

## **MOISTURE LOSS ALLOWANCE, DETERMINING WHEN TO APPLY**

Most federal agencies require commodities under their jurisdiction be given consideration for reasonable moisture loss in good distribution.\*

The Federal Food and Drug Administration (FDA); United States Department of Agriculture (USDA); United States Department of Treasury, Bureau of Alcohol, Tobacco and Firearms (UST); and Federal Trade Commission (FTC) allow for reasonable moisture loss occurring in the course of good distribution practices. The United States Supreme Court Rath decision requires local officials to recognize reasonable moisture loss during distribution for items regulated by these federal agencies.

When no other agency has concurrent jurisdiction, there is no moisture loss allowance for commodities regulated by California (CA), the Environmental Protection Agency (EPA), or USDA Seed Laws.

The list, beginning on page 6-2, indicates commodities controlled by each agency. Any commodity class with (CA) or (EPA) after it does **not** require moisture loss allowance consideration. Any commodity class with (FDA), (UST), (FTC), or (USDA), with the exception of agricultural seed, require that a moisture loss allowance be considered.

There are a variety of products where moisture loss normally will not occur. Some examples are dehydrated seasoning mixes, vacuum-packed coffee, or canned fruit. (FDA tests on cake mixes, flour mixes, and breakfast cereals concluded that they gain moisture in distribution.) Even though moisture loss is recognized by FDA, and page 6-3 indicates that foods are regulated by FDA, these types of products and their packaging make moisture loss in good distribution unlikely. In these cases, moisture loss would be a consideration and would be determined to be 0%.

Moisture loss occurs both through evaporation to the atmosphere as with laundry detergent, flour, noodles or beans, and through transfer from the product to or through the packaging material, either absorbed or free flowing, as with corned beef, hot dogs, poultry, fish, tofu, or bacon.

\* If a commodity has been improperly handled (e.g., held at an incorrect temperature, offered for sale after the sell by date, etc.) "good distribution" does not exist and moisture loss allowance is not considered. Investigation is necessary to determine the responsible party; usually it will be the one who did not maintain the "good distribution practices."

### **Examples: Whether to consider moisture loss and how to determine the value to be given.**

- A. **Bottled Glue:** An official is testing bottled glue at a stationery supply store. Checking the list on page 6-2, he finds glue is subject to moisture loss allowance consideration because it is regulated by the Federal Trade Commission (FTC). The bottle appears to be sealed; moisture loss is not likely. A reasonable moisture loss allowance (MLA) would be 0%.
- B. **Snail and Earwig Bait:** An official is testing the net contents of snail and earwig bait. According to the list of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) covered products (page 6-4) EPA has concurrent jurisdiction. EPA regulations specifically require an accurate net content declaration with no allowances for moisture loss, so there is no MLA for this product.

- C. Water-Added Hams: An official is testing water-added hams from the packaging line at the point of pack. Even though hams are under USDA jurisdiction, moisture loss allowance consideration does **not** apply since the packages have not yet entered into distribution. The official would use dry tare for the inspection.
- D. Dried Fruit: An official receives a complaint concerning dried apricots, and finds this brand is being distributed by a local produce mart. Since food or drink for man or animal is regulated by FDA and the dried apricots have entered into distribution, moisture loss must be considered. The official refers to the FDA recommended moisture allowances (page 6-6) and finds 3% is recommended for dried fruits and vegetables.
- E. Bars of Soap: Soap is under FTC regulation (page 6-4) and is subject to moisture loss allowance. However, FTC has not recommended any allowances nor is there an established gray area for soap. The official has not tested this product in the lab for moisture loss, nor is there any evidence of testing or studies done by other officials.

Where comprehensive test data is not available for reference, experience with similar commodities or inferences drawn from testing other brands or package sizes can still form the basis for establishing a "reasonable" allowance to permit testing of a commodity that has entered distribution.

