

# **A Fair Exchange**

**Information on Indiana's  
weights and measures program**

**Indiana State Board of Health**

1330 West Michigan Street

Indianapolis, Indiana

-46206-

# A Fair Exchange

## Did you know...

...that there is an agency of state government charged with the responsibility of assuring the buyer and seller alike that they will have accurate quantity determinations in all transactions where weighing and measuring devices are used?

## Well, There Is!

It is the Division of Weights and Measures of the Indiana State Board of Health. With central offices located at 1330 West Michigan Street, Indianapolis, this division is responsible for enforcing all Indiana laws pertaining to weights and measures, and for the general supervision of all weighing and measuring devices in the state.

## And, More Is Told...

...in the following pages, about the division, its purpose and the methods it uses to protect the public.

# About the Division –

As the agency of government charged with the enforcement of all laws pertaining to weights and measures in Indiana, the division of weights and measures carries out this responsibility by conducting an educational, inspection, and training program.

Some of the division functions are highlighted in the following paragraphs.

- ✓ The division is responsible for seeing that all state, city, and county inspectors of weights and measures are duly authorized deputies of the state division.
- ✓ The inspectors have general supervision of the weighing and measuring devices in use in the State of Indiana.
- ✓ State inspectors are responsible for inspecting and calibrating (every two years) the test weights and test measures-standards-of the various cities and towns.
- ✓ The city or county inspector, as a deputy of the state division, has charge of the weights and measures standards within his jurisdiction. Where not otherwise specified, measuring or weighing device is accurate, and whether or not the purported measurements for articles for sale are correct.
- ✓ At least once a year, and more frequently if necessary, the local inspector determines that the weights, measures and all apparatus used in his jurisdiction, are correct.

Upon written request from any citizen, firm, company, or institution of the state, these inspectors will test or calibrate any weights and/or measuring devices or instruments, and any apparatus used as a test weight or measuring device-standards.

## It Goes Without Saying...

...that any honest dealer welcomes the request to reweigh or remeasure an order, when he knows he can rely on the accuracy of his weighing or measuring devices.

...that in over-the-counter sales the scales and their quantity-value indicators, must be in plain view of the purchaser.

...that all packaged goods must be marked with a statement concerning the net content.

...that labels are required for the protection of the consumer, and they should indicate what is received for a specific amount of money.

...that meat and meat products must be sold by net weight.

...that all commodities must be sold by definite unit of measurement by prescribed by law: by weight, by measure, or in some instances, by numerical count.

## Suggestions To Consumers...

Read zero, quantity, and value graduations on service-station pumps when purchasing gasoline.

Buy solid commodities by weight whenever possible. In any event, buy by definite quantity whenever practicable, and not by money's worth.

Learn the price per pound, per quart, etc., of what you buy. Learn to read the scale indications, and observe the weighing of your purchases.

Check your purchases for price extension and quantity received. Mere package size may be deceptive. Read and compare labeled quantities in relation to price.

Demand accurate weight and measure in your purchases just as you demand accurate change from the cashier.

Some stores provide scales on which you can check the weights of your purchases. Use them!

Become acquainted with your local or State weights and measures official, and consult him if in doubt on any weights and measures matter.

Report suspected inaccuracies or violations of the weights and measures laws and regulations to your weights and measures official.

## The Reliable Merchant...

...wants to know that his customers are receiving full measures for the dollars they spend--and no more.

...checks all devices for accuracy at least once a day.

...knows that mechanical failure of equipment in favor of the consumer can be costly.\*

\*A scale error of minus one ounce weighing a product selling for \$1.00 per pound, repeated 100 times a day, for 300 working days(one year) would result in a loss to the merchant of \$1,875.00 annually

## The Reliable Merchant – cont'd.

...is aware that weighing and measuring devices are delicate mechanisms and can become inaccurate through wear and tear of constant use.

### Points to Remember –

- All weights and measures in the United States are based on the standard kilogram and the standard meter kept at the National Bureau of Standards in Washington, D.C.
- That your state and local inspectors of weights and measures officials and the facilities of their departments are at your disposal. Do not hesitate to contact them if you feel they can be of service.
- Weights and measures supervision benefits both buyer and seller and is intended to assure equity in commercial transactions.
- Don't condemn a merchant too hurriedly in case of short weight or measure. It could be the result of an error that he would quickly rectify if brought to his attention.
- Net weight does not include the weight of the bag, wrapper, or container of any kind in which a commodity may be weighed.
- An approval seal on a weighing or measuring device means only that the device was correct at the time it was tested and does not guarantee future correctness.
- No dry capacity measure such as a basket, barrel, or other container may be used as a means of determining the amounts of any commodities offered for sale.

