



**AGM**

**H<sub>2</sub>O Lock**

Advanced Desiccant

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# H<sub>2</sub>OLock

## INTRODUCTION

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Moisture inside of modern military munitions housings can corrode or short circuit internal electronics, and fog optics systems, resulting in weapons failure during combat.

Unfortunately, the wide-ranging storage and deployment environments typical of military munitions serve to further compound moisture problems. Dew point levels fluctuate inside of munitions housings with varying temperatures and relative humidity (RH) to exacerbate condensation issues.

Moreover, the rough handling and sometimes improvised storage conditions in operational theaters of war can cause significant wear to these munitions, creating the potential for internal components to break or come apart.

AGM's H<sub>2</sub>OLock Advanced Desiccant provides a single solution to both moisture and durability concerns regarding advanced military munitions. A dense, shapeable, composite desiccant, H<sub>2</sub>OLock provides superior moisture adsorption through a wide range of temperatures and is strong enough for use as a structural design component.



# A NEW SOLUTION TO AN OLD PROBLEM

## PUT MOISTURE IN LOCKDOWN

A common method for lowering RH inside of munitions enclosures, such as missile nose cones and housing for arming mechanisms, is to place inside some amount of desiccant, like silica gel. The desiccant will adsorb water vapor from the air in the enclosure, protecting the electronics.

To properly provide for the moisture demands of advanced military munitions a desiccant must provide a high adsorption rate and significant capacity through a range of temperatures. AGM's H<sub>2</sub>OLock Advanced Desiccant more than meets these requirements.

### H<sub>2</sub>OLock ADVANCED DESICCANT MOISTURE CAPACITY

In a side by side comparison to H<sub>2</sub>OLock, traditional beaded 4A molecular sieve desiccant can adsorb approximately 2.5 grams of water per cubic inch. However, the beaded molecular sieve requires a bag or housing to hold the beads, as well as additional mounting hardware, which results in lost adsorption capacity and potentially additional space requirements.

Under the same conditions, H<sub>2</sub>OLock will adsorb 2.9 grams of water per cubic inch and requires no special bag, housing, or hardware. Rather, H<sub>2</sub>OLock can be used as a structural component, or be directly adhered or bolted to other components in an assembly. This significantly increases the adsorption power of H<sub>2</sub>OLock within the same space as traditional desiccants.

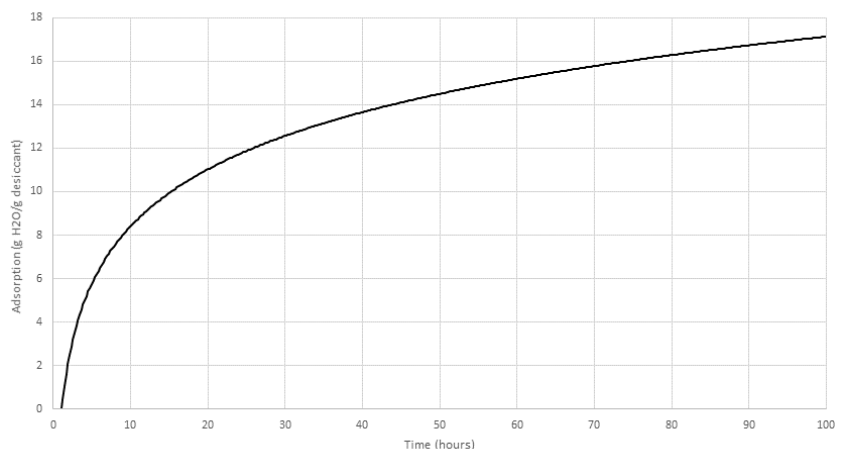
### H<sub>2</sub>OLock ADVANCED DESICCANT OPERATING TEMPERATURE RANGES

**Recommended Standard:**  
-54°C and 85°C (-65.2°F and 185°F)

**Maximum Serviceable:**  
150°C (302°F)



### ADSORPTION RATE





# SUPERIOR DURABILITY

## IN ANY SHAPE YOU NEED

If a desiccant can not meet the durability requirements for a given application, it can break or “leak,” potentially sending desiccant and debris throughout an enclosure and possibly damaging system components.