The official should be prepared to discuss his or her reasoning with other officials and with the manufacturer in order to develop further information about the product's moisture loss characteristics. It should be noted that the date of pack and the date distribution begins may be quite different.

- F. Freshly Baked Bread at the Bakery: The Food and Drug Administration (FDA) recommends percentages for moisture loss allowances for certain foods in distribution (page 6-6). It also provides for moisture loss allowances prior to distribution under specific conditions when the packer provides "Acceptable Data." The criteria for determining "Acceptable Data" is on page 6-6. If "Acceptable Data" is not presented, moisture loss allowance is not given prior to distribution.

**Note:** When questions or doubts arise, and it is expedient to continue inspection, try to contact your area Price and Quantity Verification Investigator. If this is not possible, it is probably best to select a "reasonable" allowance for moisture loss using your best judgment, resume the inspection and take appropriate action. It is advisable to do follow-up tests of the product to verify that the allowance given is reasonable (See Page 6-9).

## **COMMODITIES WITH MOISTURE LOSS ALLOWANCE CONSIDERATION**

### **Adhesives and Sealants (FTC)**

1. Pastes
2. Glue
3. Specialty adhesives and sealants, including solder

### **Air Fresheners and Deodorizers (FTC)**

### **Alcoholic Beverages (UST)**

## **Bath Oil and Bubble Bath (FDA)**

### **Cosmetics (FDA)**

Cosmetics. Defined by Section 501(l) of the Food, Drug, and Cosmetic Act as “(1) articles intended to be rubbed, poured, sprinkled, or sprayed on, introduced into, or otherwise applied to the human body or any part thereof for cleansing, beautifying, promoting attractiveness, or altering the appearance; and (2) articles intended for use as a component of any such articles; except that such term shall not include soap.”

### **Cleaning Compounds (FTC)**

1. Liquid
2. Powder
3. Paste or cake
4. Other

### **Devices (FDA)**

Devices. Defined by Section 201(h) of the Food, Drug, and Cosmetic Act as “instruments, apparatus, and contrivances, including their components, parts and accessories, intended (1) for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other animals; or (2) to affect the structure or any function of the body of man or other animals.”

### **Drugs (FDA)**

Drugs. Defined by Section 201(g)(l) of the Food, Drug, and Cosmetic Act as “(a) articles recognized in the official United States Pharmacopoeia, official Homeopathic Pharmacopoeia, or official National Formulary, or any supplement to any of them; and (b) articles intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other animals; and (c) articles (other than food) intended to affect the structure or any function of the body of man or other animals, and (d) articles intended for use as a component of any articles specified in a clause (a), (b) or (c); but does not include devices or their components, parts, or accessories.”

### **Food (FDA)**

Food. Defined by Section 201(f) of the Food, Drug, and Cosmetic Act as “(1) articles used for food and drink for man or other animals; (2) chewing gum; and (3) articles used for components of any such article.”

### **Household Supplies (FTC)**

1. Lighter fuel, flints, pipe cleaners, etc.
2. Household lubricants
3. Picnic supplies
4. Charcoal briquettes, chips, logs, etc.
5. Dyes and tints
6. Protective fabric sprays
7. Other (e.g., plastic or paper drop cloths)

### **Laundry Supplies (FTC)**

1. Conditioners and softeners, ironing aids, distilled water
2. Sizing and starches
3. Bluing and bleaches
4. Presoaks, enzymes, etc.
5. Other

**Meat and Meat Products (USDA)**

**Mouthwash (FDA)**

**Poultry and Poultry Products (USDA)**

**Rubbing Alcohol (FDA)**

**Shampoo (FDA)**

**Soaps and Detergents (FTC)**

If there is a drug or cosmetic claim such as “removes blemishes,” it is regulated by (FDA).

