

Student Essay on The Heat Capacity of Methylated Spirits

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Essay

The Heat Capacity of Methylated Spirits

Aim :-]

To calculate the heat capacity of two solutions, methylated spirits and paraffin oil.

Equipment :-]

Bunsen burner, tripod, wire gauze, 2 beakers, 200 ml of solution, water, thermometer, tongs, matches, (scales).

Method :-]

Set up the equipment as shown -

Boil the water with the brass mass placed at the bottom.

Once the water boils, take the brass mass out with the tongs and quickly transfer it to the beaker containing the cold water. (make sure the initial temperature of the water is known).

Record the temperature after a while and calculate the difference in temperatures.

Return the cooled brass mass back to the boiling water and wait for it to heat up again.

Have the methylated spirits ready (take down the initial volume and temperature of the liquid). Place the heated mass into the methylated spirits and record the temperature change.

Pack up equipment and dispose of the solutions appropriately.

Risk Assessment :-]

Do not deliberately let the methylated spirits and the flame come into contact.

Make sure that the liquids are not overflowing the beaker.

Avoid getting the methylated spirits onto clothes, skin and into eyes, etc.

Wear protective eyewear.

Results :-]

The beaker weighed 105.236 grams

The beaker and methylated spirits weighed 173.9999 grams

Therefore, our experiment was conducted with 68.7417 grams of methyl.

The initial temperature of the methyl. was 18.5, °C and the final temperature was 26.5, °C. Therefore, the change in temperature or ΔT was 8, °C.

We are trying to calculate the C using the formula $J = MC \Delta T$

We already know that M is equal to 68.7 g and that ΔT is 8. We also know what J is, thanks to the previous experiment. J of the brass mass is equal to $MC \Delta T$.

M is equal to 200 | C of water is equal to 4.18 | ΔT is equal to 3 (21.5 - 18.5)

Therefore $J = 200 \cdot 4.18 \cdot 3 = 2508 \text{ joules} = 2.508 \text{ KJ}$

So, using the J of the brass mass, we can easily calculate the heat capacity of the methylated spirits -

$2508 = 68.7418 \cdot C$

C of methylated spirits is 4.5605505 which is approximately equal to 4.6