

## COBALT-DICHLORIDE FREE HUMIDITY INDICATOR CARDS

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

The Humidity Indicator 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 Indicator 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.

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

The [13858](#), [13859](#), [13860](#) and [13861](#) humidity indicator cards meet the requirements of MIL-I-8835 and IPC/JEDEC J-STD-033A.

"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-033A section 1.5.7)

## Application

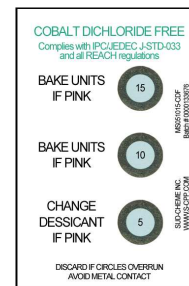
1. The humidity indicator spots will change from blue (dry condition) to pink (humid condition) as the relative humidity changes in the volume of air surrounding the indicator.
2. Relative humidity is indicated at the lavender color.
3. Indicator spots will change within eight hours of being exposed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

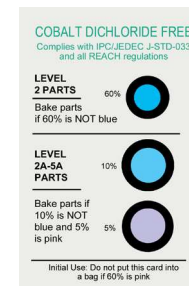
1. Store humidity indicators in original sealed container with desiccant when possible before using, verify that indicator spots have not changed color
2. Replace desiccant bag after three openings of container.
3. Store in dry, cool area.
4. Keep indicators out of direct sunlight.
5. Keep humidity indicators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



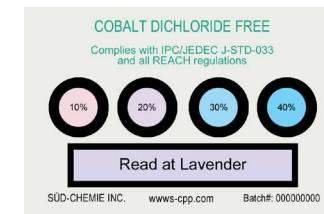
Made in the United States of America



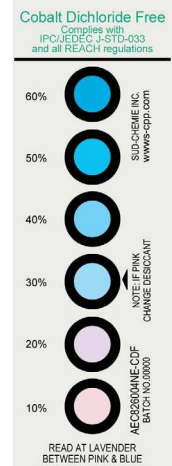
13858



13859



13860



13861

Specifications and procedures subject to change without notice.

## COBALT-DICHLORIDE FREE HUMIDITY INDICATOR CARDS



DESCO WEST: 3651 WALNUT AVE., CHINO, CA 91710 WEB SITE: [Desco.com](http://Desco.com)  
 PHONE (909) 627-8178  
 DESCO EAST: ONE COLGATE WAY, CANTON, MA 02021-1407  
 PHONE (781) 821-8370

DRAWING NUMBER  
13859

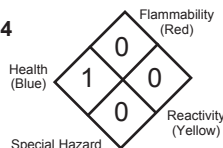
DATE:  
January  
2014

## 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



## HMIS:

Health: 0                      Flammability: 0                      Reactivity: 0

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Hazardous ingredients:

Component	CAS-No.	Concentration
Cobalt dibromide	7789-43-7	< 1 %

## 4. FIRST AID MEASURES

After inhalation: Remove victim to fresh air.  
Consult physician if irritation or other symptoms occur.

After contact with skin: Immediately wash thoroughly with soap and water for at least 15 minutes.  
Seek medical attention if pain or irritation occurs.

After contact with eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids.  
Seek medical attention.

After ingestion: No emergency care is anticipated. If large quantities are ingested, call your local Poison Control Center or physician. Call your local Poison Control Center (In the U.S. call 1-800-222-1222).

Advice to doctor/Treatment:  
Treat the patient symptomatically.

## 5. FIRE FIGHTING MEASURES

Flashpoint: This information is not applicable for solids.

Hazardous combustion products:  
In the event of fire the following can be released:  
Hydrogen bromide (HBr)  
breathable cobalt/cobalt oxide dust

Extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special fire fighting procedure:  
Wear full protective clothing and NIOSH/MSHA-approved positive pressure, self-contained breathing apparatus.

Unusual fire and explosion hazards: None known

## 6. ACCIDENTAL RELEASE MEASURES

Steps to be taken in case of spill or leak:  
Scoop into suitable containers appropriate for either recovery or disposal to avoid exposure and to comply with applicable waste disposal regulations.  
Do not flush to sewer.

## 1. PRODUCT AND COMPANY IDENTIFICATION

### Product information

COMMERCIAL PRODUCT NAME: Reversible Humidity Indicator  
COMPANY: Desco  
3651 Walnut Ave.  
Chino, CA. 91710  
PHONE: (909) 627-8178  
FAX: (909) 627-7449  
TRADE NAME: HIC Card, AEC826004NE, CDF, 10-60%, G/B  
PRIMARY PRODUCT USE: Humidity Indicator

## 2. HAZARDS IDENTIFICATION

**Emergency overview:** Paper treated with chemical  
Poses little or no immediate hazard.

### Expected Route of entry:

Inhalation: Route of exposure unlikely  
Skin contact: No adverse effects expected.  
Sensitive individuals may develop irritation or allergic reaction.

Eye contact: Route of exposure unlikely.  
Rubbing eyes after handling material may cause irritation.  
Use of proper chemical hygiene should prevent exposure.

Ingestion: Route of exposure unlikely.  
Ingestion of large quantities may cause toxic effects.

Skin absorption: Route of exposure unlikely.

**Health effects of exposure:** Cobaltous Bromide ( 7789-43-7 )  
Cobalt dibromide : May cause serious eye irritation. Causes skin and respiratory irritation.  
Harmful if inhaled or swallowed. May be harmful in contact with skin.  
May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Possibly carcinogenic to humans (IARC Group 2B).