1. Powder, flakes, chips, etc.
2. Liquid
3. Paste, cake, or tablet
4. Other

**Tobacco and Tobacco Products (UST)**

**Toothpaste (FDA)**

**Waxes and Polishes (FTC)**

1. Powder
2. Liquid
3. Paste and cake
4. Other (e.g., polish impregnated cloths, scratch removers, etc.)

**COMMODITIES WITH NO MOISTURE LOSS ALLOWANCE CONSIDERATION**

**Antifreeze (CA)**

**Automotive Chemical Products (CA)**

Including auto polish, wax and finish conditioner, rubbing compound, tire paint, chrome polish, gasoline additives, etc.

**Bottled Gas for Cooking or Heating (CA)**

**Disinfectants (EPA)**

**FIFRA Covered Products (EPA)**

Products subject to regulation under the Federal Insecticide, Fungicide, and Rodenticide Act, which is now administered by the Environmental Protection Agency. Normally, the label will bear an EPA or USDA number if subject to FIFRA.

**Flowers, Flower Seeds, Fertilizer, and Fertilizer Materials, Plants or Shrubs, Garden and Lawn Supplies (CA)**

**Germ-Killing or Germ-Proofing Products (EPA)**

**Ink (CA)**

**Insecticides (EPA)**

Including insect repellents in any form, mothballs, etc.

**Motor Oil (CA)**

Including additives.

**Paints and Kindred Products (CA)**

Including wallpaper, turpentine, putty, paint removers, glazing compounds, wood fillers, etc.

**Pet Care Supplies (CA)**

**Seeds, Agricultural (USDA)**

**Sporting Goods (CA)**

Including fish baits, gun powder, gun oil, etc.

**Toys (CA)**

Including play dough, finger paints, etc.

**Reference:** FTC Correspondence

### **Food and Drug Administration (FDA) Recommends the Following Moisture Loss Allowances for These Foods**

**1%** Fresh baked breads, buns, rolls, and muffins when tested after the end of the packing day.

Frozen fruits and vegetables when tested seven or more days after the end of the packing day.

**3%** Bakery products other than fresh breads, buns, rolls, and muffins when tested after the end of the packing day.

Fresh or dried fruits and vegetables, cheese and cheese products, pasta, rice, and coffee beans when tested seven or more days after the end of the packing day.

A moisture loss allowance (MLA) is given to the foods listed above when they are in distribution and is given at the packing location when acceptable data has been provided by the packer. Additionally, if the commodity is in distribution but is inspected prior to the time specified, the packer must present acceptable data documenting moisture loss before any MLA is permitted.

The criteria for determining "Acceptable Data" follows. If "Acceptable Data" is not presented, moisture loss allowance is not given before the specified time or prior to distribution.

#### **Acceptable Data for Moisture Loss Allowance at the Packing Location (FDA)**

The data must be computed using the average moisture loss determined on a daily basis in environmental conditions similar to those that exist when the product is being inspected.

At least three sample control lots consisting of at least 48 randomly selected packages must be used to develop the moisture loss data. The three sample control lots must be placed at various locations in the storage site. Each sample must be stored under the same conditions as are typical for the product. Moisture loss data obtained by removing the individual packages from shipping cases and storing them in a laboratory would not be acceptable.

The weight of each package in each of the sample control lots is determined every day for seven days, except that fresh bakery products are weighed hourly. The average moisture loss value must be computed from the three sample control lots with a 95% prediction interval.

Example: An official visits a pet food plant in Los Angeles in the middle of July to conduct a point-of-pack inspection. If the product tested had been packaged five days before the inspection and is found underweight, the moisture loss data must reflect the loss that would occur in July, not January. If the product is typically placed in a sealed case on a pallet and shrink wrapped, the sample lots must be stored under the same conditions.

## **Food and Drug Administration (FDA) Moisture Loss Allowances (MLA) for Flour and Dry Pet Food**

**Moisture Loss Allowances (MLA):** The National Institute of Standards and Technology in conjunction with members of the National Conference on Weights and Measures and industry have established moisture loss allowances for certain commodities. These moisture loss allowances are given percentages where shortages within these percentages may have been caused by unavoidable moisture lost in good distribution.

