SAFETY DATA SHEET

PRODUCT NAME	AF-490AS
PART NUMBER	AF490AS
DOCUMENT NUMBER	AU-E AF-490AS rev.0 /Issue rev.0
DOCUMENT DATE	2018.5.10

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

TRADE DESIGNATION:

AF-490AS

RECOMMENDED USE:

For welding

RESTRICTIONS ON USE:

Do not use except for welding

DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET:

PRODUCER:

KOBE STEEL, LTD.

5-9-12 Kitashinagawa Shinagawa-Ku Tokyo JAPAN

Telephone: +81-3-5739-6331

Fax: +81-3-5739-6960

EMERGENCY TELEPHONE NUMBER:

+81-3-5739-6331

SUPPLIERS (IMPORTERS) NAME:

Lawvale Pty. Ltd. T/As Migomag Welding Supplies

SUPPLIERS (IMPORTERS) ADDRESS:

716 Geelong Road, Brooklyn, Victoria, 3012, Australia

SUPPLIERS (IMPORTERS) PHONE:

+61 1800 934 231

SUPPLIERS (IMPORTERS) EMAIL:

info@migomag.com.au

SUPPLIERS (IMPORTERS) WEB SITE:

migomag.com.au

EMERGENCY PHONE NUMBER:

Poisons Information Australia: 13 11 26

2. HAZARDS IDENTIFICATION

Classification according to Globally Harmonized System of classification and labelling of chemicals (GHS).

HAZARD CLASSIFICATION:

Not Classified

*Hazard classification not listed above, are not classified.

LABEL ELEMENTS:

SYMBOL: Not classified

SIGNAL WORD: Not classified

HAZARD STATEMENT: Not classified

PRECAUTIONARY STATEMENT:

PREVENTION: Do not handle until all Safety Data Sheet (SDS) have been read and understood. Wear protective equipment (eye protection, respiratory protection, protective shoes) as required. Do not eat drink or smoke when using this product. Wash hands thoroughly after handing. Use only outdoors or in a well-ventilated area.

RESPONSE: IF SWALLOWED: Immediately call POISON CENTRE or doctor/physician. Rinse mouth.

IF ON SKIN: Wash with plenty of soap and water. Call POISON CENTRE or doctor/physician if you feel unwell. Wash contaminated clothing before reuse. If skin irritation or rash occurs, get medical advice/attention.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

IF INHALED: Remove victim to fesh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

OTHERS: If exposed of if you feel unwell: Call a POISON CENTER or doctor/physician.

DISPOSAL: Dispose of contents/container in accordance with local/regional/national/ international regulation.

OTHER HAZARDS WHICH ARE NOT CLASSIFIED IN GHS CLASSSIFICATION:

GENERAL: When this product is used in a welding process the hazards are electric shock, fumes, gases, radiation, spatter, slag and heat. Read and understand this Safety Data Sheet and the manufacturer's instructions and the precautionary labels before using this product.

SHOCK: Electrical shock can kill.

RADIATION: Arc rays can injure eyes and burn skin.

FUMES: Overexposure to welding fumes result in symptoms like dizziness, nausea, dryness or irritation of the nose, throat or eyes. Chronic overexposure to welding fumes may affect respiratory system and nervous system.

SUBSTANCE(S) FORMED UNDER THE CONDITIONS OF USE: The welding fumes produced from this welding electrode may contain the listed constituent(s) of Sec.3 and/or their complex metallic oxides as well as solid particles or other constituents from the consumables, base metal, or base metal coating not listed Sec.3. ***The welding fumes may contain Mn, Ni, Cr(VI) and their compounds***. Refer to Sec.8 and 10.

GASES: Gases may cause gas poisoning. Under conditions of use, gases may contain carbonoxides, nitrogen oxides, ozone etc. Refer to Sec.8 and 10.

SPATTER, SLAG: Spatter, slag can damage eyes.

