#### 1. PRODUCT AND COMPANY IDENTIFICATION: HARDFACING ALLOYS QUALITIUM™

ALLOYS QUALITIUM <sup>™</sup>,corp 7:00 a.m. - 6:00 p.m. Email:support@alloysqualitium.com Revision: November 2014 EMERGENCY TELEPHONE NUMBER: 786-3727246

ALLOY MIC 11100	С	Mn	Si	Cr	Мо	Fe	Fluorides	Others
MN	1.0	15.0	1.0	3.5	-	Bal.	0.0-2.0	-
HM	0.4	15.0	0.8	15.0	-	Bal.	0.0-2.0	-
MB	0.1	2.5	0.8	1.3	-	Bal.	<1.0	-
С	0.2	2.0	1.0	3.4	-	Bal.	<1.0	-
44	2.5	1.5	1.2	9.5	1.5	Bal.	<1.0	0.4 Cu
74	0.20	0.50	0.17	-	-	bal	<1.0	1.59 Al
HI	3.0	1.2	1.0	16.0	-	Bal.	<1.0	-
W	0.3	2.1	1.2	6.3	1.1	Bal.	<1.0	1.5 W
57-GW	0.5	2.0	1.2	5.5	-	Bal.	<1.0	-
58	0.6	0.6	0.6	8.0	-	Bal.	<1.0	-
58-GV	0.8	1.4	1.2	8.0	0.6	Bal.	<1.0	1.0 V, 5-8 TiO <sub>2</sub>
60 HB	0.4	0.5	1.0	-	-	Bal	<1.0	2.0 Ni, 1.0 -5.0 B
TIC	1.8	2.0	1.5	7.0	1.4	Bal.	<1.0	5.0 Ti
CD	4.8	1.2	1.2	27.0	-	Bal.	<1.0	-
CR	6.5	1.2	1.2	28.0	-	Bal.	<1.0	-
62	2.5	0.5	0.7	7.0	0.7	Bal.	<1.0	1.0 V
HW	5.4	1.2	1.2	23.0	-	Bal.	<1.0	7.0 Cb
CHW	5.4	1.0	1.2	22.0	5.5	Bal.	<1.0	6.0 Cb, 1.0 V
SUGARMIC	3.0	1.0	1.0	15.0	-	Bal.	<1.0	-
105-S	0.4	3.0	1.5	4.5	0.6	Bal.	<1.0	0.1 V
420-S	0.3	1.0	0.6	12.5	-	Bal.	<1.0	-
423-S	0.1	1.2	0.5	13.5	1.1	Bal.	<1.0	2.5 Ni, 0.2 V, 0.2 Cb

## 2. HAZARD IDENTIFICATION:

**Emergency Overview:** This product is normally not considered hazardous as shipped. Avoid eye contact or inhalation of dust from the product. When this product is used in a welding process, the most important hazards are welding fumes, heat, radiation and electric shock.

**Classification of the Substance/Mixture** 

CLP/GHS Classification (1272/2008): Carcinogenicity, Category 2

EU Classification (67/548/EEC): Harmful (Xn), Carcinogen Category 3, R40

Labelling:

Symbols:



Signal Word: Warning Hazard Statements:

	SDS # 442
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<b>S</b> heet	
H351 - Suspected of causing cancer.	*****************

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P201 – Obtain special instructions before use.

**P202 –** Do not handle until all safety precautions have been read and understood.

**P210 –** Keep away from heat/sparks/open flames/hot surfaces – No smoking.

P280 - Wear protective gloves/eye protection/face protection.

**P281 –** Use personal protective equipment as required.

P308+P313 – IF exposed or concerned: Get medical advice/attention.

P405 – Store locked up.

P501 - Dispose of contents/container in accordance with local/regional/national/international regulations.

3..

## **COMPOSITION / INFORMATION ON INGREDIENTS**

Important: This section covers the materials from which the product is manufactured. The fumes and gases produced during normal use of this product are covered in Section V. The term "hazardous" in "hazardous material" should be interpreted as a term required and defined in "OSHA" communication standard hazard or (current) 29 CFR-1910 to 1200 and does not necessarily imply the existence of Hazard. The chemicals or compounds or combinations reported by section 313 of "SARA" are marked by the symbol #.

