

SAFETY DATA SHEET

1 COMPANY/PRODUCT NAME

COMPANY: SIP (Industrial Products) Limited
ADDRESS: Gelders Hall Road, Shepshed, Loughborough, Leics. LE12 9NH.
Tel: (01509) 503141 Fax: (01509) 503154

PRODUCT NAME: SIP WELDING CONSUMABLES

2 COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL COMPOSITION: This section covers the material from which these products are manufactured. Aluminium(Al), Carbon(C), Chromium(Cr), Cobalt(Co), Copper(Cu), Iron(Fe), Lithium/Strontium(Li/Sr), Magnesium(Mg), Manganese(Mn), Molybdenum(Mo), Nickel(Ni), Niobium(Nb), Phosphorus(P), Silicon(Si), Sulphur(S), Tin(Sn), Titanium(Ti), Vanadium(V), Zinc(Zn), Zirconium(Zr).

Note: All ingredients may or may not be present in each product. Also refer to product specific Chemical Analysis Table 1 under section 16 Other Information.

3 HAZARDS IDENTIFICATION

a) This section covers the products in the normal stored state. For hazards during use of the products refer to b) of this category and section 8 Exposure Controls (mg/m³) and Personal Protection and product specific Chemical and Fume Analysis Tables 1 to 3 under section 16 Other Information.

In normal stored state the products are NOT classified as hazardous. However electrode coatings and fluxes should not be ingested or allowed to come into contact with food. Skin contact does not normally present a hazard however normal personal hygiene standards should be followed and hands should be washed thoroughly before handling food. Certain individuals may be allergic to substances normally regarded as inert, take appropriate precautions in such cases.

b) This section identifies known likely hazards during normal use under test conditions. The hazards under non test conditions cannot be classified simply, particularly fumes and gases, where the composition and quantity of these will be governed entirely by the cleanliness of the material being welded and any paint, coatings or other undefined substances which may be present on the work-piece or contaminating the work area in general. Also refer to section 8 Exposure Controls (mg/m³) and Personal Protection and product specific Chemical and Fume Analysis Tables 1 to 3 under section 16 Other Information.

i) UV and infrared radiation, heat, sparks and noise generated by the welding arc.

ii) Electric shock from welding machines.

iii) Fumes and gases from the welding process consist of various airborne substances, fine gases and or particles, which may create hazards to health when inhaled or swallowed.

iv) Hazards of over exposure arising from inadequate ventilation and or protection can include;

a) Irritation of the respiratory tract from dust and fume, can cause dryness of the throat, tickling, coughing, chest tightness, wheezing and difficulty in breathing. In its most acute form can cause fluid on the lungs.

b) The inhalation of many freshly formed metallic oxides such as those of Zinc, Chromium, Nickel, Copper, Manganese, may lead to an acute flu-like illness termed Metal Fume Fever.

c) Systemic poisoning can result from the inhalation or swallowing of substances such as Fluorides, Hexavalent Chromium, Lead and Barium.

d) It is possible that certain constituents of welding fume such as Hexavalent Chromium (CrVI) and Nickel (Ni) may be carcinogenic and, until there is definitive information on this possibility, it is wise to treat them as such.

e) Fibrosis is the formation of fibrous or scar tissue in the lung and is the result of reaction between dust and or fume with the lung tissue. There are various types depending on the nature of the substance involved and duration of exposure.

f) Long term overexposure to iron fumes can cause iron deposits on the lungs. This condition is called Siderosis. The lungs should eventually clear when exposure to iron and its compounds ceases.

g) Long term overexposure to Manganese or Manganese Oxides 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 occur.

h) Argon and Carbon Dioxide shielding gases used in some welding processes may displace or replace atmospheric air and therefore should be treated as asphyxiant.

In all cases of doubt or where excessive short term (acute) over exposure, or long term (chronic) over exposure, or any over exposure may have occurred, to any of the hazards described, medical advice should be sought promptly.

v) Molten aluminium may explode upon contact with water.

SAFETY DATA SHEET CONTINUED

4 FIRST AID MEASURES

This section covers the products in the normal stored state. For hazards during use of the products refer to section 3, b) Hazards in Use and section 8 Exposure Controls (mg/m^3) and Personal Protection. If over exposure occurs, due to inadequate protection against any of the hazards identified in section 3, b) Hazards in Use or section 8 Exposure Controls (mg/m^3) and Personal Protection, remove from exposure to a comfortable and well ventilated environment and give first aid treatment appropriate to the injury. Seek medical advice wherever necessary.

