Insulating ice cream How to make Baked Alaska

Baked Alaska is an unusual pudding because it contains ice cream which is put into a hot oven. If you follow the recipe carefully then the ice cream does not melt as it is insulated by sponge cake and meringue, allowing it to remain frozen

You will need:

- a sponge cake approx 20 cm in diameter and 2.5 cm thick
- 2-3 tablespoons of jam
- about ½ litre of ice cream
- 3 egg whites
- 175g caster sugar
- ice cream scoop
- tray or dish which can go in the freezer
- oven dish about the same size as the cake
- bowl
- whisk – an electric one is easier
- table spoon and knife
- access to a freezer and an oven

What to do:

Heat the oven to 200°C/gas mark 6.

Allow the ice cream to thaw slightly then put scoops of it into the tray and put it back into the freezer to harden up for about 10 minutes.

Put the cake into the oven dish. Spread jam over the cake with the knife.

Separate the eggs and put the egg whites into a bowl. It is very important that the bowl is clean and dry and that there are no bits of yolk in with the whites or they will not whisk up well.

Begin whisking the egg whites. When they have turned white and puffed up and will stay standing begin to add the sugar. Add a spoonful at a time and whisk in each spoonful before adding another. The egg whites should now be white and glossy. This is the meringue.

This next bit needs to be done quickly. Remove the ice cream from the freezer and put the scoops onto the cake, adding more if you think it is needed. Leave about a 2 cm gap all around the edge of the cake. Cover the ice cream thoroughly with the beaten egg mixture ensuring that there are no gaps at all. If you wish you can swirl a pattern in the meringue, but be quick.

Beaten eggs contain lots of tiny air bubbles which insulate the ice cream.

Place the dish into the oven and leave for 10 minutes. The meringue should be just turning golden.

Serve immediately. When you cut it open you should find the ice cream is still frozen inside the hot meringue.

How it works:

When you beat the egg whites, air becomes trapped. You have made a foam, with many tiny air bubbles surrounded by the egg protein. The sugar strengthens the foam. Sponge cake also contains a lot of air. Air is a good thermal insulator – it is a poor conductor of heat.

As you bake the meringue, the ice cream is insulated by both the meringue and the sponge, so the heat from the oven does not have time to reach it.

Vicky Wong is Chemistry editor of Catalyst.