

SAFETY DATA SHEET

CW005 Stainless steel flux cored wires



Version number: 1
Replaces SDS: 2009-11-23
Issued: 2014-10-14

Not for sale in the USA

Section 1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1 Product identifier

Trade name SmoothCor 409Ti
Article-no

Product/Article	Diameter(mm)	Packaging (kg)	Part Number
SmoothCor 409Ti	1.2	227	1409Ti12227

1.2 Relevant identified uses of the substance or mixture and uses advised against

Article type FCAW Stainless steel flux cored wires Classification: AWS SFA A5.22 (or other)
Use Flux cored arc welding

1.3 Details of the supplier of the safety data sheet

Supplier	BOC Limited	BOC Limited
Street address	10 Julius Avenue North Ryde NSW 2113 Australia	970-988 Great South Road Penrose, Auckland New Zealand
Telephone	131 262	0800 111 333
Fax	132 427	0800 229 923
Email	contact@boc.com	customer.servicenz@boc.com

1.4 Emergency telephone number

Available outside office hours Yes
Emergency phone number 1800 653 572 (Aus) or 0800 111 333 (NZ)

Other

Additional product information Web site: www.boc.com.au or www.boc.co.nz

Section 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

As shipped the product is:

Not Classified as Hazardous according to Australian, New Zealand and European regulations (refer Section 15 for references)

Not a Dangerous Good for Transport by road, rail, air or sea according to Australian, New Zealand, European, IMO, and IATA.

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GHS Classification Not Classified

2.2 Label elements

Not Applicable

2.3 Other hazards

When the product is used in the welding process the most important hazards are:
Overexposure to fumes and gases from welding released from the welding process may release products that are classified as hazardous and can be dangerous to health. Refer to Section 16 for more information.
Watch out for splatter, hot metal and slag. It may cause skin burn and cause fire.
Arc rays can injure eyes and burn skin. Electric shock can kill. Avoid touching live electrical parts.

Section 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

This product is a mixture and please refer to Section 3.2

3.2 Mixtures

Flux	Maximum %	CAS No.
Limestone and/or Calcium Carbonate	37	1317-65-3
Fluorides (as F)	5	7789-75-5
Manganese and its Inorganic compounds (as Mn)	10	7439-96-5 and others
Aluminium, metal and insoluble compounds	10	7429-90-5
Rutile/ Titanium oxide (total inhalable dust) (respirable dust)	30	13463-67-7
Nickel and its inorganic compounds (soluble, as Ni) (insoluble, as Ni)	20	7440-02-0
Molybdenum compounds (as Mo) (soluble compounds) (insoluble compounds)	15	7439-98-7
Chromium Chromium III compounds Chromium VI compounds	40	7440-47-3
Silica, crystalline, α – quartz	10	14808-60-7

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Section 4. FIRST AND MEASURES

4.1 Description of first aid measures

Inhalation	IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms occur.
Skin contact	Burns should be treated by a doctor. Wash affected areas with running water/soap. Seek medical attention in event of irritation
Eye contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Burns from radiation, see doctor.
Ingestion	Contact a doctor if more than an insignificant amount has been swallowed.

4.2 Most important symptoms and effects, both acute and delayed

Inhalation	Welding can generate fumes, mists, dust, vapours and gases, including ozone. The amounts and types of fumes produced vary greatly depending on the process involved and the materials being used such as metals, solvents, flux, paint and plastics. The health effects of exposure to fumes, dust, vapour and gases can vary. Effects can include irritation of the upper respiratory tract (nose and throat), tightness in the chest, asphyxiation, asthma, wheezing, metal fume fever, lung damage, bronchitis, cancer, pneumonia or emphysema.
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4.3 Indication of any immediate medical attention and special treatment needed

Acute effects include irritation of the eyes, nose and throat, shortness of breath

Section 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	Carbon dioxide (CO ₂), powder or diffuse jet of water. In case of major fire: Extinguish fire with diffuse jet of water or foam.
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5.2 Special hazards arising from the substance or mixture

Avoid contact with strong acids or other substances which are corrosive to metals

5.3 Advice for fire fighters

Special protective equipment for fire fighters	Wear self contained breathing apparatus as in a fire welding rods may decompose on heating and produce hazardous decomposition products
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Section 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

General ventilation and local fume extraction must be adequate to keep fume concentrations within safe limits. Use respiratory equipment when welding in a confined space. Wear protective clothing and eye protection appropriate to arc welding. Skin contact should be avoided to prevent possible allergic reactions.

6.2 Environmental precautions

Try to prevent the material from entering drains or water courses.

