2hr/4hr Cooling Rule

Not sure about the 2hr /4hr Cooling Rule?

Food Standards Code Australia and New Zealand sets out specific parameters for cooling food.

Food Standards Code 3.2.2 Clause 7 (3) states…

…when cooling cooked potentially hazardous food, cool the food –

(a) within two hours – from 60^{0}C to 21^{0}C; and
(b) within a further four hours – from 21^{0}C to 5^{0}C;

Cooling food according to this requirement is a process that involves measurement.

Two things are measured, time and temperature.

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Why do we need to follow the 2hr/4hr Cooling Rule?

Let's think about the Temperature Danger Zone. All temperatures between 60^0C – 5^0C.

Food at 60^0C is safe. Most bacteria are not comfortable there.

Food at 5^0C is safe. Most bacteria are not comfortable there.

The temperatures in between are not safe, but temperatures above 60^0C and below 5^0C are safe. The Temperature Danger Zone is anywhere between 60^0C and 5^0C.

Because bacteria like to grow in the Temperature Danger Zoner, we don't want to our food to spend too much time in this temperature range.

The Temperature Danger Zone cannot be avoided completely. However, we can control the time the food takes on its journey through this temperature range.

Pathogenic bacteria grow quickly in temperatures between 60^0C and 21^0C. They grow between 21^0C and 5^0C too, but reproduce more slowly in that temperature range.

If we don't want the bacteria reproducing in our food while it is cooling down, then we need to hurry up this cooling process.

We only have 2 hours to get the food down from 60^0C to 21^0C.
(ie a 39^0C drop in temperature during Stage 1).

Then, after that, we only have 4 hours to get the food down from 21^0C to 5^0C.
(ie a 16^0C drop during Stage 2).

The total time of cooling must not be more than 6 hours. It can be less not more.

When cooling food we must control both the time and temperature as the food travels to its safe destination of 5^0C.

The 2 STAGES of the COOLING JOURNEY

Stage 1:

After cooking, and once the temperature of the food drops to 60^0C, we have a maximum of 2 hours to drop the temperature to 21^0C (or below).

Food temperature must drop to at least 21^0C within the first 2 hours.

Food temperature must not be more than 21^0C after the first 2 hours.

It is OK for the food temperature to be less that 21^0C at the 2 hour mark.

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So, by the 2 hour mark:

Is it OK for the food to be 19.9^{0}C ? YES - it is below 21^{0}C

Is it OK for the food to be 10.1^{0}C? YES - it is below 21^{0}C

Is it OK for the food to be 4.8^{0}C? YES - no need to go to Stage 2, cooling complete

Is it OK for the food to be 22.3^{0}C **NO** - because that is above 21^{0}C

Is it OK for the food to be 21.1^{0}C **NO** - because that is above 21^{0}C

Stage 2:

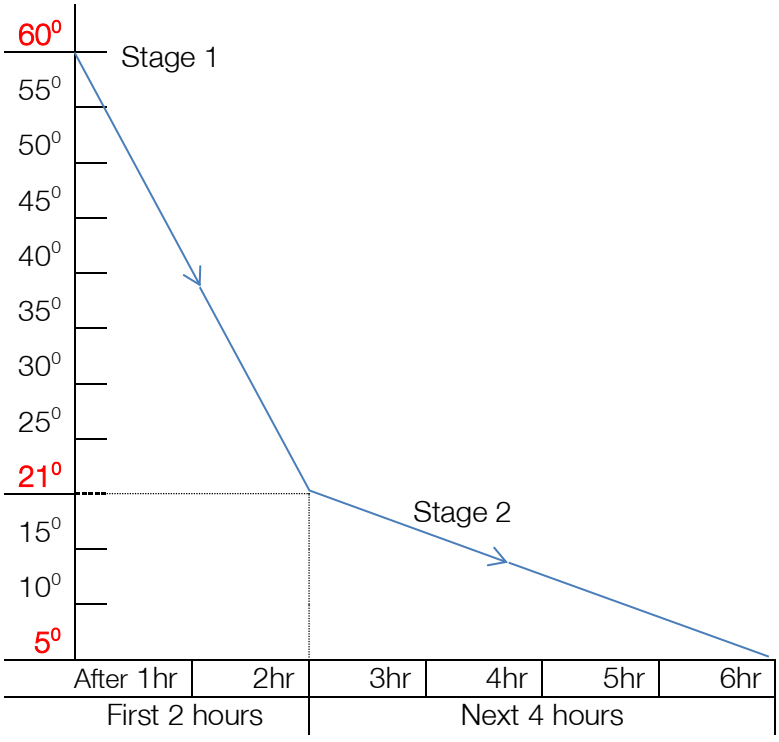
After the first 2 hours of cooling, when the food temperature has dropped down to at least 21^{0}C *(Stage 1 completed)*, we only have 4 hours to cool the food down to 5^{0}C *(Stage 2).*

