert gases ie. argon and helium) in high concentrations in confined spaces may reduce oxygen in the atmosphere to dangerous levels, resulting in possibly asphyxiation.

Chronic: Long-term overexposure to welding fumes can lead to siderosis (iron deposits in the lung) and affect pulmonary function. Long term overexposure to manganese compounds may affect the central nervous system. Symptoms include muscular weakness and tremors similar to Parkinson's Disease. Behavioural changes and changes in handwriting may also appear.

### FIRST AID MEASURES

Swallowed: Does not present an ingestion hazard.

Eye: If in eyes, **act immediately**, hold eyes open, flood with water for at least 15 minutes -- retract eyelids often to ensure adequate irrigation. Immediately transport to a hospital or doctor.

Skin: Wash thoroughly with soap and water. Seek medical attention if irritation persists.

Inhaled: Remove from exposure and give fresh air. Loosen tight clothing at the neck and waist. Keep patient warm and at rest. Check for clear airway, breathing and presence of pulse. If breathing is weak or has ceased, provide artificial respiration. Immediately transport to a hospital or doctor.

Advice to Doctor: **Treat symptomatically.**

### FIRE-FIGHTING MEASURES

Flammable: This product is not flammable. However, the welding arc and sparks can ignite combustibles, therefore such materials should be kept away from areas where welding is taking place.

#### Fire Extinguishing Materials:

These products are not flammable; use fire-extinguishing agents appropriate for surrounding materials.

Water Spray:	YES	Carbon Dioxide:	YES
Halon:	YES	Foam:	YES
Dry Chemical:	YES		

Special fire fighting procedures:  
Not applicable.

## ACCIDENTAL RELEASE MEASURES

Not applicable.

## HANDLING AND STORAGE

Precautions for safe handling:

As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat or drink while handling this product.

Storage and Transport: Store in a dry area. No other special requirements.

Spills and 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.

## EXPOSURE CONTROLS & PERSONAL PROTECTION

Exposure Standards: Threshold Limit Values (TLV'S)

NOHSC: 1003 (latest edition)

Manganese: Dust & compounds (as Mn) – 5mg/m<sup>3</sup>  
TWA Fume (as Mn) 1mg/m<sup>3</sup> TWA,  
3mg/m<sup>3</sup>

Silicon: STEL  
As fumed silica (SiO<sub>2</sub>) – 2mg/m<sup>3</sup> TWA,  
(as Si) – 10mg/m<sup>3</sup> TWA

Magnesium Oxide: Iron oxide fume (as Fe) 5mg/m<sup>3</sup> TWA  
As fume – 10mg/m<sup>3</sup> TWA

In addition to complying with these individual exposure standards for specific contaminants where current manual welding processes are used, the fume concentrations inside the welder's helmet should not exceed 5mg/m<sup>3</sup> when collected in accordance with the appropriate Australian Standard (AS3640 – Latest Edition). The "National Exposure Standards [NOHSC:1003 (1991)]" recommended limit for welding fumes not otherwise classified (NOC) is 5mg/m<sup>3</sup>. TLV-TWA's should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations.

### Engineering Controls:

*Ventilation* Use enough ventilation and local exhaust to keep fume below the relevant exposure standards in the worker's breathing zone and the general area. The welder should be trained to keep his head out of the fume. If welding in confined spaces ensure and maintain adequate air and oxygen to avoid asphyxiation from high concentration of shielding gases.

### Personal Protection:

#### *Respiratory Protection*

Use a fume respirator or air supplied respirator when welding in a confined space or where local exhaust or ventilation does not keep exposure below the relevant exposure standards. Refer AS/NZS 1715 and AS/NZS 1716.

#### *Eye Protection*

Wear a helmet or use a face shield with a filter lens. Use a shade which gives just sufficient arc brightness to allow weld pool control. Provide protective screens and flash goggles if necessary to shield others. Refer AS1336, AS1337 and AS1338.

#### *Clothing*

Wear head, hand and body protection which help to prevent injury from UV radiation, sparks and

electrical shock. At a minimum, this includes welder's gloves and protective face shield and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Welders should not touch live electrical parts and should insulate themselves from the work and ground.

## OTHER INFORMATION

**Hazardous Decomposition Products:** Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependant upon the metal being welded, the process, procedure and electrodes 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 welded (such as paint, plating or galvanizing), the number of welders and the volume of 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 vapours 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 the ingredients section. Fume and gas decomposition products and not the ingredients in the electrode, are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration in the electrode. Also, new compounds not in the electrodes may form. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in the ingredients section, plus those from the base metal and coating, etc as noted above.

Reasonably expected decomposition products from normal use of these products include a complex of the oxides of the materials listed in the ingredients section as well as carbon monoxide, carbon dioxide, ozone and nitrogen oxides. The fume limit for manganese may be reached before the general limit for welding fumes (5mg/m<sup>3</sup>) is reached.

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. Refer AS3853 and also WTIA Technical Note 7.