

# Product Data Sheet

## Aquasign® Retrofit: Magnet

### General Information

AQUASIGN offer a magnetic retrofit option for their subsea markers providing ease of installation to ROV or divers. Aquasign® subsea markers are supplied pre-bonded to a customisable polycarbonate frame complete with handle, which houses the permanent rare-earth magnets.



Standard magnets are prepared using Neodymium 45 MGOe magnetic material within a T316 stainless steel housing which is fully welded complete with a water-proof finish. Whilst magnet sizes can be altered to suit specific applications our standard stocked dimensions are 60 x 130 x 15mm offering a holding force in excess of 100lbs.

### General Properties

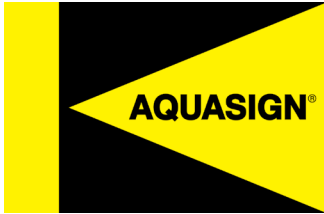
#### Rare Earth Magnet

Characteristic	Specification
Magnetic Material	Neodymium 45 MGOe
Housing	T316 Stainless Steel
Standard Height (mm)	60
Standard Width (mm)	130
Standard Thickness (mm)	15
Minimum Holding Force	115lbs (52kg)
Magnetic Range (approx.)	4" (25mm)

### General Properties

#### Stainless Steel Housing

Property	Test ISO (IEC)	Unit	Result
Density	1183	g / cm <sup>3</sup>	8.00
Modulus of Elasticity	-	GPa	193
Electrical Resistivity	-	Ω.m	0.074 x 10 <sup>-6</sup>
Thermal Conductivity	-	W / (K.m) @100°C	16.3



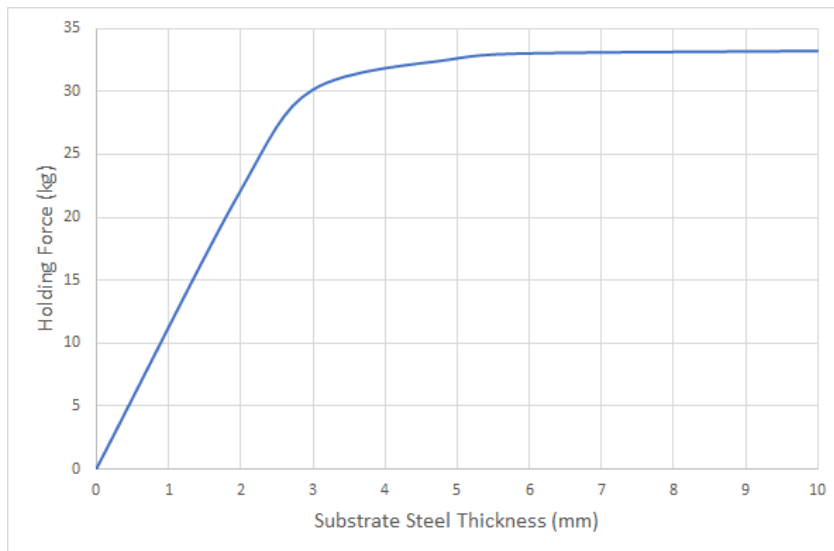
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## Aquasign® Retrofit: Magnet

### Mechanical Properties

### Stainless Steel Housing

Property	Test ISO (IEC)	Unit	Result
Tensile Strength	-	MPa	515
Compression Strength	-	MPa	170
Proof Stress	-	MPa	205
Elongation A5	-	%	40
Hardness	Rockwell B	-	

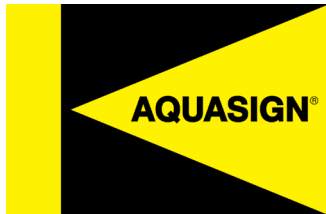


Forces in graph above are for a single magnet embedded in our standard shield designs.

### Electrical Properties

### Polycarbonate

Characteristic	Parameter	Value	Unit	DIN/EN/ISO
Volume Resistivity	-	10E15	Ohm.cm	60093
Relative Permittivity	50/60Hz	2.7	-	60250
Relative Permittivity	1Mhz	2.7	-	60250
Dissipation Factor	50/60Hz	0.001	-	60250
Dissipation Factor	1Mhz	0.01	-	60250



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### Mechanical Properties

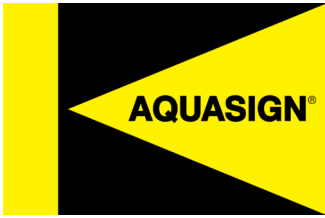
Polycarbonate

Characteristic	Parameter	Value	Unit	DIN/EN/ISO
Tensile Strength at Yield	50mm/min	60	Mpa	527
Tensile Strength at Break	50mm/min	70	Mpa	527
Tensile Strain at Yield	50mm/min	6	%	527
Tensile Strain at Break	50mm/min	120	%	527
Flexural Strength at Yield	2mm/min	90	Mpa	178
Modulus of Elasticity (Flexural Test)	2mm/min	2300	Mpa	178
Izod Impact Strength 23°C	Notched	65	kJ/m <sup>2</sup>	180/4A
Izod Impact Strength -30°C	Notched	10	kJ/m <sup>2</sup>	180/4A
Impact Strength (Charpy)	Notched	35	kJ/m <sup>2</sup>	179/1C
Hardness	H35/30 95	95	Mpa	2039/1

### Thermal Properties

Polycarbonate

Characteristic	Parameter	Value	Unit	DIN/EN/ISO
Vicat Softening Temperature	B/120	145	°C	306
HDT/Ae, 1.8 MPa edgew	120*1*04/sp=100	127	°C	75
Thermal Conductivity	-	0.2	W/m.°C	8302
Coeff. Of lin. Therm. Exp. Extr	23-80°C	700 E-05	1/°C	11359-2
Ball Pressure Test	125 +2 °C	Passes	-	60695-10-2
Relative Thermal Index	Electrical Prop.	130	°C	746B
Relative Thermal Index	Mechanical Prop. (with impact)	125	°C	746B
Relative Thermal Index	Mechanical Prop. (without impact)	125	°C	746B



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### Other Properties

Polycarbonate

Characteristic	Parameter	Value	Unit	DIN/EN/ISO
Water Absorption	50%RH/23°C	0.15	%	62
Water Absorption	Saturation/23°C	2.7	-	62
Light Transmission	3mm	-	119	D495
Temperature Range	- 51°C to + 132°C			

### Storage & Shipment

AQUASIGN's magnetic solutions will be supplied as a single pre-assembled unit. The magnetic material is completely housed within welded T316, and shielded with an additional sacrificial sheet of packaging steel for air transport. All packages are classified as non-hazardous for air travel given the magnetic field measurement of ~ 0 gauss.

### Availability

Magnetic markers are made to order with a general turn-around of 20 working days from receipt of Purchase Order.