

# SOUND PROPAGATION IN SOLIDS

AKD 02.04



## **Material:**

Item Code	Qty.	Description
DW100-1A	1	Tuning fork, 440 Hz, with resonance box
DG100-3A	1	Ruler, plastics, 300 mm
DW151-1T	1	Drumstick (rubber)

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## Objective:

We know that sound waves can be transmitted in air.  
But are they also transmitted in solids?

## Setup:

We need the ruler and the tuning fork (without the resonance box).

### 1. Experiment:

The tuning fork is held at the stem about 30 cm from the ear and struck at the upper end of the prong. Note the volume of the tuning fork.

Now take the ruler and hold it at one end against the auricle. The tuning fork is struck again (with as much force as possible) and the tip of the stem is briefly placed on the other end of the ruler several times in succession.

Is the tone of the tuning fork always audible?  
Is the volume of the sound the same when the tip of the stem is pressed against the ruler?



### Result 1:

If the tuning fork is pressed against the ruler, the sound is more audible (louder).  
The vibration of the tuning fork is transmitted via its stem to the ruler and thus also to the auricle.

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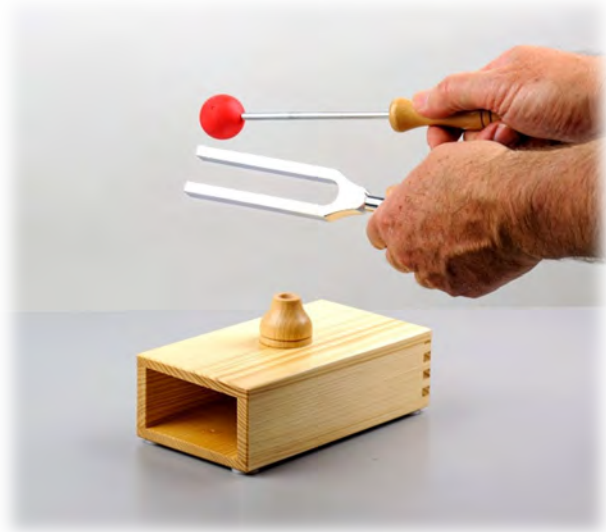
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## 2. Experiment:

The tuning fork is held by the stem.  
The upper end of one prong of the tuning fork is struck with the striking hammer.

## Result 2:

By striking the tuning fork, a tone becomes audible.



## 3. Experiment:

The tuning fork is inserted into the central peg on the resonance box.  
The tuning fork is struck with the same intensity and in the same place as before.

## Result 3:

The sound of the tuning fork is now much louder.

But why is that?

## Conclusion:

Sound is also transmitted in solids.  
Solids transmit sound waves better than air.  
Sound waves can be transmitted well from one solid to another.

In experiment 3, the vibration of the tuning fork is transmitted to a very special solid, a resonating body, so the sound is much louder.

## Cross-reference to practice:

If you press your ear lightly against a door, you can hear better what is being said in the next room.

Many years ago, Indians used to press their heads against the ground to hear if there were any buffalo in the surrounding area.