

**Safety Data Sheet: AWS-A5.4 E309L-16**

Supersedes Date 10/25/2012

Issuing Date 06/14/2013

**1. PRODUCT AND COMPANY IDENTIFICATION**

**Product Name** AWS-A5.4 E309L-16  
**Recommended use** Welding  
**Information on Manufacturer**  
 TOKO GROUP LTD  
 (WUXI,CHINA)  
 JP@TOKOC.COM

**Product Code** TOKO E309L-16  
**Chemical nature** Inorganic solid blend  
**Emergency Telephone Number**  
 TEL: (86)510-8359 5138

**2. HAZARD IDENTIFICATION**

**Color** White

**Physical State** Solid

**Odor** Odorless

**GHS**

**Classification**

Physical Hazards

None

Health Hazard

Acute Oral Toxicity  
 Skin Corrosion/Irritation  
 Skin Sensitization  
 Carcinogenicity  
 Specific target organ systemic toxicity (repeated exposure)

Category 5  
 Category 3  
 Category 1  
 Category 2  
 Category 1

Other hazards

None

**Labeling**

Signal Word

**DANGER**



Hazard Statements

H351 - Suspected of causing cancer  
 H303 - May be harmful if swallowed  
 H317 - May cause an allergic skin reaction  
 H316 - Causes mild skin irritation  
 H372 - Causes damage to organs through prolonged or repeated exposure

Precautionary Statements

P201 - Obtain special instructions before use  
 P202 - Do not handle until all safety precautions have been read and understood  
 P260 - Do not breathe dust or fume  
 P270 - Do not eat, drink or smoke when using this product  
 P264 - Wash face, hands and any exposed skin thoroughly after handling.  
 P281 - Use personal protective equipment as required  
 P280 - Wear protective gloves, protective clothing and eye protection.  
 P272 - Contaminated work clothing should not be allowed out of the workplace  
 P363 - Wash contaminated clothing before reuse  
 P321 - Specific treatment (see supplemental first aid instructions on this label)  
 P302+ P352 - IF ON SKIN: Wash with plenty of soap and water  
 P333 + P313 - If skin irritation or rash occurs, get medical attention  
 P308 + P313 - IF exposed or concerned: Get medical attention/advice  
 P405 - Store locked up  
 P273 - Avoid release to the environment  
 P501 - Dispose of contents and container to an approved waste disposal plant.

45 % of the mixture consists of ingredient(s) of unknown toxicity

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Component	CAS-No	Weight %
Iron	7439-89-6	30-60
Chromium	7440-47-3	10-30
Titanium dioxide	13463-67-7	10-30
Nickel	7440-02-0	7-13
Molybdenum	7439-98-7	1-5
Feldspar	68476-25-5	1-5

Calcium Fluoride	7789-75-5	1-5
Manganese	7439-96-5	.1-1
Wollastonite (Ca(SiO3))	13983-17-0	1-5
Bentonite	1302-78-9	1-5
Potassium silicate	1312-76-1	1-5
Calcium carbonate	1317-65-3	1-5

**4. FIRST AID MEASURES**

<b>General advice</b>	Do not breathe dust or fume. Avoid contact with skin, eyes and clothing.
<b>Eye Contact</b>	Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.
<b>Skin Contact</b>	Wash off immediately with soap and plenty of water. Get medical attention if symptoms occur.
<b>Inhalation</b>	Remove person to fresh air. If signs/symptoms continue, get medical attention.
<b>Ingestion</b>	Give 3 to 4 glasses of water, but DO NOT induce vomiting. If vomiting occurs, give fluids again. Seek medical attention if discomfort occurs .
<b>Notes to physician</b>	May cause sensitization of susceptible persons.