As of April 2000, FDA regulated commodities having a moisture loss allowance greater than 0% are:

**Flour 3% and Dry Pet Food 3%** (pet food packaged in paperboard boxes or kraft paper bags and has a moisture content of 13% or less at the time of pack is granted this allowance. Moisture content information is on the ingredient label.)

Moisture content testing may be used to determine if a shortage found to be within the MLA is due to moisture loss and not taking insufficient tare for the packaging.

**Inspections in the Packing Plant:** There is no MLA when the commodity is tested at the packing plant; however, there may be consideration for moisture loss. See the previous page for parameters for acceptable data moisture loss consideration in the packing plant.

## United States Department of Food and Agriculture (USDA) Moisture Loss Allowance (MLA) Consideration

**Moisture Loss Allowances (MLA):** The National Institute of Standards and Technology in conjunction with members of the National Conference on Weights and Measures and industry had established moisture loss allowances for certain commodities. A moisture loss allowance is a given percentage where shortages within that percentage may have been caused by unavoidable moisture lost in good distribution. Wet tare is used for testing commodities with a MLA greater than 0%.

As of October 2008, USDA regulated commodities such as fresh meat or poultry are required to be tested using dry tare (either unused dry tare or used dry tare). When a dry tare is used the Moisture loss allowance is considered zero. Ice glaze is still considered tare and not part of the product and should be rinsed off the meat to determine net weight.

### **FRESH POULTRY:**

(whole or cut-up with no further processing or additives and having a temperature above 26°F, this is product that yields or gives when pushed with a person's thumb)

**Moisture Loss Allowance (MLA):** Unless there is an established moisture loss allowance, the moisture loss allowance is 0% for meat and poultry hermetically packaged in a USDA plant, and inspected after entering into distribution. Dry or dried used tare is used for inspection.

If the meat or poultry package allows moisture to evaporate into the atmosphere, a reasonable moisture allowance must be given. USDA has not given any guidance for the value of "reasonable moisture loss."

**Inspections in the Packing Plant:** There is no MLA for meat or poultry inspected at the packing plant. Category B sampling plans are used for inspection. Dry tare is used for all USDA in-plant inspections.



## MOISTURE LOSS

### LABORATORY VERIFICATION OF MOISTURE LOSS

**Purpose:** In instances when little data is available or when legal actions may result or where a weights and measures official does not have high confidence in the amount of moisture allowance to give a product, laboratory verification of the moisture loss should be done. Packages of product should be obtained for further evaluation and if possible the test should be run on more than one lot code. Verification of moisture loss should be done even when the processor/packer provides information.

**Methodology:** There are two ways products lose moisture, those that lose moisture primarily through evaporation and those that lose moisture through absorption into packaging materials and/or purge. The nature of the moisture loss dictates the number of initial samples needed. You may also need to follow products under more than one set of conditions- "Room Conditions" or "Under Refrigeration" depending on how the product is handled during distribution or retail conditions. Initial data received will determine if more samples are needed. Shortages of storage space and financial restrictions may also limit the number of samples you use to initially determine moisture loss.

- A. For products which lose moisture primarily through evaporation, gross weights can usually be recorded at regular intervals on a laboratory worksheet until the expiration date or typical distribution period has occurred. At the end of the test period, the tare weight can be determined and deducted from each recorded gross weight. Start with at least five samples per each set of laboratory conditions and increase them if data is variable. Use the formula below to determine percent moisture loss for the product.
- B. For packages/products where moisture is lost into the package or packaging material, some packages may be opened, taking care not to lose any of the packaging materials or fluid. The packaging materials, fluid, and the product can be placed in zip-lock storage bag or other re-sealable container. At appropriate time intervals, remove the product from the container, and record the net weight, temperature and date. Carefully return the product to the re-sealable container wherein the packaging materials and fluids have remained. Packages should be kept within the ranges of normal storage conditions during the period of the tests. Start with about 10 samples per each set of laboratory conditions.