6.3 Methods and material for containment and cleaning up

Spills to be cleaned up immediately using dry clean up methods and avoid dust generation
Use appropriate PPE to prevent contact with skin
Ensure good hygiene practices following clean up

6.4 Reference to other sections

For *Personal protection* see section 8. For *Disposal* see section 13. For *Environmental precautions* see section 12. For *Precautions for safe handling* see 7.1.

Section 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Preventive handling precautions

Ensure adequate ventilation for the welder and others. Use respiratory equipment when welding in a confined space. Wear protective clothing and eye protection appropriate to arc welding. Remove all flammable materials and liquids before welding.

General hygiene

Wash hands before breaks and immediately after handling the product.

7.2 Conditions for safe storage, including any incompatibilities

Store welding consumables inside a room with low humidity. Do not store welding consumables directly on the ground or beside walls. Store away from chemical substances like acids which could cause chemical reactions.

7.3 Specific end use(s)

Welding process.

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Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Welding fume component	CAS No.	TWA ¹ (mg/m ³)	STEL ¹ 15min (mg/m ³)	Hazard Classification 67/548/EC	Hazard Classification (GHS) 1272/2008
Welding fumes (not otherwise classified)	-	5			
Iron oxide fume (as Fe)	1309-37-1	5	10		
Manganese, fume (as Mn)	7439-96-5	1	3	R20/R22	H332/H302 Acute Tox.4
Chromium III compounds (as Cr)		0.5		R45: R43:	H351 Carc. 2 H317 skin sens 1
Chromium VI Compounds				R45: R43:	H351 Carc. 2 H317 skin sens 1
Certain water insoluble		0.05			
Water soluble		0.05			
Nickel and its inorganic compounds					H351 Carc.2
Water soluble	7440-02-0	0.1		R40/R43 R49/R53	H317skin sens 1/ H413 Aquatic Ch.4
Aluminium					
Inhalable dust	1344-28-1	10			
Respirable dust		4			
Molybdenum					
(compounds, soluble)	7439-98-7	5			
(compounds, insoluble)		10			
Silica, Crystalline					H350 Carc. 1
Quartz (respirable dust)	14808-60-7	0.1			/H370 spec targ resp 1/ H372 spec tar 1
Magnesium oxide (as Mg)					
(fume)	1309-48-4	10			
Zinc oxide, fume	1314-13-2	5	10		
Lead, inorganic dusts & fumes (as Pb)	7439-92-1	0.15			
Titanium dioxide					
(inspirable dust)	13463-67-7	10			
Calcium Oxide	1305-78-8	2			
Calcium Silicate					
(inspirable dust)	1344-95-2	10			
Fluoride, inorganic (as F)		2.5			

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Nitrogen monoxide	10102-43-9	31	0
Ozone	10028-15-6	0,2 peak limitation	
Carbon dioxide	124-38-9	9000	54000
Carbon Monoxide	630-08-0	31	

1. Extracted from Safework Australia, Hazardous Substances Information System (HSIS) & Worksafe New Zealand Table of workplace exposure standards

8.2 Exposure controls

Technical precaution measures	General ventilation and local fume extraction must be adequate to keep dust concentrations within safe limits.
Eye / face protection	Safety glasses.
Safety gloves	Skin contact should be avoided to prevent possible allergic reactions.
Other skin protection	Protective work clothing.
Respiratory protection	Use suitable respiratory protective device in case of insufficient ventilation (Filter P2)

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance, colour	Grey
Appearance, physical state	Rod
Auto-ignition temperature	Not applicable
Auto-inflammability	Not auto-flammable
Decomposition temperature	Not applicable
Evaporation rate	Not applicable
Explosive properties	Not explosive
Flammability (solid gas)	Not applicable
Flash point	Not applicable
Form	Fast
Initial boiling point and boiling range	Not applicable
Melting point / Freezing point	Not applicable
Odour	Odourless
Odour threshold	Not applicable
Oxidising properties	Not applicable
Partition coefficient: n-octanol / water	Not applicable

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pH value	Not applicable
Relative density	Not applicable
Solubility	Not applicable
Solubility in water	Insoluble
Upper / lower flammability or explosive limits	Not applicable
Vapour density	Not applicable
Vapour pressure	Not applicable
Viscosity	Not applicable

9.2 Other information

Not applicable

Other

Density	7.96g/cm ³
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Section 10. STABILITY AND REACTIVITY

10.1 Reactivity

Reactive with incompatible materials such as strong acids/corrosives

10.2 Chemical stability

Stable at normal conditions.

10.3 Possibility of hazardous reactions

Hazardous polymerisation will not occur

10.4 Conditions to avoid

None under normal conditions

10.5 Incompatible materials

Strong acids and metal corrosives

10.6 Hazardous decomposition products

Welding fumes and gases. Additional fume may arise from coatings and contaminants on the base material.

