

MAGNA 770 AC-DC

Description :

Magna 770 AC - DC is the one electrode especially designed to weld all types of cast iron encountered in maintenance applications.

Special Qualities :

Magna 770 actually diffuses into the base metal favouring soft graphite transformation. This reduces the tendency for both hard martensite formation and stress. With most electrodes for cast iron welding, the elements of the melt consist of two entirely different components. With Magna 770 the weld deposit actually diffuses with the base metal and graphite precipitates in the transition zone, making the weld metal and the base metal compatible. There is no marked separation of two separate components but a gradual structural transition between the weld metal and the base metal. A certain amount of the phosphorous, carbon, and sulphur is converted into slag by special additives in the powerful coating. This greatly increases the weld's resistance to cracking.

Superior Machinability :

One of the major reasons for the extraordinary machinability of Magna 770 is related to supplements in the core wire and coating which tend to eliminate hard formations in the microstructure. Hardening of the zone near the weld is minimized because of additives that are related to carbonization control and which enhance free machining soft graphite formation adjacent to the weld.

It is a well known fact that welds in cast iron which have a high phosphorous content (0.20% phosphorous or more) readily crack when nickel cast iron electrodes are used, but are successfully welded with Magna 770.

Unique Coating :

The coating of Magna 770 is most complex, containing 22 different ingredients, including strontium, sodium and carbonate. In addition it is fortified with fluorides and calcium compounds not normally found in electrode coatings. This unique coating has supplements that actually promote free graphite transformation.

Magna 770 actually enables both the transition zone and the weld deposit to follow a stable system. This makes it possible to weld cast iron of all types without cracking, resulting in a fully machinable weld. It is the remarkable coating chemistry of Magna 770 that gives it an ability to perform differently from ordinary cast iron electrodes.

The arc is highly ionized and with sufficient drive to penetrate contaminated work pieces. The coating also contains a heavy metallic content including vanadium, magnesium, iron and nickel powders. Additionally this remarkable coating is deoxidized with aluminium which is added both as ferro aluminium and as a discrete powder.

The coating has been designed to be electrically conductive and this special feature completely eliminates over-heating of the core-wire.

One additive converts sulphur, which is a common cause for cracking, into harmless manganese sulphide. One additive tends to diffuse into the neighbouring base metal and this condition helps avoid brittle areas.

Crack Resistance :

Magna 770 is capable of providing, at the same time, both crack resistance and ultra high machinability. There are other electrodes made for cast iron such as the nickel irons, that, under certain conditions do not crack. However, these tended to be hard and unmachinable, especially in the transition zone. There are other electrodes, such as monel or nickel types that give reasonable machinability. Unfortunately monel is hot-short and the welds on cast iron crack readily.

One of the outstanding features of Magna 770 is that it has up to 300% the elongation of nickel type electrodes for cast iron. This exceptionally high elongation enables the Magna 770 weld to stretch and absorb weld contraction without either the weld or the base cracking.

Magna 770 is the answer for maintenance welding of cast iron because it produces both crack-free welds and welds that are fully machinable.

Outstanding Weldability:

May be used for “cold” welding without preheat, or may be used with low preheat on heavy sections as required.

Excellent for all position welding including vertical and overhead. It is the one electrode that can be relied on for crack sensitive applications and for repairs subject to hydrostatic pressure. Magna 770 not only welds all types of cast iron but welds exceptionally heavy wall thickness cast iron without danger of cracking and welds cast iron to steel. This electrode is suitable for welding shrinkage holes and cracks as well as very long welds. Preheat is not necessary in these cases. The slag is readily removed and there is no spatter. Magna 770 is noted for its ability to provide dense welds without porosity.

How to Apply :

Clean weld area. Bevel cracks using Magna 100, to form a 75-90 vee in the break or crack area. Preheat is not necessary in most instances. Drill holes at end of crack to prevent crack propagation during welding. Align parts and tack weld. Use AC or DC electrode positive. Maintain short or medium arc. Use stringer beads or slight weaving technique. Peen before making additional weld deposits.

In most instances, Magna 770 can be “poured on” rapidly. It is unnecessary to use the old fashioned method of welding short beads at a low rate as usually required with ordinary electrodes. With Magna 770 the interpass temperature is not critical; the welding can be almost continuous causing the interpass temperature to build up.

Where the size and location of the equipment to be welded makes preheating impossible, but the design is such that expansion and contraction caused during welding will warp or highly stress the metal, the following steps should be observed:-

- (1) Pause between passes to allow heat to dissipate.
- (2) Lightly peen with a hammer before each deposit solidifies and while it is still hot.
- (3) By making separate weld deposits and then going back over and filling in, you will avoid localized excess heat.

