



DISPENSABLE MICROWAVE ABSORBERS

Robzorb™ dispensable absorber platform is a new class of micro and mm wave absorber compliant with dispensing technology.

The Robzorb™ grades of material are matching the RF performances of their equivalent Eccosorb™ elastomer sheets that have been on the market for decades.

Targeting surface current and cavity resonance type of application, those grades exhibit self levelling features to enable smooth cavity fill to reach minimum thickness and associated attenuation performance.

The 2 components technology guarantee product stability as well as long shelf life.

Available packaging from tubes to pails are compliant with existing dispensing equipment on the market.

PROPERTIES

	Robzorb™ MCS	Robzorb™ GDS
PROPERTY	TYPICAL VALUE	TYPICAL VALUE
PHYSICAL		
Elastomer	Silicone	Silicone
Density, gm/cc	TBD	3.75
Hardness (000)	TBD	80
Adhesion	TBD	Cohesive failure
Viscosity	TBD	23,000 cps
FLAMMABILITY		
UL	TBD	V0 94
OUTGASSING		
TML(%)	TBD	0.27
CVCM(%)		0.06
THERMAL		
Temperature range (°C)	TBD	-50 +125
Thermal Conductivity (W/m.K)	TBD	0.7
ELECTRICAL		
Volume Resistivity (ohm*cm)	TBD	10 ¹¹
PROCESSING		
Mixing ratio	1:1	1:1
Curing schedule		24Hrs @RT 1Hr @ 85°C

USA: +1.866.928.8181

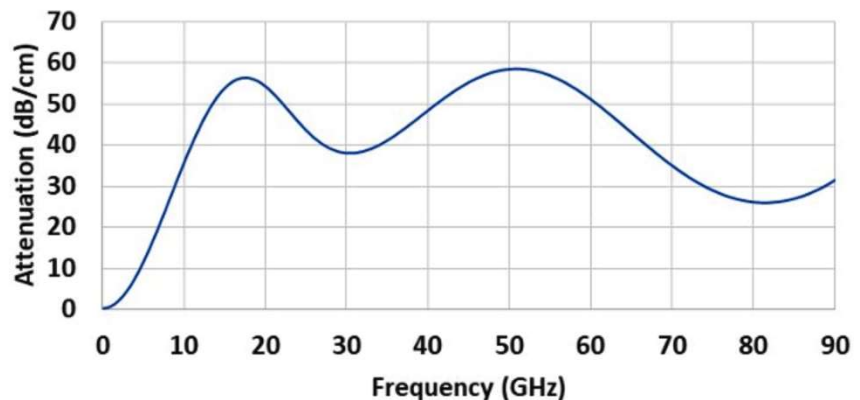
Europe: +49.8031.24600

Asia: +86.755.2714.1166

www.laird.com



Attenuation



KEY FEATURES

- Self levelling grades
- High Magnetic Loss
- Grades availability : Robzorb™ MCS(6-18 Ghz) (Q1 2024), Robzorb™ GDS(18-40Ghz)
- UL V0 94

DESIGN CONSIDERATIONS

Traditionally cavity isolation is being designed in electronic housing to avoid EMI disturbance between components or area of the PCB. The absorber product is usually placed at the bottom of the cavity in front of the noisy component(s).

- **Housing Design**

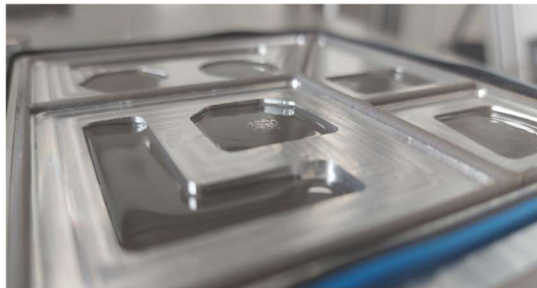
While die cut pad laminated with Pressure Sensitive Adhesive are currently used, dispensable version can nearly be a 1 to 1 switch.

Key design rule to make sure Robzorb™ grades will be compliant is to design closed cavities. As the purpose is to dispense and fill the cavity, it needs to ensure there are no aperture under the thickness level that is targeted which would result in leakages.