#### 3. COMPOSITION / INFORMATION ON INGREDIENTS:

Chemical Identity	CAS #	Range %	OSHA PEL (mg/m3)	ACGIH-TLV (mg/m3)	Carcinogenicity	EU Classification (67/548/EEC)	CLP/GHS Classification (1272/2008)
#Chromium	7440-47-3	5-15	1.0 (Metal) .05 (Cr II & Cr IIII Compounds) 0.005(Cr VI Compounds) 0.01 ( Cr VI Insoluble Compounds)	0.5 ((Metal) 0.5 (Cr IIII Compounds) 0.05(Cr VI Soluble Compounds)	Yes	Not Dangerous	(H400) Aquatic Acute 1 🏠

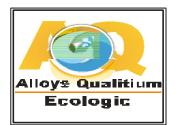


Fluorides	7789-75-5	0-5	2.5 (as F)	2.5 (as F)	No	(Xi) R36/37/38	(H315) Skin Irrit 2 (H319) Eye Irrit 2A (H335) STOT SE 3	()
Carbon	7440-44-0	1-5	15	10	No	Not Dangerous	Not Hazardous	
#Vanadium	7440-62-2	0-5	1	1	No	Not Dangerous	Not Hazardous	
Titanium Dioxide	13463-67-7	1-11	15	10	No	Carc. Cat. 3 (Xn) R40	(H351) Carc. 2	
Silicon	7440-21-3	0-5	5 (as SiO2)	3 (as SiO2)	No	(F) R11	(H228) Flam. Sol. 2	<u> </u>
Iron	7439-89-6	50-60	10 ( as Fe2O3 )	5 ( as Fe2O3 )	No	Not Dangerous	Not Hazardous	

Important This section covers the materials of which the products manufactured. The fumes and gases produced during normal use of this product are covered in section 10.

The term "Hazardous" in "Hazardous Material" should be interpreted as a term required and defined in OSHA Hazard Communication Standard 29CFR 1910-1200 and it does not necessarily imply the existence of hazard. The chemicals or compounds reportable by Section 313 of SARA are marked by the symbol #.

Ingredient	% Weight	CAS No.	OSHA PEL (mg/m <sup>3</sup> )	ACGIH TLV (mg/m <sup>3</sup> )
TYPE I:				
Iron	70-95	7439-89-6	10	5 (Respirable Fraction)
Manganese	0.5-2	7439-96-5	5 (stop limit)	0.2
Titanium dioxide	0-3	13463-67-7	5 (Respirable Fraction)	10
Silicon	0-2	7440-21-3	5 (Respirable Fraction)	10
Aluminum	2-12	7789-75-5	2.5 (as F)	2.5 (as F)
Fluoride	1-5	7429-90-5	5 (Respirable Fraction)	1 (Respirable)
Magnesium	1-3	7439-95-4	5 (Respirable Fraction	10
Compound Bario (present in 701, 700GS, 78)	1-5	7440-39-3	0.5 (as Ba)	0.5 (as Ba)
Litium carbonate (present in 78)	0-2	554-13-2	10	10
Litium oxide (present in 78)	0-3	12057-24-8	10	10
Iron oxide (present in 78)	8-12	1309-37-1	10	5 (Respirable)
Zirconium	0-2	7440-67-7	5	5
TYPE II:				
Iron	75-95	7439-89-6	10	5 (Respirable Fraction)
Manganese	1-4	7439-96-5	5 (stop limit)	0.2
Titanium dioxide	4-10	13463-67-7	5 (Respirable Fraction)	10
Silicon	0.5-3	7440-21-3	5 (Respirable Fraction)	10
Fluoride	0-2	7789-75-5	2.5 (as F)	2.5 (as F)
Nickel	0-4	7440-02-0	1	1.5 (Metal)
Chrome	0-10	7440-47-3	1	0.5
Molybdenum	0-2	7439-98-7	5 (Respirable Fraccion)	10
Copper	0-1	7440-50-8	1 (powder)	1 (powder)
TYPE III:				
Iron	80-98	7439-89-6	10	5 (Respirable Fraction)
Manganese	1-4	7439-96-5	5 (stop limit)	0.2
Titanium dioxide	0-3	7440-21-3	5 (Respirable Fraction)	10
Silicon	0-4	7440-02-0	1	1.5 (Metal)
Fluoride	0-3	7440-47-3	1	0.5
Nickel	0-2	7439-98-7	5 (Respirable Fraction)	10
Chrome	0-1	7440-50-8	1 (powder)	1 (powder)