The food temperature must not be above 5^{0}C at the 4 hour mark, at the end of *Stage 2.*

It may be less than 5^{0}C, but not more.

So, at the 6 hour mark:

Can it be 4.3 ^{0}C? YES Can it be 5.3^{0}C? **NO**



Stage 1 *: must not take any longer than 2 hours; by the end of Stage 1, the temperature must be 21^{0}C or less.*

Stage 2 *: must not take any longer than 4 hours; by the end of Stage 2, the temperature must be 5^{0}C or less.*

These are maximum times as illustrated in the diagram.

You can cool faster but not slower.

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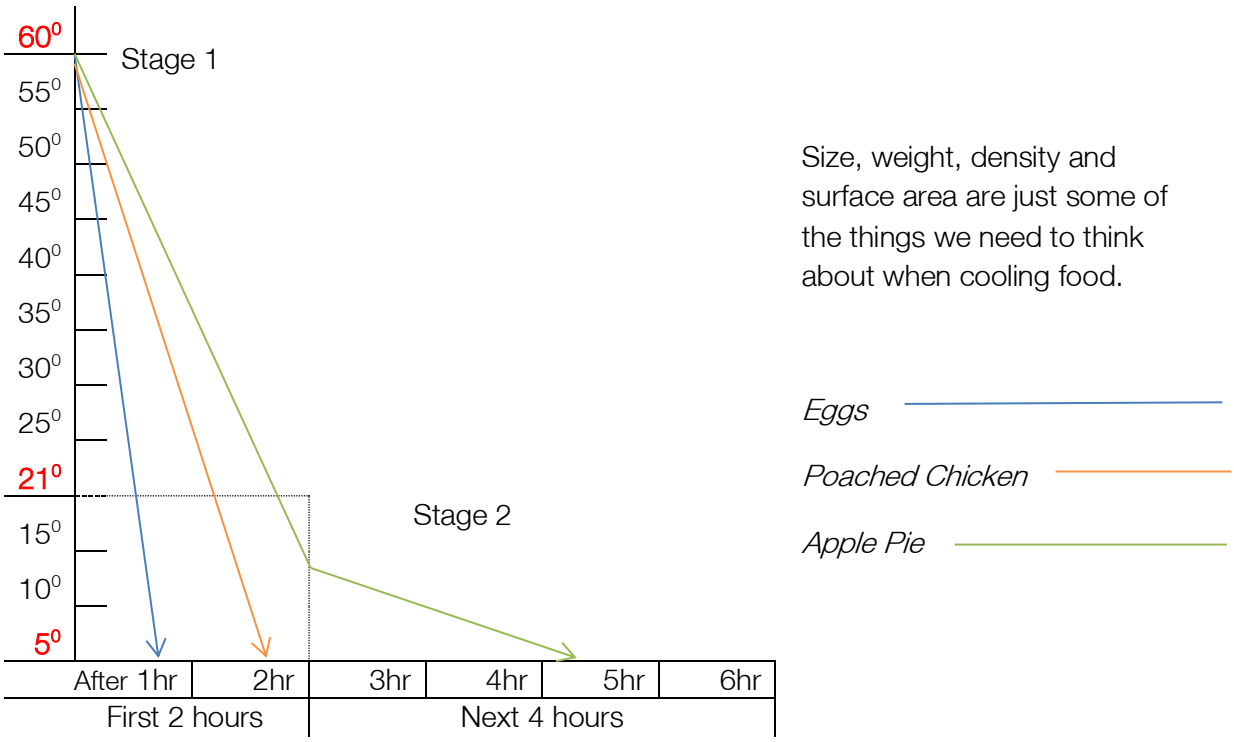
Examples of Faster Cooling:

Boiled eggs can cool from 60^{0}C – 5^{0}C in 40 minutes! Completely cooled in Stage 1.