HEAT: Spatter, slag, melting metal, hot welds, arc rays and sparks can cause burn injuries andignite combustibles and flammable materials

3. COMPOSITION/INFORMATION ON INGREDIENTS

MIXTURES:

CHEMICAL NAME	CAS NO.	CONCENTRATION RANGE (%)
Magnesium oxide	1309-48-4	20-30
Calcium fluoride	7789-75-5	20-30
Aluminium oxide	1344-28-1	13-23
Silicon dioxide	14808-60-7	10-20
Aluminium fluoride	7784-18-1	<5
Sodium oxide	1313-59-3	<5
Potassium oxide	12136-45-7	<3
Titanium dioxide	13463-67-7	<3
Iron	7439-89-6	<3
Calcium oxide	1305-78-8	<3
Silicon	7440-21-3	<3
Manganese oxide	1344-43-0	<3
Ferric oxide	1309-37-1	<1
Manganese dioxide	1313-13-9	<1

4. FIRST AID MEASURES

DESCRIPTION OF FIRST AID MEASURES:

INHALATION: Remove person to fresh air and keep comfortable for breathing and get medical advice/attention. If breathing has stopped, perform artificial respiration and get immediate medical advice/attention.

SKIN CONTACT: Take off contaminated clothing and rinse skin with soap and water [or shower]. If skin irritation occurs, get medical advice/attention. For reddened or blistered skin, or thermal burns, get medical advice/attention.

EYE CONTACT: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention. Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. If symptoms persist, get medical advice/attention.

ELECTRIC SHOCK: Disconnect and turn off power. If the victim is semi- or unconscious, open the airway. If the victim cannot breathe, give artificial respiration. If there is no pulse, massage the chest and apply artificial respiration.

INGESTION: Unlikely due to form of product, except for granular materials. If ingested, rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor.

MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED:

SYMPTOMS:

Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).

Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.

HAZARDS: Welding hazards are complex and may include physical and health hazards such as but not limited to electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to welding fume or dust. Refer to Section 11 for more information.

INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED: Treat symptomatically

5. FIREFIGHTING MEASURES

GENERAL FIRE HAZARDS: As shipped, this product is non-flammable, however, welding arc and sparks can ignite combustibles and flammable products. See WTIA Technical Note No. 7 Health and Safety in Welding before using this product.

SUITABLE (AND UNSUITABLE) EXTINGUISHING MEDIA:

SUITABLE EXTINGUISHING MEDIA: As shipped, the product will not burn. In case of fire in the surroundings, use CO_2, powder or water spray.

UNSUITABLE EXTINGUISHING MEDIA: None known.

SPECIFIC HAZARDS ARISING FROM CHEMICAL: None known.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE-FIGHTERS:

SPECIAL PROTECTIVE EQUIPMENT: Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SPECIAL PRECAUTIONS: Use standard firefighting procedures and consider the hazards of other involved materials.

6. ACCIDENTAL RELEASE MEASURES

GENERAL: Unlikely due to form of product, except for granular materials. The welding fumes and slags may be released.

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEEDURES: If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP: Clean up spills immediately, observing precautions in the personal protective equipment in Section 8. Avoid generating dust. Prevent product from entering any drains, sewers or water sources. Refer to Section 13 for proper disposal.

ENVIRONMENTAL PRECAUTIONS: Avoid release to the environment. Prevent further leakage or spillage if safe to do so.

7. HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING:

REDUCTION OF FUMES AND DUST: Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places were dust is formed. Read and understand the manufacturer's instruction and the precautionary label on the product. See WTIA Technical Note No. 7 Health and Safety in Welding.

PREVENTION OF ELECTRIC SHOCK: Do not touch live electrical parts such as the welding wire and welding machine terminals. Wear insulated gloves and safety boots. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting , kneeling or lying, or if there is a high risk of unavoidable or accidental contact with workpiece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

PREVENTION OF FIRE AND EXPOLSION: Remove flammable and combustible materials and liquids.

PREVENTION OF HARM WHEN HANDLING WELDING CONSUMABLES: Handle with care to avoid stings and cuts. Hold the welding wire manually when loosening the wire.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES:

Store welding consumables inside a room without humidity. Do not store welding consumables directly on the ground or beside a wall. Keep welding consumables away from chemical substances like acids which could cause chemical reactions. Store in accordance with local/regional/national regulations.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

CONTROL PARAMETERS:

For substances may be included in welding fumes, gases and flux, occupational exposure values are shown in Annex. ***Keep exposure below exposure limits.*** Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) are values published by the American Conference of Government Industrial Hygienists (ACGIH). ACGIH Statement of Positions Regarding the TLVs and BEIs states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures. See Section 10 for information on potential fume constituents of health interest.

