



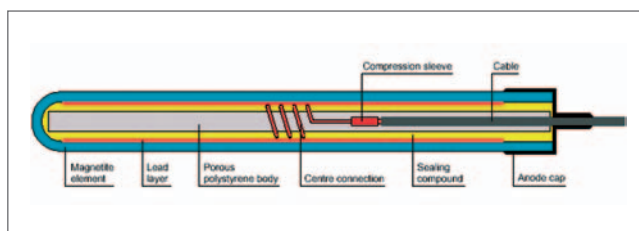
# MAGNETITE ANODES

REVISION 1

## APPLICATION

Magnetite is a natural mineral with a high corrosion resistance making it an excellent anode material. The anodes are cast cylindrical and hollow. Cables are centre connected to give a uniform dissipation of current from the anode surface. The anode to cable connection is electrically sealed with a dielectric compound and an anode cap. Suitable for use in Horizontal Groundbeds, Deep Well Groundbeds, Fresh Water Installations, Seawater Installation

## MAGNETITE ANODE DATA



Specific gravity	4.7-4.8	kg/dm <sup>3</sup>
Brinell hardness (WB5/187.5/15)	344	
Bending strength	5	kN/cm <sup>2</sup>
Density	4.71	g/cm <sup>3</sup>
Melting point	1500	°C
Coefficient of linear expansion	6.4x10 <sup>-6</sup>	1/°C (0-100°C)
Consumption rate	0.02	kg/A year
Current density (1)	0.70	mA/dm <sup>2</sup>
Efficiency	90%	

(1) depends on environment

## CHEMICAL COMPOSITION

FeO	28 - 32%
Fe <sub>3</sub> O <sub>4</sub>	60 - 64%
Balance	4 - 12%



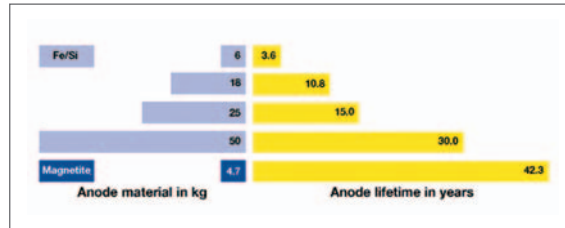
# MAGNETITE ANODES

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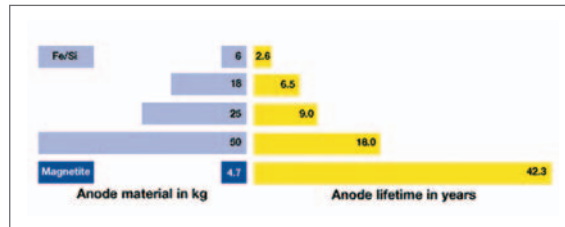
## EXPERIENCE

Lifetime comparison - Basis: anode current load 5 A

### CHLORINE CONTAINING SOIL

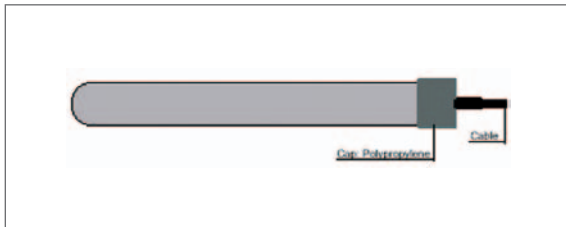


### SEAWATER AND DEEP GROUND BEDS



## STANDARD ANODE TYPES WEIGHTS AND OUTPUTS

### TYPE MA-U

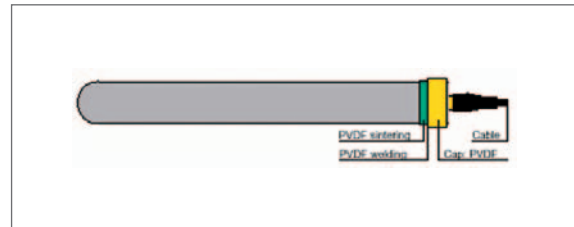


Surrounding electrolyte: neutral soil and water without chlorine and sulfate content

Applications: shallow groundbeds, deep groundbeds

Diameter	60	mm
Total length	720	mm
Effective length	670	mm
Total weight	6.0	kg
Min. effective mass	4.7	kg
Surface area	13.4	dm <sup>2</sup>
Max. current load	3.0	A

### TYPE MA-CS



Surrounding electrolyte: chlorine and/or sulfate containing soil or stagnant water

Applications: shallow groundbeds, deep groundbeds

Diameter	60	mm
Total length	720	mm
Effective length	670	mm
Total weight	6.0	kg
Min. effective mass	4.7	kg
Surface area	13.4	dm <sup>2</sup>
Max. current load	6.0	A

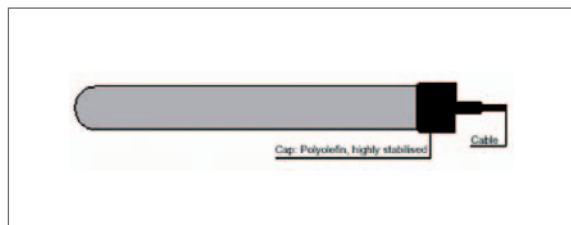


# MAGNETITE ANODES

REVISION 1

## STANDARD ANODE TYPES WEIGHTS AND OUTPUTS

### TYPE MA-SEA

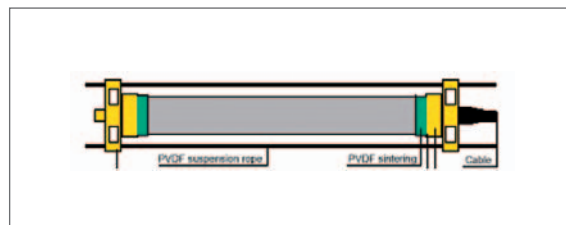


Surrounding electrolyte:  
flowing seawater or  
brackish water

Applications:  
platforms, jetties,  
harbours

Diameter	60	mm
Total length	760	mm
Effective length	710	mm
Total weight	6.0	kg
Min. effective mass	4.7	kg
Surface area	13.4	dm <sup>2</sup>
Max. current load	16.0	A

### TYPE MA-CHAIN

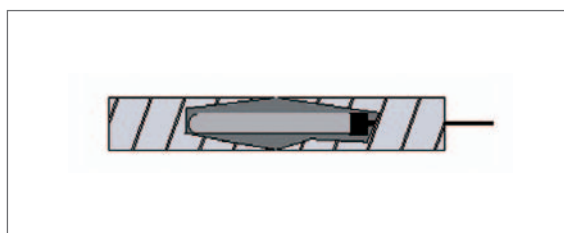


Surrounding electrolyte:  
chlorine containing soil or  
stagnant water

Applications:  
deep groundbeds open  
hole, deep groundbeds  
closed hole, water tank

Diameter	60	mm
Total length	740	mm
Effective length	600	mm
Total weight	6.2	kg
Min. effective mass	4.7	kg
Surface area	11.3	dm <sup>2</sup>
Max. current load (groundbeds)	6.0	A
Max. current load (tanks)	16.0	A

### CANISTER FOR MA-U & MA-CS



COKE BACKFILL	
Minimum carbon content	90%
Maximum moisture content	5%
Maximum resistivity	1Ωm
Density	700-950 kg/m <sup>3</sup>
Particle size (dia.)	20 mm max.

Standard canister	Diameter (mm)	Length (mm)	Total weight (kg)
CAN 10	160	1000	22
CAN 15	300	1500	85
CAN 20	300	2000	110