### 4. FIRST AID MEASURES:

Inhalation: Remove to fresh air immediately or administer oxygen. Get medical attention immediately.

Skin: Flush skin with large amounts of water. If irritation develops and persists, get medical attention.

**Eye:** Flush eyes with water for at least 15 minutes. Get medical attention.

Ingestion: Obtain medical attention immediately if ingested. Rinse mouth.

**Electric Shock:** Disconnect and turn off the power. Use a nonconductive material to pull victim away from contact with live parts or wires. Immediately contact a physician.

#### 5. FIRE-FIGHTING MEASURES:

**Suitable Extinguishing Media:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Welding arcs and sparks can ignite combustible and flammable materials. Use the extinguishing media recommended for the burning material and fire situation.

Unsuitable Extinguishing Media: Not applicable

**Specific Hazards Arising From Chemical:** Arcs and sparks can ignite combustibles and flammable products. Chromium oxides, Hydrogen fluoride, Calcium oxide, Carbon oxides, Vanadium/vanadium oxides, Silicon oxides, Iron oxides

Protective Equipment: Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

#### 6. ACCIDENTAL RELEASE MEASURES:

Personal Precautions: Refer to section 8.

Environment Precautions: Refer to section 13.

**Cleaning Measures:** Solid objects may be picked up and placed into a container. Liquids or pastes should be scooped up and placed into a container. Wear proper protective equipment while handling these materials. Do not discard as refuse. Do not allow product to reach sewage system.



## 7. HANDLING AND STORAGE:

**Precautions for Safe Handling:** Handle with care to avoid stings or cuts. Wear gloves when handling welding consumables. Avoid exposure to dust. Do not ingest. Some individuals can develop an allergic reaction to certain materials. Retain all warning and identity labels.

**Conditions for Safe Storage:** Store in dry place in closed packages. Keep separate from chemical substances like acids and strong bases, which could cause chemical reactions

## 8. EXPOSURE CONTROLS/ PERSONAL PROTECTION:

**Engineering Controls:** Avoid exposure to welding fumes, radiation, spatter, electric shock, heated materials and dust. Ensure sufficient ventilation, local exhaust, or both, to keep welding fumes and gases from breathing zone and general area. Keep work place and protective clothing clean and dry. Train welders to avoid contact with live electrical parts and insulate conductive parts. Check condition of protective clothing and equipment on a regular basis.

**Exposure limits:** Use industrial hygiene equipment to ensure that exposure does not exceed applicable national exposure limits. The limits defined under section 3 can be used as guidance. Unless noted, all values are for 8 hour time weighted average. For information about welding fume analysis refer to section 10.

Biological limits: No available data

#### **Personal protection:**

**Respiratory protection:** Use an air purifying dust respirator when welding or brazing in a confined space, or when local exhaust or ventilation is not sufficient to keep exposure values within safe limits.

Hands protection: Wear appropriate gloves to prevent skin contact.

## EN 12477: Protection gloves for welders

Requirements (EN Levels)	Туре А	Туре В
Abrasion (Cycles)	2 (500)	1 (100)
Cut (Factor)	1 (1.2)	1 (1.2)
Tear (Newton)	2 (25)	1 (10)
Puncture (Newton)	2 (60)	1 (20)
Burning Behaviour	3	2
Contact Heat	1	1
Convective Heat	2	-
Small Splashes	3	2
Dexterity	1 (11)	4 (6.5)

Type B gloves are recommended when high dexterity is required as for TIG welding, while type A gloves are recommended for other welding processes. The contact temp (°C) is 100 and the threshold time (seconds) >15.

