HUMIDITY INDICATOR CARDS

An integral part of a complete moisture barrier packaging assembly is the Humidity Indicator Card. High relative humidity can cause significant, possibly irreparable damage to sensitive equipment, supplies, and products. To ensure dehumidification measures work, humidity indicator cards measure the relative humidity (RH) inside sealed packages to allow immediate visual inspection of whether it has sustained unsafe humidity levels.

The Monitor Card contains 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.

Humidity Monitor cards are sold in cans. The 2" x 3" blotting paper cards indicate relative humidity. Humidity Indicator Cards should be inserted and sealed within an Moisture Barrier Bag with the desiccant packs.

<table>
<thead>
<tr>
<th>Item#</th>
<th>Unit Size</th>
<th>Std. Package</th>
<th>Relative Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>13868</td>
<td>2&quot; x 3&quot; Card</td>
<td>125 pieces/can</td>
<td>5/10/15</td>
</tr>
<tr>
<td>13869</td>
<td>2&quot; x 3&quot; Card</td>
<td>125 pieces/can</td>
<td>5/10/60</td>
</tr>
<tr>
<td>13870</td>
<td>2&quot; x 3&quot; Card</td>
<td>100 pieces/can</td>
<td>10/20/30/40</td>
</tr>
</tbody>
</table>

The 13868, 13869 and 13870 humidity indicator cards meet the requirements of MIL-I-8835 and IPC/JEDEC J-STD-033C.

“Humidity Indicator Card (HIC) A card on which a moisture-sensitive chemical is printed such that it will change color from blue to pink when the indicated relative humidity is exceeded. This is packed inside the moisture-sensitive bag, along with the desiccant, to aid in determining the level of moisture to which the moisture-sensitive devices have been subjected.” (IPC/JEDEC J-STD-033C section 1.5.7)

Application

1. The humidity indicator spots will change from blue (dry condition) to pink (humid condition) as the relative humidity changes in the volume of air surrounding the indicator.
2. Relative humidity is indicated at the lavender color.
3. Indicator spots will change within eight hours of being exposed to a change in relative humidity.

4. The humidity indicator spots are reversible, and the pink spots will change back to blue when the volume of air is dried. Humidity indicator cards with pink or lavender spots can be returned to a blue color by placing indicators in a sealed container with 33 grams (1 unit) of desiccant for four hours. However, we do not recommend reversing or using cards that have been exposed to high humidity in excess of 60%
5. The highest humidity indicator spot should be blue before being put into use.
6. The humidity indicator will be at its most accurate at a temperature of 23 °C (73 °F).
7. Avoid contact with indicator spots. Wash any irritated areas with clean water.

Handling

1. Store humidity indicators in original sealed container with desiccant when possible before using, verify that indicator spots have not changed color
2. Replace desiccant bag after three openings of container.
3. Store in dry, cool area.
4. Keep indicators out of direct sunlight.
5. Keep humidity indicators away from water or steam.
6. Ammonia gases will damage humidity indicators.

Specifications and procedures subject to change without notice.
5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Use extinguishing media appropriate to the environment.

Suitable extinguishing media which must not be used: water.

Emralising media which must not be used for safety reasons: None

Suitable extinguishing media: Use extinguishing measures appropriate to the environment.

In case of fire, use water, foam, or any other extinguishing media appropriate to the environment.

6. ACCIDENTAL RELEASE MEASURES

Environmental precautions: Methods for cleaning up:
- Avoid contact with eyes, skin, and clothing.
- Take up spilled material by mechanical means.
- Transport to safe containers and dispose of in accordance with legal regulations.

Suitable personal protective equipment:
- Respiratory protection: N.A.
- Eye protection: N.A.
- Skin protection: Protective ointment (barrier cream) is recommended.
- Hand protection: Protective gloves
- Respiratory protection: N.A.
- Eye protection: N.A.
- Skin protection: Wash off with soap and plenty of water
- Hand protection: Protective gloves

Personal protective equipment:
- Respiratory protection: N.A.
- Eye protection: N.A.
- Skin protection: Wash off with soap and water and soap
- Hand protection: No protective equipment

7. HANDLING AND STORAGE

Handling:
- No special precautions required.

Safe handling: None

Safe handling advice: No special precautions required

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

Requirements for storage area: N.A.

Temperature and humidity: 15 - 30°C

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical name:
- Cobalt chloride on cardboard
- Cobalt dichloride

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:
- Color: Pink to blue

Appearance:
- Color: N.A.

Water solubility:
- Parity soluble, max. 600 ppm CoCl₂ can be leached

pH: 4.5 - 6

10. STABILITY AND REACTIVITY

Stability:
- Stable under normal use.

Reactivity:
- Dehydration: No decomposition if stored and applied as directed.

Decomposition: Not readily biodegradable

11. TOXICOLOGICAL INFORMATION

Acute toxicity:
- LD₅₀: 13.3 mg/kg (oral), 2400 mg/kg (intraperitoneal)

Acute oral toxicity:
- LD₅₀: 766 mg/kg

Acute dermal toxicity:
- LD₅₀: Not available

Acute respiratory toxicity:
- LD₅₀: Not available

Acute skin contact:
- LD₅₀: Not available

Eco-toxicity:
- Heavy metals: Heavy metals should not be released into the environment.

12. ECOLOGICAL INFORMATION

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Suitable personal protective equipment:
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- Skin protection: Wash off with soap and plenty of water
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Eco-toxicity:
- Heavy metals: Heavy metals should not be released into the environment.

12. ECOLOGICAL INFORMATION

Accidental release:
- No decomposition if stored and applied as directed.

Decomposition: Not readily biodegradable

Eco-toxicity effects:
- Heavy metals: Heavy metals should not be released into the environment.

13. DISPOSAL CONSIDERATIONS

Product:
- Disposal as special waste. Can be biodegraded or incinerated, when in compliance with the European Waste Framework Directive (WFD) 2008/98/EC Articles 12 and 14.
- Disposal: Landfills, incineration.

14. TRANSPORT INFORMATION

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

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:
- None.

Preparation:
- No applicable.

Other information:
- Follow the usual precautions required when handling chemicals.

16. OTHER INFORMATION

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

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.A.V.: Not Available
- N.R.: Not relevant
- N.C.: Not necessary

Material Safety Data Sheet
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NFPA Designation 704
- Health (Blue): 2
- Flammability (Red): 01
- Reactivity (Yellow): 0
- Special Hazard: 0

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