

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

In order to provide a complete moisture barrier packaging assembly, 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.



"...it is important to take possible temperature exposure into account when shipping electronic parts. It is particularly important to consider what happens to the interior of a package if the environment has high humidity. If the temperature varies across the dew point of the established interior environment of the package, condensation may occur. The interior of a package should either contain desiccant or the air should be evacuated from the package during the sealing process. The package itself should have a low WVTR." (ESD Handbook ESD TR20.20 section 5.4.3.2.2)

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	0.5
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

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

*To measure interior bag surface area, multiply length x width x 2

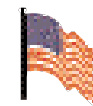
**MIH - Maximum Interior Humidity (%)

Desiccant packs are available from ESD Systems.com in the following unit sizes and standard packages:

Item #	Unit Size	Std. Package	Dimensions
32302	1/2 unit	Pail of 550	1.5" x 3"
32304	1 unit	Pail of 300	3" x 4"

Desiccant packs sold by ESD Systems.com meet the requirements of MIL-D-3464.

Fill Contents: Activated Clay
Paper: Tyvek



Made in America

Vapor Protection, Desiccant Pack

ESD SYSTEMS.com

432 NORTHBORO ROAD CENTRAL
MARLBORO, MA 01752-3170
PHONE (508) 485-7390
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Visit our online
library of Tech Drawings:
ESDSystems.com

DRAWING NUMBER
TD-32302

DATE
September
2008

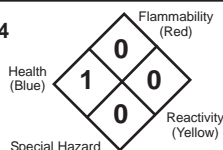
Material Safety Data Sheet

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

Health
(Blue)



SECTION I -- PRODUCT IDENTIFICATION AND THE COMPANY

Product information

Trade Name and Synonyms:
Company:

Desi Pak®
ESD Systems.com
432 Northboro Road Central,
Marlboro, MA. 01752-7390
(508) 485-7390
(508) 480-0257

Phone:
Fax:

Chemical Family:

Montmorillonite Clay Mineral
Smectite Clay Mineral
Bentonite
Calcium Aluminosilicate
(Ca)_x(Al_{2-x}Mgm)Si₄O₁₀(OH)₂nH₂O

Formula:

NFPA/HMIS

Health: 0
Fire: 0
Reactivity: 0
Specific Hazard: See Section X

SECTION II -- HAZARDOUS INGREDIENTS

Hazardous Components in the Solid Mixture

COMPONENT	CAS No.	% by Weight	OSHA/PEL	ACGIH/TLV
Montmorillonite Clay Mineral	1302-78-9	≥ 99	5.0 mg/m ³ in respirable form	5.0 mg/m ³ in respirable form
Silicon dioxide (Crystalline Quartz)	14808-60-7	<1%		
Respirable Dust		Not Detectable	0.1 mg/m ³	0.1 mg/m ³

INGREDIENT HAZARD STATEMENT - This product contains less than 1% crystalline quartz (CAS #14808-60-7), which is in a non-respirable form. The product is in granular form, and packed in bags for use as a desiccant. Therefore, no exposure to quartz or clay dust is anticipated under normal use of this product.

CARCINOGENICITY

NTP? No OSHA? No

Prolonged or repeated exposure may cause lung injury. Unless otherwise noted, all values are reported as 8-hour Time Weighted Averages (TWA's) and total dust (particulates only). All ACGIH TLV's refer to the 1989-90 Standards. All OSHA PEL's refer to 49 CFR Part 1910 Air Contaminants: Final Rule, January 19, 1989.

SECTION III -- PHYSICAL DATA

Appearance and Odor	Gray granules. No odor.
Melting Point:	N/A
Solubility in Water:	Insoluble
Bulk Density:	57-64 lbs./cu. ft.
Percent Volatile by Weight at 150° C:	<3.0%

SECTION IV -- FIRE EXPLOSION DATA

FIRE AND EXPLOSION HAZARD - Negligible fire and explosion hazard when exposed to heat or flame by reaction with incompatible substances.

FLASH POINT - Nonflammable.

FIREFIGHTING MEDIA - Dry chemical, water spray, or foam. For larger fires, use water spray fog or foam.

FIREFIGHTING - Nonflammable solids, liquids or gasses: Cool containers that are exposed to flames with water from the side until well after fire is out. For massive fire in enclosed area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of the tank due to fire.

SECTION V -- HEALTH HAZARD DATA

This material is normally packaged and contained in a bag. If the bag is open, the resulting dust is classified a nuisance dust, and may cause health hazards when inhaled, ingested or in contact with the eyes and skin. Prolonged inhalation may cause irritation to the upper respiratory tract and/or lung damage. If large amounts are ingested, intestinal disorders may occur. Contact with eye tissue may result in irritation.

Prolonged or repeated contact with the skin in the absence of proper hygiene may cause irritation.

Desi Pak® clay may contain a small amount of crystalline silica (quartz). Inhalation of crystalline silica in the respirable range in excess of the TLV may result in an increase in the risk of serious respiratory disease. Avoid breathing the dust. Use NIOSH/MSHA approved respirators when the TLV for crystalline silica may be exceeded.

FIRST AID (INHALATION) - Remove to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention immediately.

FIRST AID (INGESTION) - If large amounts have been ingested, give emetics to cause vomiting. Stomach siphon may be applied as well. Milk and fatty acids should be avoided. Get medical attention immediately.

FIRST AID (EYES) - Wash eyes immediately and carefully for 30 minutes with running water, lifting upper and lower eyelids occasionally. Get prompt medical attention.

FIRST AID (SKIN) - To avoid repeated or prolonged contact with this chemical, use good hygienic practices. Wash with soap and a large amount of water. Get medical attention if irritation or inflammation develops

SECTION VI - REACTIVITY DATA

REACTIVITY - Is stable under normal temperatures and pressures in sealed containers. Hazardous polymerization will not occur.

SECTION VII - SPILL OR LEAK PROCEDURES

Notify safety personnel of spills or leaks. Clean-up personnel need protection against inhalation of dusts or fumes. Eye protection is required. Vacuuming and/or wet methods of cleanup are preferred. Place in appropriate containers for disposal, keeping airborne particulates at a minimum. Clay is slippery when wet.

DISPOSAL - Consult application local, state, and federal regulations to select the method of disposal.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION - Provide a NIOSH/MSHA jointly approved respirator in the absence of proper environmental control. Contact your safety equipment supplier for proper mask type.

VENTILATION - Provide general and/or local exhaust ventilation to keep exposure below the TLV. Ventilation used must be designed to prevent spots of dust accumulation or recycling of dusts.

PROTECTIVE CLOTHING - Wear protective clothing, including long sleeves and gloves, to prevent repeated or prolonged skin contact.

EYE PROTECTION - Chemical splash goggles designed in compliance with OSHA regulations are recommended. Consult your safety equipment supplier.

SECTION IX - STORAGE PRECAUTIONS

Store in a dry, well-ventilated place, below 115 degrees F., away from a heat source. Keep in tightly closed container. Protect container from physical damage. Always reseal container and protective moisture barrier liner after use.

SECTION X

HMIS (Hazardous Materials Identification System) for this product is as follows:

Health Hazard	0
Flammability	0
Reactivity	0
Personal Protection	HMIS assigns choice of personal protective equipment to the customer, as the raw material supplier is unfamiliar with the condition of use.

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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 ESDsystems.com.