**Eyes protection:** Welder's helmet or face shield with colour absorbing lenses. Shield and filter to provide protection from harmful UV radiation, infra red and molten metal approved to standard EN379. Filter shade to be a minimum of shade 9.

**Skin protection:** Heat-resistant protective clothing. Wear safety boots, apron, arm and shoulder protection. Keep protective clothing clean and dry. Clothing should be selected to suit the level, duration and purpose of the welding activity.

Class 1		
Impact of Spatter 15 Drops		
Heat Transfer (radiation)	RHTI 24 ≥ 7 seconds	



Process	Manual welding with light formation of spatter and drops			
	Gas Welding			
	TIG Welding			
	MIG Welding			
	Micro plasma welding			
	Brazing			
	Spot Welding			
	MMA Welding (with rutile-covered electrode)			
Environmental	Operation of machines			
Conditions	Oxygen cutting machines			
	<ul> <li>Plasma cutting machines</li> </ul>			
	Resistance welding machines			
	<ul> <li>Machines for thermal spraying</li> </ul>			
	Bench welding			
	Class 2			
Impact of Spatter				
Impact of Spatter	25 Drops			

Heat Transfer (radiation)	RHTI 24 ≥ 16 seconds
Process	<ul> <li>Manual welding with heavy formation of spatter and drops</li> <li>MMA welding (with basic or cellulose-covered electrodes)</li> <li>MAG welding (with CO2 or mixed gases)</li> <li>MIG Welding (with high current)</li> <li>Self shielded flux core arc welding</li> <li>Plasma cutting</li> <li>Gouging</li> <li>Oxygen cutting</li> <li>Thermal spraying</li> </ul>
Environmental Conditions	Operation of machines <ul> <li>In confined spaces</li> <li>At overhead welding/cutting or in comparable constrained positions</li> </ul>



9. PHYSICAL AND CHEMICAL PROPERTIES: Appearance: Solid Color: None **Odour:** Odourless Odour Threshold: Not Available pH Value: Not Available Specific Gravity: Not Available Melting Point/Melting Range: 1560 - 2000° F, 850 - 1100° C Freezing Point: Not Available Boiling Point/Boiling Range (° F @ 760 mmHg): N/A Flash point: Not Available **Evaporation Rate:** Not Available Self-in flammability: Not Available Explosion limits: Not Available Vapour pressure: (mm Hg): NA Vapour density: (Air= 1): NA Density at 20°C: Not Available Percent volatile by volume: Not Available Bulk Density: Not Available Relative density: 6-9 g/cm3 Solubility: Soluble in water Reactivity in Water: Not Available Partition coefficient: Not Available Auto-ignition temperature: Not Available **Decomposition temperature:** Not Available Other Information: No available data.

## **10. STABILITY AND REACTIVITY:**

Chemical Stability: This product is stable under normal conditions. Hazardous Reactions: Contact with chemical substances like acids or strong bases cause generation of gas. Conditions to Avoid: Not applicable. Incompatible Materials: Reacts with acid.

**Hazardous Decomposition Products:** When this product is used in a welding process, hazardous decomposition product would include those from volatilization, reaction or oxidation of the material listed in section 3 and those from the base metal and coating. The amount of fumes generated from this product varies with welding parameters and dimensions. Refer to applicable national exposure limits for fume compounds, including those exposure limits for fume compounds found in

Refer to applicable national exposure limits for fume compounds, including those exposure limits for fume compounds found in section 3. Reasonably expected gaseous products would include carbon oxides, nitrogen oxides and ozone. Air contaminants around the welding area can be affected by the welding process and influence the composition and quality of fumes and gases produced.



## 11. TOXICOLOGICAL INFORMATION:

Chromium 7440-47-3

LD/LC50 Values that are relevant for classification

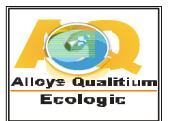
**Signs and Symptoms of Overexposure:** Inhalation of welding fumes and gases can be dangerous to your health. Classification of welding fumes is difficult because of varying base materials, coatings, air contaminants and processes. The Internal Agency for Research on Cancer has classified welding fumes as possible carcinogenic to humans (Group 2B). **Acute Effects:** Overexposure to welding fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes. May cause sensitisation by skin contact.

