

# MAGNA 303 Gold

## SPECIAL MAINTENANCE QUALITIES

In maintaining heavy equipment, vehicles, and machinery it is continually necessary to weld a wide variety of different analysis of steel and frequently to weld steels of unknown analysis. A single piece of heavy equipment may have ten or more different steels making up its different components. Today's high speed, high-powered equipment is built from higher alloy, higher yield strength steels.

In the past mild steel electrodes and low hydrogen electrodes have been standard for maintenance welding in many industries. This has resulted in much costly downtime since mild steel electrodes are not adequate for welding today's high yield strength steels or steels of unknown composition.

Mild steel and low hydrogen electrodes have proven their excellence for production welding where most of the variables of welding such as joint design, base metal analysis, and accessibility can be controlled. In general, superior electrodes have not been required for these repetitive controllable production applications. In maintenance, however, the problems are completely different. The maintenance man has to weld many different types of steel, the metal is usually dirty, rusty and oily and often he has only limited accessibility to the area to be welded. Ordinary electrodes are not adequate for the more difficult maintenance conditions.

The introduction of Magna 303 Gold, which is a Ferrite-Balanced, all steel electrode for welding hard-to-weld and dissimilar steel is proving to be popular in maintenance welding in many industries today.

## MAGNA 303 Gold HAS THE FOLLOWING INTERESTING QUALITIES:

### 1. High Physical Properties.

- \* Approximately 225 Brinell hardness
- Tensile Strength as welded maximum 128,000 psi (880 N/mm<sup>2</sup>)
- Tensile Strength work hardened maximum 186,000 psi (1280 N/mm<sup>2</sup>)
- Yield Strength maximum 90,000 psi (630 N/mm<sup>2</sup>)
- Elongation maximum 32%
- Impact Energy maximum 50J: 20 ° C ( 68 °F)

## 2. Microstructure.

A duplex austenite / delta ferrite structure with Shaeffler ferrite value below 35%

## 3. Universal Application Feature.

Magna 303 Gold has exceptional strength and crack resistance. It is ideal for welding any dissimilar steel combination, except for aluminum and copper alloys. It is also recommended for the following metals:

Spring Steel	Manganese Steel	High Carbon Steel
Vanadium Spring Steel	Stainless Steel	Tool and Die Steel
Sulphur Bearing Steel	Cast Steel	Galvanized Steel
Shock Resisting Steel	Bright Steel	Dissimilar Steels

A major benefit in using Magna 303 Gold is that it eliminates guesswork. In maintenance often a steel of unknown analysis must be welded. If the welder "guesses" what the steel might be and uses the electrode, which might be adequate for that steel, a weld failure will probably occur if he guessed wrongly. If Magna 303 Gold is used, the guesswork is eliminated or at least minimized since this one electrode gives good results on the widest range of dissimilar steel combinations, except for aluminum and copper alloys.

Another benefit of Magna 303 Gold is that it eliminates stocking of many different types of electrodes because of its versatility. In the past many maintenance departments found it necessary to stock many different kinds of electrodes in order to be prepared for any emergency.

**4. Cost Factor.** Magna 303 Gold AC-DC costs much more than mild steel electrodes but it does so much more. What difference does it make if a weld costs six cents or sixty cents? The important factor is whether the welding electrode will keep your machinery producing.

## APPLICATION

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No special preparation is necessary when using Magna 303 Gold. However, a 90° vee joint should be used when joining heavy sections. Also maintain a short arc length and use stringer beads.

**Recommended current:** DC reverse polarity (electrode positive)  
or AC.

**RECOMMENDED AMPERAGES:**

<b>Metric</b>	<b>Inches</b>	<b>Gauge</b>	<b>DC reverse polarity-Electrode + or AC</b>
2.4 mm.	3/32	12	35-75 amps
3.2 mm.	1/8	10	60-110 amps
4.0 mm.	5/32	8	75-140 amps

**Welding Positions for Magna 303 Gold:**

Magna 303 Gold is excellent for welding in all positions.