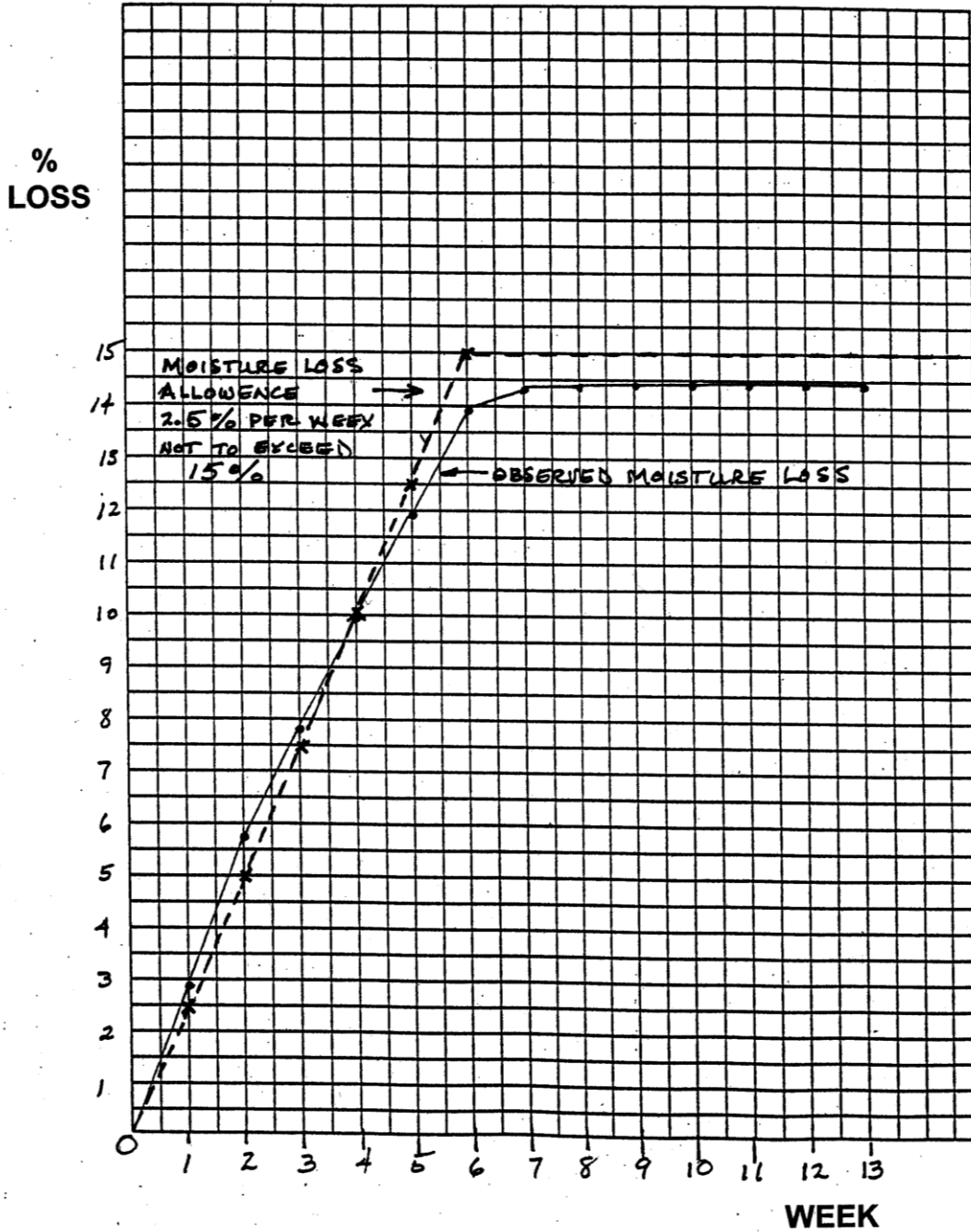
Variations can be plotted or changed into a percent loss by the following formula:

$$\frac{\text{Original Net Weight} - \text{Net Weight}}{\text{Original Net Weight}} \times 100 = \text{Percent Moisture loss}$$