Oral LD50 19.8 mg/kg (rat) (highly toxic) LD/LC50 Values that are relevant for classification Calcium Fluoride 7789-75-5 >2000 mg/kg (rat) Oral LD50 Inhalation LC50 >5070 mg/m3/4 hr. (rat) LD/LC50 Values that are relevant for classification Carbon 7440-44-0 LD50 440 mg/kg (mouse) Intravenous LD/LC50 Values that are relevant for classification Vanadium 7440-62-2 LC50 .17 mg/l (96h) (fish) LD/LC50 Values that are relevant for classification Titanium Dioxide 13463-67-7 Oral LD50 >10000 mg/kg (rat) LD50 >10000 mg/kg (rabbit) Dermal

LD/LC50 Values that are relevant for classificationSilicon 7440-21-3OralLD503160 mg/kg (rat)

LD/LC50 Values that are relevant for classification		
Iron 7439-89	-6	
Oral	LD50	30000 mg/kg (rat)

**Chronic Effects:** Overexposure to welding fumes may affect pulmonary function and eyes. Prolonged inhalation of titanium dioxide (Classified by 2B by IARC) above safe exposure limits can cause cancer. Prolonged inhalation of vanadium compounds may cause pneumonia and may affect the kidneys, respiratory system, skin and eyes (chronic symptoms of vanadium toxicity).



## **12. ECOLOGICAL INFORMATION:**

**Toxicity:** Welding rods contain metals which are considered to be very toxic towards aquatic organisms. Finely divided welding rods are therefore considered harmful to aquatic organisms.

**Persistence and Degradability:** The welding rods consist of elements that can not degrade any further in the environment. **Bio accumulative Potential:** Welding rods contain heavy metals which bio accumulates in the food chain. The following figures are the bio concentration factor (BCF) for the substances on their own.

BCF: Chromium, BCF: 200 Carbon, BCF: 0.14 Vanadium, BCF: 2 Iron, BCF: 140000

**Mobility in Soil:** Welding rods are not soluble in water or soil. Particles formed by working welding rods can be transported in the air.

Other Adverse Effects: In massive form, welding rods present no hazards to the aquatic environment.

Welding materials could degrade into components originating from the materials used in the welding process. Avoid exposure to conditions that could lead to accumulation in soils or groundwater. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

## 13. DISPOSAL CONSIDERATIONS:

Product: For product elimination, consult recycling companies or appropriate local authority.

**USA RCRA:** This product is not considered hazardous waste if discarded. Residue from welding consumables and processes could degrade and accumulate in soils and groundwater. Welding slag from this product typically contains mainly the following components originating from the coating of the electrode.

**Package:** May be disposed in approved landfills provided local regulations are observed.

#### 14. TRANSPORT INFORMATION:

**UN-number:** Welding rods are not classified as dangerous goods for transport and has no UN number.

**UN proper shipping name:** Welding rods are not classified as dangerous goods for transport and has no UN proper shipping name.

Transport hazard class: Welding rods are not classified as dangerous goods for transport.

**Packing group:** There are not any special precautions with which a user should or must comply or be aware of in connection with transport or conveyance either within or outside premises.

**Environmental hazards:** Welding rods are not environmentally hazardous according to the criteria of the UN Model Regulations (as reflected in the IMDG Code, ADR, RID and AND) and/or a marine pollutant to the IMDG Code.

**Special precautions for users:** There are not any special precautions which a user should or must comply or be aware of in connection with transport or conveyance either within or outside premises of the welding rod.

**Transport in Bulk According to Annex III MARPOL 73/78 and the IBC Code:** Welding rods in massive form do not subject under MARPOL 73/78 and the IBC Code. Not applicable – product is transported only in packaged form.

### **15. REGULATORY INFORMATION:**

Safety, health and environment regulations/legislation specific for the substance or mixture: Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label. Observe any federal and local regulations. Take precautions when welding and protect yourself and others.

