# Making your own Desiccant Packs for Long-term Firearm Storage

**By Burt Gummer**

"I feel I have been denied critical, need-to-know information!" (Tremors II)

With the political climate such as it is today, those of us who had enough for-sight to acquire firearms for the eventual need of preservation and survival have realized that long term storage will become a necessity. It will become a necessity because those in power would like the populous as dependant and passive as possible. This of course includes the right to keep and bear arms which the morons on the left & in the White House consider such a pesky little roadblock to the creation of the perfect socialist society. Damn those 2nd amendment rights!!

***"35. Do you support state legislation ???***
***a.*** *ban the manufacture, sale or possession of handguns? - Yes.*
***b.*** *ban the manufacture, sale or possession of assault weapons? - Yes.*
***c.*** *mandatory waiting periods with background checks for weapons? - Yes."*
***Barack Obama*** *-* ***Independent Precinct Organization Questionnaire.***
***1996 Independent Voters of Illinois***

*"Even if I want to take them away, I don't have the votes in Congress,''*
***Barack Obama*** *-* ***Wall Street Journal*** ***September 5, 2008***

This means that at some point some or all of the firearms you own will need long-term storage either in one place or more strategically in several places. Real-world experiments (which can be found on the net) in long-term firearm storage have been made possible with the use of Desiccant Packs. These experiments have proven safe and efficient storage of firearms without rust for more than fifteen years when done properly.

See "How to Bury a gun and Ammo" to learn more about this technique to ensure your firearms are safe when Big Brother Barack comes knocking…

It's hard to find brand-new desiccant packs, especially now! You can buy canisters for gun lockers and so forth, but they're very expensive. Some gun stores sell gun-locker canisters that are about the size of an Altoids tin for something like $15.00. Also expensive are the little packets you see occasionally on sale in surplus catalogues. These can be upwards of $15.00 or more for a dozen.

**Materials you will need:**

- Tea bags held closed by a staple.
- Or, Coffee filter- Just as a Teabag, a coffee filter will allow moisture to reach the silica, while keeping it away from the items you're storing.
- Or. Any dry porous, fibrous fabric from any source.

**And:**

- Silica gel bought in bulk (see below)
- A 1 tsp measuring spoon or similar device. (BTW: 2 Tsp. = 1 Ounce = 28 Grams)
- A small dish or paper plate
- A stapler, and or tie wire for filters or cut fibrous cloth.
- A small pair of pliers

Silica gel in bulk is easier to find than you might imagine; but like all things worth finding, you must know where to look:

- Go to the art stores in your town. You know; Michael's or Hobby Lobby. If you don't know where it is or don't think you have one in your town, ask someone who is into arts and crafts. When you get there ask them where they keep the stuff for preserving flowers. A pound can cost around $5.00 or so.
- Another source is the Pet store! "Tidy Cats Crystals" is 100% Silica Gel beads. You can find this at Petsmart, Petco or even Walmart in a quantity that will last years, (3.5 lb jug)


# MATERIAL SAFETY DATA SHEET

| IDENTITY | DATE PREPARED: |
|---|---|
| Tidy Cats® Crystals Cat Box Filler | 12/4/02 |
| **SYNONYMS, CHEMICAL NAMES, COMMON NAMES** | **CAS REGISTRY NO.** |
| Silica Gel, Silicic Acid, Synthetic Amorphous Silica, Amorphous Silicon Dioxide | 112926-00-8 |

## SECTION I - MANUFACTURER INFORMATION

**MANUFACTURER'S NAME**
Nestlé Purina PetCare Company

**ADDRESS**
Checkerboard Square
St. Louis, MO. 63164

**TELEPHONE NUMBER FOR INFORMATION**
Customer Service: 1-800-835-6369

## SECTION II - INGREDIENTS

| COMPONENTS | OSHA PEL | ACGIH TLV | %/wt. |
|---|---|---|---|
| Silica Gel | 6 mg/m3 (total dust) | 10 mg/m3 (total dust) | 100 |
| | (20 mppcf) | | |
| | | | |
| | | | |

Remaining components, if any, are not hazardous or hazardous components are present at less than 1% (0.1% for carcinogens).

## SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

| | | | |
|---|---|---|---|
| **BOILING POINT** | n.a. | **SPECIFIC GRAVITY ($H_2O$ = 1)** | 0.4 - 0.5 |
| **VAPOR PRESSURE (mm Hg)** | n.a. | **MELTING POINT** | n.a. |
| **VAPOR DENSITY (Air = 1)** | n.a. | **EVAPORATION RATE (Butyl Acetate = 1)** | n.a. |
| **SOLUBILITY IN WATER (% by wt.)** | Negligible | | |
| **APPEARANCE AND ODOR** | White with blue flecks; no odor to slight fragrant odor | | |

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

| FLASH POINT | FLAMMABLE LIMITS | LEL | UEL |
|---|---|---|---|
| Nonflammable | n.a. | n.a. | n.a. |

**EXTINGUISHING MEDIA**
Use extinguishing media suitable for surrounding fire.

**SPECIAL FIRE FIGHTING PROCEDURES**
n.a.

**UNUSUAL FIRE AND EXPLOSION HAZARDS**
None

## SECTION V - REACTIVITY DATA

The information and recommendations set forth herein are made in good faith and are believed to be accurate as of the date of preparation. Nestlé Purina PetCare Co. makes no warranty, either express or implied, with respect to this information and disclaims all liability from reliance on it.

 | n.a. = Not Applicable

Once home, assemble everything in one place; the dining room table if you're brave, the workbench if you're not, the coffee table in the living room if you're foolhardy. Upon taking your first teabag out of its paper pouch—the Russians call it "Postman's Tea" because it comes in envelopes—you will notice that it's held closed with the World's Smallest Staple.

This you will remove with the pliers, prying apart one tiny arm at a time. You could just rip it out but you want your finished product to have a workmanlike appearance, so take your time. It's not difficult and comes out with next to no effort. Drop it in the dish or paper plate.

You will also notice, if you're using Lipton bags, that they are a sort of cheesecloth tube (I don't know what the material is but it looks like cheesecloth and it isn't really that important anyway), folded in half with tea on both sides.

Unfold the bag, and dump the tea out onto the paper plate. Shake the little bits out but it isn't necessary to get every last particle.

You could measure the amount of tea in the bag and replace it with a like amount of silica gel. Or you could take my word for it when I tell you that there is about a teaspoon's worth of tea in the bag. It doesn't look like much until you remember that it's one teaspoon's worth of dry tea in the bag; after steeping in water, the contents swell up to about three times their normal volume, or about a tablespoon's worth.

The upshot is that the bag will hold much more in Silica than it does in tea.

For my purpose, I split the difference and poured one teaspoon of silica gel in each half. It fits quite nicely.

You may put less or more in depending on how much silica gel you want in your pack or how much room you have in the space where the pack is going. **One word of caution: The thickness of any gel container should be less than two inches because Silica Gel is most effective when maximum surface area is exposed and any beads deeper than two inches will not absorb moisture within the container.**

**SCIENCE & MEASUREMENTS:**

**Silica Gel**- A form of silica manufactured from sodium silicate and sulfuric acid. Like Clay, Silica Gel is non-hazardous (if your Dog or Boy eats it, they won't die.) and is capable of adsorbing 40% of its weight in water vapor at 100% humidity. Silica Gel has a porous molecular structure that closely resembles a sponge, and has the highest capacity of any commercial desiccant for moisture adsorption. It has an almost indefinite shelf life if stored in airtight conditions. It can be regenerated and reused if required. Gently heating silica gel will drive off the adsorbed moisture and leave it ready for reuse.

A "**Unit**" of Silica gel is typically 28 grams, or roughly One Ounce. Standard unit bag sizes purchased from most retailers are 1/6, 1/3, 1/2, 1, 2, 4, 8, 16, and 80 units.

**Point of Reference:**

**One Unit** = will protect 2 cubic foot area. Most effectively used in multiples scattered evenly throughout the safe, tool box, drawer, safety deposit box, etc. This is a 12" x 12" x 24" area or roughly the size of a steel Sea Chest. **And as mentioned before; 2 Tablespoons = 1 Ounce = 28 Grams = 1 "Unit"**

**Desiccant Required (in units):**

The following desiccant requirement chart for unit size bags shows the amount of Desi-Pak (clay desiccant) or Sorb-It (silica gel desiccant) that you need for any given product or package.