## Years of Experience...

...have shown authorities that there are certain "problem areas" in connection with the sale or purchase of certain commodities. For the purpose of calling these areas to the attention of the public, information on the following is included:

### FRUITS AND VEGETABLES

All berries, plums, and other such small fruit must be sold in standard dry measure pint or quart boxes, (such boxes to be well filled), or if sold in bulk, by avoirdupois net weight.

Apples, peaches, pears, and other fruit or vegetables must be sold by avoirdupois net weight, except fruit or vegetables ordinarily sold by the piece, dozen, or in bunches. Standard container sizes for fruits are as follows:

**-the standard hamper**

one peck hamper  
one-half bushel hamper  
five-eighths bushel hamper  
one bushel hamper  
one and one-half bushel hamper

**-the standard splint basket**

four quart basket  
eight quart basket  
twelve quart basket  
sixteen quart basket  
twenty-four quart basket

**-the standard round stave basket**

one-fourth bushel basket  
one-half bushel basket  
five-eighths bushel basket  
one bushel basket  
one and one-half bushel basket  
two bushel basket

**-the standard climax basket**

two quart basket  
four quart basket  
twelve quart basket

The standard basket or other container for small fruits, berries, and vegetables includes the following capacities:

dry one-half pint  
dry pint

dry quart  
multiples of the dry quart

All of these containers must be in conformance with the specifications of the standard fruit and vegetable container law

## LABELING

Anyone who packs or repacks fresh fruits or vegetables in containers for sale must mark the containers in a plain and indelible manner as follows:

1. Full name and address, including name and state where such fruits and vegetables are grown or packed.
2. The net contents, by weight; if not in a standard container built in accordance with the specifications of the federal or state standard container act, in which case, the cubical contents shall be sufficient.
3. The grade, in accordance with the standards established by law.
4. All markings shall be in letters not less than one-half inch in height.

## BREAD

Bread must be sold by net weight.

Loaves must weigh  $\frac{3}{4}$  lb., 1 lb.,  $1 \frac{1}{4}$  lb.,  $1 \frac{1}{2}$  lb., 2 lb., or some whole multiple of one pound.

Labeling must show the correct weight.

Variations from the stated weight are allowed when caused by (1) ordinary and customary exposure, after introduction into

intrastate commerce, to conditions which normally occur in good distribution practice and which unavoidably result in change of weight, (2) when caused by unavoidable deviations in weight which occur in good manufacturing practice.

Variations are not permitted to such an extent that the average of the quantities comprising a shipment is below the quantity stated; no unreasonable weight shortage in any loaf is permitted, even though overages in weight of other loaves in the same shipment compensate for such shortage.

Each loaf must be plainly labeled to show its net weight in pounds or fractions of pounds, or both, and name of baker or manufacturer.

In the case of wrapped bread, the label must be located on the wrapper of each loaf in a conspicuous position unobscured by the folds of the wrapper.

In the case of unwrapped bread the label must not be larger than 1" x 1 1/2" in size and not smaller than 1" x 3/4". The label must not be affixed to the unwrapped loaf in any manner, or to the wrapper with any gums or paste which are insanitary or unwholesome.

Violators are subject to fines of \$10, to \$100 and each day's continuance in violation constitutes a separate offense.

# Information for Housewives

## Approximate Weights of Some Commodities in Avoirdupois Ounces Per Cup

Beans(dry) .....	6.5	Milk(dry) .....	4.5
Butter, margarine, cooking oils .....	8	Oatmeal .....	3
Citrus fruit juice(fresh) ....	8.5	Pancake mix .....	5
Cornflakes .....	1	Prunes(dried) .....	5.5
Corn meal.....	5	Raisins(seedless).....	5
Eggs(whole) .....	8.5	Rice .....	7
Flour(wheat, all-purpose, sifted).....	4	Shortening(vegetable).....	7
Flour(cake, sifted) .....	3.5	Sugar(brown, moist, firmly packed) .....	7.5
Milk(whole, fluid) .....	8.5	Sugar(granulated) .....	7
		Water .....	8 1/3

