

# Statshield® Moisture Barrier Bags Application Instructions



Made in the  
United States of America

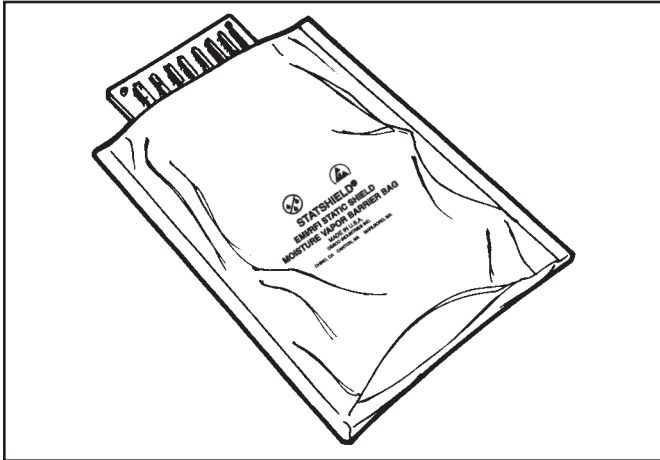


Figure 1. Desco Statshield® Moisture Barrier Bag

## Description

[Desco Statshield® Moisture Barrier Bags](#) combine the properties of a MOISTURE BARRIER protection with EMI-RFI-ESD shielding. Statshield® Moisture Barrier Bags meet the electrical and physical requirements of ANSI/ESD S20.20, Packaging standard ANSI/ESD S541, and Static Control Bag ANSI/ESD S11.4. All Statshield® Moisture Barrier Bags are amide, amine, and silicone free and pass outgassing and corrosion tests. All bags are printed with ESD protective symbol and the Moisture-Sensitive Identification Label and are dated and lot coded for quality control traceability.

All three styles are available in a variety of standard sizes, custom sizes and with custom printing.

## Desco offers three styles of Moisture Barrier Bags:

### Moisture Barrier Bags

- Static Control Bag ANSI/ESD S11.4 Level 2
- Thickness .0035" (.0889mm)
- Moisture Barrier Transfer Rate (MVTR)  $\leq$  0.020
- Puncture Resistance >20 lbs

### High Moisture Barrier Bags

- Static Control Bag ANSI/ESD S11.4 Level 2
- Thickness .0065" (.1651mm)
- Moisture Barrier Transfer Rate (MVTR)  $\leq$  0.014
- Puncture Resistance >30 lbs

### Foil (EMI/RFI) Moisture Barrier Bag

- Static Control Bag ANSI/ESD S11.4 Level 1
- Thickness .0040" (.1061mm)
- Moisture Barrier Transfer Rate (MVTR)  $\leq$  0.0003
- Puncture Resistance >27 lbs

## Notes:

Thickness - Typical value. Nominal  $\pm$ 10% per MIL-STD-3010 1003

Moisture Barrier Transfer Rate (MVTR) - Measured per ASTM F1249 (g/100 sq.in./24 hrs, at 100F)

Puncture Resistance – measured per MIL-STD-3010 2065

## Construction

### [Desco's Statshield® Moisture Barrier Bags](#)

manufactured from a static dissipative metalized laminated film. The metal layer of the Desco's [Statshield® Moisture Barrier Bags](#) and [Statshield® High Moisture Barrier Bags](#) is created by vacuum deposited manufacturing technique. This manufacturing technique allows for a more flexible finished bag that is less likely to tear or rip during use. Finished bags with foil layer, such as Desco's [Statshield® Foil Moisture Barrier Bags](#) provides a better moisture barrier and is a good choice when having to meet IPC/JEDEC J-STD-033 Standard.

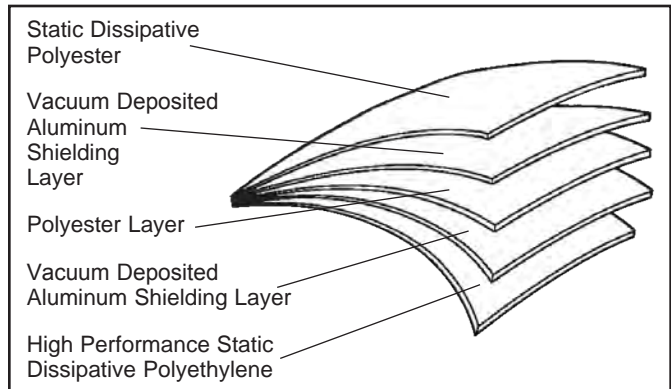


Figure 2. Statshield® MBB bag and High Moisture MBB Bag Layer construction.