It is recommended that moisture loss worksheets be submitted to your area Quantity Control Specialist so that the information is available to others to assist them in selecting reasonable moisture loss values in future testing. A file will be kept in the Sacramento DMS office.

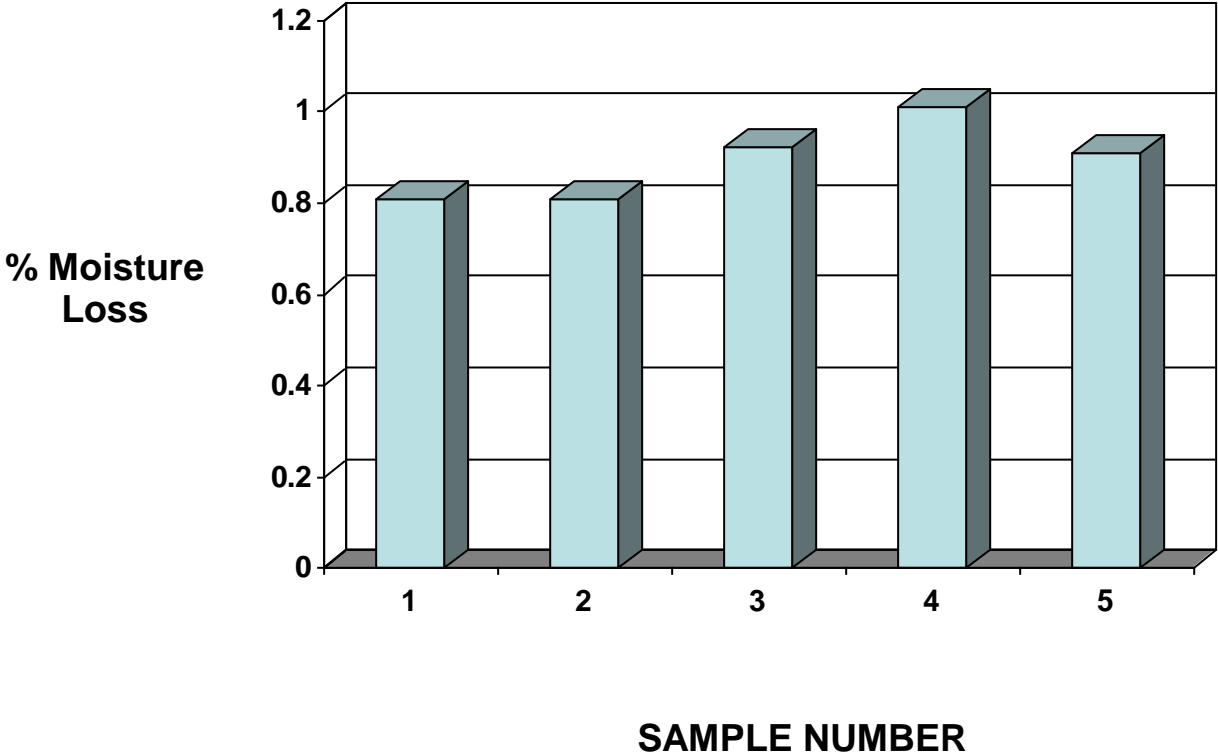


SPOTS AWAY DETERGENT SAMPLE PACKAGE 17





### MOISTURE LOSS TEST TOFU



Recommended Moisture Loss Allowance 1%

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