Welding fume component	CAS No.	Classification (67/548EEC)	CLP (1272/2008)		Concentration of classified fume components
Aluminium oxide (Al)	1344-28-1	-	-	-	1.8 to 1.2
Barium (Ba)	7440-39-3	-	-	-	≤0.1
Bismuth oxide (Bi)	12640-40-3	-	-	-	≤0.1

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Calcium (Ca)	1305-78-8	-	-	-	0.1 to 11.6
Cobalt oxide (Co)	1307-96-6	R22: Harmful if swallowed R43: May cause sensitisation by contact	Acute tox 4 (oral) Skin sens. 1	H302 H317	≤0.1
Chromium III compounds (as Cr)	24613-89-6	R45: May cause cancer R35: Causes severe burns R43: May cause sensitisation by skin contact	Carc. 1B Skin Corr. 1A Skin Sens. 1	H350 H314 H317	≤0.1
Copper oxide (Cu)	1317-38-0	-	-	-	≤0.1
Iron oxide (Fe)	1332-37-2	-	-	-	11.9 to 54.9
Potassium (K)	7440-09-7	R34: Causes burns	Skin Corr. 1B	H314	0.6 to 23.8
Lithium (Li)	7439-93-2	R34: Causes burns	Skin Corr. 1B	H314	0.1 to 0.8
Magnesium oxide (Mg)	1309-48-4	-	-	-	0.1 to 5.3
Manganese (Mn)	7439-96-5	-	-	-	0.7 to 8.2
Molybdenum (Mo)	7439-98-7	Molybdenum trioxide R36/37: Irritating to eyes and respiratory system R40: Limited evidence of carcinogenic effect	Molybdenum trioxide Carc. 2 Eye Irrit. 2 STOT SE 3	H351 H319 H335	≤0.1
Sodium (Na)	7440-23-5	R34: Causes burns	Skin Corr. 1B	H314	0.5 to 8.7
Nickel (Ni)	7440-02-0	R40: Limited evidence of carcinogenic effect R43: May cause sensitisation by skin contact R48/23: Toxic danger of serious damage to health by prolonged exposure through inhalation R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment	Carc. 2 Skin sens 1 STOT RE 1	H351 H317 H372	0.1 to 0.2
Lead (Pb)	7439-92-1	-	-	-	0.1 to 1.8
Silicon (Si)	7440-21-3	-	-	-	2.1 to 16.3
Titanium dioxide (Ti)	13463-67-7	-	-	-	0.1 to 3.2

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Vanadium (V)	7440-62-2	-	-	-	≤0.1
Zinc (Zn)	7440-66-6	-	-	-	0.1 to 3.5
Fluoride (F-)	16984-48-8	-	-	-	0.1 to 21.4

Final Fume classification		
Classification	H phrase	Text
Acute Toxicity (Inhal): Category 3	H331	Toxic if inhaled
Acute Toxicity (Oral/Dermal): Category 4	H302/H312	Harmful if swallowed or in contact with skin
Skin corrosion/irritation: Category 1A	H314	Causes severe skin burns and eye damage
Skin sensitisation: Category 1	H317	May cause an allergic skin reaction
Respiratory sensitisation: Category 1	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
Carcinogenicity: Category 1A	H350	May cause cancer
Mutagen: Category 1B	H340	May cause genetic defects
Reproductive toxicity: Category 2	H361f	Suspected of damaging fertility
Specific Target Organ Toxicity: Single exposure Category 3	H335	May cause respiratory irritation
Specific Target Organ Toxicity: Repeated exposure Category 2	H373	May cause damage to organs through prolonged or repeated exposure

The classification information above relates to the fume during use

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Elemental Analysis of the fumes is shown below.

Component	wt %	Component	wt %
Aluminium	0.1 to 1.2	Nickel	0.1 to 0.2
Calcium	0.1 to 11.6	Lead	0.1 to 1.8
Iron	11.9 to 54.9	Silicon	2.1 to 16.3
Potassium	0.6 to 23.8	Titanium	0.1 to 3.2
Lithium	0.1 to 0.8	Zinc	0.1 to 3.5
Sodium	0.5 to 8.7		

Section 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Conditions to avoid: none in the form supplied

When welding, fumes and gases generated can be dangerous to health.

Acute toxicology

Welding operations may evolve fumes that may be irritating to the respiratory tract and harmful if inhaled. Aspiration may cause pulmonary oedema and pneumonitis. Short-term overexposure can cause dizziness, nausea and irritation of the nose, throat or eyes.