**5. FIRE-FIGHTING MEASURES**

<b>Flash Point</b>	The product is not flammable	<b>Method</b>	Not applicable
<b>Flammability Limits in Air %</b>	Not applicable.	<b>Upper</b>	No data available
		<b>Lower</b>	No data available
<b>Suitable Extinguishing Media</b>	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.		
<b>Specific hazards arising from the chemical</b>	Arcs and sparks can ignite combustibles and flammable products. See American National Standard Z49.1; Safety in Welding and Cutting published by The American Welding Society .		
<b>Protective Equipment and Precautions for Firefighters</b>	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.		
<b>NFPA</b>	<b>Health 2</b>	<b>Flammability 0</b>	<b>Instability 0</b>
<b>HMIS</b>	<b>Health 2</b>	<b>Flammability 0</b>	<b>Instability 0</b>

**6. ACCIDENTAL RELEASE MEASURES**

<b>Personal Precautions</b>	Use personal protective equipment. Avoid contact with skin, eyes, and clothing.
<b>Environmental Precautions</b>	Prevent product from contaminating soil or from entering sewage, drainage systems, and bodies of water .
<b>Methods for Containment</b>	Pick up and arrange disposal without creating dust.
<b>Methods for Cleaning Up</b>	Shovel or vacuum any spilled material into a suitable container. Alloy wastes are normally collected to recover metal value .
<b>Neutralizing Agent</b>	Not applicable.

**7. HANDLING AND STORAGE**

<b>Handling</b>	Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke when using this product.			
<b>Storage</b>	Keep in a dry place.			
<b>Storage Temperature</b>	<b>Minimum</b>	No information available	<b>Maximum</b>	No information available
<b>Storage Conditions</b>	<b>Indoor</b>	X	<b>Outdoor</b>	<b>Heated</b> <b>Refrigerated</b>

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Exposure Guidelines**

Component	ACGIH TLV	OSHA PEL	NIOSH
Iron	No data available	No data available	No data available
Chromium	TWA: 0.5 mg/m <sup>3</sup>	TWA: 1 mg/m <sup>3</sup>	IDLH: 250 mg/m <sup>3</sup> TWA: 0.5 mg/m <sup>3</sup>
Titanium dioxide	TWA: 10 mg/m <sup>3</sup>	TWA: 15 mg/m <sup>3</sup>	IDLH: 5000 mg/m <sup>3</sup>
Nickel	TWA: 1.5 mg/m <sup>3</sup>	TWA: 1 mg/m <sup>3</sup>	IDLH: 10 mg/m <sup>3</sup> TWA: 0.015 mg/m <sup>3</sup>
Molybdenum	TWA: 10 mg/m <sup>3</sup> TWA: 3 mg/m <sup>3</sup>	No data available	IDLH: 5000 mg/m <sup>3</sup>
Feldspar	No data available	No data available	No data available
Calcium Fluoride	TWA: 2.5 mg/m <sup>3</sup>	TWA: 2.5 mg/m <sup>3</sup>	No data available
Manganese	TWA: 0.2 mg/m <sup>3</sup>	Ceiling: 5 mg/m <sup>3</sup>	IDLH: 500 mg/m <sup>3</sup>

			STEL 3 mg/m <sup>3</sup> TWA: 1 mg/m <sup>3</sup>
Wollastonite (Ca(SiO <sub>3</sub> ))	No data available	No data available	No data available
Bentonite	TWA: 1 mg/m <sup>3</sup>	No data available	No data available
Potassium silicate	No data available	No data available	No data available
Calcium carbonate	No data available	TWA: 15 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>	TWA: 10 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>

**Engineering Measures**

Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases below the TLV's in the worker's breathing zone and in the general area. Train the worker to keep his head out of the fumes .

**Personal Protective Equipment  
Eye/Face Protection**

Wear a helmet or use face shield with filter lens of appropriate shade number (SEE ANSI/ASCZ49.1) provide protective screen and flash goggles, if necessary, to shield others. As a rule of thumb, start a shade that is too dark to see the weld zone. Then go next lighter shade which gives sufficient view of the weld zone .

**Skin Protection  
Respiratory Protection**

Welder's leather gloves, Wear fire/flame resistant/retardant clothing.  
Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gasses below the TLV's in the workers' breathing zone and the general area. Train the worker to keep his head out of the fumes. Use MSHA/NIOSH approved or equivalent fume respirator or air supplied respirator when welding in a confined space or when local exhaust or ventilation does not keep exposure below TLV.