**Known effects on other illnesses:** No known effects on other illnesses for this product.  
**Listed carcinogen:** IARC: Yes  
NTP: No  
OSHA: No  
Other: No

Refer to Section 8 for more information.

## 7. HANDLING AND STORAGE

Advice on safe handling: Use of proper hygiene practices in the work place is recommended.  
Further info on storage conditions: Store in a dry area.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is 5 mg/m<sup>3</sup> for respirable fraction and 15 mg/m<sup>3</sup> for total dust. ACGIH exposure guidelines of less than 3 mg/m<sup>3</sup> (respirable) and 10 mg/m<sup>3</sup> (inhalable) have been established for particles (insoluble/poorly soluble) not otherwise specified (PNOS).

Respiratory protection: Follow facility guidelines.  
Hand protection: Wear suitable gloves.  
Wash thoroughly after handling.  
Eye protection: Follow facility guidelines in the absence of dusts.  
Other protective equipment: Use of proper hygiene practices in the workplace is recommended.  
Advice on system design: No special ventilation requirements.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Form: Plates  
Color: Blue to pink  
Odor: None  
Odor limit: Cannot be determined  
pH: Not determined  
Solubility in water: Slightly soluble  
Miscibility with water: Not tested  
Soluble in ...: Not tested  
Solubility / qualitative: Not tested  
Density: Not tested  
Melting point: Not determined  
Boiling point: Not determined  
Evaporation number: Not available.  
Vapor pressure: Not applicable  
Bulk density: Not determined  
Relative vapor density: Not determined  
Partitioning coef. octanol/water: No data available  
Loss on drying: Not Volatile

## 10. STABILITY AND REACTIVITY

Chemical stability: No decomposition if stored and applied as directed.  
Hazardous Polymerization: Will not occur.  
Conditions to avoid: None known.  
Conditions to avoid: Exposure to moisture (hygroscopic).

## 11. TOXICOLOGICAL INFORMATION

Other relevant toxicity information: There is no data available for this product.

## 12. ECOLOGICAL INFORMATION

Remarks: May cause long lasting harmful effects to aquatic life.  
Do not allow to enter ground water, waterways or waste water.

## 13. DISPOSAL CONSIDERATIONS

Waste disposal information: This product, if discarded as sold, is not a Federal RCRA hazardous waste. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations.  
RCRA hazardous waste: This product, if discarded as sold, is not a Federal RCRA hazardous waste.  
RCRA number: NONE

## 14. TRANSPORT INFORMATION

DOT: Not restricted  
IATA: Not restricted  
IMDG: Not restricted

## 15. REGULATORY INFORMATION

TSCA Status: All components of this product are listed or excluded from listing on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) Inventory.

SARA (section 311/312):  
Reactive hazard: No  
Pressure hazard: No  
Fire hazard: No  
Immediate/acute: Yes  
Delayed/chronic: Yes  
SARA 313 information: This product contains the chemical or chemicals listed below which are subject to the supplier notification requirements of Section 313 of the Superfund Amendments and Reauthorization Act of 1986 ("SARA") and the requirements of 40 CFR Part 372:

Component	CAS-No.	Concentration
Cobalt compound		< 1 %
Cobalt (and inorganic compounds as Co)	7440-48-4	< 0.27 %

**Clean Water Act:** Contains no known priority pollutants at concentrations greater than 0.1%.

**CERCLA information:** Contains ingredient(s) listed under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 40 CFR 302.. The metal compound(s) listed below is considered to be a CERCLA hazardous substance and may be subject to CERCLA/Superfund liability.. However, there is no specific listed CERCLA reportable quantity for the generic metal compound(s).

Component	CAS-No.	Percentage	RQ
Cobalt Compounds		< 1 %	0

they are appropriate for that use. No warranty, express or implied, is made regarding the accuracy of this data, the hazards connected with the use of the material, or the results to be obtained from the use thereof. We assume no responsibility for damage or injury from the use of the product described here in. Data provided here are typical and not intended for use as product specifications.

**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](#).

**16. OTHER INFORMATION**

State regulatory information:

This product does not contain chemical(s) known to the state of California to cause cancer, birth defects, or reproductive harm.

Label information:

WARNING!

POSSIBLE CANCER HAZARD: PRODUCT HAS BEEN CLASSIFIED AS IARC/2B - POSSIBLE HUMAN CARCINOGEN. MAY BE IRRITATING TO EYES, SKIN OR RESPIRATORY SYSTEM Prolonged or repeated inhalation may cause lung damage.

Avoid breathing dust. Avoid contact with eyes, skin and clothing. Avoid ingestion. Keep container closed. Prior to handling this product, please refer to the current MSDS for recommended protective equipment and detailed hazard and precautionary information.

INHALATION: If exposed to excessive levels of dust or fumes, remove to fresh air and get medical attention. Get medical attention if cough and other symptoms develop. INGESTION: If swallowed, call your local Poison Control Center (1-800-222-1222 in the U.S.) EYE CONTACT, immediately flush eyes with plenty of water for at least 15 minutes.

SKIN: Wash contacted skin with soap and water. Get medical attention if symptoms occur.

NFPA:

Health: 0      Flammability: 0      Reactivity: 0

This information is supplied under the OSHA Hazard Communication Standard, 29 CFR 1910.1200, and is offered in good faith based on data available to us that we believe to be true and accurate. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable to the material. However, each user should review these recommendations in the specific context of the intended use and determine whether