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MATERIAL SAFETY DATA SHEET (MSDS)
CADMIUM FREE BRAZING ALLOYS
Please ensure that this MSDS is received by the appropriate person

DATE: June2011 2011 Version 1

Ref. No.: MS043

1 PRODUCT AND COMPANY IDENTIFICATION

Product Name CADMIUM FREE BRAZING ALLOYS

Product Specifications This MSDS gives specific information On cadmium free silver brazing alloys In the Silverflo and Argobraze ranges.

Company Identification African Oxygen Limited
23 Webber Street
Johannesburg, 2001
Tel. No: (011) 490-0400
Fax No: (011) 490-0506

EMERGENCY NUMBER **0860111185 or (011) 873 4382 (24 hours)**

2 DETAILS OF COMPOSITION

CADMIUM FREE BRAZING ALLOYS – SILVERFLO RANGE:

Alloy	Ag	Cu	Zn	Sn	Si	Melting Range ^{0}C	BS 1845 (1984)	BS EN 1044 (1999)
Silverflo 60	60	26	14	-	-	695-730	Ag 13	Ag 101
Silverflo 56	56	22	17	5.0	-	618-652	-	Ag 102
Silverflo 55	55	21	22	2.0	-	630-660	Ag 14	Ag 103
Silverflo 452	45	27.75	25	2.25	-	640-680	-	Ag 104
Silverflo 45	45	25	30	-	-	680-700	-	-
Silverflo 44	44	30	26	-	-	675-735	-	Ag 203
Silverflo 43	43	37	20	-	-	690-775	Ag 5	-
Silverflo 40	40	30	28	2.0	-	650-710	Ag 20	Ag 105
Silverflo 38	38	31	29	2.0	-	660-720	-	-
Silverflo 34	34	36.75	2.7	2.25	-	630-730	-	Ag 106
Silverflo 33	33	33.5	33.5	-	-	700-740	-	-
Silverflo 302	30	36	32	2.0	-	665-755	Ag 21	Ag 107
Silverflo 30	30	38	32	-		695-770	-	-
Silverflo 30 Si	30	37.8	32	-	0.2	700-765	-	-
Silverflo 27 Si	27	39.8	33	-	0.2	700-780	-	-
Silverflo 25	25	41	34	-	-	700-800	-	Ag 108
Silverflo 25 N	25	50	25	-	0.4 5	680-700	-	-
Silverflo 24	24	43	33	-	-	740-800	-	-
Silverflo 24 Si	24	42.8	33	-	0.2	700-800	-	-
Silverflo 20	20	44	35.9	-	0.1	776-815	-	Ag 206
Silverflo 18	18	45.75	36	-	0.2 5	784-816	-	-

CADMIUM FREE BRAZING ALLOYS – ARGOBRAZE RANGE

Alloy	Ag	Cu	Zn	Mn	Ni	Melting Range ^{0}C	BS 1845 (1984)	BS EN 1044 (1999)
Argobraze 49H	49	16	23	7.5	4.5	680-705	Ag 18	Ag 506
Argobraze 25	25	38	33	2	2.0	780-810	-	-

CADMIUM FREE BRAZING ALLOYS – MISCELLANEOUS

Alloy	Ag	Cu	Zn	Mn	Ni	Melting Range ^{0}C	BS 1845 (1984)	BS EN 1044 (1999)
Silver Copper Eutectic	72	28	-	-	-	778	-	AG 401

3. HAZARDS IDENTIFICATION

Welding fumes and gases cannot be classified simply. The composition and quality of both are dependant upon the metal being welded, the
Process, procedure and electrode used. Most fume ingredients are present as complex oxides and compounds and not as pure metals.
Other conditions which also influence the composition and quality 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.

4 FIRST AID MEASURES

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

During welding

Inhalation

Zinc oxide fume if excessive can be irritating to the upper respiratory tract and can cause metal fume fever…Metal fume fever can be caused by exposure to excessive fumes of copper or zinc oxides. Symptoms are similar to those of influenza and often appear after latent period of up to 10 hours. They normally disappear after 24 hours with rest
In the event of inhalation of metal fumes the person should be moved from further exposure

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.

5 FIRE FIGHTING MEASURES

No specific measures required for the welding consumable prior to welding.

During 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.

6. ACCIDENTAL RELEASE MEASURES

No specific actions for welding consumable 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.

7. HANDLING AND STORAGE

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

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

The following table list the occupational exposure standard for metals commonly used in cadmium free alloys

Element	Long Term(8 hour) * TWA Value	Short-Term(10 minutes * TWA Value
Silver	0.1 mg/m^3	-
Copper fume (as Copper)	0.2 mg/m^3	-
Zinc Oxide Fume	5.0 mg/m^3	10 mg/m^3
Tin compound inorganic (as Tin)	2.0 mg/m^3	4mg/m^3
Manganese Fume (as Manganese)	10.0 mg/m^3 as total inhalable fused Silica dust	-
Nickel	1.0 mg/m^3	3mg/m^3
Indium	0.5 mg/m^3	-
	0.1 mg/m^3	-
Cobalt	0.1 mg/m^3	-

** Time Weighted Average*

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9. PHYSICAL AND CHEMICAL PROPERTIES

See composition above

10 STABILITY AND REACTIVITY

No special precautions necessary

11 TOXICOLOGICAL INFORMATION

Welding fumes if inhaled can potentially produce several differing health effects caused by the metal containing particles and the gases produced during the welding 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, weld process, 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 particular welding process.

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 produced when welding with these electrodes

11 ECOLOGICAL INFORMATION

The welding process produces particulate fumes and gases which may cause long term adverse effects in the environment if released directly into the atmosphere. Welding fumes from electrodes covered by this data sheet can produce carbon dioxide gas, which is dangerous to the ozone layer.

13 DISPOSAL CONSIDERATIONS

Packaging, stub ends and slag residue should be disposed of as general waste or recycled.

No special precautions are required for this product.

14 TRANSPORT INFORMATION

No special requirements are necessary in transporting these products

15 REGULATORY INFORMATION

- OHSAct No 85 0f 1993 General Safety Regulations 9.
- SABS 0238 (SANS 10238) Welding and Thermal Cutting Processes – Health and Safety

16 OTHER INFORMATION

The customer should provide this Materials Safety Data Sheet to any person involved in the materials use or further distribution. Afrox requests the users (or distributors) of this product to read this Materials Safety Data Sheet carefully before usage. Further information can be obtained from the American National Standard Z49.1 Safety in Welding and Cutting.

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.

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