**General Hygiene Considerations**

Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical State</b>	Solid	<b>Viscosity</b>	Not applicable
<b>Color</b>	White	<b>Odor</b>	Odorless
<b>Odor Threshold</b>	Not applicable	<b>Appearance</b>	Textured black paste
<b>pH</b>	Not applicable	<b>Specific Gravity</b>	9
<b>Evaporation Rate</b>	Not applicable	<b>Percent Volatile (Volume)</b>	No information available
<b>VOC Content (%)</b>	0	<b>VOC Content (g/L)</b>	0
<b>Vapor Pressure</b>	Not applicable	<b>Vapor Density</b>	Not applicable
<b>Solubility</b>	Negligible	<b>n-Octanol/Water Partition</b>	No data available
<b>Melting Point/Range</b>	1560 - 2000 °F / 849 - 1100 °C	<b>Decomposition Temperature</b>	No data available
<b>Boiling Point/Range</b>	2800 °F / 1538 °C	<b>Flammability (solid, gas)</b>	No data available
<b>Flash Point</b>	The product is not flammable	<b>Method</b>	Not applicable
<b>Autoignition Temperature</b>	No information available.		
<b>Flammability Limits in Air %</b>	Not applicable.	<b>Upper</b>	No data available
		<b>Lower</b>	No data available

**10. STABILITY AND REACTIVITY**

**Chemical Stability**

Stable under normal conditions. Hazardous polymerization does not occur.

**Conditions to Avoid**

Exposure to air or moisture over prolonged periods

**Incompatible Products**

Incompatible with oxidizing agents, Strong acids.

**Hazardous Decomposition Products**

Fumes and gasses produced by welding, brazing and similar processes cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, the procedures and the filler metal being used. Other conditions which also influence the composition and quantity of fumes and gases to which the worker may be exposed include: coatings on the metal being welded, the number of welders and the volume of the work space, the quality and amount of ventilation used, the position of the welder's head in relation to the fume plume, as well as the presence of contaminants in the atmosphere when the filler metal is consumed. The fume and gas decomposition products generated are different in percent and form the product ingredients listed in Section III. The products formed in normal operation include those originating from the volatilization, reaction and oxidation of the filler metal, the metal being welded, the coatings, etc. as noted above. One recommended way to determine the composition and quality of fumes and gases to which workers are exposed is to take an air sample inside the welders helmet if worn or in the workers breathing zone. See ANSI/AWS F1.1

**Possibility of Hazardous Reactions**

None under normal processing

11. TOXICOLOGICAL INFORMATION

Product Information

The following values are calculated based on chapter 3.1 of the GHS document (Rev. 3, 2009):

Oral LD50	No information available
Dermal LD50	No information available
Inhalation LC50	
Gas	No information available
Mist	No information available
Vapor	No information available

Principle Route of Exposure Inhalation, Skin contact, Eye contact, Ingestion.

Primary Routes of Entry Inhalation

Acute Effects

Eyes	Welding arc may damage eyes . Causes eye irritation. Molten product can cause thermal burns .
Skin	May cause allergic skin reaction. The molten product can cause serious burns.
Inhalation	Welding fumes may result in discomfort such as: dizziness, nausea, or dryness or irritation of nose, throat, or eyes. Fumes can aggravate asthma, bronchial conditions, or allergies. Individuals with allergies or impaired respiratory function may have symptoms worsen by exposure to welding fumes . Very toxic by inhalation. Inhalation may cause central nervous system effects. May cause allergic respiratory reaction.
Ingestion	May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Chronic Toxicity** Prolonged exposure may cause chronic effects. Inhalation of manganese fumes may affect the central nervous system, may cause spastic gait, drowsiness, paralysis and other neurological problems with symptoms including weakness and tremors resembling Parkinson’s disease. Behavioral changes and changes in handwriting may also appear . Repetitive exposure to nickel oxides may lead to lung fibrosis or pneumoconiosis. Soreness and itchiness of the nose and changes in skin color and/or appearance may also result. Nickel compounds are on the IARC list as posing a carcinogenic risk to humans. OSHA (29 CFR 1910.120) lists nickel as possible carcinogen . Constant inhalation of chromium (VI) compounds may cause an ulceration and perforation of the nasal septum as well as liver and kidney damage. IARC has concluded that the evidence for carcinogenicity to humans and animals is inadequate for chromium metal and trivalent compounds, but sufficient for hexavalent chromium compounds. Chromium compounds are on the IARC list as posing a carcinogenic risk to humans. OSHA (29 CFR 1910.120) lists chromium as possible carcinogen. Chromium VI compounds are required by OSHA to be considered carcinogenic . Long term overexposure to iron fumes may lead to siderosis (iron deposits in the lung) and is believed by investigators to affect pulmonary function. Lungs will clear in time when exposure to iron and its components cease . Inhalation of Molybdenum fumes has caused kidney damage, respiratory irritation and liver damage in animals . May cause sensitization by skin contact. Nickel may cause respiratory sensitization in susceptible individuals. The TLV for Manganese (0.02 mg/m<sup>3</sup>) will be reached before the general limit for welding fumes of 5mg/m<sup>3</sup> is reached. Monitor fumes for manganese levels.

