SCIENCE & HEALTH

How That Ice Ball In Your Cocktail Inspired A Cool Physics Experiment

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Any decent bartender knows that ice can dilute your drink as it melts. That's why they use as much ice as possible: it keeps the drink colder, longer. An even better way to achieve the same effect is to use giant ice balls. Now this snazzy bartender's trick has led to a discovery in physics.

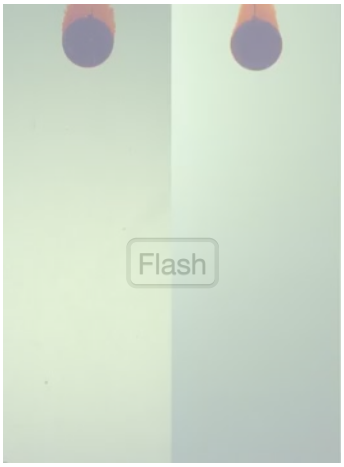
Physicists at King Abdullah University of Science and Technology in Saudi Arabia to design an experiment that helped explain why some icy objects generate less drag as they move through water.

The Saudi physicists couldn't use pure ice balls, like the ones in your cocktail, since they'd just float. Instead, the team created shells of dyed ice around steel, tungsten carbide, and steel/aluminium balls, giving each a core of different density. Then they dropped the balls into a nearly 2.4 meter tank of water, recording how quickly each ball fell through the liquid with high-speed video cameras. As the balls fell, they left an inky red trail in their wake as the ice layer began to melt, the better to visualise the drag effect.

The upshot: ice-coated balls with denser cores fell faster, with less drag and a narrower wake, than ice balls with less dense cores.

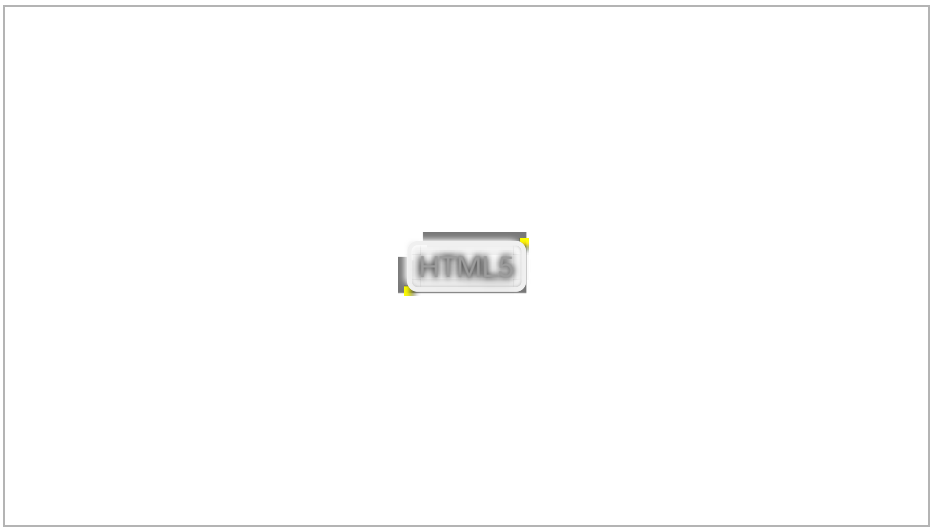
The Saudi team said this has shed light on what's known as the "drag crisis": a transition point where an object moving through a fluid (air or water) reaches a threshold speed that results in less turbulence in its wake, and hence less drag. Adding dimples to golf balls, for instance reduces drag.

It's also known that an icy surface can have a lubricating effect: a hockey puck slides smoothly along the ice because that surface has a thin layer of water on top, the result of melting. The Saudi experiment showed a similar connection between melting and this drag crisis threshold. The physicists hope their



results could be useful for modelling the drifting of icebergs in warming oceans, or the motion of ships with frozen hulls travelling through icy waters.

So ice balls are good for physics, not just your cocktail. Handy weekend tip: You can also slow down that melting process by creating your own perfect ice cubes. Raise your glasses to the science of awesome ice balls!



[Via *Physical Review Letters*]

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TAGS

fluid dynamics | ice | physics