PRODUCT IN STORED STATE

INHALATION:

Not considered a potential route of exposure.

SKIN:

Wash thoroughly with soap and water or suitable skin cleanser.

EYES:

Irrigate immediately with copious quantities of water for several minutes. If detrimental effects are noticed seek medical advice.

INGESTION:

Obtain medical attention. DO NOT induce vomiting.

5 FIRE FIGHTING MEASURES

Welding consumables are non flammable under normal storage conditions and do not present a fire or explosion risk. The outer carton/package is flammable. Molten aluminium may explode upon contact with water. If large quantities of aluminium wire are involved in a fire and become molten this may present a hazard for fire fighters and others involved. Fire fighters should be advised of the presence and quantity of aluminium involved upon arrival at the scene. Water fog can be used to extinguish a fire under most circumstances.

During the welding process the heat generated by the welding arc and the sparks from it can ignite combustibles. Take all appropriate precautions and ensure that fire fighting media is available suitable for the welding area environment and conditions.

6 ACCIDENTAL RELEASE MEASURES

Not applicable.

7 STORAGE AND HANDLING

STORAGE:

No special precautions are considered necessary. However welding consumables should not be allowed to come into contact with moisture, acids, oxidising agents or any other chemical substances which are likely to cause a reaction. Poor storage conditions where moisture exists will cause permanent corrosion damage to welding consumables rendering them unsuitable for use. Over-stacking may cause crush damage to product.

HANDLING:

No special precautions are considered necessary. However welding consumables are dense materials and even small packets are relatively heavy. This should be taken into consideration in all handling situations otherwise physical injury or an accident may be caused. Normal personal hygiene standards should be followed during and after handling. Hands should be washed thoroughly before handling food.

8 EXPOSURE CONTROLS (mg/m^3) AND PERSONAL PROTECTION

This section covers the products when in use as welding consumables and addresses the subject of fumes produced by the process and also the effects of the welding arc by virtue of its intensity. Also refer to product specific Chemical and Fume Analysis Tables 1 to 3 under section 16 Other Information.

EXPOSURE CONTROLS: The recommended limit on the concentration of welding fume (or any other atmospheric contaminant) in the air breathed by any person is defined by the Health and Safety Executive in a list of Occupational Exposure Limits (O.E.L.), Guidance Note EH40. This guidance note is revised annually and reference should always be made to the most recent edition. A long term exposure limit (8-Hour TWA) of $5\text{mg}/\text{m}^3$ for welding fume is included in the current O.E.L. recommended limits list. The limits specified for welding fume in the O.E.L.-TWA should be used only as a guide in the control of health hazards and should not be used as a fine line between safe and dangerous concentrations. Total fume concentration at $5\text{mg}/\text{m}^3$ indicates that no individual constituent of the fume exceeds its own respective occupational exposure limit.

It is the responsibility of the user/employer, under the Health and Safety at Work Act, to ensure that the O.E.L. is not exceeded. Full assessment of the possible exposure levels must be carried out by a competent authority. Air concentrate measurements should be carried out in the workplace and the degree of hazard established for welding operatives, other workers and visitors, depending on the composition of the fume, the concentration in the air breathed and the period of exposure.

Analysis of the fume evolved from the use of welding consumables is considered only when welding clean metal in a controlled environment. Other conditions which may also influence the composition and concentration of the fume must also be considered, this may include coatings and contamination on the metal being welded such as paint, plating or galvanising and general dirt or corrosion. Contaminants in the workplace atmosphere may also have an effect on the fume composition and concentration, these may include chlorinated hydrocarbon vapours from cleaning and degreasing activities. Shielding gases used in the MIG-MAG welding process must also be given consideration.

SAFETY DATA SHEET CONTINUED

8 EXPOSURE CONTROLS (mg/m³) AND PERSONAL PROTECTION Cont'd

PERSONAL PROTECTION: In addition to the fumes created during the welding process, which present a hazard, the intensity of the welding arc and the UV, infrared and heat radiation from it can cause damage to eyesight and exposed skin. Bystanders and passers by are at risk from welding arc radiation, exposure either by direct line of sight or reflection of the welding arc from surrounding surfaces. Radiant heat from the welding process presents a fire hazard and a burn hazard to all exposed. Sparks from the welding process also present a fire hazard and burn hazard to all exposed. At higher welding amperages the noise level created by the welding arc may under some conditions exceed recommended levels. Personal protection measures must take all aspects of likely exposure into consideration. The composition of the fume and the concentration in the air breathed, the period of exposure, the intensity of the welding arc and the location of the welding process in relation to welding operatives, other workers and visitors must be considered when deciding on the appropriate protection from all hazards created by the welding process.