**Special Note:**

1. Magna 303 Gold is recommended for repairing worn parts and can be used as a buffer layer in hardfacing applications.
2. Special “ Ionized Arc Transfer” drastically reduces spatter and electrode overheating, especially on small AC machines.
3. Special flux formulation eliminates slag interference in horizontal fillets.

# SAFETY DATA SHEET



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SDS-ID: GB-EN/6.1

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

Product name: Magna 303 Gold  
Container size: 2 kg & 4 kg

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

Application: Manual metal arc welding electrode.

### 1.3. Details of the supplier of the safety data sheet

<u>Supplier:</u>	EU importer:	<u>Distributed by:</u>	Trust Engineering Company
	.		9 Abdel Hamid El Deeb Street
	.		Alexandria, 21613 Egypt
			T: +(20)3 5822779 T: +(20)10 1223554
<u>Manufacturer:</u>	ITW PP & F Korea Limited.		5 Ahmed Shaker Street Fourth Zone
	13th Fl., Unit B, PAX Tower		Nasr City, 11586 Egypt
	609 Eonju-ro, Gangnam-gu		T: +(20)2 26909965 T: +(20)10 1223553
	Seoul, Korea 06108		
	Tel: +82-2-2088-3560		info@trustengineering-eg.com
	Fax: +82-2-513-3567		www.trustengineering-eg.com
	www.magnagroup.com		

### 1.4. Emergency telephone number

Emergency telephone: Call a Poison Center, emergency number or doctor/physician.

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## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

CLP: Skin Sens. 1;H317  
Carc. 2;H351  
STOT RE 1;H372

### 2.2. Label elements

Solid metals and alloys do not require a hazard label if they do not present a danger to human health or the environment in the form in which they are placed on the market. The information which would have appeared on the label is shown here.



Danger

Contains:

Nickel

H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer.
H372a	Causes damage to organs through prolonged or repeated exposure if inhaled.
P201	Obtain special instructions before use.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P260	Do not breathe fume.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective clothing and gloves.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local regulations.

### 2.3. Other hazards

Other:

Risk of sensitisation to nickel. Prolonged or repeated exposure to welding fumes may cause damage to the lungs and respiratory system. Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.2. Mixtures

The product contains: metal and fillers.

Only classified substances above threshold limits or substances with an exposure limit are shown. All substances in the product are either registered or exempt from registration under REACH.

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## CLP:

<u>%:</u>	<u>CAS-No.:</u>	<u>EC No.:</u>	<u>REACH Reg. No.:</u>	<u>Chemical name:</u>	<u>Hazard classification:</u>	<u>Notes:</u>
30-60	7439-89-6	231-096-4	01-2119462838-24-XXXX	Iron	-	#
20-40	7440-47-3	231-157-5	01-2119485652-31-XXXX	Chromium	-	#
10-20	7440-02-0	231-111-4	01-2119438727-29-XXXX	Nickel	Carc. 2;H351 STOT RE 1;H372 Skin Sens. 1;H317	S; 7
1-5	7439-98-7	231-107-2	01-2119472304-43-XXXX	Molybdenum	-	#
1-3	7440-21-3	231-130-8	01-2119535442-45-XXXX	Silicon	-	#
1-3	7439-96-5	231-105-1	-	Manganese	-	#

## Notes:

S: May not require a label.

7: Alloys containing nickel are classified for skin sensitisation, when the release rate of 0,5 µg Ni/cm<sup>2</sup>/week (EN 1811) is exceeded.

#: The substance has been assigned an exposure limit. See section 8.

References: The full text for all R-phrases and hazard statements are displayed in section 16.

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

Inhalation: Inhalation of welding fumes: Move into fresh air and keep at rest. In case of persistent throat irritation or coughing: Seek medical attention and bring these instructions.

Skin contact: Remove contaminated clothes and rinse skin thoroughly with water. In case of eczema or other skin disorders: Seek medical attention and bring these instructions.

Eye contact: Do not rub eye. Rinse with water. Contact physician if discomfort continues.

Ingestion: Not likely, due to the form of the product.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects: Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain. See section 11 for more detailed information on health effects and symptoms.

