



**MATERIAL  
SAFETY  
DATA SHEET**

# MATERIAL SAFETY DATA SHEET

## Identification of the Substance/Preparation

**Product Name:** E6013 MMA Welding Electrodes

**Product Brands:** Parweld

**Product Specification:** None

**Product Classification:** None

## Unique Reference Numbers

E6013-20, E6013-25, E6013-32, E6013-40

**Recommended use:** MMA Welding

## Composition

These electrodes consist of solid steel rods coated with a protective flux coating, manufactured in short lengths and supplied in packages.

## Dangerous Ingredients:

Name	Concentration	CAS-no.
Manganese and/or manganese alloys and compounds (Mn)	< 2	7439-96-5

## Hazards Identification

CLASSIFIED AS HAZARDOUS

NOT CLASSIFIED AS DANGEROUS GOODS

There are no recognised hazards associated directly with unused electrodes prior to welding. Packaged consumables may be heavy, and should be handled and stored with care. Some low levels of dust may be produced during handling. DO NOT BREATHE THE DUST.

When using these electrodes as part of the welding process additional potential hazards are likely:

Electric shock from the welding equipment or electrode. This can be fatal.

Hot metal spatter and heat, which can cause burns to the hand and body, and may cause fire if in contact with combustible materials.

UV, IR and light radiation from the arc, which can produce 'arc eye' and possible eye damage to unprotected eyes. WEAR SUITABLE PROTECTIVE EQUIPMENT.

Fumes produced from the electrodes, material being welded and the arc radiation:

- Particulate fume primarily iron oxide; secondarily complex oxides of manganese may be formed.

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- Gaseous fume such as ozone and nitrogen oxides from the action of arc radiation on the atmosphere.
- Short term inhalation of these fumes and gases may lead to irritation of the nose, throat and eyes.
- Long term overexposure or inhalation of high levels of fumes may result in harmful effects to the respiratory system, central nervous system and lungs.
- Highly toxic by inhalation. Inhalation may be fatal. Corrosive - causes burns. Severe respiratory irritant. Typical PEL 5 ppm. Contact with liquid causes severe eye damage - contact lenses should not be worn if you may be exposed to nitrogen dioxide.
- Local extraction and or ventilation should be used to ensure that all hazardous ingredients in the fume are kept below their individual occupational exposure standards in the welder's and other workers' breathing zones.

NOTE: If welding is performed on plated or coated materials such as galvanised steel, excessive fume may be produced which contains additional hazardous components, and may result in metal fume fever and other health effects.

## **First Aid Measures**

No first aid measures should be required for the unused electrodes.

During welding:

### **Inhalation**

If breathing is difficult, bring the patient in fresh air; breathe in fresh air deeply.

### **For Skin Burns**

Submerge affected area in cold water until burning sensation ceases and refer for immediate medical attention.

### **For Eye Effects Such As Arc Eye and Dusts**

Irrigate eye with sterile water, cover with damp dressing and refer for immediate medical attention if irritation persists.

### **Ingestion**

Ingestion is considered unlikely due to product form. However, if swallowed do not induce vomiting. Seek medical attention. Advice to doctor: treat symptomatically.

### **Electric shock**

If necessary resuscitate and seek immediate medical attention.

## **Fire Prevention Measures**

No specific measures required for the electrodes prior to welding. Welding should not be carried out in the presence of flammable materials, vapours, tanks, cisterns and pipes and other containers which have held flammable substances unless these have been checked and certified safe.

### Measures In Case Of Unintentional Release

No specific actions for electrodes prior to use. Welding in proximity to stored or used halogenated solvents may produce toxic and irritant gases. Prohibit welding in areas where these solvents are used.

### Handling and Storage (For Safety)

No special precautions are required for these welding electrodes. Welding electrodes are dense materials and can give rise to a handling hazard when multiple packages are lifted or handled incorrectly or with poor lifting posture. Good practice for handling and storage should be adopted to prevent physical injuries.