## Equivalents of Capacity Units Used in the Kitchen

Units	Fluid Drams	Tea- spoonfuls	Table- spoonfuls	Fluid ounces	1/4 cupfuls
1 fluid dram equals...	1	3/4	1/4	1/8	1/16
1 teaspoonful equals...	1 1/3	1	1/3	1/6	1/12
1 tablespoonful equals...	4	3	1	1/2	1/4
1 fluid ounce equals...	8	6	2	1	1/2
1/4 cupful equals...	16	12	4	2	1
1 gill(1/2 cupful) equals...	32	24	8	4	2
1 cupful equals	64	48	16	8	4
1 liquid pint equals...	128	96	32	16	8
1 liquid quart equals...	256	192	64	32	16

# Tables of Metric Weights and Measures

## Linear Measure

10 millimeters	-1 centimeter(cm)
10 centimeters	-1 decimeter(dm)
10 decimeters	-1 meter(m)
10 meters	-1 kilometer(km)
10 dekameters	-1 hectometer(hm)
10 hectometers	-1 kilometer(km)

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## Area Measure

100 square meters(mm <sup>2</sup> )	-1 square centimeter(cm <sup>2</sup> )
10,000 square centimeters	-1 square meter(m <sup>2</sup> )
100 square meters	-1 are(a)
100 ares	-1 hectare(ha)
100 hectares	-1 square kilometer(km <sup>2</sup> )

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## Volume Measure

10 milliliters	-1 centiliter(cl)
10 centiliters	-1 deciliter(dl)
10 deciliters	-1 liter(L)
10 liters	-1 dekaliter(dal)
10 dekaliters	-1 hectoliter(hl)
10 hectoliter	-1 kiloliter(kl)

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## Cubic Measure

1000 cubic millimeters	-1 cubic centimeter(cm <sup>3</sup> )
1000 cubic centimeters	-1 cubic decimeter(dm <sup>3</sup> )
1000 cubic decimeters	-1 cubic meter(m <sup>3</sup> )

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## Weight

10 milligrams(mg)	-1 centigram(cg)
10 centigrams	-1 decigram(dg)
10 decigrams	-1 gram(g)
10 grams	-1 dekagram(dag)
10 dekagrams	-1 hectogram(hg)
10 hectograms	-1 kilogram(kg)
1000 kilograms	-1 metric ton(t)

# Brief Reference Tables

## Linear Measure

12 in. equal 1 foot  
3 ft. equal 1 yard  
5.5 yards equal 1 rod  
40 rods equal 1 furlong  
8 furlongs equal 1 mile

## Square Measure

144 sq. in equal 1 sq. ft.  
9 sq. ft. equal 1 sq. yd.  
30.25 sq. yds. equal 1 sq. rd.  
160 sq. rds. equal 1 acre  
640 acres equal 1 sq. mile

## Cubic Measure

1728 cu. in. equal 1 cu. ft.  
27 cu. ft. equal 1 cu. ft.

## Dry Measure

2 pts. equal 1 quart  
8 qts. equal 1 peck  
4 pks. equal 1 bushel

## Liquid Measure

60 min. equal 1 fl. Dram  
8 fl. Drams equal 1 fl. oz.  
4 fl. ozs. Equal 1 ft. gill  
4 gills equal 1 pint  
2 pints equal 1 quart  
4 quarts equal 1 gallon

## Troy Weight

24 grs. Equal 1 dwt.  
20 dwt. equal 1 ounce  
12 ozs. equal 1 pound

## Avoirdupois Weight

27  $\frac{11}{32}$  grs. Equal 1 dram  
16 drams equal 1 ounce  
16 ounces equal 1 pound  
100 pounds equal 1 cwt.  
20 cwt. equal 1 ton

## NUMBER OF CUBIC INCHES IN U.S. STANDARD MEASURES

### Liquid Measure

1 gal. contains 231 cu. in.  
.5 gal. contains 115.5 cu. in.  
1 qt. contains 57.75 cu. in.  
1 pt. contains 28.875 cu. in.  
.5 pt. contains 14.37 cu. in.  
1 gill contains 7.218 cu. in.  
1 fl. oz. contains 1.804 cu. in.  
1 dr. contains .225 cu. in.

### Dry Measure

1 bu. contains 2150.42 cu. in.  
.5 bu. contains 1075.21 cu. in.  
1 peck contains 537.60 cu. in.  
.5 peck contains 268.80 cu. in.  
.25 peck contains 134.40 cu. in.  
1 qt. contains 67.20 cu. in.  
1 pt. contains 33.60 cu. in.  
.5 pt. contains 16.80 cu. in.

