MAGNA 405 AC-DC

A tough but machinable overlay for building up of worn parts which will be subjected to wear. Has these exclusive features:

1. **Exceedingly High Toughness.** Magna 405 is just within the machinable range. It has high compressive strength. It is ideal for building up of worn parts where the weld must be machined yet prolonged service is necessary after machining.

2. **Non-Cracking.** Heavy overlays or thick build-ups can be made without cracking. Magna 405 has a built-in resiliency and will absorb shock without cracking. Excellent for overlaying high carbon or low alloy steel, where cracking could be a problem with ordinary electrodes. This is an excellent electrode for use as a base on large fills before hard surfacing electrodes are applied because of its cushioning effect, along with excellent compressive strength and toughness.

3. **Flame-Hardenable.** Excellent for flame hardening or pack hardening on a part where a high hardness deposit is required Magna 405 can be applied then machined, and then flame hardened for extreme wear resistance.

4. **Extraordinary Weldability.** Magna 405 gives a super fast deposition because it can be applied 'pass-over-pass' without slag removal. The coating produces a slag which has a light viscosity and floats to the surface leaving no slag entrapment. The electrode has no spatter. It is readily usable in all positions including overhead and vertical and results in unusually smooth deposit often requiring little or no machining where precision is not required. There is never any porosity and slag is easily removed.

   Hardness : 30RC

5. **Typical Applications:**

Tractor shoes	Mine car wheels	Jack bits
Sprockets	Concrete mixer blades	Roll ends
Rollers	Water well drill bits	Clutch faces

Gear teeth Shafts Bosses

APPLICATION

Apply using either AC or DC welding machines. Where machinability is required apply using straight polarity DC equipment.

Clean and degrease base metal as much as possible then simply apply Magna 405 following standard procedure and weld pass on pass till reaching desired thickness. The special coating produces a slag which has a light viscosity and allows it to float through the weld to the surface, without causing porosity, and thus be easily removed.

Magna 405 is spatter free and versatile to use and can be applied from any angle.

For Extreme Wear Resistance

After applying Magna 405, machine deposit to shape measurements required. Then play a neutral flame of an oxyacetylene torch over surface. When it reaches a dull cherry red colour, spray a fine jet of water over heated metal. This will increase the surface hardness to the depth of the applied heat, yet still retain its built in resiliency. Even when flame hardened Magna 405 will positively not crack.

Recommended Amperages:

Metric	Inches	Gauge	Setting
3.2 mm.	1/8	10	90-135 amps
4.0 mm.	5/32	8	135-220 amps

Different Applications Using Magna Welding Electrodes:

1. Where greater machinability is required use Magna 305.
2. For extreme impact resistance use Magna 402.
3. For higher abrasion use Magna 403.
4. For gas machinable build ups use Magna 77F.

SAFETY DATA SHEET

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

1.1. Product identifier

Product name: Magna 405

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

Supplier: GB importer:

Manufacturer: 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

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

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Nasr City, 11586 Egypt
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info@trustengineering-eg.com
www.trustengineering-eg.com

1.4. Emergency telephone number

Emergency telephone: Call a Poison Center, emergency number or doctor/physician. NHS: 111

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP: The product is not classified.

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.

Safety data sheet available on request.

2.3. Other hazards

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

Other: 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

The product contains: metal and Coating.

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.

CLP:

%:	CAS-No.:	EC No.:	REACH Reg. No:	Chemical name:	Hazard classification:	Notes:
30-60	7439-89-6	231-096-4	-	Iron	-	#
10-30	7789-75-5	232-188-7	-	Calcium fluoride	-	#
10-30	1317-65-3	215-279-6	-	Limestone	-	#
5-10	7439-96-5	231-105-1	-	Manganese	-	#

Notes: #: 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.

Eye contact: 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.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: 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: Spillage should be collected for recycling.

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: 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 tightly closed original container in a dry, cool and well-ventilated place.

7.3. Specific end use(s)

Specific use(s): Not relevant.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Occupational exposure limits:

CAS-No.:	Chemical name:	As:	Exposure limits:	Type:	Notes:	References:
-	Iron oxide, fume	Fe	5 mg/m3	TWA	-	EH40
		-	10 mg/m3	STEL	15min	
-	Fluoride (inorganic)	F	2.5 mg/m3	TWA	-	EH40
1317-65-3	Limestone, respirable dust	-	4 mg/m3	TWA	-	EH40
1317-65-3	Limestone, total inhalable dust	-	10 mg/m3	TWA	-	EH40
-	Manganese and its inorganic compounds, respirable fraction	Mn	0.05 mg/m3	TWA	-	EH40
-	Manganese and its inorganic compounds, inhalable fraction	Mn	0.2 mg/m3	TWA	-	EH40

Notes: 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.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state:	Wire with a flux coating.
Form:	Solid.
Colour:	White
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:	Not available.
Oxidising properties:	Not available.

9.2. Other information

Other data:	Not available.

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 specific.

10.5. Incompatible materials

Incompatible materials: None known.

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:	Based on available data, the classification criteria are not met.
Germ cell mutagenicity:	Based on available data, the classification criteria are not met.
Carcinogenicity:	Based on available data, the classification criteria are not met.
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:	Based on available data, the classification criteria are not met.
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.
Skin contact:	The product contains a small amount of sensitising substance which may provoke an allergic reaction among sensitive individuals after repeated contact.
Eye contact:	When welding: Particles/fumes in the eyes may cause discomfort/irritation.
Ingestion:	Not likely, due to the form of the product.
Specific effects:	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: 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.

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.

SECTION 15: REGULATORY INFORMATION

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

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 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

The user must be instructed in the proper work procedure and be familiar with the contents of these instructions.

The following sections contain revisions or new statements: 1, 4, 7, 8, 9, 10, 11, 12, 15, 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.

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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