



Statshield® Moisture Barrier Bags Application Instructions

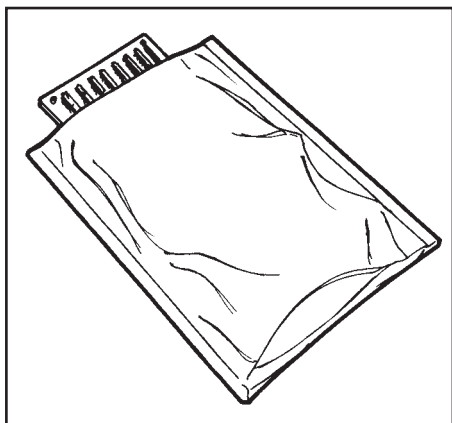


Figure 1. Charleswater Statshield® Moisture Barrier Bag

Introduction

Corrosion and thus moisture protection is becoming increasingly important. From ESD Association 22nd EOS/ESD Symposium Proceedings*, "As electronic components use less material they become more sensitive to voltage and current variations. This increases their operational speed and functionality. Corrosion that was heretofore inconsequential now becomes a major factor in the current electronic components. . . . This underlines the importance of protection from angstrom level corrosion of surfaces beyond the normal solderability level problems on circuitry." Statshield® EMI/RFI ESD Moisture Barrier Bags addresses this concern providing physical, ESD, EMI/RFI, and moisture protection.

Description

Charleswater Statshield® Moisture Barrier Bags combine the properties of a MOISTURE BARRIER constitution with EMI-RFI-ESD shielding. Statshield® Moisture Barrier Bags meet the electrical and physical requirements of EIA 583, EIA 541, EIA 625, and MIL-PRF-81705D Type 1 Class 1. All Charleswater Moisture Barrier Bags are amine free and pass outgassing and corrosion tests. All bags are printed with ESD and moisture warning symbols and are dated and lot coded for ease of traceability.

Charleswater offers the Moisture Barrier bags in the following standard sizes:

ITEM #	WIDTH	LENGTH
90700	125mm	200mm
90702	150mm	255mm
90704	200mm	255mm
90706	255mm	305mm
90709	255mm	600mm
90708	255mm	610mm
90712	305mm	405mm
90714	380mm	455mm
90715	405mm	455mm
90716	455mm	455mm
90718	455mm	610mm

CUSTOM SIZES AND CUSTOM IMPRINTING AVAILABLE

Construction

Charleswater Moisture Barrier Bags are manufactured out of a laminated film which features static dissipative surfaces. The configuration is similar to the metal-in shielding material, but with a metal layer being placed between two layers of dissipative film. Statshield® series provides protection from ESD, static fields, and tribocharging. The metal layer is approximately ten times thicker than that of traditional static shielding material and provides the EMI attenuation and water-vapour-barrier properties.

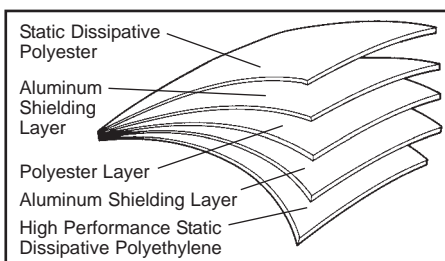


Figure 2. Statshield® Moisture Barrier Bag construction

The metal layer within the Moisture Barrier Bag is vacuum deposited rather than being a foil layer. This difference allows the bag to be much softer and flexible, therefore the metal portion of

the bag is less likely to tear or rip providing a more reliable barrier against moisture and static electricity.

General Information

Failures in certain electronic devices and microcircuits have been linked to the rapid expansion of internally absorbed moisture during the soldering process. Moisture absorption into these devices has been traced to have taken place primarily during shipping and storage in non-humidity controlled environments. Additionally, "Dry Packaging" is usually required for electronic assemblies or devices that are to be placed into long term storage or for use in military applications.

The Charleswater Statshield® Moisture Barrier Bag, Desiccant Packs and Humidity Indicator Cards have been developed for use in "DRY PACKAGING" applications. In order for the Moisture Barrier Bag and its accessories to perform properly, Charleswater recommends the user follow procedures defined in EIA-583. A copy of EIA-583 may be obtained from the Electronic Industries Association, Engineering Department, 2001 Pennsylvania Ave. N.W., Washington, D.C. 20006, Phone (202) 457-4966.

DESICCANT

Desiccant is a drying agent used to lower the moisture content of air inside a closed space, such as an Moisture Barrier Bag. Desiccant is packaged in fractional units in order to facilitate its usage with a variety of bag sizes. One full "unit" of packaged desiccant will absorb the following quantities of water at equilibrium with air at 77°F (25°C): 3.00 grams @ 20% RH and 6.00 grams @ 40% RH, when tested to MIL-D-3464.

*Paper entitled "Corrosion Induced Electrostatic Damage" by John P. Franey of Lucent Technologies Bell Labs



Figure 3. Desiccant packs.

In order to provide a moisture barrier packaging assembly system, desiccant must be inserted into the bag, prior to having the bag vacuum sealed. The recommended amount of desiccant is dependent on the interior surface area of the bag to be used. Figure 4 is a reference table indicating recommended minimum amounts of desiccant that should be used with Moisture Barrier Bags.