**Warning:** Welding fumes and gases are hazardous to your health and may damage lungs and other organs. Use adequate ventilation. Electric shock can kill. Arc rays and sparks can injure eyes and burn skin. Wear correct hand, head, eye and body protection.



#### Chemical safety assessment: No

USA: Under the OSHA Hazard Communication Standard, this product is considered hazardous. This product contains or produces a chemical known to the state of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code § 25249.5 et seq.) United States EPA Toxic Substance Control Act: All constituents of this product are on the TSCA inventory list or are excluded from listing.

#### **EPCRA/SARA Title III Toxic Chemicals**

The following metallic components are listed as SARA 313 "Toxic Chemicals" and potential subject to annual SARA reporting. See Section 3 for weight percentage.

Ingredient Name	Disclosure Threshold
Chromium	1.0 (Metal)
Vanadium	1 mg/m3

### 16. OTHER INFORMATION:

The information in this document is believed to be correct as of the date issued. However, no warranty is expressed to be implied regarding the accuracy or completeness of this information. This information and product are furnished on the condition that the person receiving them shall make his own determinations as to the suitability of the product for his particular purpose and on the condition that he assumes the risk of his use thereof.

This Material Safety Data Sheet complies with the EC directives 91/155/EEC and 93/112/EEC, including modifications 2001/58/EC.

Complies with OSHA Communication Standard 29 CFR 1910.1200 and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499499

#### Hazard Statements:

**H228** – Flammable solid.

**H315** – Causes skin irritation.

H319 – Causes serious eye irritation. H335

– May cause respiratory irritation. **H351** –

Suspected of causing cancer.

H373 – May cause damage to organs through prolonged or repeated exposure.

**H400** – Very toxic to aquatic life.

#### **R-Phrases:**

**R11** – Highly flammable.

R36/37/38 – Irritating to eyes, respiratory system and skin.

R40 – Limited evidence of a carcinogenic effect.

S-Phrases:

S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

**S36/37/39** – Wear suitable protective clothing, gloves and eye/face protection.

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workers in industries where exposure was limited to nickel metal or hydrometallurgical processes found no association between exposure to nickel metal and its alloys the subsequent development of respiratory cancer. The effects of chronic overexposure (thermal long) to air pollutants can lead to accumulation in the lungs, a condition which could be seen as dense areas on radiographs. The severity of change is proportional to the exposure time. The changes seen are not necessarily associated with symptoms or signs with reduced function or lung disease. Changes in the X-rays can be caused by factors associated with work such as smoking, etc. Nickel and Chromium (some products) are considered carcinogenic. Long term overexposure to nickel fumes may also cause pulmonary fibrosis and edema. Overexposure to manganese compounds may affect the central nervous system. Symptoms include weakness, listlessness, lack of sleep, muscle weakness, emotional and spasmodic alteration. The manganese effect in the nervous system is irreversible.

## XI. ECOLOGICAL INFORMATION

About the Product: unknown data About the Ingredient: unknown data

### XII. CONSIDERATIONS WASTE DISPOSAL

**Product:** For product disposal, consult recycling companies or appropriate local authorities. **Packaging:** Product can get rid of approved garbage in landfills provided for that purpose and subject to the regulations of the town.

## XIII. TRANSPORTATION INFORMATION

#### INTERNATIONAL REGULATIONS:

Embark on earth: safely - Rail / road (RID / ADR): Shipment by sea: no danger Shipping by air: no danger

## XIV. REGULATORY INFORMATION

CEE Label: not applicable Hazard symbols and indications: Xn R- phrases: R40: R43: S- Phrases: S22: S36:



## XV. OTHER INFORMATION

The information in this document is believed to be correct at the date of publication. However there is no express warranty that involves accuracy and completeness of this information. This information and product are provided on condition that the person receiving it shall make or take their own determination as proper particular purpose under the conditions that this person assumes the risk of using it.

The datasheet of safety equipment complies mandate EC 91/155 / EEC and 93/112 / EEC Including amendments 2001/58 / EC.

Kindly the OHSA communication standard 29 CFR 1910.1200 and amendments "Superfund" and Reauthorization Act (SARA) of 1986 Public Law - 99-499

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