### Exposure Prevention / Controls / Personal Protection

Welders should not touch live electrical parts, and should insulate themselves from the work and the ground. Manufacturer's guidelines for the use of electrical welding machines should be observed at all times. Welders and co-workers should be educated about the health hazards associated with welding fume, and trained to keep their heads out of the fume plume. During welding, fumes and gases will be produced and emitted from the welding process. The content of the fume is dependent on the electrode type and base material being welded. The amount and concentration of fume generated is dependent on factors such as current, voltage, welding practices and number of welders in a given area. By following recommended welding practices, fume production can sometimes be minimised. Consult the Safety Data Sheets for the materials being welded. Gaseous ozone and nitrous oxides are also formed by arc radiation. In some cases ozone levels can be high and additional controls may be needed. The individual exposure limits (when specified) for the constituents mentioned above are given below. Fume exposure should be controlled to below the recognised exposure limit for each of the individual constituents, and to below 3.5 mg/m<sup>3</sup> for the total particulate fume.

#### Total welding fume (particulate) – 3.5

##### Manganese oxide

7439-96-5 1mg/m<sup>3</sup>

##### Carbon Monoxide

630-08-0 30ppm 200ppm

##### Nitrogen dioxide (NO<sub>2</sub>)

10102-44-0 3ppm 5ppm

##### Ozone (O<sub>3</sub>)

10028-15-6 0.2 ppm

##### Nitrogen monoxide (NO)

10102-43-9 25ppm 35ppm

Units are in mg/m<sup>3</sup>, except when stated otherwise

These fume exposure limits indicate that several of the fume constituents have low exposure limits.

This, together with the fact that some additional particulate fume components can be present from the material being welded, means that additional controls are required beyond the 3.5mgm/m<sup>3</sup> total fume exposure limits. The fume constituents which may need extra controls are ozone and nitrogen dioxide.

THE ADVICE ON FUME EXPOSURE CONTROL GIVEN ABOVE IS BASED ON REASONABLY EXPECTED FUME CONSTITUENTS FROM THE WELDING ELECTRODES AND THE WELDING ARC. IT DOES NOT, AND CANNOT TAKE INTO ACCOUNT THE FUME PRODUCED FROM THE MATERIALS BEING WELDED. ACTUAL FUME LEVELS WILL VARY IN PRACTICE, AND MAY CONTAIN OTHER CONSTITUENTS FROM THE MATERIAL BEING WELDED THAT REQUIRE ADDITIONAL CONTROLS. THE ONLY ACCURATE WAY TO DETERMINE THE COMPOSITION AND QUANTITY OF FUMES AND GASES TO WHICH WORKERS ARE EXPOSED IS TO TAKE AIR SAMPLES FROM INSIDE THE OPERATORS HELMET, IF WORN, OR IN THE WORKER'S BREATHING ZONES.

Individual fume measurements should be made in these cases using recognised sampling and analysis standards. Based on the results of these measurements, additional fume controls may be required to ensure that all the fume constituents are controlled below their exposure limits.

### **Controls**

Where possible, welding should be performed in a area with good general ventilation, and/or local fume extraction at the arc should be used to control the fumes and gases produced during welding to below their individual recognised exposure limits when measured in the welder's and co-workers' breathing zone. In addition the ventilation and extraction should also be sufficient to ensure that the total particulate fume levels are reduced below 3.5mgm/m<sup>3</sup> when measured in the breathing zone. In confined spaces where ventilation is not adequate, an air fed breathing system should be used. All precautions for working in confined space should be observed. Where fume levels exceed the recognised exposure limits, respiratory protection may be required in the form of a respirator.

### **Personal Protection**

Welding equipment operators and co-workers in the vicinity should wear protective clothing and eye protection appropriate to arc welding as specified by local standards.