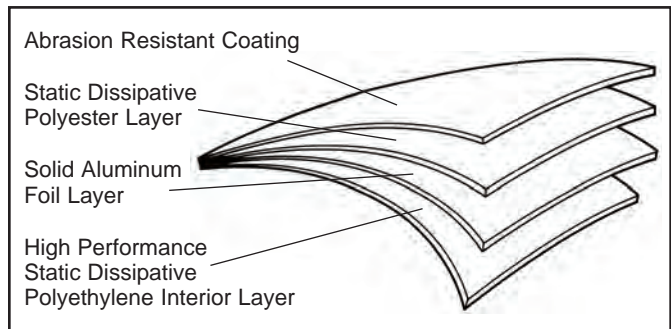


Figure 3. Statshield® Foil (EMI/RFI) MBB Bag Layer construction

## Dry Packing Information

The Statshield® Moisture Barrier Bag, Desiccant Packs and Humidity Indicator Cards have been developed for use in "DRY PACKAGING" applications. In order for the MBB bag and its accessories to perform properly, Desco recommends the user follow procedures defined in IPC/JEDEC J-STD-033B.

## DESICCANT

**Desiccant** is a drying agent used to lower the moisture content of air within a closed space, such as a sealed 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.



Figure 4. Desiccant packs

In order to provide a complete moisture barrier packaging 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 5 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%
100 sq. in.	1.5	1.0	1.0
130 sq. in.	2.0	1.5	1.0
160 sq. in.	2.0	1.5	1.5
200 sq. in.	2.5	2.0	1.5
240 sq. in.	3.0	2.0	1.5
290 sq. in.	4.0	2.5	2.0
340 sq. in.	4.5	3.0	2.5
390 sq. in.	5.0	3.5	2.5
450 sq. in.	5.5	4.0	3.0
510 sq. in.	6.5	4.5	3.5
580 sq. in.	7.5	5.0	4.0
650 sq. in.	8.0	5.5	4.0
720 sq. in.	9.0	6.0	4.5

Figure 5. Table for recommended desiccant usage. Information taken out of EIA-583, Table 1, Page 8

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

Item #	Unit Size	Std. Package
<a href="#">13840</a>	1/2 unit - 1.5" x 3"	Box of 700
<a href="#">13843</a>	1 unit - 2" x 4"	Box of 450
<a href="#">13844</a>	1/2 unit - 2" x 4"	Pail of 300
<a href="#">13850</a>	1/2 unit - 1.5" x 3"	Pail of 550

Desiccant packs sold by Desco meet the requirements of MIL-D-3464. For more detailed information, see Drawing [13850](#).

## HUMIDITY INDICATOR CARDS

**Humidity Indicator Cards** contain chemically impregnated, humidity sensitive, indicating spots that will change color with moisture. The comparison bar is used to determine relative humidity of air. Select the indicating spot that most closely matches the color 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 color as the moisture levels change.

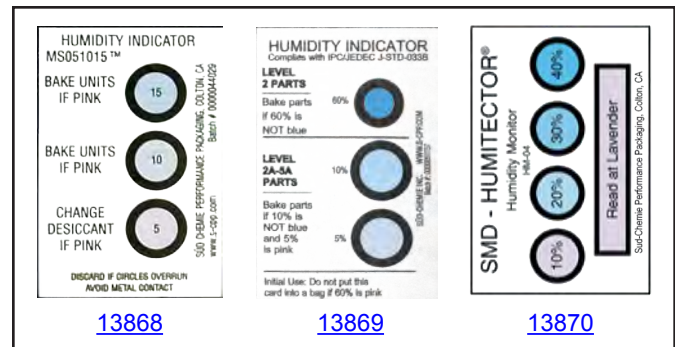


Figure 5. Humidity Indicator Cards

Item#	Card Size	Std. Package	Relative Humidity
<a href="#">13868</a>	2" x 3"	125 pcs/can	5/10/15
<a href="#">13869</a>	2" x 3"	125 pcs/can	5/10/60
<a href="#">13870</a>	2" x 3"	100 pcs/can	10/20/30/40

## COBALT-DICHLORIDE FREE HUMIDITY INDICATOR CARDS

**Cobalt-Dichloride Free Humidity Indicator (HI) Cards** provide electronic and semiconductor manufacturers with a JEDEC complaint humidity indicator card that is free of Cobalt-Dichloride, a chemical regulated under European Chemical Bureau (ECB) REACH-directives.

\*MIH - Maximum Interior Humidity.

