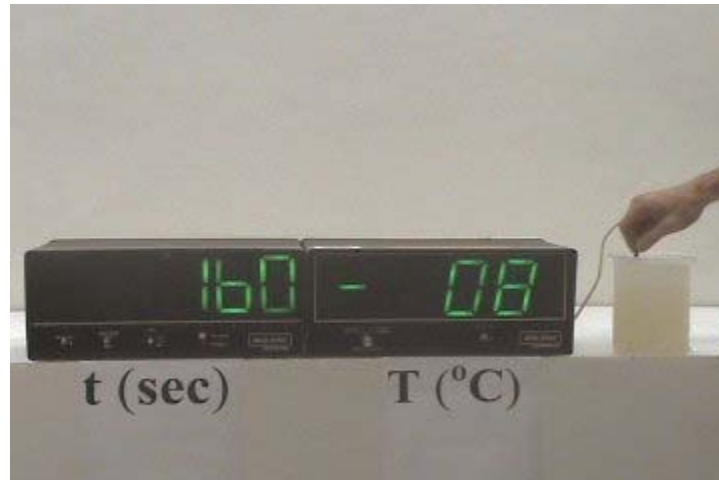


Answer #278

The answer is (b): the temperature of the icewater will decrease, as seen in an mpeg video by clicking your mouse on the photograph below.



As time goes on and the salt is continually mixed into the icewater, the video has been edited to show short segments of the action such that you can see the temperature of the mixture as a function of time.

The freezing point of salt water is lower than that of pure water, due to the impurity. Therefore when the water is salted ice will melt, lowering the temperature of the icewater bath to the freezing point of salt water, as seen in the video. This technique is used on roads to lower the freezing point of the water on the roads and thus prevent the freeze-thaw cycle from further damaging the road surfaces. It is only good down to the ultimate freezing point of salt water, about -8° Celcius, or 12° Fahrenheit lower than the freezing point of fresh water. Thus salting roads is not an effective technique in far northern climates where the temperature often becomes considerably lower than the freezing temperature of salt water.

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