INTERIOR BAG SURFACE AREA	NUMBER OF DESICCANT UNITS		
	*MIH <20%	MIH <30%	MIH <40%
645 sq. cm	1.5	1.0	1.0
839 sq. cm	2.0	1.5	1.0
1,032 sq. cm	2.0	1.5	0.5
1,290 sq. cm	2.5	2.0	1.5
1,548 sq. cm	3.0	2.0	1.5
1,871 sq. cm	4.0	2.5	2.0
2,194 sq. cm	4.5	3.0	2.5
2,516 sq. cm	5.0	3.5	2.5
2,903 sq. cm	5.5	4.0	3.0
3,290 sq. cm	6.5	4.5	3.5
3,742 sq. cm	7.5	5.0	4.0
4,194 sq. cm	8.0	5.5	4.0
4,645 sq. cm	9.0	6.0	4.5

Figure 4. Table for recommended desiccant usage. Information taken out of EIA-583, Table 1, Page 8.

Desiccant packs are available from Charleswater in the following unit sizes and standard packages:

ITEM #	UNIT SIZE	STANDARD PKG.
90666	1/2 unit	Box of 700
90667	1 unit	Box of 500

Desiccant packs sold by Charleswater meet the requirements of MIL-D-3464.

*MIH - Maximum Interior Humidity

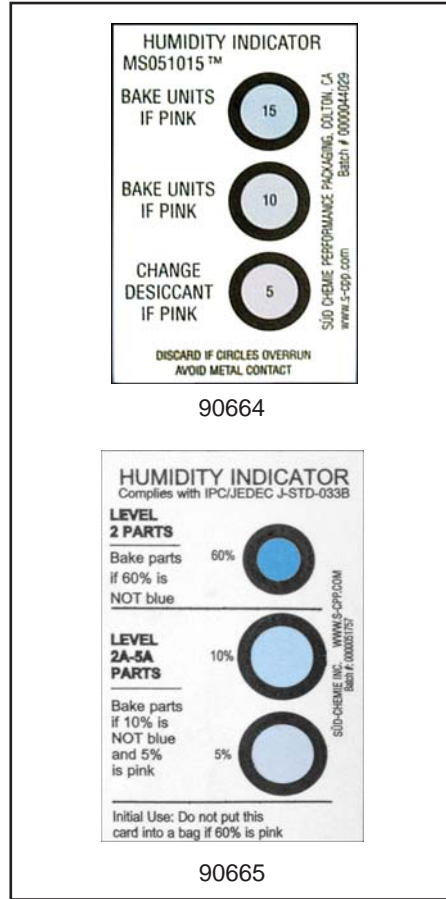


Figure 5. Humidity Indicator Cards

HUMIDITY INDICATOR CARDS

Another integral part of a moisture barrier packaging assembly system is the Humidity Indicator Card. The Indicator Card contains chemically impregnated, humidity sensitive, indicating spots that will change colour with moisture. The comparison bar is used to determine relative humidity of air. Select the indicating spot that most closely matches the colour of the comparison bar. The measured relative humidity is the percentage indicated on the matching spot. The chemical reaction of the indicating spots is completely reversible; the spots will continue to change colour as the moisture levels change.

Charleswater offers Humidity Indicator Cards as items 90664 and 90665 in cans of 125 each. The 50mm x 76mm blotting paper cards indicate relative humidity. Humidity Indicator Cards should be inserted and sealed within a Moisture Barrier Bag along with the recommended amount of Desiccant Packs. Both Humidity Indicator Cards meet the requirements of MIL-I-8835A and J-STD-033A.

Specifications

Electrical Properties

- Resistance of polyester layer: 10^{11} ohms per ANSI/ESD S11.11
- Resistivity, conductive metal layer: 100 ohms per ANSI/ESD S11.11
- Resistance of polyethylene layer: 10^{11} ohms per ANSI/ESD S11.11
- EMI Shielding (dB between 1 and 10 GHz): 50 per Mil-B-81705 Rev C
- Static Decay (5000V to 0.0V, sec): 0.03 per FTMS 101C, Method 4046.1

Physical Properties

- Thickness (mils): ≥ 3.5 per ASTM D2103
 - Light Transmission (%): 0.01 per ASTM D1033-92
 - MVTR (gms / 100 in² / 24 hrs, 100°F): ≤ 0.002 per ASTM F1249-90
 - Puncture Strength (lb): ≥ 20 per FTMS 101-C, Method 2065.1
- For more detailed information, see Drawing 90700.E.

Limited Warranty

Charleswater expressly warrants that for a period of one (1) year from the date of purchase, our shielding bags will be free of defects in material (parts) and workmanship (labour). Within the warranty period, a unit will be tested, repaired or replaced at Charleswater's option, free of charge. Call Customer Service at 00 44 (0) 1892-665313 for a Return Material Authorisation (RMA) and for proper shipping instructions and address. You should include a copy of your original packing slip, invoice, or other proof of purchase date. Any unit under warranty should be shipped prepaid to the Charleswater factory. Warranty replacements will take approximately two weeks.

Warranty Exclusions

THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESSED AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE SPECIFICALLY DISCLAIMED. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean or repair products.

Limit of Liability

In no event will Charleswater or any seller be responsible or liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, users shall determine the suitability of the product for their intended use, and users assume all risk and liability whatsoever in connection therewith.

RoHS Compliance Statement

None of the following materials are intentionally added in manufacturing this product: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE) as outlined in the Directive 2002/95/EC Article 4.1. See Desco Industries Inc. letter on-line at Charleswater.co.uk