MAGNA 303 TIG

MAGNA 303 TIG FOR MAINTENANCE WELDING

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. **Magna 303 TIG Super-Strength Non-Cracking Alloy for All Steels** is the perfect filler rod for such demanding MRO applications since it provides dense, porosity free deposits that are extremely strong and crack-resistant and is designed for joining virtually all kinds of steels such as carbon steel to stainless steel, most Ferrite & Martensitic steels.

MAGNA 303 TIG's SPECIAL MAINTENANCE QUALITIES

1. Premium Chemical & Physical Properties

- Engineered with special chemical/metallurgical formulation, Magna 303 TIG performs very well even on dissimilar joints, which is important in an MRO application for emergency breakdown and minimizes downtime.
- Magna 303 TIG offers an exceptional weld puddle, making it easy for welders to control the beads when used in all-position.
- Magna 303 TIG reduces maintenance (inventory) cost of keeping TIG filler rods for different steels since it can be used for joining dissimilar steels.
- Magna 303 TIG's tensile and yield strengths are high:

Physical Properties (Typical Data):

Tensile Strength (as welded)	Up to 120,000 psi
Tensile Strength (work hardened)	Up to 180,000 psi
Yield Strength	Up to 90,000 psi
Elongation	Up to 35%
Brinell Hardness	220 as deposited, fast work-harden to 320

2. Two Phase Microstructure.

Magna 303 TIG provides a deposit consisting of soft Delta Ferrite in an austenitic matrix. This ferrite rich structure is highly resistant to fissure, cracking, hot cracking and underbead cracking. Welds of X-Ray quality can be obtained on a wide range of applications. Welds of outstanding quality are obtained even on dissimilar steel and composite steel structures. The high physical properties of Magna 303 TIG are obtained without heat treatment.

This microstructure is so stable that a high percentage of ferrite occurs and the two phase structure exists even if a high amount of dilution occurs from austenitic forming elements such as may be encountered when welding some steels of unknown analysis, thus the weld deposit displays a remarkably high resistance to all types of cracking under practically all conceivable conditions.

3. Universal Application Feature.

Magna 303 TIG is capable of providing welds of excellent crack resistance on virtually all steels including:

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

RECOMMENDED AMPERAGES

Use DC welding equipment and DC electrode negative polarity for best result. Use stringer bead for proper fusion and sound weld. Avoid excessive weaving. Magna 303 TIG can be used with Argon or Argon – Helium mixtures.

Metric	Inches	Gauge	Current Range (DCEN)	Gas Flow Rate (Litre/min)
1.60 mm.	1/16	16	70-100 amps	6 - 9

(The current can vary based on application condition and size of tungsten electrode)

Special Note:

1. Because of Magna 303 TIG's high work hardening qualities, for optimum results always use a reduced speed and feed when machining.

2. Magna 303 TIG can be used for overlaying applications on Cast Iron.

3. When cutting welds of Magna 303 TIG with an oxyacetylene torch, due to its extremely high alloy nature you will find it easier if you first place a small piece of scrap steel over weld and direct torch on this piece of metal to begin oxidation. It is then possible to easily cut through weld. When necessary to cut welds, Magna 100 works perfectly.

SAFETY DATA SHEET

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

1.1. Product identifier

Product name: Magna 303 TIG

Container size: Various.

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

Application: Welding material

1.3. Details of the supplier of the safety data sheet

Supplier: EU importer:

Unigroup ApS
Diplomvej 373
DK-2800 Lyngby
Danmark
Tel:+45 70222818
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www.unigroup.dk

Manufacturer:

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Further information can be obtained from: magna@magnagroup.com

1.4. Emergency telephone number

Emergency telephone: NHS: 111

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP: The product is classified: Skin Sens. 1;H317 - Carc. 2;H351 - STOT RE 2;H373

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.

Warning

Contains: Nickel

H351	Suspected of causing cancer.
H317	May cause an allergic skin reaction.
H373a	May cause damage to organs through prolonged or repeated exposure if inhaled.
P201	Obtain special instructions before use.
P260	Do not breathe fume.
P280	Wear protective clothing and gloves.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local regulations.

2.3. Other hazards

PBT/vPvB: This product does not contain any PBT or vPvB substances.

Other: Risk of sensitisation to nickel. 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: Metals.

