Volume Measure Density (VMD). Volume of 1 Grain of Powder

This is a term we use to describe the average volume of one grain of a specific powder when metered by the average reloader. The VMD below is that part of a cubic centimeter that is needed to hold one grain of the specific powder you are using. Cubic centimeter was selected as a standard not only because that is what the powder companies use, but a cubic inch is a comparatively large unit. To obtain the same degree of accuracy, it would be necessary to carry the number out two extra places.

To find the volume needed for any charge, simply multiply the charge in grains by the number behind the powder you are using. It is then easy to set your measure to that number.

Volume Measure Density (VMD) Volume of 1 Grain of Powder

Grain and cubic centimeters

The grain, as used to measure gunpowder, should not be confused with a granule or kernel of powder.

A grain was so named because it was the weight measure equal to one plump grain of wheat. A grain is a grain whether using avoirdupois, troy or apothecaries weight.

The reloader uses the avoirdupois system where there are 7,000 grains or 16 ounces to one pound. The same system we use daily in the USA to buy and sell gunpowder, steak, potatoes, etc.

Don’t confuse grains and grams. A gram equals 15.432 grains.

1.0 cc of water weighs 1 gram. So if you are ever curious about your case capacity, weigh your empty case in grams, fill the case with water and the difference between full and empty case tells you the useful case capacity in cc’s.

grams x 15.432 = grains

Grains weight of sample = VMD

4.0 cc setting

To find the VMD of your powder, set your powder measure to 4.0cc. Drop the charge, weigh the charge in grains, and divide 4.0cc by the weight of the dropped charge.

Mark this number on the powder container and you’ll have it for reference in the future.

Average of several samples increases accuracy and confidence.

Calibrate your powder or VMD not listed

To find the VMD of your powder, set your powder measure to 4.0cc. Drop the charge, weigh the charge in grains, and divide 4.0cc by the weight of the dropped charge.

Mark this number on the powder container and you’ll have it for reference in the future.

Average of several samples increases accuracy and confidence.

Rotor Tension Adjustment

When the measure leaves the factory the adjusting screw is set to 16 oz. of pressure to operate the lever. This setting is optimum for most powders. Extremely fine powders may leak very slightly at this setting. This causes no harm. Should you find it objectionable you may tighten the adjusting screw slightly. The rotor should never be so tight that more than four pounds are required to rotate lever.

Empty The Measure

To change powder, close hopper by rotating clockwise. Place a container underneath drop tube, then work the lever a few times to empty the powder below the valve. Now you can pull off the hopper and empty into the original powder can. Don’t forget to turn valve on before starting to reload the next time. The powder valve is also positioned to act as a powder baffle to enhance the accuracy of your measure.

4.5.17 Lee Precision, Inc.

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CHECKED BY

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COMPLETE INSTRUCTIONS FOR THE

LEE PERFECT POWDER MEASURE

L E E G U A R A N T E E

LEE RELoading PRODUCTS are guaranteed not to wear out or break from normal use for two full years or they will be repaired or replaced at no charge if returned to the factory. Any Lee product of current manufacture, regardless of age or condition, will be reconditioned to new, including a new guarantee, if returned to the factory with payment equal to half the current retail price.
These materials are non-cutting the powder. The charge is more uniform which levels the metering chamber without cutting the powder. The charge is more uniform than possible with any other measure.

IMR powders, work just fine. They do not meter in such uniform charges that you will think your powder measure. Most powders will be dispensed to give you a lifetime of unmatched accuracy.

CAUTION
Ammonium nitrate can be dangerous if done improperly and should not be attempted by persons not willing and able to read and follow instructions exactly. Children should not be permitted to reload ammunition without strict parental supervision. Always wear safety glasses when reloading and shooting. Ammunition loaded with these tools and data should only be used in modern guns in good condition. We do not accept responsibility for ammunition loaded with these tools or data as we have no control over the manufacture and storage of components or the loading procedure and techniques. Primers and gun powders, like gasoline and matches, can be dangerous if improperly handled or misused.

Setting and Reading the Micrometer
Loosen the thimble so the metering rod can be turned freely to any setting you desire. The metering rod is calibrated in cubic centimeters; you’ll be able to see one through a little over seven and one half. If you have been loading with Lee Dippers you can easily set the powder measure to your favorite load by setting to the dipper number, or reference the volume cc column in “Modern Reloading” or your Lee die set instructions.

Lee “Modern Reloading”
LEE DIE INSTRUCTIONS

Lee Safety Powder Scale
Magnetically damped and Approach-to-weight
Safety and accuracy are the most important features. Easy to read and set. Calibrated with weights traceable to the UNITED STATES BUREAU OF STANDARDS. Even if you already own a combination bullet and powder scale, you will want a Lee Safety Powder Scale. 90681

 mount your Powder Measure
For bench mounting, attach the powder measure to the stand with the (2) #10 x 1¼ (FA3010) screws supplied. Attach the base to your bench or suitable base for portable use. Use an ample size base. You may also “C” clamp the stand to your bench.

Attach body to stand using 8-32 x ¼ pan head Phillips screw (FL1901)

Insert (2) 8-32 x 1½ screws (FT1940) through body and steel stand and tighten with (2) nuts (FE3364).

Insert drop tube into body; screw knurled nut (AP1640) tight to body.

Lee Safety Powder Scale

MOUNT YOUR POWDER MEASURE

Mounting Chamber

Thimble

Metering Rod

Lee Safety Powder Scale

MAGNETICALLY DAMPED AND APPROACH-TO-WEIGHT

SAFETY AND ACCURACY ARE THE MOST IMPORTANT FEATURES. EASY TO READ AND SET.

CALIBRATED WITH WEIGHTS TRACEABLE TO THE UNITED STATES BUREAU OF STANDARDS.

EVEN IF YOU ALREADY OWN A COMBINATION BULLET AND POWDER SCALE, YOU WILL WANT A LEE SAFETY POWDER SCALE. 90681

Snug Thimble
Once you’ve achieved your charge, snug up the thimble after setting and the “o” ring within will hold the setting with no fear of it moving while in use.

Add/Change Powder
Add powder to hopper, be certain of brand and type. Rotate counterclockwise to open valve, rotate clockwise to close valve.

IMPORTANT! YOU MUST DO THIS BEFORE USE
If using the measure for the first time, you must process at least one hopper full of powder through the measure to coat the nylon parts with graphite from the powder. This conditioning is important so static electricity will be bled off. Otherwise, you’ll find the measure continues to dispense charges progressively heavier. This need only be done once.

The lever should be turned at a uniform, slow to moderate speed to a full stop in both directions. If using a large charge you must pause in both directions to permit the metering tube to fill and empty. You will be able to see the powder move in the hopper while the tube is filling.

CAUTION
Using the wrong type or wrong amount of powder can cause a serious or fatal injury.

Lee Perfect Powder Measure
is built to give you a lifetime of unmatched accuracy. Like other powder measures, you can use any type of smokeless powder. Because black powder explodes in bulk, it should not be used in this powder measure. Most powders will be dispensed in such uniform charges that you will think your scale is stuck. Extruded powders, such as most IMR powders, work just fine. They do not meter quite as well, but you can expect charges more uniform than possible with any other measure.

This is possible because of the elastomer wiper, which levels the metering chamber without cutting the powder. The charge is more uniform than possible with any other measure.

The housing, rotor and adapter are all made from nylon. The metering tube is aluminum. These materials are non-sparking, low friction and lightweight.