### **Protection of Body and Skin**

Suitable clothes for welding should be worn such as non light reflective fireproof overalls, leather apron, welding helmet, leather boots spats and gloves

### **Protection of Hands**

welding equipment operators should wear suitable hand protection such a welding gloves or gauntlets of a suitable standard. Co-workers should also wear suitable hand protection against hot metal, sparks and spatter.

### Eye Protection

Welding equipment operators should wear a welding helmet fitted with the appropriate optical welding filter for the operation. Suitable protective welding screens and goggles should be provided, and used by others working in the same area.

### Physical and chemical properties

<b>Physical state:</b>	Solid
<b>Colour:</b>	Generally Flux coated steel rod with grey core/covering.
<b>Form:</b>	Tubular rod
<b>Odour:</b>	Odourless
<b>PH:</b>	Not available
<b>Vapour pressure:</b>	Not relevant
<b>Vapour Density:</b>	Not relevant
<b>Boiling point / range:</b>	Not relevant
<b>Melting Point:</b>	1500 °C
<b>Solubility in water:</b>	Insoluble
<b>Density:</b>	Not available
<b>Explosive / ignition point:</b>	Non flammable. No fire or explosion hazard exists

### Stability and Reactivity

There are no stability or reactivity hazards from welding electrodes as supplied. Hazardous decomposition products such as metal oxide fumes and gases (see Section 8) are produced during welding.

### Toxicity Data

Welding fumes if inhaled can potentially produce several differing health effects caused by the metal containing particles and the gases produced during the process, both of which are present in the 'fumes'. The exact nature of any likely health effect is dependent on the consumable, material being welded and the welding process parameters, all of which affect fume quantity and composition, as well as the use of adequate ventilation, respirators, or breathing equipment as circumstances require. Inhalation of the fumes/gases produced during welding may lead to irritation to the nose throat and eyes. The range of health effects include respiratory effects with symptoms such as asthma, impaired respiratory and lung function, chronic bronchitis, metal fume fever, pneumoconiosis, possible emphysema and acute pulmonary oedema. Other potential health effects at elevated levels of exposure include central nervous effects possible lung cancer, bone disease, skin and fertility effects. Which of these health effects is potentially likely is related to the fume composition, and this needs to be consulted with the specific toxicity data below to assess the health risk when using any specific welding operation.

Unprotected skin exposed to UV and IR radiation from the welding arc may burn or redden, and UV radiation is potentially a carcinogen. UV radiation can affect the unprotected eye by producing an acute condition known as 'arc eye'.

*Specific effects relevant to major particulate and gaseous fume constituents which may be produced from welding with these electrodes, (excluding fume from components being welded).*

### **Manganese Dioxide**

Affects Lungs, central nervous system, Blood and Kidneys. May cause irritation to eyes and respiratory tract

### **Ozone and Nitrogen Oxides**

These gases are formed due to interactions of the arc with the surrounding air. Both gases can produce eye, respiratory and lung irritation and also can produce longer term lung effects such as decreased lung capacity, chronic bronchitis, and emphysema. Of particular concern with both gases is that exposure to high levels (e.g. due to build up in confined spaces) can result in acute lung effects such as delayed pulmonary oedema.

### **Ecological Data**

The welding process produces particulate fumes and gases which may cause long term adverse effects in the environment if released directly into the atmosphere.

### **Disposal Data**

Packaging, and electrode stubs should be disposed of as general waste or recycled. No special precautions are required for this product.

### **Transport Information**

No special requirements are necessary in transporting these products NOT CLASSIFIED AS A DANGEROUS GOODS

### **Regulations**

A poison schedule number has not been allocated to this product

### **Other Information**

The customer should provide this Materials Safety Data Sheet to any person involved in the materials use or further distribution. PARWELD requests the users (or distributors) of this product to read this Materials Safety Data Sheet carefully before usage.

Additional information on welding safety can be obtained from: The Health and safety executive. The information contained in this Material Safety Data Sheet relates only to the specific materials designated and may not be valid for such material used in combination with any other material or in any process. Information is given in good faith and is based on the latest information available to PARWELD and is, to the best of

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