To use, simply:

1) Determine how your item is packaged. Most sealed packages fall within two categories. A) Plastic bags or other flexible barrier materials. B) RIgid containers made of plastic or metal and drums made of fibers.

2) Calculate the volume of your package in either square feet/inches, gallons or cubic feet/inches.

3) Match the calculated volume of your package with the appropriate column below.

4) The far right column indicates the amount of desiccant your package requires.

| **DESICCANT UNITS REQUIREMENT CHART FOR MEDIUM TO LARGE PRODUCTS, PACKAGES OR AREAS** | | | | | |
|---|---|---|---|---|---|
| **Container Size** | | | | | |
| **Moisture Sealed Plastic Bags or Flexible Barrier Materials** | | **Sealed Barrier Coated Fiber Drums or Rigid Metal Containers** | | | **Units of Desiccant Required** |
| **Square Feet** | **Square Inches** | **Gallons** | **Cubic Feet** | **Cubic Inches** | **Desi-Pak or Sorb-It** |
| 0.1 | 15 | 1.1 | 0.14 | 237 | 1/6 |
| 0.2 | 30 | 2.1 | 0.28 | 476 | 1/3 |
| 0.3 | 45 | 3.2 | 0.42 | 714 | 1/2 |
| 0.6 | 90 | 6.2 | 0.83 | 1,428 | 1 |
| 1.3 | 180 | 12.5 | 1.67 | 2,856 | 2 |
| 1.9 | 270 | 18.7 | 2.50 | 4,284 | 3 |
| 2.5 | 360 | 25.0 | 3.33 | 5,712 | 4 |
| 3.1 | 450 | 31.2 | 4.16 | 7,140 | 5 |
| 3.8 | 540 | 37.4 | 5.00 | 8,568 | 6 |
| 4.4 | 630 | 43.6 | 5.83 | 9,996 | 7 |
| 5.0 | 720 | 50.0 | 6.66 | 11,424 | 8 |
| 5.6 | 810 | 56.1 | 7.50 | 12,852 | 9 |

| | | | | | |
|---|---|---|---|---|---|
| 6.3 | 900 | 62.3 | 8.33 | 14,280 | 10 |
| 7.5 | 1,080 | 74.8 | 10.00 | 17,136 | 12 |
| 8.8 | 1,260 | 87.3 | 11.66 | 19,992 | 14 |
| 10.0 | 1,440 | 99.7 | 13.32 | 22,850 | 16 |
| 20.0 | 2,880 | 199.4 | 26.64 | 45,700 | 32 |
| 50.0 | 7,200 | 498.5 | 66.65 | 114,250 | 80 |
| 100.0 | 14,400 | 997 | 133.30 | 228,500 | 160 |

1) Calculate the weight of your dunnage* in either grams, ounces or pounds.

2) Match the calculated weight of your dunnage with the appropriate column below.

3) The far right column indicates the amount of additional desiccant your package requires.

| **DUNNAGE COMPENSATION CHART** | | |
|---|---|---|
| **Weight of Dunnage** | | **Units of Desiccant Required** |
| **Wood and Cellulose** | **Synthetic Foams and Rubber** | **Desi-Pak or Sorb-It** |
| 9.5 g | 5.3 oz. | 1/6 |
| 18.9 g | 10.7 oz. | 1/3 |
| 1 oz. | 1 lb. | 1/2 |
| 2 oz. | 2 lbs. | 1 |
| 4 oz. | 4 lbs. | 2 |
| 6 oz. | 6 lbs. | 3 |
| 8 oz. | 8 lbs. | 4 |
| 10 oz. | 10 lbs. | 5 |
| 12 oz. | 12 lbs. | 6 |
| 14 oz. | 14 lbs. | 7 |
| 1 lb. | 16 lbs. | 8 |
| 1.1 lbs. | 18 lbs. | 9 |
| 1.3 lbs. | 20 lbs. | 10 |
| 1.5 lbs. | 24 lbs. | 12 |
| 1.8 lbs. | 28 lbs. | 14 |
| 2.0 lbs. | 32 lbs. | 16 |
| 2.5 lbs. | 40 lbs. | 20 |
| 3.8 lbs. | 60 lbs. | 30 |
| 5.0 lbs. | 80 lbs. | 40 |
| 6.3 lbs. | 100 lbs. | 50 |
| 7.5 lbs. | 120 lbs. | 60 |
| 8.8 lbs. | 140 lbs. | 70 |
| 10 lbs. | 160 lbs. | 80 |

*Dunnage: Packaging material used as padding or bracing to protect product from damage during shipping. This material will give off moisture while in the package.

