

MAKING YOUR OWN TONE CHIMES

For those who teach on limited budgets, here is an idea to provide a homemade three-octave set of tone chimes for your classroom. These tone chimes are relatively easy to make and assemble, yet they have an excellent tone quality. Amazingly the entire set can be produced for less than thirty dollars.

The chimes described herein are remarkably versatile! The full three-octave set can be substituted for choir chimes. The set can also be used with three-octave handbell literature. The lower one and a half octaves can substitute for metallophone, while the upper octave can easily substitute for glockenspiel. They are played with a hard rubber or wooden mallet.

You'll need basic tools, saws, and some raw materials from a hardware store (Lowe's and Home Depot will almost certainly have these items).

If you do not have access to tools and saws, the best place to access tools and saws is at the local high school shop. The project could be a student assignment with a cooperating shop teacher. Also, the project could be an excellent opportunity to enlist parents as volunteers.

Basic tools:

- Metric Ruler
- EMT Pipe Cutter (EMT = Electrical Metal Tubing)
- Electric Miter Saw
- Table Saw
- Grinder or Belt Sander

Materials:

- 20' of 3/4 inch EMT
- 20' of 1/2 inch EMT
- 20' of 3 inch PVC pipe (from basic plumbing supplies)
- 1 box Size 117B Rubber Bands

STEP ONE: Using EMT pipe cutter, cut 3/4 inch EMT pipes at specified lengths to produce the lower octave of chimes. Begin with lower notes and work upward. Tune chimes according to ear or electronic tuner as each pipe is cut. Length of chimes may vary slightly with composition of metal. If the note is flat, *slightly* shorten the pipe with grinder or belt sander until it is brought up to pitch. If note is sharp, measure and re-cut that pipe for the next note above (which will eliminate waste).

C4	52.5 cm
D4	49.4
E4	46.6
F4	45.3
F#4	44.0
G4	42.6

A4	40.2
Bb4	39.1
B4	38.0
C5	36.9

STEP TWO: Using EMT pipe cutter, cut 1/2 inch EMT pipes at specified lengths to produce the upper two octaves. Use same tuning process described in STEP ONE.

C5	32.2 cm (duplicate note)
D5	30.4
E5	28.6
F5	27.9
F#5	26.9
G5	26.1
A5	24.7
Bb5	23.9
B5	23.3
C6	22.5
D6	21.1
E6	19.9
F6	19.3
F#6	18.8
G6	18.2
A6	17.1
Bb6	16.6
B6	16.0
C7	15.4

STEP THREE: Using electric miter saw, cut fifteen sections of 3 inch PVC pipe at specified lengths.

- 5 sections @ 53 cm
- 5 sections @ 33 cm
- 5 sections @ 22 cm

STEP FOUR: Using table saw, “rip” (saw) each section of PVC pipe length-wise into two equal sections to produce frames that chimes will “nest” in. This step will produce the following materials. (Note photo.)

- 10 one-half section frames @ 53 cm
- 10 one-half section frames @ 33 cm
- 10 one-half section frames @ 22 cm

STEP FIVE: Mount EMT chime onto PVC frame using two rubber bands at the nodal points of the chime. Each nodal point is located approximately one-fifth of the EMT pipe length from each end of the pipe. For example, if the pipe length is 40 cm, each rubber band will be located 8 cm from the each end of the pipe. These can be tested and adjusted for maximum resonance. The rubber bands should wrap around the PVC frame

and loop over the EMT chime. (Note photo.) The following length of PVC frames are used for the following EMT chimes.

53 cm PVC frame for C4 through C5

33 cm PVC frame for C5 through C6

22 cm PVC frame for D6 through C7

STEP SIX: Label pitch of each chime on end of PVC frame.

Ran Whitley, Ph.D.

Chair for the Division of Fine Arts, Associate Professor of Music Education

Campbell University

PO Box 70, Buies Creek, NC 27506

whitley@mailcenter.campbell.edu



