

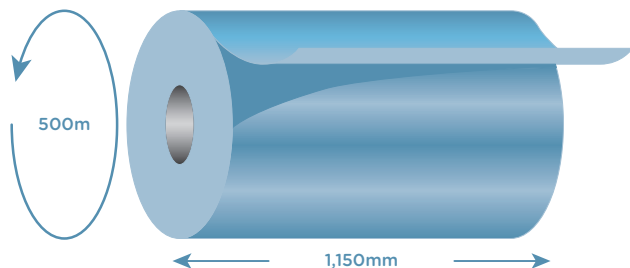
SOFTALLOY™ FILM

For Conformal Permeable Broadband Antennas

SOFTALLOY™ is a soft-magnetic thin film sputtered onto a flexible substrate. The primary application of SoftAlloy film is a new generation of conformal permeable broadband antennas in HF, VHF and UHF frequency ranges. Also referred to as magneto-dielectric antennas, these antennas operate using the current induced in the complex permeability of their own materials of construction.

PROPERTIES MAKING SOFTALLOY THE IDEAL PRODUCT FOR THIS APPLICATION:

- Outstanding soft-magnetic properties and magnetic resonance at over 1 GHz frequency (see next page for a full list of properties).
- Thickness of the soft-magnetic alloy (~0.8 μm) is adjusted for preventing Eddy-current losses.
- The substrate is kept very thin (12.5 μm) in order to improve the film/substrate ratio necessary for the application.
- Magnetic anisotropy along one of the in-plane directions maximizes the permeability available for the antenna application.



*Pictures shown are for illustration purpose only.

A SAINT-GOBAIN BRAND



WHO WE ARE

With over 50 years of thin film manufacturing experience and state-of-the-art wide-web sputtering equipment, we are the expert in the roll-to-roll sputtering, precision wet coating and laminating fields. Saint-Gobain is committed to providing our customers with outstanding quality and exceptional value by developing innovative, high-performance solutions for your thin film needs.

Need a custom solution? Our scientists and engineers stand ready to partner with you throughout the entire life cycle of your product - from design and development to prototype and into full production.

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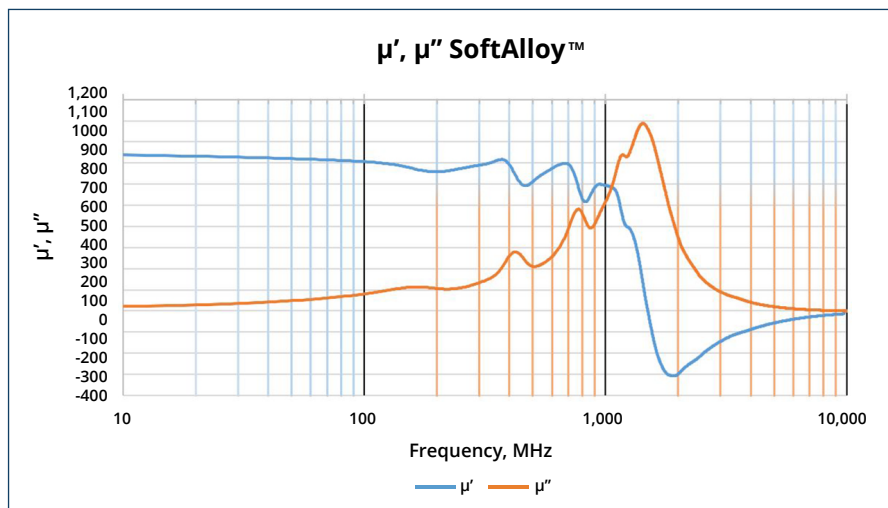
MAGNETO-DIELECTRIC ANTENNAS: ADVANTAGES & MARKETS

- Conformal form factor eliminates the visual signature of the antenna on its platform and contributes zero drag on an aircraft.
- A single conformal wideband antenna will replace several blades or wire aerials.
- The frequency range from HF through UHF, often requiring large unwieldy antennas, is widely used by defense, emergency services, legacy airborne communication systems, etc.

TECHNICAL INFORMATION

MAGNETIC PROPERTIES OF SOFTALLOY™

	SYMBOL	VALUE	UNIT
PROPERTY Easy Axis			
Saturation magnetization	$4\pi M_s$	11,000	Gauss
Permeability dc	μ_{dc}	75,000	
Coercivity dc	H_{cdc}	60	mOe
PROPERTY Hard Axis			
Anisotropy field	H_k	22	Oe
Permeability dc	μ_{dc}	475	
Permeability at 20 MHz	μ	500	
Resonance frequency	f_{res}	1.3	GHz
Resistivity	r	140	$\mu\Omega.cm$



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Valid 06/2024 • Supersedes all previous versions