**Desiccant Required (in grams)**

To use: Select container size and read off required amount of desiccant.

| DESICCANT GRAMS REQUIREMENT CHART FOR SMALL PRODUCTS, PACKAGES OR AREAS | | | | | |
|---|---|---|---|---|---|
| | Required Amount (in grams) | | | | |
| | Packets and Canisters | | | | |
| **Canister Size** | **Desi-Pak (Clay)** | **Sorb-It or Sorb-It Indicating (Silica Gel)** | **Tri-Sorb (Molecular Sieve)** | **Getter (Odor/Gas Adsorbent)** | **2-in-1 ( Moisture/ Odor/Gas Adsorbent)** |
| 30 cc | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| 40 cc | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| 50 cc | 1/2 | 1/2 | 1/2 | 1/4 | 1/4 |
| 60 cc | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 |
| 75 cc | 3/4 | 3/4 | 3/4 | 1/2 | 1/2 |
| 100 cc | 1 | 1 | 1 | 1 | 1 |
| 150 cc | 1 | 1 | 1 | 1 | 1 |
| 200 cc | 2 | 2 | 2 | 2 | 2 |
| 300 cc | 2 | 2 | 2 | 2 | 2 |
| 400 cc | 3 | 3 | 3 | 2 | 3 |
| 500 cc | 3 | 3 | 3 | 2 | 3 |
| 750 cc | 5 | 5 | 5 | 2 | 5 |
| 950 cc | 5 | 5 | 5 | 5 | 5 |

**A WORD OF CAUTION:**

Silica gel is of course very dry, VERY slick and comes in little ball-shaped grains, about half the size of a pepper corn, that bounce and roll crazily when loose. Some care is necessary not only spooning the stuff out of the bag or tub and into your teabags, but also in opening the bags or tubs for the first few times. 1lb bags are packed VERY full. Carelessly opening these containers the first time will cost you about an hour vacuuming all the little crystals up off the floor.

To finish, simply fold the ends up like they were before and staple. Remember to close the tub or bag as carefully as you opened it.

It’s a fine thing for a larger volume container such as a PVC tube, a larger ammo can or a small gun cabinet.

Estimating the cost of tea bags at $2.00 per box of 20 (get ‘em on sale), the cost of silica gel at $5.00 a pound and a penny per staple; and that (conservatively) I could get a hundred desiccant packs out of said one pound bag, the cost per desiccant pack is around 14¢ apiece. Better than the $4.99 per four or five you sometimes see in the surplus catalogues. They each take about a

minute to make, start-to-finish, so it's well worth the time, especially if you have several to put together. They are just as reusable as surplus ones and can be dried the same way.

**RECONDITIONING SILICA GEL**

The most efficient method of removing moisture is with heat. Although silica gel has a very high melting temperature (1600º C), it will lose its chemically bound water and hygroscopic properties if heated above 300º C. The principle impact of a lower heat of regeneration is that a longer time is required to dry the gel and there is less potential for the degradation of silica gel properties.

**Conventional Oven:** Spread loose gel to a depth of no more than ½ inch in a shallow, heat-resistant pan. Set oven to 150 degrees Fahrenheit, and heat gel for four hours. Temperature and time may vary depending on the gel's moisture content, the RH required and the type of gel used.

**Microwave Oven:** Spread loose gel in a shallow glass pan to a depth of no more than ½ inch. Heat in microwave for two minutes on high. Cool gel for one minute outside oven. Repeat 10 times or until dry.

**SUPPLIERS:**

http://www.silicagelpackets.com/

http://www.silicagelco.com/

http://www.theruststore.com/

http://texastechnologies.com/index.htm