With this in mind a full analysis of the workplace environment must be carried out to ensure that all concerned are provided with adequate protection from all aspects of the welding process. If any doubt exists on the subject of protection then a competent authority must be consulted.

Based on the full analysis of the workplace environment and the hazards presented by the welding process for all concerned including welding operatives, other workers and visitors, protection measures required may include: adequate ventilation close to the welding arc and in the general area, respiratory protection for all exposed where local or general ventilation does not keep exposure below the recommended OEL's. Welding operatives may require appropriate head, body, hand, eye and ear protection suitable for the welding process. This may include welders gloves a protective head/face shield with the appropriate shade of lens fitted, impact resistant eye protection goggles or safety glasses, arm protectors, welders apron, shoulder protection, ear protection and appropriate substantial dark clothing, welding screens may also be required. According to exposure levels other workers and visitors may require similar protection.

9 PHYSICAL PROPERTIES

This section covers the products in the normal stored state. For physical properties in use refer to product specific Chemical and Fume Analysis Tables 1 to 3 under section 16 Other Information.

PHYSICAL STATE:	Solid	FORMULA:	N/A
ODOUR:	Odourless	BOILING POINT (°C):	N/A.
APPEARANCE:		EVAPORATION RATE:	N/A
MMA:	Silver/Grey colour	EXPLOSIVE PROPERTIES %:	N/A
MIG - MAG MILD STEEL:	Copper colour	FLASH POINT (°C):	N/A
MIG - MAG OTHERS:	Silver/Grey colour	MELTING POINT (°C) Al (Si):	Above 600
MOG:	Silver/Grey colour	MELTING POINT (°C) OTHERS:	Above 1500

10 STABILITY AND REACTIVITY

STABILITY:	Stable in all normal conditions of storage and use.
CONDITIONS TO AVOID:	High humidity in storage.
MATERIALS TO AVOID:	May react with acids or strong oxidising materials.
KNOWN HAZARDOUS DECOMPOSITION PRODUCTS:	None in normal storage.

11 TOXICOLOGICAL INFORMATION

Non toxic in normal storage
For toxicological information in use see Chemical and Fume Analysis Tables 1 to 3 under section 16 Other Information.

12 ECOLOGICAL INFORMATION

ENVIRONMENTAL ASSESSMENT:	When used and disposed of as intended, no adverse environmental effects are foreseen.
---------------------------	---

13 DISPOSAL CONSIDERATIONS

UNUSED/CONTAMINATED PRODUCT:	Should be disposed of through an authorised waste contractor or licensed site.
PACKAGING:	Should be disposed of through an authorised waste contractor or licensed site.

14 TRANSPORT INFORMATION

Product in stored state is NOT classified as dangerous for transport.
Consideration should be given to the high density of the product. Welding consumables are dense materials and even small packets are relatively heavy.

15 REGULATORY INFORMATION

EC DIRECTIVES:	Personal Protective Equipment (PPE) 89/686/EEC. (HMSO)
STATUTORY INSTRUMENTS:	PPE Regulations S.I. 1992 No. 3139. (HMSO)
GUIDANCE NOTES:	Occupational Exposure Limits (O.E.L.), Guidance Note EH40. (HSE) Chromium, Health and Safety Precautions, Guidance Note EH2. (HSE) Welding, Guidance Note MS15. (HSE)
OTHER REFERENCES:	Welding Fume, Sources, Characteristics & Control. Volumes 1, 2 & 3. (TWI) The above publications are available from HMSO, HSE or TWI as indicated.

SAFETY DATA SHEET CONTINUED

16

OTHER INFORMATION

TABLE 1 - PRODUCT CHEMICAL ANALYSIS

Consumable	Typical Chemical Elements Analysis %. REM = Remainder																			
MMA Electrode	Al	C	Cr	Co	Cu	Fe	Li/Sr	Mg	Mn	Mo	Ni	Nb	P	Si	S	Sn	Ti	V	Zn	Zr
6013		0.070				REM			0.400					0.020	0.250	0.020				
7018		0.080	0.070			REM			1.050	0.010	0.040			0.017	0.550	0.013		0.021		
29/9		0.080	29.00			REM			1.000		9.000			0.800						
Cast Iron	0.010	0.700			0.010	4.200			0.050		REM			0.200	0.005					