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

CLP:

%:	CAS-No.:	EC No.:	REACH Reg. No:	Chemical name:	Hazard classification:	Notes:
30-60	7439-89-6	231-096-4	-	Iron	-	#
15-40	7440-47-3	231-157-5	-	Chromium	-	#
7-13	7440-02-0	231-111-4	-	Nickel	Carc. 2;H351 STOT RE 1;H372 Skin Sens. 1;H317	S; 7
1-5	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/cm2/week (EN 1811) is exceeded.
#: The substance has been assigned an exposure limit.

References: The full text for all hazard statements is 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. If irritation occurs during dust-raising work, flush with plenty of water for at least 15 minutes.

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.

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 spillage with shovel, broom or the like.

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

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Occupational exposure limits:

CAS-No.:	Chemical name:	As:	Exposure limits:	Type:	Notes:	References:
7440-47-3	Chromium	-	0.5 mg/m3	TWA	-	EH40
-	Iron oxide, fume	Fe	5 mg/m3	TWA	-	EH40
		-	10 mg/m3	STEL	15min	
-	Chromium (VI) compounds	Cr	0.05 mg/m3	TWA	Carc; Sen	EH40
-	Nickel and water-insoluble nickel inorganic compounds (except nickel tetracarbonyl)	Ni	0.5 mg/m3	TWA	Sk; Carc; Sen	EH40
-	Manganese and its inorganic compounds, inhalable fraction	Mn	0.2 mg/m3	TWA	-	EH40
-	Manganese and its inorganic compounds, respirable fraction	Mn	0.05 mg/m3	TWA	-	EH40

Notes: Sk: Can be absorbed through skin.
Sen: Capable of causing occupational asthma.
Carc: Capable of causing cancer and/or heritable genetic damage.
EH40: EH40/2005.

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.

Provide eyewash station and safety shower.

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.

Hand protection: Heat insulated protective gloves.

Eye protection: Safety glasses with side-shields

Skin protection: Wear apron or protective clothing.

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

Physical state:	Welding rod.
Colour:	Silver.
Odour:	Odourless.
Odour threshold:	Not available.
pH:	Not available.
Melting point / freezing point:	Not available.
Boiling point:	Not available.
Flash point:	Not available.
Evaporation rate:	Not available.
Explosive limits	Not available.
Vapour pressure:	Not available.
Vapour density:	Not available.
Relative density:	Not available.
Solubility:	Insoluble in water
Partition coefficient (n-octanol/water):	Not available.
Auto-ignition temperature (°C):	Not available.
Decomposition temperature (°C):	Not available.
Viscosity:	Not available.
Explosive properties:	Non-explosive
Oxidising properties:	Not available.

9.2. Other information

Other data:	Not available.

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.

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:	May cause 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. Harmful: 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.

11.2. Information on other hazards

Endocrine disrupting properties:	The product does not contain any substance identified as having endocrine disrupting properties.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity: The product is not expected to be hazardous to 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: Not relevant, due to the form of the product.

12.5. Results of PBT and vPvB assessment

PBT/vPvB: This product does not contain any PBT or vPvB substances.

12.6. Endocrine disrupting properties

Endocrine disrupting properties: The product does not contain any substance identified as having endocrine disrupting properties.

12.7. Other adverse effects

Other adverse effects: None known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

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

Waste from residues: EWC-code: 12 01 13

Contaminated packaging: Dispose of contaminated packings as residue.

Empty packaging: Empty clean packaging should be collected for reuse.

SECTION 14: TRANSPORT INFORMATION

The product is not covered by international regulation on the transport of dangerous goods (IMDG, IATA, ADR/AND/RID).

14.1. UN number

UN-No: -

14.2. UN proper shipping name

Proper Shipping Name: -

14.3. Transport hazard class(es)

Class: -

14.4. Packing group

PG: -

14.5. Environmental hazards

Marine pollutant: -

Environmentally Hazardous substance: -

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 relevant.

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: UK Statutory Instruments, 2021 No. 904, CONSUMER PROTECTION ENVIRONMENTAL PROTECTION HEALTH AND SAFETY. The REACH etc. (Amendment) Regulations 2021.
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: No chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

For restrictions on use see section 15.

The following sections contain revisions or new statements: 1, 3, 4, 8, 9, 11, 12, 13, 16.

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Abbreviations and acronyms used in the safety data sheet:	CSA= Chemical Safety Assessment. PBT = Persistent, Bioaccumulative and Toxic. vPvB = very Persistent and very Bioaccumulative.
Additional information:	Classification according to Regulation (EC) No. 1272/2008: Calculation method.

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.
H373a	May cause damage to organs through prolonged or repeated exposure if inhaled.

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.

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www.dhigroup.com.