Irritation

Manganese fumes – Eye (rabbit) 500 mg/24hr Mild
- Skin (rabbit) 500 mg/24 hr Mild

Corrosive effects

Not available

Sensitisation

May cause sensitisation by skin contact

Mutagenicity

Not available

Carcinogenicity

Welding fumes are possibly carcinogenic to humans and have been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans

Repeated dose toxicity

Not available

Reproductive toxicity

Not available

Section 12. ECOLOGICAL INFORMATION

12.1 Toxicity

The welding process can effect the environment if fume is released directly into the atmosphere. Residues from welding consumables could degrade and accumulate into soils and ground water.

Acute fish toxicity

LC50 Fish 96h:
Manganese: 2,91 mg/l

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Acute algae toxicity

Aluminiumoxide: >100 mg/l Salmo trutta
IC50 Algae 72h:
Manganese: 0,55 mg/l
Aluminiumoxide: >100 mg/l Selenastrum capricornatum (green algae)

Acute crustacean toxicity

EC50 Daphnia 48h:
Manganese: 5,2 mg/l
Aluminiumoxide: >100 mg/l Daphnia magna (Water flea)

12.2 Persistence and degradability

Not available

12.3 Bio accumulative potential

Not available

12.4 Mobility in Soil

Not available

12.5 Results of PBT and vPvB assessment

Not available

12.6 Other adverse effects

Not available

Section 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal considerations

Recycle packing materials. Dispose of any product, residue or packing material according to national and local regulations. Spent ;fume extraction filters shall be disposed of as hazardous waste..

Section 14. TRANSPORT INFORMATION

14.1 UN number

Not applicable

14.2 UN proper shipping name

Not applicable

14.3 Transport hazard class(es)

Not applicable

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14.4 Packing group

Not applicable

14.5 Environmental hazards

Not applicable

14.6 Special precautions for user

Not applicable

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

Other

Dangerous goods Not classified as a dangerous good for transport by air, land, or sea

Section 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations / legislation specific for the substance or mixture.

EU regulations

Dangerous Goods Regulations/2014 (IATA)

International Maritime Dangerous Goods/2012 (IMO)

Regulation (EC) No 1271/2008 [CLP]

Dangerous Substances Directive (67/548/EEC)

National regulations

Model Work and Safety Regulations 2014 (Safework Australia)

Hazardous Substances [Classification] Regulations 2001 [New Zealand]

Australian Code for the transport of Dangerous Goods by Road and Rail Volume 7/2011 (NTC)

Land Transport Rule 45001/1 (New Zealand)

Local laws and regulations should be carefully observed.

15.2 Chemical safety assessment

Not applicable

Section 16. OTHER INFORMATION

References to key literature and data sources

Regulation (EC) No 1907/2006 of the European Parliament and of the Council, (REACH).

Regulation (EC) No 1272/2008 of the European Parliament and of the Council.

Safework Australia: Hazardous Substances Information System (HSIS)

Worksafe New Zealand: Table of workplace exposure standards

Annex VI CLP Regulation (EC) 1272/2008

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Other	Safework Australia: Code of Practice : Welding Processes/2012
Manufacturer's notes	<i>Read this Safety Data Sheet carefully and become aware of hazards implied and the safety information.</i>
Details of Hazards relating to fumes	As a result of intended normal use, decomposition products that are classified as Hazardous may be released.
<i>GHS Classification</i>	Acute Toxicity – Inhalation (Hazard Category 4) Sensitisation – Skin (Hazard Category 1) Carcinogenicity (Hazard Category 2) Chronic Aquatic Toxicity (Category 4)
<i>Hazard statement(s)</i>	H332 – Harmful if inhaled H317 - May cause an allergic skin reaction H351 – Suspected of causing cancer H413 - May cause long lasting harmful effects to aquatic life
<i>Precautionary statements (s):</i>	<u>Prevention</u> P201 -Obtain special instructions before use P202 - Do not handle until all safety precautions have been read and understood. P261 - Avoid breathing dust/fume/gas/mist/ vapours/spray P271 - Use only outdoors or in a well-ventilated area. P272 - Contaminated work clothing should not be allowed out of the workplace. P280 - Wear protective gloves P201 - Obtain special instructions before use. P281 - Use personal protective equipment as required. P273 – Avoid release to the environment <u>Response</u> P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P311 - Call a POISON CENTER or doctor/physician. P312 - Call a POISON CENTER or doctor/physician if you feel unwell. P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention. P308 + P313 - IF exposed or concerned: Get medical advice/attention. P302 + P352 -IF ON SKIN: Wash with plenty of soap and water. P321 - Specific treatment (refer label) P363 - Wash contaminated clothing before reuse. <u>Storage</u> P403 + P233 - Store in a well-ventilated place. Keep container tightly closed <u>Disposal</u> P501 - Dispose of contents/container in accordance with local , state and national regulations.

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