- **Flatness**

Dispensing being a wet process, the quality of the substrate/housing have a direct impact on the quality and performance of the product.

Thickness control is not only related to the volume being dispensed but also to the flatness of the part as well as the substrate on which the part will sit during the curing (gel time @ RT within the first 2 hrs, first 20 mins at 85°C) till it freeze solid. It is recommended to minimize the movement and manipulation between the dispensing station and the curing station to avoid material being projected to the edges of the cavity (even if having material above the targeted height level will not impact the RF performance)



- **Surface Roughness**

Rough surface for adhesion often leads to stronger bonds for several reasons.

Roughness imparts additional surface area with which the wet material can make contact when forming a bond.

A rough surface provides additional mechanical interlocking at the interface

Irregularities on the surface may mitigate crack propagation, enabling stronger, more fatigue-resistant bonds.

Obviously excessive roughness won't be of benefit. State of the art range to optimize reliable bond is 3 to 6 µm.

Pending on surface energy of the substrate (combination of material, roughness and surface treatment), The material will have slightly different flowing speed. The material can show a meniscus effect on the edges of the cavity, this will not affect the RF performance .

- **Absorber Thickness**

When it comes to cavity resonance, absorber thickness matters to reach targeted attenuation. Indeed the key point is to ensure a minimum thickness determined theoretically and confirmed practically to achieve the minimum attenuation required in the application. In a given cavity the thickness of the absorber is controlled by dispensed volume of material considering the tolerances on both the cavity dimension and from the dispensing equipment. Flatness of the part and flatness of the equipment on which the part is sitting during curing is also a key factor to achieve the minimum thickness required.

MATERIAL AND SUBSTRATE CONDITIONING

- **Robzorb™ Preparation**

Homogenization: Mix few minutes with propeller/blade (for paint type application) in the original pail to ensure no agglomerates (break filler settling).
Condition material at workshop temperature before dispensing. Recommended processing temperature are 15-25°C.

- **Substrate Preparation**

Make sure substrate is clean and dry, free of any contaminant like oil. Use adequate washing process to prepare your surface.
Condition substrate at room temperature before dispensing.

CURING GUIDELINES

- Room temperature: 24 Hrs
- Accelerated temperature schedule: >1 Hrs at 85°C
- Curing inhibition of silicone systems include tin, sulfur, phosphorous, and nitrogen containing compounds, urethanes, compounds containing antimony, arsenic, tellurium, and selenium, residual solvents or monomers, and some primers. Lubricants used on new equipment have also been shown to inhibit cure. Do not use latex gloves when handling uncured material.

CLEANING AND REWORKING

Excess of material can be cleaned up by drag rag on flat surface. Residual silicone can be removed using a clean rag with solvent (acetone, IPA).

Once dispensed in cavity, recommendation is to cure the material before cleaning using plastic or wood stick to remove the material.

PACKAGING AND STORAGE

- **Storage:** Recommended storage conditions are 0-35°C, at 50% maximum relative humidity. Robzorb™ should be stored in original product packaging until ready for use. The product will settle over time during shipping or storage and therefore should be remixed as per recommendation.

Storing as low temperature 0-5°C will delay and minimize the settling.

Few iterations of opening closing within minutes do not affect the shelf life.

- **Shelf life:** 9 months in recommended condition

DISPENSING GUIDELINES

- **Dispensing Technology**

Recommended set up consist of

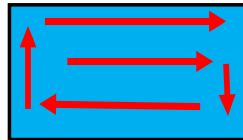
- Tanks equipped with agitation, degassing and recirculation.
- Dosing valve/pump c

- **Process Parameters**

- Static mixer: 12 or 24 elements standard static mixer.
- Needle: needle diameter is selected upon size of the cavity to optimize cycle. Standard diameter from 0.84 mm can be used. Always take shortest length and largest inner diameter to minimize dosing pressure.
- Agitation and degassing required
- Programming tips: to avoid dripping out of the needle, especially between cavities, use “suck back” programming method.

Pattern Versus Cavity Shapes:

The principle to get a uniform self-leveling effect across the surface of the cavity is to design helicoidal pattern starting from the center toward the sides following shape of the cavity.



ROBZORB™ DISPENSABLE 112023