AGM's H<sub>2</sub>OLock desiccant is a thermoplastic and desiccant composite material consisting of 4A molecular sieve and a polymer binder. These two materials are combined to give AGM's H<sub>2</sub>OLock Advanced Desiccant **three important attributes:**

# 01

## SUPERIOR DURABILITY

H<sub>2</sub>OLock Advanced Desiccant is significantly more durable in comparison to other desiccants. Because of its unique manufacturing process, H<sub>2</sub>OLock may be machined as necessary for most projects, and maintains its rigidity up to 150°C.

# 02

## COMPLEX GEOMETRIES

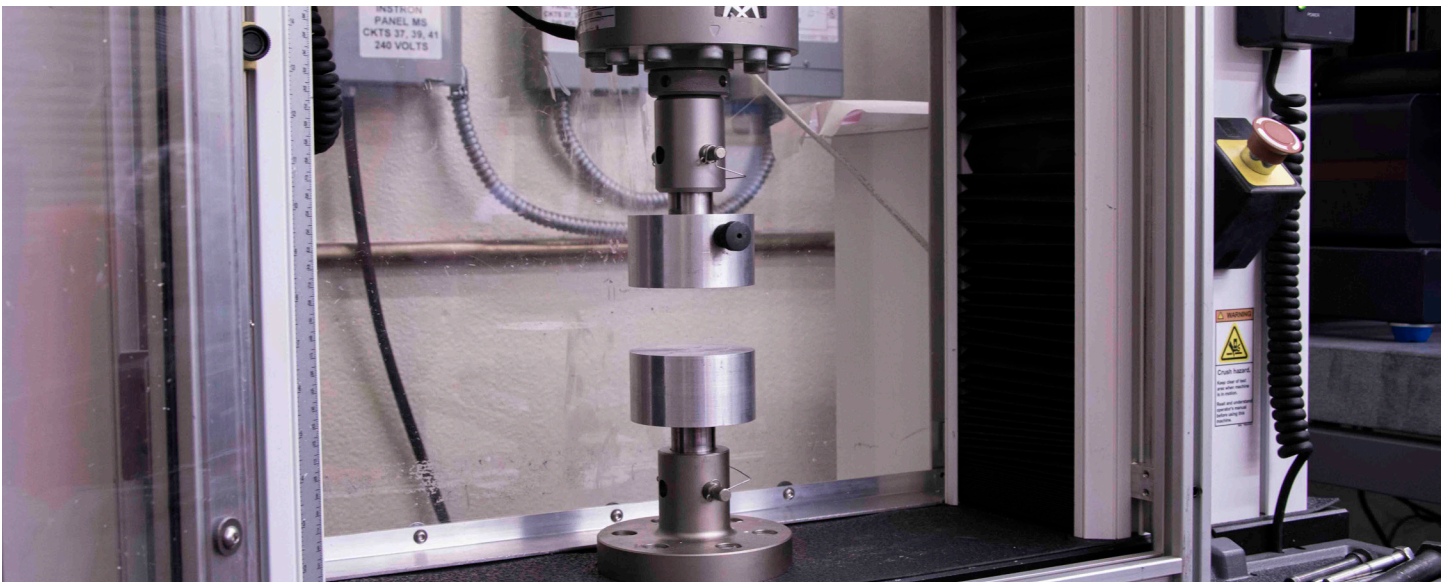
The composition of H<sub>2</sub>OLock desiccant enables it to be shaped in the factory to many different form factors. This makes H<sub>2</sub>OLock ideal for projects with demanding space and shape constraints, or used as a structural component to help streamline designs.

# 03

## NON-DUSTING

In vibration tests, H<sub>2</sub>OLock desiccant has proven to exceed the Type II desiccant dusting requirements of MIL-D-3464E Section 3.10.2, which states “When tested as specified in 4.6.6, Type II desiccant shall produce not more than ½ milligram of dust, regardless of bag size.”

Compressive strength is 6,000 psi over temperature range -54°C to 85°C



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## CONCLUSION

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The evolution of modern military munitions involves sophisticated electronics and optics equipment that is highly sensitive to the damaging effects of moisture, and yet must be constructed to withstand the rigors of long-term storage and operational theaters alike.

AGM's H<sub>2</sub>O Lock Advanced Desiccant solutions are tailored to each unique application's size requirements and tuned to provide superior results.

LEARN MORE ABOUT AGM'S H<sub>2</sub>O LOCK ADVANCED  
DESICCANT SOLUTIONS WITH A  
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