

Rolling Coke cans

(Ireland)

When a coke can rolls in a hollow it oscillates like a pendulum but is the period of oscillation affected if the can is shaken vigorously in advance?

Background

A simple pendulum may oscillate for a few minutes before coming to rest.

A coke can rolling in a hollow as shown in the photograph may come to rest in half a minute.

If the can is then shaken vigorously and allowed to roll in the same hollow, will it roll for longer, the same time as before, or for a shorter time?

Follow these steps:

1. Appoint a timekeeper and a second person to count the number of oscillations before the Coke can comes to rest.
2. Ensure both trials take place under the same conditions.
3. Record results for comparison purposes.

So what happened?

The can which was shaken vigorously rolled for only half the time of the unshaken can.

Also, the number of oscillations completed was approximately half in the second case (shaken can) as occurred in the first case (unshaken can).

Explanations involve the variation in viscosity due to changed distribution of the dissolved gas in the coke. Since the container is “factory-sealed” there is negligible change in pressure inside it.

What next?

Repeat the experiment with clear plastic containers of Coke to observe (if possible) any change in liquid characteristics.