### 4.3. Indication of any immediate medical attention and special treatment needed

Medical attention/treatments: Treat symptomatically.

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## SECTION 5: FIREFIGHTING MEASURES

### **5.1. Extinguishing media**

Extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

### **5.2. Special hazards arising from the substance or mixture**

Specific hazards: During fire, gases hazardous to health may be formed.

### **5.3. Advice for firefighters**

Protective equipment for fire-fighters: Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### **6.1. Personal precautions, protective equipment and emergency procedures**

Personal precautions: Avoid any exposure. When welding: Follow precautions for safe handling described in this safety data sheet.

### **6.2. Environmental precautions**

Environmental precautions: The product should not be dumped in nature but collected and delivered according to agreement with the local authorities.

### **6.3. Methods and material for containment and cleaning up**

Methods for cleaning up: Collect in containers and seal securely.

### **6.4. Reference to other sections**

References: For personal protection, see section 8.  
For waste disposal, see section 13.

## SECTION 7: HANDLING AND STORAGE

### **7.1. Precautions for safe handling**

Safe handling advice: Avoid prolonged and repeated contact.  
When welding: Do not breathe fumes. Observe good chemical hygiene practices.

Technical measures: No special precautions.

Technical precautions: When welding: Mechanical ventilation may be required.

### **7.2. Conditions for safe storage, including any incompatibilities**

Technical measures for safe storage: No special precautions.

Storage conditions: Store in closed original container in a dry place.

### **7.3. Specific end use(s)**

Specific use(s): Welding material

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## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

Occupational exposure limits:

<u>CAS-No.:</u>	<u>Chemical name:</u>	<u>As:</u>	<u>Exposure limits:</u>	<u>Type:</u>	<u>Notes:</u>	<u>References:</u>
-	Iron oxide, fume	Fe	5 mg/m3	TWA	-	EH40
		-	10 mg/m3	STEL	15min	
7440-47-3	Chromium	-	0.5 mg/m3	TWA	-	EH40
-	Nickel and water-insoluble nickel inorganic compounds (except nickel tetracarbonyl)	Ni	0.5 mg/m3	TWA	Sk; Carc; Sen	EH40
-	Molybdenum insoluble compounds	Mo	10 mg/m3	TWA	-	EH40
		-	20 mg/m3	STEL	15min	
7440-21-3	Silicon, respirable dust	-	4 mg/m3	TWA	-	EH40
7440-21-3	Silicon, inhalable dust	-	10 mg/m3	TWA	-	EH40
7439-96-5	Manganese and its inorganic compounds	Mn	0.5 mg/m3	TWA	-	EH40

### 8.2. Exposure controls

Engineering measures: When welding: Provide adequate ventilation. Observe Occupational Exposure Limits and minimise the risk of inhalation of dust and fumes.

Personal protection: Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.  
When welding: Use special welding equipment for protection of eyes, skin and respiratory system.

Hygiene measures: Wash hands after handling. Change contaminated clothing.

Environmental Exposure Controls: Not available.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

Appearance: Wire with a flux coating.

pH: Not relevant.

Melting point / freezing point: 1000-1500°C

Vapour pressure: Not relevant.

Relative density: 5-8

Solubility: Insoluble in water

### 9.2. Other information

Other data: Not relevant.



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## SECTION 10: STABILITY AND REACTIVITY

### **10.1. Reactivity**

Reactivity: Not reactive.

### **10.2. Chemical stability**

Stability: Stable under normal temperature conditions and recommended use.

### **10.3. Possibility of hazardous reactions**

Hazardous Reactions: None known.

### **10.4. Conditions to avoid**

Conditions to avoid None known.

### **10.5. Incompatible materials**

Incompatible materials: Water, moisture. Avoid contact with acids.

### **10.6. Hazardous decomposition products**

Hazardous decomposition products: None under normal conditions.

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## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects

Acute Toxicity (Oral): Based on available data, the classification criteria are not met.

Acute Toxicity (Dermal): Based on available data, the classification criteria are not met.