Chicken takes under 2 hours to get to 5^{0}C. Completely cooled in Stage 1.

Apple Pie needs to go through both Stage 1 and Stage 2.



Stage 1: Time maximum = 2 hours; Temperature maximum = 21^{0}C.

Stage 2: Time maximum = 4 hours; Temperature maximum = 5^{0}C.

You may start cooling when the food is at any temperature at, or ABOVE 60^{0}C, providing the food is 21^{0}C or below no longer than 2 hours later.

Cooling is complete when the food is 5^{0}C or below.

Remember, businesses that sell or provide food in Australia must :

…when cooling cooked potentially hazardous food, cool the food –

(a) within two hours – from 60^{0}C to 21^{0}C; and
(b) within a further four hours – from 21^{0}C to 5^{0}C;

*Food Standards Code 3.2.2 Clause 7 (3)……..*and that is the Law.

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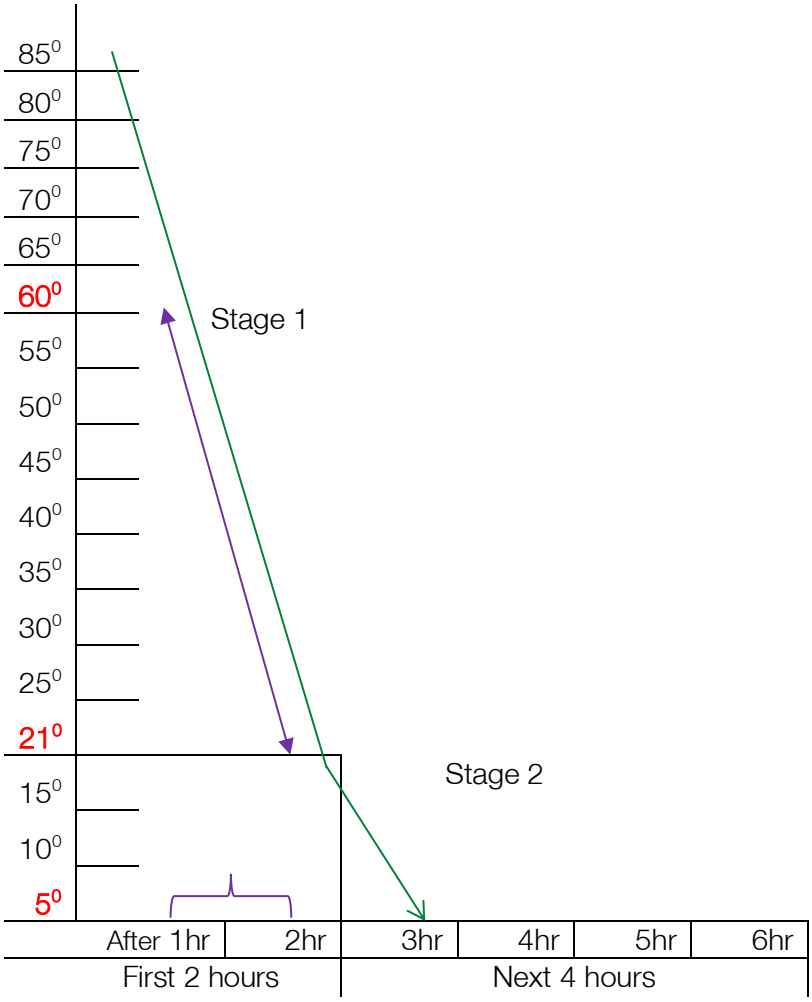
Some foods cool quickly. Imagine a tray of broccoli. We may start **measuring** our cooling process when the food is at any temperature at, or ABOVE 60^{0}C providing the food reaches 21^{0}C or below no longer than 2 hours later.



If we ask the question:

Did the food cool from 60^{0}C to 21^{0}C within 2 hours?

The answer is YES, it did.

Here the broccoli is cooked, and temperature checked at 85^{0}C.

Then, the broccoli it is transferred to a cold plater and let rest.

When the steam subsides and has lost sufficient heat, the broccoli is covered and placed in the cool room.

The temperature is checked just before the 2 hours (since the time of the first reading at the end of cooking), is up.

The temperature is 19.5^{0}C.

So, we can prove from the diagram that the broccoli cooled from 60^{0}C to 21^{0}C within 2 hours.

The broccoli was checked again an hour later and the temperature was 5^{0}C.

Cooling complete and compliant with the law.