
Overview:

Hammers and mallets come in different lengths, weights, materials, and shapes. Different ones are used for different types of jobs. For example, a heavier rawhide hammer is commonly used in stone work, a white rubber mallet (photo 1) for tile work, and a 16 oz carbide hammer (photo 2) for brick work.



Photo 1 - 14 oz White rubber Mallet



Photo 2 - 16 oz Carbide Hammer

Selecting the right hammer or mallet depends on the type of work being performed as well as your hand measurements.

Tips for what to look for:

- ⇒ **Grip size.** The hammer or mallet handle's grip size should match or be close to your grip size. A handle that matches or is close to your grip size will allow you to use the least amount of force.

- ⇒ **Weight & balance.** The weight of the hammer or mallet, length of time in continuous use, and the size of the handle can contribute to hand and wrist fatigue and injury. Using the lightest weight hammer or mallet that allows you to perform a task without requiring faster swings to make up for the lower weight will reduce the risk for injury. Hammer and mallet weights vary and it is important to be aware that weights reported by manufacturers may just reflect the head of the tool and exclude the weight of the handle.

The proper head-to-handle weight distribution -- the balance -- is also important because it reduces the stress placed on hand and arm muscles by making it easier for the user to swing the hammer or mallet. As one manufacturer noted, "*Balance is difficult to*

describe and impossible to formulate, but when a hammer's got it - you can just "feel it. A well-balanced hammer can seem to "swing itself" reducing stress on muscles and tendons."* One suggested way to check the balance of a hammer is to "[s]tand the hammer up on the claws so they are like rockers of a rocking chair. If the hammer stays on the claws, it's balanced. If the handle falls down, it's "handle heavy" and if it rocks up on the head, it's "head heavy."***

- ⇒ **Material & vibration.** The vibration that results from using a hammer or mallet can injure the nerves in the fingers and wrist. Wood and fiberglass handles produce less vibration. Steel handles without vibration damping cladding tend to transmit the most vibration.

- ⇒ **Anti-slip materials.** Since hammers and mallets require a steady grip, a handle with an anti-slip material can help. Some, but not all, anti-slip materials have the additional advantages of reducing vibration and/or exposure to cold (this is even more likely to be an issue when the handle is made out of metal).

Applying the tips:

If there are two handle grip sizes available and your grip is in between, consider replacing the handle or modifying it to fit.

- ⇒ **Modify the grip --**
 - ◇ **If the handle is *too large for your hand***, you might be able to sand down a wood handle to a smaller grip size. But be careful, reducing the size of the handle could affect the strength of the hammer and may increase the chance of the handle breaking.
 - ◇ **If the handle grip size is *too small for your hand***, you can apply a tool sleeve or use a padding kit. In addition to increasing the handles grip size, these types of products may also provide

* "What Makes Vaughan So Special" (accessed 2013)]

**Woodworking.com Forum "someone educate me about hammers" (accessed 2013)]

a steadier grip and reduce vibration and exposure to cold. Wearing gloves may also help since they typically reduce your effective grip size. Anti-vibration gloves also reduce vibration. Depending on the materials and products you are working with a specific type of glove may be recommended or required to avoid skin disorders, such as burns and dermatitis. *Note: some workers have reported a reduced sense of touch and needing a stronger grip to hold on to tools when wearing gloves. Using a hand tool with a non-slip grip area or adding an anti-slip material may help.*

Using a handle made out of a material that produces less vibration along with anti-vibration features, such as a cushion grip, can reduce the risk of vibration-related injuries. Some tools come equipped with anti-vibration handles.

⇒ **If you already have a hand/arm injury or condition such as tendonitis, arthritis, or carpal tunnel syndrome**, it is best to select the lightest weight hammer or mallet for the job and take steps to reduce vibration. Selecting the lightest weight tool for the job is also important if you are already suffering from a back injury. Using the lighter weight hammer, for example, will reduce the force on the hand and arm, reduce the back strain caused by swinging the hammer, and also be lighter to carry to and from the job site. *Remember: lighter handles such as fiberglass can reduce the weight of the hammer without reducing the work done by the head*

Example:

Worker Hand Measurements = hand size (length from wrist crease to tip of middle finger) of about 7-1/4" (or 7.25"), with a grip diameter of about 1-2/5" (or 1.4"), a grip size of about 4-3/5" (or 4.6"), and a palm size of 3".

Choices:

16 oz hammer with a tapered wood handle, about 4-1/2" (or 4.5") grip at its widest point and 2-5/8" at the narrowest point, a 9-3/4" handle length, and a total weight of roughly 1 lb 6.4 oz (22.4 oz).

Or

24 oz hammer with a tapered wood handle, about 4-1/2" (or 4.5") grip at its widest point and 3" at the narrowest point, a 9-3/4" handle length, and a total weight of just under 2 lbs (31.8 oz).

What the worker in this example should consider:

- ⇒ The 24 oz hammer weighs 40% more and will add to the worker's fatigue and risk of injury. In this example, the worker should use the 16 oz hammer if it will do the job.
- ⇒ The worker should also take steps to minimize vibration and ensure a stable grip by using anti-vibration gloves or an anti-vibration wrap. Since both hammers have a grip size slightly smaller than the worker's grip size, use of anti-vibration gloves and/or anti-vibration tape may make the handle grip size closer to the 'best' grip size for this worker.

To learn more, visit www.choosehandsafety.org for information on how to determine your hand-size, use this information when selecting tools, examples of hand tools, and other ways to protect your hands.

Photos: Tools supplied for photos courtesy of the Masonry r2p Partnership (BAC, ICE and IMI)

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