

Flume Demo: Laminar and Turbulent Flow

SPEAKER: In this first flume demonstration for Lesson 5, we're going to try to indicate what laminar flow looks like in the flume. Now what we have is we have the flume set at a very low flow rate with a very low velocity and we've inserted a thread into the flume, and you can see how it flows basically flat. The weight of the thread, in fact, is causing it to droop somewhat, and you can see that the far end of it is actually waving a little bit, which indicates that we do have some turbulence even though we've tried to create a laminar flow situation.

Now what we're going to do is we're going to inject some dye into the flume, and you'll see that, in fact, there is going to be some dispersion of that dye. You see here as the dye is injected that it flows mostly flat. However, it is moving upward and downward and dispersing, which indicates that even at this very low flow rate we have some dispersion and some turbulence.

In the next section, we'll show you what turbulent flow looks like.

In this second flume demonstration for Lesson 5, we're going to show you what turbulent flow looks like. Now, as opposed to laminar flow, when we inserted the thread into the flow, you can see that the thread in turbulent flow is moving around quite a bit more. You see the dispersion of bubbles. You see the water surface moving around. And these are all indications of, in this case, actually very extreme turbulence.

Now when we take the thread out and we insert dye into turbulent flow, you will see that the dye will disperse very quickly, and, in fact, here you see it you almost can barely see the dye being injected into the water at all. It disperses so quickly. And this is, again, the indication that we have extreme turbulence.

So these are the two kinds of flow that we see, laminar flow and turbulent flow.