APPROPRIATE ENGINEERING CONTROLS:

VENTILATION: Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases below the exposure limits in the worker's breathing zone and the general area. Keep exposure as low as possible. Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See WTIA Technical Note No. 7 Health and Safety in Welding

INDIVIDUAL PROTECTION MEASURES:

EYE PROTECTION: Wear helmet or use face shield with filter lens. As a rule of thumb, start with a shade which is too dark to see the weld zone. Then go to the next lighter shade which gives sufficient view of the weld zone. Provide protective screens and flash goggles, if necessary, to shield others.

HAND PROTECTION: Wear protective gloves. Suitable gloves can be recommended by the glove supplier.

PROTECTIVE CLOTHING: Wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Wear dry gloves free of holes or split seams. Train the welder not to permit electrically live parts or electrodes to contact skin or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation.

RESPIRATORY PROTECTION: Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below exposure limits.

EAR PROTECTION: Wear earplugs or earmuffs when using engine driven arc welding machine or pulsed arc welding machine that generates high-level noise.

HYGIENE MEASURES: Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9 PHYSICAL AND CHEMICAL PROPERTIES

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES:

Physical state:	Granular
Form:	Powder
Colour:	Brown or grey
Odour:	Odourless
Odour threshold:	No further relevant information available
pH:	Not applicable
Melting point/freezing point:	No further relevant information available
Boiling point, initial boiling point & boiling range:	No further relevant information available
Flash point:	Not applicable
Evaporation rate:	Not applicable
Flammability:	No further relevant information available
Upper/lower flammability or explosive limits:	No further relevant information available
Vapor pressure:	Not applicable

Vapor density:	Not applicable
Solubility(ies)	No further relevant information available
Partition coefficient (n-octanol/water):	No further relevant information available
Auto-ignition temperature:	No further relevant information available
Decomposition temperature:	No further relevant information available
Viscosity:	Not applicable

10 STABILITY AND REACTIVITY:

REACTIVITY: Non-reactive under normal conditions of storage and transport.

CHEMICAL STABILITY: Stable under normal conditions of storage and transport. **POSSIBILITY OF HAZARDOUS REACTIONS:** Contact with acids, alkalis and oxidizing agents could cause reaction and generation of gas.

CONDITIONS TO AVOID: Avoid heat or contamination of acids, alkalis & oxidizing agents.

INCOMPATIBLE MATERIALS: Avoid contact with acids, alkalis and oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS:

Welding fumes and gases are generated as by products during the welding. The composition and quantity of fumes and gases cannot be recognized simply. The composition and quantity of the fumes and gases are dependent upon the base metal being welded (included coating such as solvent, paint, plating), the welding process, welding procedure, welding parameter and electrodes used. Other conditions which also influence the quantity of the fumes and gases to which workers may be exposed include the number of welding spots, the volume of the worker 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).The fumes and gases are different in percent and form from the ingredients listed in Section 3. The fumes and gases 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. Reasonably expected fume constituents produced during arc welding include ***the oxides of iron, manganese and other metals*** present in the welding consumable or base metal. And, it is known that these metal oxides are complex oxides, not single compounds. ***Hexavalent chromium compounds*** may be in the welding fume of consumables or base metals which contain chromium. ***Nickel compounds*** may be in the welding fume of consumables or base metals which contain Nickel. Gaseous and particulate fluoride may be in the welding fume of consumables which contain fluoride. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

11 TOXICOLOGICAL INFORMATION

GENERAL: Classification not possible as product. Refer to Sec.2. Inhalation of welding fumes and gases can be dangerous to your health. The composition and quantity of both are

dependent upon the material being worked, the process, procedures, and consumables used. Refer to Sec.10

ACUTE TOXICITY: Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).

CR: The presence of chromium/chromate in welding fumes can cause irritation of nasal membranes and skin.

Ni: The presence of nickel compounds in fume can cause metallic taste, nausea, tightness of chest, fever.

F: Exposure to the fluoride ion in welding fumes may cause hypocalcaemia-calcium deficiency in the blood that can result in muscle cramps and inflammation and necrosis of mucous membranes.