Acute Toxicity (Inhalation): Based on available data, the classification criteria are not met.

Skin Corrosion/Irritation: Based on available data, the classification criteria are not met.

Serious eye damage/irritation: Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation: May cause an allergic skin reaction.

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: Suspected of causing cancer.

Reproductive Toxicity: Based on available data, the classification criteria are not met.

STOT - Single exposure: Based on available data, the classification criteria are not met.

STOT - Repeated exposure: Causes damage to organs through prolonged or repeated exposure if inhaled.

Aspiration hazard: Based on available data, the classification criteria are not met.

Inhalation: Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain. Toxic: danger of serious damage to health by prolonged exposure through inhalation.

Skin contact: May cause allergic skin disorders in sensitive individuals.

Eye contact: Particles/fumes in the eyes may cause discomfort/irritation.

Ingestion: Not likely, due to the form of the product.

Specific effects: Risk of sensitisation to nickel. Prolonged or repeated exposure to welding fumes may cause damage to the lungs and respiratory system. Limited evidence of a carcinogenic effect.

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

Ecotoxicity: Not regarded as dangerous for the environment.

### 12.2. Persistence and degradability

Degradability: The product solely consists of inorganic compounds which are not biodegradable.

### 12.3. Bioaccumulative potential

Bioaccumulative potential: No data available on bioaccumulation.

### 12.4. Mobility in soil

Mobility: No data available.

### 12.5. Results of PBT and vPvB assessment

PBT/vPvB: Not Classified as PBT/vPvB by current EU criteria.

### 12.6. Other adverse effects

Other adverse effects: None known.

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## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

Waste is classified as hazardous waste. Dispose of waste and residues in accordance with local authority requirements.

Waste from residues: EWC-code: 12 01 13

## SECTION 14: TRANSPORT INFORMATION

The product is not regulated as dangerous goods under IMDG Code, IATA-DGR and ADR/RID.

### 14.1. UN number

UN-No: Not regulated.

### 14.2. UN proper shipping name

Proper Shipping Name: Not regulated.

### 14.3. Transport hazard class(es)

Class: Not regulated.

### 14.4. Packing group

PG: Not regulated.

### 14.5. Environmental hazards

Marine pollutant: Not regulated.

Environmentally Hazardous substance: Not regulated.

### 14.6. Special precautions for user

Special precautions: Not regulated.

### 14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk: Not regulated.

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## SECTION 15: REGULATORY INFORMATION

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

Special provisions: As a general rule, persons under 18 years of age are not allowed to work with this product. Users must be carefully instructed in the proper work procedure, the dangerous properties of the product and the necessary safety instructions.

National regulation: Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, with amendments.

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 with amendments.

The Control of Substances Hazardous to Health Regulations 2002 (S.I. 2002 No. 2677) with amendments.

EH40/2005, Workplace exposure limits 2005, with amendments.

The Management of Health and Safety at Work Regulations 1999 (SI 1999 No. 3242), with amendments.

The List of Wastes (England) (Amendment) Regulations 2005. (SI 2005 No. 895).

### **15.2. Chemical Safety Assessment**

CSA status: Not relevant.

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## SECTION 16: OTHER INFORMATION

For restrictions on use see section 15.

The following sections contain revisions or new statements: 3, 161, 11

Magna Welding Alloys  
13th Fl., Unit B, PAX Tower,  
609, Eonju-Ro, Gangnam-Gu, Korea 06108  
Tel : +82-2-2088-3560  
Fax : +82-2-513-3567  
Web site : www.magnagroup.com

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Abbreviations and acronyms PBT = Persistent, Bioaccumulative and Toxic.  
used in the safety data sheet: vPvB = very Persistent and very Bioaccumulative.

Key literature references and sources for data: None.

Additional information: None.

Wording of H-statements:

H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure.

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The information on this data sheet represents our current data and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product which involves using the product in combination with any other product or any other process is the responsibility of the user.

Made by DHI - Environment and Toxicology, Agern Allé 5, DK-2970 Hørsholm, Denmark.  
www.dhigroup.com.