

STAYDRY[®] H2-3000

Hydrogen and Moisture Getter

DESCRIPTION

Hermetically sealed semiconductor devices containing Gallium Arsenide (GaAs), RF absorbers, and active industry gate metallization structures have been shown to leak out hydrogen in ambient as well as environmental conditioning, which will poison and shorten the life of the device. MacDermid Alpha manufactures and sells the hydrogen getter for the semiconductor industry, specifically designed for these types of devices.

STAYDRY H2-3000 film is a unique getter, which employs an active hydrogen getter and desiccant for water absorption, dispersed in a flexible silicone polymer matrix. The high permeability of the polymer matrix to both hydrogen and moisture assures a rapid uptake of both gases. The getter operates through a reaction, which is irreversible for hydrogen. Therefore, there are no hazardous or problematic side effects, once absorbed gases are trapped from harming the device.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

APPLICATIONS

STAYDRY H2-3000 possesses high hydrogen and moisture gettering capacity, while being thermally stable up to 400 °C. The material is a low outgasing, electrically non-conductive, silicone film and can therefore be molded or stamped to any desired shape. The excellent physical properties of the polymer allow the getter to remain flexible over the temperature range of -65 to 165 °C. As a result, no spalling or flaking occurs as the getter removes hydrogen. The composition of the material is designed to maintain a dew point of less than -65 °C, while maintaining a hydrogen atmosphere of less than 1 ppm (part per million) within the device.

TYPICAL PROPERTIES

Typical Properties	Value
Appearance:	Black film
Storage Temperature:	10 to 25 °C
Getter Activation:	See Activation section
Shelf Life:	12 Months
Density:	≥ 1.35 g/cc
Thermal Stability @ 200 °C:	< 1.0% Loss
Moisture Absorption:	≥ 3.5% by weight
CTE:	440 µm/m °C
Ionics:	Na ⁺ ≤ 50 ppm K ⁺ ≤ 50 ppm Cl ⁻ ≤ 200 ppm FI ⁻ ≤ 50 ppm
Hydrogen Capacity:	≥ 45cm ³ /g
Hydrogen Rate (within 24 hrs):	< 1 ppm

AVAILABILITY

STAYDRY H2-3000 film is available in standard thickness of 8mil, 10mil, 20mil and 30 mil. Special thicknesses are available upon request. Standard sheets are available in many sizes up to 8" x 10". Custom pre-forms (hard tool stamped) and laser cut prefoms are also available upon request.

BONDING ATTACH PROCESS

1. Allow substrates and **STAYDRY H2-3000** to reach ambient temperature (21°C to 38°C) before bonding.
2. Thoroughly remove all oils and any residues from the surface to be bonded.
3. Apply primer (Momentive DC1204, PR 1204,) to both the lid and one side of the **STAYDRY H2-3000** to promote RTV silicone adhesion.
4. Allow primer to dry at room temperature with 50% or greater RH for 4 hours.
5. Apply RTV silicone (Momentive RTV 3145 Gray, RTV 655 clear or Sylgard 577) to either the primed lid or primed surface of **STAYDRY H2-3000**.
6. Press the getter onto the lid. Apply "squeeze-out" pressure and remove excess silicone, if needed.
7. Cure RTV via 85%RH @ 25°C for 16 hours.

ACTIVATION

Place the bonded assembly into a vacuum oven at 150°C for a minimum of 16 hours (500mmHg or less). See below for alternative activation processes. Assemble package in a dry inert atmosphere. Seal the package **IMMEDIATELY** after activating. 90% of moisture gettering capacity is gone after 45 minutes of exposure to normal humidity at 25°C. **STAYDRY H2-3000** can be activated/saturated/re-activated as many times as needed. Store in an inert atmosphere until ready to assemble.

STAYDRY H2-3000 Activation Chart		
Temperature (°C)	Time (Hours)	Vacuum (mmHg)
125	24	<250
150	16	<500
175	4	<760
200	2	None

STAYDRY H2-3000 Nitrogen Activation Chart		
Temperature (°C)	Time (Hours)	Environment*
100	8	Nitrogen
125	4	Nitrogen
150	2	Nitrogen
175	1	Nitrogen
200	0.5	Nitrogen

*66L Nitrogen oven was used with nitrogen flow rate set to 15L/min

SHIPPING & STORAGE

There are no special shipping concerns for this product. Store material in an inert atmosphere or dry box as a maximum condition. Minimize long term exposure to air and dust particles. Always use powderless gloves when handling film. Shelf life of the material is 12 months from date of shipment, when stored dry at temperatures (10 to 25°C).

SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use. **Safety Data Sheets are available.**

WASTE TREATMENT

Prior to using any recommendations or suggestions for waste treatment, the user is required to know the appropriate local/state/federal regulations for on-site or off-site treatment which may require permits. If there is any conflict regarding our recommendations, local/state/federal regulations take precedent.

CONTACT INFORMATION

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Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE. Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588

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