GASES: Some toxic gases associated with welding may cause pulmonary oedema, asphyxiation, and death

CHRONIC TOXICITY: Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis, pneumoconiosis and other pulmonary effects. The severity of the change is proportional to the length of the exposure. The changes may be caused by non-work factors such as smoking, etc.

Ni: Long term overexposure to nickel fumes may also cause pulmonary fibrosis and oedema.

Cr: Chromates may cause ulceration, perforation of the nasal septum, and severe irritation of the bronchial tubes and lungs. Liver damage have also been reported. Chromates contain the hexavalent form of chromium.

Mn: Overexposure to manganese compounds may affect the central nervous system, symptoms of which are languor, sleepiness, muscular weakness, emotional disturbances and spastic gait. The effect of manganese on the nervous system is irreversible.

Cu: Overexposure to copper fumes may lead to copper poisoning, resulting in thermolytic anaemia and liver, kidney and spleen damage.

Fe: Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called “iron pigmentation” of the lung, which can be seen on a chest x-ray but causes little or no disability. Chronic overexposure to iron (>50-100mg Fe per day) can result in pathological deposition of iron in body tissues, symptoms of which are fibrosis of the pancreas, diabetes mellitus, and liver cirrhosis.

SiO2: Respiratory exposure to the crystalline silica present in this welding electrode is not anticipated during normal use. Respiratory overexposure to airborne crystalline silica is known to cause silicosis, a form of disabling pulmonary fibrosis which can be progressive and may lead to death.

F: Chronic fluoride absorption can result in osseous fluorosis, increased radiographic density of the bones and mottling of the teeth.

CARCINOGENICITY: Welding fumes (not otherwise specified) are possibly carcinogenic to humans. Welding fumes is on the IARC lists as posing a cancer risk.

SiO2: Crystalline silica is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans.

Ni: Nickel and its compounds are on the IARC and NTP lists as posing respiratory cancer risk.

Cr: Hexavalent chromium and its compounds are on the IARC and NTP lists as posing a cancer risk to humans

ARC RAYS: Skin cancer has been reported.

RESPIRATORY OR SKIN SENSITISATION:

Ni: Nickel and its compounds are skin sensitizers with symptoms ranging from slight itch to severe dermatitis.

Cr: Chromates may cause allergic reactions, including skin rash. Asthma has been reported in some sensitized individuals. Skin contact may result in irritation, ulceration, sensitization, and contact dermatitis.

OTHERS: Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition by-products may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.

12 ECOLOGICAL INFORMATION

ECOTOXICITY: No further relevant information available.

PERSISTANCE AND DEGRADABILITY: No further relevant information available.

BIOACCUMULATIVE POTENTIAL: No further relevant information available.

MOBILITY IN SOIL: No further relevant information available.

13 DISPOSAL CONSIDERATIONS

The generation of waste should be avoided or minimized whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner. Dispose of non-recyclable products in accordance with all applicable National, State, and Local requirements. Discharge, treatment, or disposal may be subject to National, State, or Local laws.

14 TRANSPORT INFORMATION

UN number:	No further relevant information available
UN proper shipping name:	No further relevant information available
Transport hazard class(es):	No further relevant information available
Packing group:	No further relevant information available
Environmental hazards:	No further relevant information available

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:	No further relevant information available
Special precautions for user:	No further relevant information available

15 REGULATORY INFORMATION

Regulations of each country are applied to substance/mixtures.

16 OTHER INFORMATION

This SDS is prepared in accordance with ISO 11014, OSHA Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Controlled Products Regulations.

REFERENCE:

WTIA Technical Note No. 7 Health and Safety in Welding. ISO 11014:2009 “Safety data sheet for chemical product - Content and order of sections” United Nations (UN) “Globally harmonized system of classification and labelling of chemicals (GHS)”

DISCLAIMER:

The information given in this SDS is based on the present level of our knowledge and experience. This information is believed to be accurate as of the revision date shown above. However, no warranty, expressed or implied, is given. Because the conditions or methods of use are beyond KOBE STEEL, LTD.’s control, we assume no liability resulting from the use of this product. Regulatory requirements are subject to change and may differ between various locations. Compliance with all applicable Federal, State, Provincial, and local laws and regulations remain the responsibility of the user. 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.