

ALPHA[®] STAYDRY[®] H2-3000PSA

Hydrogen and Moisture Getter with Backing Adhesive

DESCRIPTION

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

STAYDRY H2-3000PSA 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 these gasses are trapped, from harming the device. This PSA (Pressure Sensitive Adhesive) version of film has a low outgassing PSA on one side that allows easier and quicker attach of the getter film to substrates during assembly.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

APPLICATIONS

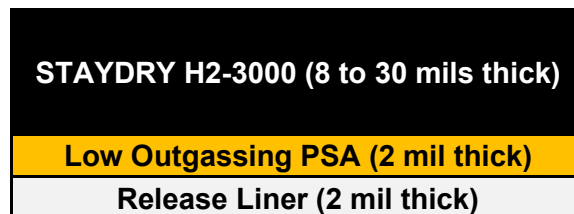
STAYDRY H2-3000PSA possesses high hydrogen and moisture gettering capacity, while being thermally stable up to 220 °C. The material is a low outgasing, electrically non-conductive, silicone film and can therefore be molded or stamped to any desired shape. The excellent physical properties of the polymer and PSA 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 F ⁻ ≤ 50 ppm
Hydrogen Capacity:	≥ 45cm ³ /g
Hydrogen Rate (within 24 hrs):	< 1 ppm

AVAILABILITY

STAYDRY H2-3000PSA 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 preforms are also available upon request.



Graphic of STAYDRY H2-3000PSA as received.

BONDING ATTACH PROCESS

The **STAYDRY H2-3000PSA** attach process is different and seen as a process improvement to standard **STAYDRY H2-3000**.

- 1) Allow substrates and **STAYDRY H2-3000PSA** to reach ambient temperature (21 to 38 °C) before bonding.
- 2) Do not bond to surfaces at temperatures below (10 °C/50 °F).
- 3) Thoroughly remove all oil, moisture and any residues from the surface to be bonded.
- 4) Remove backing liner from **STAYDRY H2-3000PSA**.
- 5) Place **STAYDRY H2-3000PSA** where required. PSA may be cleaned off using acetone should incorrect placement occur. A new piece will be needed.
- 6) Be sure to apply pressure with a roller, press, or use sufficient hand pressure for smaller preforms. Failure to do so could affect PSA properties and appearance.
- 7) PSA film may not bond well to uneven or distorted surfaces.
- 8) Avoid placing significant stress on **STAYDRY H2-3000PSA** applied to substrate for several hours after application.
- 9) Material can be pre-applied or attached to the device. Store in dust resistant packaging or inert atmosphere until ready to perform final assembly.

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 used after 45 minutes of exposure to normal humidity at 25 °C. Getter may be activated up to 5 times.

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

STAYDRY H2-3000PSA 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 the date of shipment, when stored dry at temperatures (10 to 25 °C). Product shipped with cold packs.

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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