Consumable	Typical Chemical Elements Analysis %. REM = Remainder																			
MIG/MAG Wire	Al	C	Cr	Co	Cu	Fe	Li/Sr	Mg	Mn	Mo	Ni	Nb	P	Si	S	Sn	Ti	V	Zn	Zr
Mild Steel	0.001	0.090	0.070		0.160	REM			1.500	0.010	0.030		0.022	0.880	0.013	0.001	0.001	0.001		0.001
Stainless 308			30.00	1.000	5.000	REM			11.00	8.000	38.00	1.000		2.000			1.500			
Aluminium (Si)	REM				0.050	0.400		0.050	0.050					5.000			0.150		0.100	

Consumable	Typical Chemical Elements Analysis %. REM = Remainder																			
MOG Wire	Al	C	Cr	Co	Cu	Fe	Li/Sr	Mg	Mn	Mo	Ni	Nb	P	Si	S	Sn	Ti	V	Zn	Zr
Gasless Cored	1.150					REM	4.900	1.900	0.950					0.700						

Table 2 and 3 give the typical fume emissions, that are of hygienic interest, evolved during the use of the welding consumables, analysis being of fume generated in an enclosed Swedish box type apparatus using a compatible base plate. The composition of the fume is conventionally expressed as a weight percentage of elements rather than as oxides and silicates and other complex forms in which they actually exist in the fume. The fume analysis given is not complete and must be used as a guide only. The fume analysis does not include other fumes which may be produced in actual use by contaminants and added to those formed by the use of the product. Also refer to section 3 (b) Hazards Identification.

TABLE 2 PRODUCT FUME ANALYSIS (for welding consumables where the control of total consumable fume to 5mg/m³ should ensure that no constituent of the fume will exceed its own O.E.L. recommended limit)

Consumable	Typical Fume Analysis Weight %																
MMA Electrode	Al	Ba/Co	Co	Cr	Cr III	Cr VI	Cu	F	Fe	Mg	Mn	Mo	Ni	Pb	Si	Zn	
6013				0.040			0.030	1.700	15.00		7.800		0.020	0.070			
7018				0.030			0.040	15.00	19.00		5.000		0.020	0.120			

Consumable	Typical Fume Analysis Weight %																
MIG/MAG Wire	Al	Ba/Co	Co	Cr	Cr III	Cr VI	Cu	F	Fe	Mg	Mn	Mo	Ni	Pb	Si	Zn	
Mild Steel			0.040	0.100			0.700	1.200	29.00		57.00	0.060	0.060	0.010	5.100	0.030	
Aluminium (Si)	72.00			0.150						2.000	1.400		1.300		19.00	2.800	

Consumable	Typical Fume Analysis Weight %																
MOG Wire	Al	Ba/Co	Co	Cr	Cr III	Cr VI	Cu	F	Fe	Mg	Mn	Mo	Ni	Pb	Si	Zn	
Gasless Cored								8.500	15.00		1.000						

TABLE 3 PRODUCT FUME ANALYSIS (for welding consumables where the control of total consumable fume to 5mg/m³ may not be sufficient, due to high levels of Chromium and or Nickel. Also refer to section 3 iv (d) Hazards Identification)

Consumable	Typical Fume Analysis Weight %																
MMA Electrode	Al	Ba/Co	Co	Cr	Cr III	Cr VI	Cu	F	Fe	Mg	Mn	Mo	Ni	Pb	Si	Zn	
29/9					2.100	4.000		12.40 0	6.800		1.600		0.900				
Cast Iron		3.100						7.500	4.500		0.200		7.000				

Consumable	Typical Fume Analysis Weight %																
MIG/MAG Wire	Al	Ba/Co	Co	Cr	Cr III	Cr VI	Cu	F	Fe	Mg	Mn	Mo	Ni	Pb	Si	Zn	
Stainless 308				11.10 0			0.160		40.00		4.000	0.060	6.300				

The data and advice given in this document apply when the product is sold for the stated application or applications. The product is not sold as suitable for any other application. Use of the product for applications other than stated in this document may give rise to risks not mentioned. You should not use the product other than for the stated application or applications without seeking advice.

If you have purchased the product for supply to a third party for use at work, it is your duty to take all the necessary steps to ensure that any person handling or using the product is provided with the information in this document.

If you are an employer, it is your duty to tell your employees and others who may be affected by any hazards described in this document and of any precautions which should be taken.

The information, data and recommendations contained in this document are believed to be accurate and up to date at the time of compilation. It is essential that you read the whole of this document before using the product and ensure that only persons who have read the whole of this document are permitted to do so, after putting into effect the safety precautions for the hazards identified. If in any doubt whatsoever then a competent authority must be consulted before using the product