Recommended Amperages:

Metric	Inches	Gauge	Setting
2.4 mm.	3/32	12	45 - 85 amps
3.2 mm.	1/8	10	60 - 100 amps
4.0 mm.	5/32	8	90 - 140 amps

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

1.1. Product identifier

Product name: Magna 770
UFI: A342-2055-Q00E-ETMG

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>	GB importer:	<u>Distributed by:</u>	Trust Engineering Company
<u>Manufacturer:</u>	ITW PP & F Korea Limited 13th Fl., Unit B, PAX Tower 609 Eonju-ro, Gangnam-Gu Seoul, Korea 06108 Tel:+82-2-2088-3560 Fax:+82-2-513-3567 magna@magnagroup.com www.magnagroup.com	9 Abdel Hamid El Deeb Street Alexandria, 21613 Egypt T: +(20)3 5822779 T: +(20)10 1223554 5 Ahmed Shaker Street Fourth Zone Nasr City, 11586 Egypt T: +(20)2 26909965 T: +(20)10 1223553 info@trustengineering-eg.com www.trustengineering-eg.com	
<u>Further information can be obtained from:</u>	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 1;H372

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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

<u>Contains:</u>	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.
P260	Do not breathe fume.
P280	Wear eye protection and gloves.
P270	Do not eat, drink or smoke when using this product.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
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. Prolonged or repeated exposure to welding fumes may cause damage to the lungs and respiratory system.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

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Only classified substances above threshold limits or substances with an exposure limit are shown.

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	-	#
15-40	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	7429-90-5	231-072-3	01-2119529243-45	Aluminium powder (stabilised)	Water-react. 2;H261 Flam. Sol. 1;H228	T
1-5	7789-75-5	232-188-7	17-2119399297-20	Calcium fluoride	-	#
1-5	1317-65-3	215-279-6	-	Limestone	-	#
1-5	7782-42-5	231-955-3	01-2119486977-12-XXXX	Graphite	-	#
1-5	1309-37-1	215-168-2	-	Diiron trioxide	-	#
0.5-1.5	1302-78-9	215-108-5	-	Bentonite	-	

Notes: #: The substance has been assigned an exposure limit.
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.

References: The full text for all hazard statements is displayed in section 16.

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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. Immediately flush with plenty of water for at least 15 minutes. Remove any contact lenses and open eyelids widely. If irritation persists: Seek medical attention and bring along these instructions.

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

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

Symptoms/effects: 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.

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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: Store locked up.

Storage conditions: Store in tightly closed original container in a dry, cool and well-ventilated 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/m ³	TWA	-	EH40
		-	10 mg/m ³	STEL	15min	
-	Nickel and water-insoluble nickel inorganic compounds (except nickel tetracarbonyl)	Ni	0.5 mg/m ³	TWA	Sk; Carc; Sen	EH40
-	Nickel water-soluble inorganic compounds (except nickel tetracarbonyl)	Ni	0.1 mg/m ³	TWA	Sk; Carc; Sen	EH40
7782-42-5	Graphite, respirable dust	-	4 mg/m ³	TWA	-	EH40
7782-42-5	Graphite, inhalable dust	-	10 mg/m ³	TWA	-	EH40
1317-65-3	Limestone, total inhalable dust	-	10 mg/m ³	TWA	-	EH40
1317-65-3	Limestone, respirable dust	-	4 mg/m ³	TWA	-	EH40
-	Fluoride (inorganic)	F	2.5 mg/m ³	TWA	-	EH40

Notes:

Sk: Can be absorbed through skin.
Carc: Capable of causing cancer and/or heritable genetic damage.
Sen: Capable of causing occupational asthma.
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 easy access to water supply and eye wash facilities.

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.

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state: Wire with a flux coating.

Colour: Black.

Odour: Odourless.

Odour threshold: Not available.

pH: Not relevant.

Melting point / freezing point: Not available.

Boiling point: Not available.

Flash point: Not available.

Evaporation rate: Not available.

Flammability (solid, gas): 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.

Oxidising properties: Not available.

9.2. Other information

Other data: Not available.

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SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

Reactivity: None known.

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. Exposure to dust and fumes of some metal oxides may result in metal fume fever with flu-like symptoms occurring in 4-12 hours. 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.

11.2. Information on other hazards

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

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SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity: There are no data on the ecotoxicity of this product.

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: 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.

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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 relevant.

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

Transport in bulk: Not relevant.

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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: 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 Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use) (Amendment etc.) (EU Exit) Regulations 2019 (SI 2019 No. 720), as amended.
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.

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SECTION 16: OTHER INFORMATION

For restrictions on use see section 15.

The following sections contain revisions or new statements: 1.

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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:

H228	Flammable solid.
H261	In contact with water releases flammable gases.
H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer.
H372a	Causes 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.

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