**Target Organ Effects** Respiratory system, Central nervous system, Kidney, Blood, Liver, Lungs, Nasal Cavities, Eyes, Skin.

**Aggravated Medical Conditions** Respiratory disorders, Neurological disorders, Kidney disorders, Blood disorders, Liver disorders, Skin disorders.

Component Information

Acute Toxicity

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation	Draize Test	Other
Iron	= 984 mg/kg ( Rat )	no data available	no data available	no data available	no data available
Chromium	no data available	no data available	no data available	no data available	no data available
Titanium dioxide	> 10000 mg/kg ( Rat )	no data available	no data available	no data available	no data available
Nickel	> 9000 mg/kg ( Rat )	no data available	no data available	no data available	no data available
Molybdenum	no data available	no data available	no data available	no data available	no data available
Feldspar	no data available	no data available	no data available	no data available	no data available
Calcium Fluoride	= 4250 mg/kg ( Rat )	no data available	no data available	no data available	no data available
Manganese	= 9 g/kg ( Rat )	no data available	no data available	no data available	no data available
Wollastonite (Ca(SiO3))	no data available	no data available	no data available	no data available	no data available
Bentonite	> 5000 mg/kg ( Rat )	no data available	no data available	no data available	no data available
Potassium silicate	= 1300 mg/kg ( Rat )	no data available	no data available	no data available	no data available
Calcium carbonate	= 6450 mg/kg ( Rat )	no data available	no data available	no data available	no data available

Chronic Toxicity

Component	Mutagenicity	Sensitization	Developmental Toxicity	Reproductive Toxicity	Target Organ Effects
Iron	no data available	no data available	no data available	no data available	no data available
Chromium	no data available	no data available	no data available	no data available	eyes, respiratory system, skin
Titanium dioxide	no data available	no data available	no data available	no data available	respiratory system
Nickel	no data available	no data available	no data available	no data available	nasal cavities, lungs, skin

					(lung and nasal cancer) lungs, skin, nasal cavities (lung and nasal cancer)
Molybdenum	no data available	no data available	no data available	no data available	eyes, respiratory system, liver, kidneys
Feldspar	no data available	no data available	no data available	no data available	no data available
Calcium Fluoride	no data available	no data available	no data available	no data available	no data available
Manganese	no data available	no data available	no data available	no data available	CNS, respiratory system, blood, kidneys
Wollastonite (Ca(SiO3))	no data available	no data available	no data available	no data available	no data available
Bentonite	no data available	no data available	no data available	no data available	no data available
Potassium silicate	no data available	no data available	no data available	no data available	no data available
Calcium carbonate	no data available	no data available	no data available	no data available	eyes, respiratory system, skin

**Carcinogenicity**

Component	ACGIH	IARC	NTP	OSHA	Other
Iron	not applicable	not applicable	not applicable	not applicable	not applicable
Chromium	not applicable	not applicable	not applicable	not applicable	not applicable
Titanium dioxide	A4	Group 2B	not applicable	X	not applicable
Nickel	not applicable	Group 1 Group 2B	Known Reasonably Anticipated	X	not applicable
Molybdenum	not applicable	not applicable	not applicable	not applicable	not applicable
Feldspar	not applicable	Group 2B	not applicable	not applicable	not applicable
Calcium Fluoride	not applicable	not applicable	not applicable	not applicable	not applicable
Manganese	not applicable	not applicable	not applicable	not applicable	not applicable
Wollastonite (Ca(SiO3))	not applicable	not applicable	not applicable	not applicable	not applicable
Bentonite	not applicable	not applicable	not applicable	not applicable	not applicable
Potassium silicate	not applicable	not applicable	not applicable	not applicable	not applicable
Calcium carbonate	not applicable	not applicable	not applicable	not applicable	not applicable