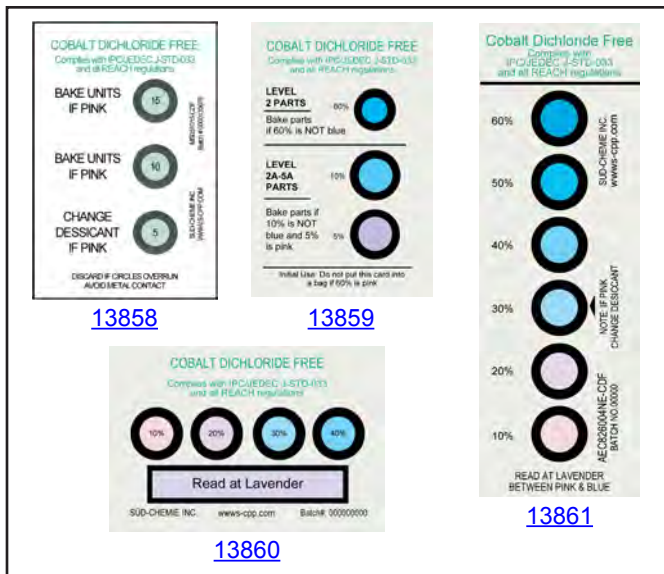


Figure 6. Cobalt-Dichloride Free Humidity Indicator Cards

Item#	Card Size	Std. Package	Relative Humidity
<a href="#">13858</a>	2" x 3"	125 pcs/can	5/10/15
<a href="#">13859</a>	2" x 3"	125 pcs/can	5/10/60
<a href="#">13860</a>	2" x 3"	100 pcs/can	10/20/30/40
<a href="#">13861</a>	1.56" x 4.75"	200 pcs/can	10/20/30/40/50/60

## Specifications

### Moisture Barrier Bag .0035" (.0889mm)

#### Electrical Properties

- Resistance of polyester layer  
< 1 x 10<sup>11</sup> ohms per ANSI/ESD STM11.11
- Resistance of polyethylene layer  
< 1 x 10<sup>11</sup> ohms per ANSI/ESD STM11.11
- EMI Shielding (dB between 1 and 10 GHz)  
45dB
- Energy Penetration <20nJ per ANSI/ESD S11.31

#### Physical Properties

- Thickness (nominal)  
0.0035" (.0889mm) per MIL-STD-3010 1003
- MVTR (grams / 100 in<sup>2</sup> / 24 hrs, 100°F) ≤0.02 per ASTM F 1249
- Puncture Strength (lb)  
≥20 per FTMS 101-C, MIL-STD-2065

For more detailed information, see Drawing [13806](#).

### Foil Moisture Barrier Bag .0040" (.1016mm)

#### Electrical Properties

- Resistance of polyester outer layer  
< 1 x 10<sup>11</sup> ohms per ANSI/ESD STM11.11
- Resistance of polyethylene inner layer  
< 1 x 10<sup>11</sup> ohms per ANSI/ESD STM11.11
- EMI Shielding (dB between 1 and 10 GHz)  
45dB
- Energy Penetration <20nJ per ANSI/ESD S11.31

#### Physical Properties

- Thickness (nominal)  
0.0040" (.1016mm) per MIL-STD-3010 2065
- MVTR (grams / 100 in<sup>2</sup> / 24 hrs, 100°F)  
≤0.0003 per ASTM F 1249
- Puncture Strength (lb)  
≥25 per FTMS 101-C, MIL-STD-3010 2065

For more detailed information, see Drawing [13950](#).

### High Moisture Barrier Bag .0065" (.1651mm)

#### Electrical Properties

- Resistance of polyester outer layer  
< 1 x 10<sup>11</sup> ohms per ANSI/ESD STM11.11
- Resistance of polyethylene inner layer  
< 1 x 10<sup>11</sup> ohms per ANSI/ESD STM11.11
- EMI Shielding  
45dB
- Energy Penetration <20nJ per ANSI/ESD S11.31

#### Physical Properties

- Thickness (nominal)  
0.0065" (.1651mm) per MIL-STD-3010 1003
- MVTR (grams / 100 in<sup>2</sup> / 24 hrs, 100°F)  
0.005 per ASTM F 1249
- Puncture Strength (lb)  
30 per FTMS 101-C, MIL-STD-3010 2065

For more detailed information, see Drawing [13760](#).

See Bag Selection Chart Click [HERE](#).

See Shielding Bag Storage at [TB-7057](#).

### **Limited Warranty**

Desco expressly warrants that for a period of one (1) year from the date of purchase, Desco shielding bags and components will be free of defects in material (parts) and workmanship (labor). Within the warranty period, the product will be tested, repaired, or replaced at Desco's option, free of charge. Call our Customer Service Department at 909-627-8178 (Chino, CA) or 781- 821-8370 (Canton, MA) for a Return Material Authorization (RMA) and proper shipping instructions and address. 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 Desco factory. Warranty repairs will take approximately one week.

### **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 Desco 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 2 and REACH Statement**

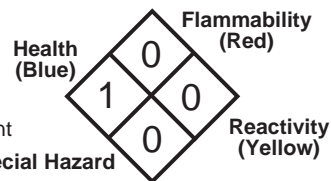
None of the RoHS 2 restricted materials or REACH substances of very high concern as of 2013/06/20 are intentionally added in manufacturing this product. Ref: European Union Directive 2011/65/EU and Regulation (EC) No. 1907/2006/CE. See Desco [Limited Warranty at Desco.com](#).

## Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910. 1200. Standard must be consulted for specific requirements.

### NFPA Designation 704

Degree of Hazard:  
4 = Extreme  
3 = High  
2 = Moderate  
1 = Slight  
0 = Insignificant



## SECTION 1 — IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

### Product information

Commercial Product Name: Reversible Humidity Indicator  
Company: Desco  
3651 Walnut Ave.  
Chino, CA. 91710  
Phone: (909) 627-8178  
Fax: (909) 627-7449

## SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Cobalt dichloride on cardboard

Components	CAS-No.	Symbol(s)	R-phrases(s)	Concentration
cobalt(II) chloride	7646-79-9	T, N	R49, R22, R42/43, R50-53	>0.10 - <1.00%

## SECTION 3 — HAZARDS IDENTIFICATION

None under normal use

## SECTION 4 — FIRST AID MEASURES

General advice: None  
Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes  
Skin contact: Wash off with soap and plenty of water  
Inhalation: N.A.  
Ingestion: Rinse mouth  
Notes to physician  
Treatment: None

## SECTION 5 — FIREFIGHTING MEASURES

Suitable extinguishing media: Use extinguishing measures appropriate to the environment.  
Extinguishing media which must not be used for safety reasons: None

## SECTION 6 — ACCIDENTAL RELEASE MEASURES

Environmental precautions: Do not flush into surface water or sanitary sewer system  
Methods for cleaning up: Take up contaminated material by mechanical means, load into clean containers, and dispose of in accordance with legal regulations

## SECTION 7 — HANDLING AND STORAGE

### Handling

Safe handling advice: No special precautions required

### Storage

Requirement for storage area and containers: Keep in a dry place

---

## SECTION 8 — COMPOSITION/INFORMATION ON INGREDIENTS

### Components with workplace parameters

Components	CAS-No.	Value	Remarks	Basis
cobalt(II) chloride	7646-79-9	0.5 mg/m <sup>3</sup>	Inhalable dust, Sensitizer	TRGS900, TRK

### Personal protective equipment

Respiratory protection: N.A.  
Hand protection: Protective gloves  
Eye protection: N.A.  
Skin and body protection: Not required  
Hygiene measures: Wash off with warm water and soap  
Protective measures: Prophylactic use of protective ointment (barrier cream) is recommended.

---

## SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

Form: Plates  
Color: Pink to blue  
Odor: None

### Other data

Water solubility: Partly soluble, max. 600 ppm CoCl<sub>2</sub> can be leached out  
pH: 4.5 - 6

---

## SECTION 10 — STABILITY AND REACTIVITY

Hazardous reactions: (Conditions to avoid) hygroscopic  
Hazardous reactions: (Materials to avoid) Alkali metals  
Information about decomposition: No decomposition if stored and applied as directed

---

## SECTION 11 — STABILITY AND REACTIVITY

### Acute toxicity

Acute oral toxicity: LD50  
Dose: 766mg/kg  
(cobalt (II)chloride-hexahydrate)

Irritation, Sensitization, Other Data Toxicology

Sensitization: Result: May cause sensitization by skin contact.  
Repeated dose toxicity: No data available

---

## SECTION 12 — ECOLOGICAL INFORMATION

Decomposition: Not readily biodegradable

### Ecotoxicity effects

Further information  
Ecotoxicity: No data available

Heavy metals: Heavy metals should not be released into the environment.

Additional information  
about ecology: Heavy metals should not be released into the environment

---

## SECTION 13 — DISPOSAL CONSIDERATIONS

Product: Dispose as special waste. Can be landfilled or incinerated, when in compliance with the Environmental Protection (Duty of Care) Regulations 1991.

---

## SECTION 14 — TRANSPORT INFORMATION

Land transport: Not classified as dangerous in the meaning of transport regulations.

Sea transport: Not classified as dangerous in the meaning of transport regulations.

Air transport: Not classified as dangerous in the meaning of transport regulations.

---

## SECTION 15 — REGULATORY INFORMATION

General advice: The product does not need to be labeled in accordance with EC directives or respective national laws.

Hazardous components which must be listed on the label:

Preparation: Not applicable  
Other information: Follow the usual precautions required when handling chemicals.

---

## SECTION 16 — REGULATORY INFORMATION

Responsible for SDS: Environmental Protection Contact person: Dep. CEQ Tel.08761/82-654

The information presented herein is believed to be accurate, but is not warranted. It does not represent any assurance of properties of the product. The specifications are to be drawn from the corresponding leaflet.

A vertical bar (|) in the left margin indicates an amendment from the previous version.

### Legend

N.A.: Not applicable  
N.AV.: Not Available  
N.R.: Not relevant