

# MAGNESIUM ANODES

## GENERAL

Magnesium is the most commonly used sacrificial anode material for the protection of buried structures. Bare magnesium (without backfill) anodes are also used for the protection of the interiors of water tanks and heaters, heat exchangers and condensers, and waterfront structures. Magnesium anodes with standard backfill (75% Gypsum, 20% Bentonite and 5% Sodium Sulfate) are used for protection of buried pipelines. Two different anode compositions are commonly used. They are the “standard alloy” and a commercially pure or “high potential” alloy.

Applications for the use of magnesium anodes are not limited to structures buried in soil electrolytes. These powerful anodes (standard type) have proven to be extremely effective at combating corrosion in certain aqueous environments as well. Anodes are casted into circular, rectangular, square, and teardrop shapes.

## CHEMICAL COMPOSITION (IPS-M-TP-750/3)

Element	Composition (wt %)	
	Standard*	High Potential
Aluminum	5.3 – 6.7	max.0.01
Zinc	2.5 – 3.5	--
Manganese	min. 0.25	0.9 - 1.2
Copper	max.0.08	max.0.02
Iron	max.0.05	max.0.03
Nickel	max.0.003	max.0.001
Other Elements (total)	max.0.3	max.0.3
Magnesium	Remainder	Remainder

\* There isn't any refer to chemical composition of Standard type in IPS.

## TECHNICAL SPECIFICATION

Anode Type		Weight		Open Circuit Potential (V vs. Cu/CuSO <sub>4</sub> )	Current Eff.	Cons. Rate	Standard Backfill Composition	
		Net (lb)	Total (Kg)					
<input type="checkbox"/>	Standard	9	10	-1.50 to -1.55	50 (%)	7.3 (Kg/A.y)	<input type="checkbox"/>	75 % Gypsum 20 % Bentonite 5 % Sodium Sulfate
<input type="checkbox"/>	High Potential	17	20					
		32	30	-1.70 to -1.75			<input type="checkbox"/>	75 % Gypsum 25 % Bentonite
		48	45					

## CABLE CONNECTION

Anode Type	Cable Size	Cable length	Cable Type **	Packed Mg Anode Dim. (mm × mm) (Approx.)	
<input type="checkbox"/> With Standard Backfill	<input type="checkbox"/> 1 × 6	(m)	<input type="checkbox"/> PVC/PVC	152	432
			<input type="checkbox"/> XLPE/PVC	165	483
<input type="checkbox"/> Without Standard Backfill	<input type="checkbox"/> 1 × 10		<input type="checkbox"/> HMWPE	203	762
			<input type="checkbox"/> KYNAR/HMWPE	254	457

\*\*  The armored cables (SWA or AWA) can be connected to Mg anodes in special offers.