**12. ECOLOGICAL INFORMATION**

Product Information No information available.  
Component Information

Component	Toxicity to Algae	Toxicity to Fish	Microtox	Water Flea	log Pow
Iron	no data available	LC50 = 13.6 mg/L Morone saxatilis 96 h LC50 = 0.56 mg/L Cyprinus carpio 96 h	no data available	no data available	N/A
Chromium	no data available	no data available	no data available	no data available	N/A
Titanium dioxide	no data available	no data available	no data available	no data available	N/A
Nickel	EC50 = 0.18 mg/L Pseudokirchneriella subcapitata 72 h EC50 0.174 - 0.311 mg/L Pseudokirchneriella subcapitata 96 h	LC50 > 100 mg/L Brachydanio rerio 96 h LC50 = 1.3 mg/L Cyprinus carpio 96 h LC50 = 10.4 mg/L Cyprinus carpio 96 h	no data available	EC50 > 100 mg/L 48 h EC50 = 1 mg/L 48 h	N/A
Molybdenum	no data available	no data available	no data available	no data available	N/A
Feldspar	no data available	no data available	no data available	no data available	N/A
Calcium Fluoride	no data available	no data available	no data available	no data available	N/A
Manganese	no data available	no data available	no data available	no data available	N/A
Wollastonite (Ca(SiO3))	no data available	no data available	no data available	no data available	N/A
Bentonite	no data available	LC50 8.0 - 19.0 g/L Salmo gairdneri 96 h LC50 = 19000 mg/L Oncorhynchus mykiss 96 h	no data available	no data available	N/A
Potassium silicate	no data available	LC50 301 - 478 mg/L Lepomis macrochirus 96 h LC50 = 3185 mg/L Brachydanio rerio 96 h	no data available	EC50 = 216 mg/L 96 h	N/A
Calcium carbonate	no data available	no data available	no data available	no data available	N/A

Persistence and Degradability No information available.  
Bioaccumulation No information available.  
Mobility No information available.

**13. DISPOSAL CONSIDERATIONS**

**Product Disposal** Dispose of in accordance with local regulations.  
**Container Disposal** Empty containers should be taken for local recycling, recovery, or waste disposal

**14. TRANSPORT INFORMATION**

**DOT** Not regulated  
**TDG** Not regulated  
**ICAO** Not regulated  
**IATA** Not regulated  
**IMDG/IMO** Not regulated

**15. REGULATORY INFORMATION**

**Inventories**  
**TSCA** Complies  
**DSL** Complies

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Component	CAS-No	Weight %	SARA 313 - Threshold Values
Chromium	7440-47-3	10-30	1.0
Nickel	7440-02-0	7-13	0.1
Feldspar	68476-25-5	1-5	1.0
Manganese	7439-96-5	.1-1	1.0

**SARA 311/312 Hazardous Categorization**

Acute Health Hazard	Chronic Health Hazard	Fire Hazard	Sudden Release of Pressure Hazard	Reactive Hazard
Yes	Yes	No	No	No

**CERCLA**

Component	Hazardous Substances RQs	CERCLA EHS RQs
Iron	Not applicable	Not applicable
Chromium	5000 lb	Not applicable
Titanium dioxide	Not applicable	Not applicable
Nickel	100 lb	Not applicable
Molybdenum	Not applicable	Not applicable
Feldspar	Not applicable	Not applicable
Calcium Fluoride	Not applicable	Not applicable
Manganese	Not applicable	Not applicable
Wollastonite (Ca(SiO3))	Not applicable	Not applicable
Bentonite	Not applicable	Not applicable
Potassium silicate	Not applicable	Not applicable
Calcium carbonate	Not applicable	Not applicable

**U.S. State Regulations**

**California Proposition 65**

This product contains the following Proposition 65 chemicals

Component	CAS-No	California Prop. 65
Chromium	7440-47-3	carcinogen, initial date 2/27/87, developmental female, male 12/19/08
Nickel	7440-02-0	carcinogen
Titanium dioxide	13463-67-7	carcinogen

**16. OTHER INFORMATION**

**Prepared By** Linda Chow  
**Supersedes Date** 10/25/2012  
**Issuing Date** 06/14/2013  
**Reason for Revision** No information available.

**Glossary**

No information available.

**List of References.**

No information available.

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