## Useful Information

*To find the diameter of a circle—divide the circumference by 3.1416.*

*To find the circumference of a circle—multiply the diameter by 3.1416*

*To find the radius of a circle—divide the diameter by 2*

*To find the area of a circle—square the radius and multiply by 3.1416*

*To find the area of a globe or sphere—multiply the square of the diameter by 3.1416*

*To find the volume of a globe or sphere—multiply the cube of the diameter by .5236*

*To find the area of a cylinder—multiply the circumference by the length and to the product add the areas of both ends*

*To find the volume of a cylinder—multiply the area of one end by the length.*

*To find the area of a cube—multiply the area of one side by six*

*To find the volume of a cube—multiply the length, the breadth, and the thickness together*

*To find the capacity of a rectangular box or bin—multiply the length by the breadth by the depth or height.*

*To find the capacity of a Berry box with Sloping Sides—Add the area of the top and the area of the bottom and divide by 2, then multiply by the depth*

*A legal flexible tape measure must be made of metal.  
A legal yard stick must have brass or other metal ends.*

## Frozen Desserts – Methods of Sale

Frozen Desserts generally are sold by liquid measure (pint, quart, half-gallon, etc.) but may legally be sold by weight.

However, if the quantity delivered is determined by volume (liquid measure), the only proper basis of sale is the volume delivered. If the quantity delivered is determined by net weight, the only proper basis of sale is the weight delivered. The two methods of quantity determination should not be confused as it is entirely improper to determine the quantity by measure and attempt to sell it by weight or vice versa.

## Frozen Desserts – Quality Standards

The Definitions And Standards of Identity For Frozen Desserts, adopted by the Indiana State Board of Health, establishes quality standards based on minimum weights - per gallon as follows:

Ice Cream	4.5 pounds
Bulky Flavored Ice Cream	4.5 pounds
French Ice Cream and Frozen Custard	4.5 pounds
Ice Milk	4.5 pounds
Sherbets	6 pounds
Water Ices	6 pounds

The minimum weight of a half-gallon, quart, or pint of the products listed above would be the appropriate fraction of the established weight---per gallon.

## Miscellaneous Equivalents

- 1 bushel=2150.42 cubic inches
- 1 bushel=1.24 cubic feet
- 1 carat(precious stones)=200 milligrams
- 1 carat(fineness of gold alloy)=1/24 part
- 1 cord(firewood)=128 cubic feet
- 1 cubic foot=7.48 gallons
- 1 cubic foot=0.80 bushel
- 1 furlong=220 yards
- 1 furlong=1/8 mile
- 1 fathom=6 feet

# Bushel Weights

The avoirdupois weight of a bushel of certain commodities in Indiana is as follows:

Articles	Bushel Lbs.	Articles	Bushel Lbs.
Apples.....	42	Peaches, Dried .....	33
Apples, Dried .....	25	Pears .....	50
Barley .....	48	Potatoes .....	60
Beans .....	60	Potatoes, Sweet .....	50
Beans, Soy Soja.....	60	Quinces .....	48
Beets .....	60	Rice, Rough .....	45
Buckwheat .....	50	Rye .....	56
Carrots.....	50	Rye, Malt .....	35
Charcoal .....	20	Salt, Coarse .....	50
Coal .....	80	Salt, Fine .....	55
Coke .....	40	Seed, Alfalfa .....	60
Corn Meal .....	50	Seed, Bluegrass .....	14
Corn, Ear Until Dec 1 .....	70	Seed, Clover .....	60
Corn, Ear After Dec 1 .....	68	Seed, Flax .....	56
Corn, Kaffir .....	56	Seed, Hemp .....	44
Corn, Pop.....	56	Seed, Herds-Grass .....	45
Corn, Shelled .....	56	Seed, Millet .....	50
Cow Peas .....	60	Seed, Orchard Grass .....	14
Cranberries .....	33	Seed, Rape .....	50
Cucumbers .....	48	Seed, Red Top .....	14
Gooseberries.....	40	Seed, Sorghum.....	50
Hickory Nuts .....	50	Seed, Timothy .....	45
Middlings, Coarse .....	30	Tomatoes .....	60
Oats .....	32	Turnips .....	55
Onions .....	57	Walnuts.....	50
Parsnips.....	55	Wheat .....	60
Peaches.....	48	Green Beans .....	28