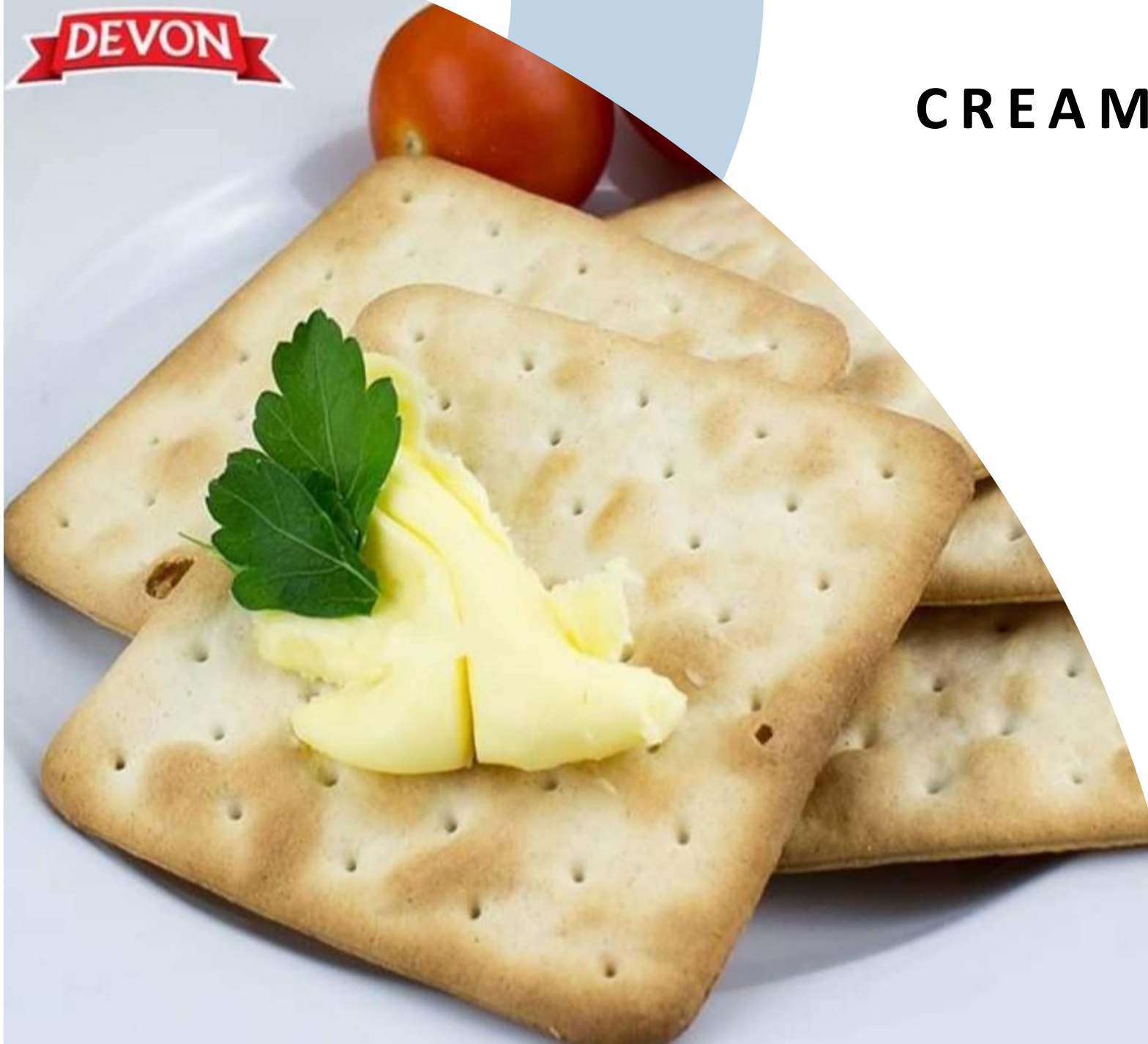


# Checking in Crackers

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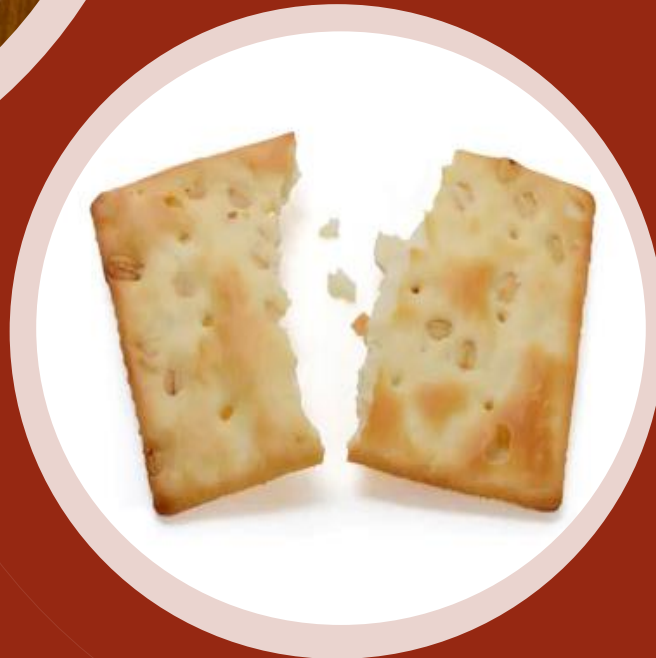
## CREAM CRACKERS



Flat, usually square shaped savoury biscuits.

The product has been around since the late 1800's.

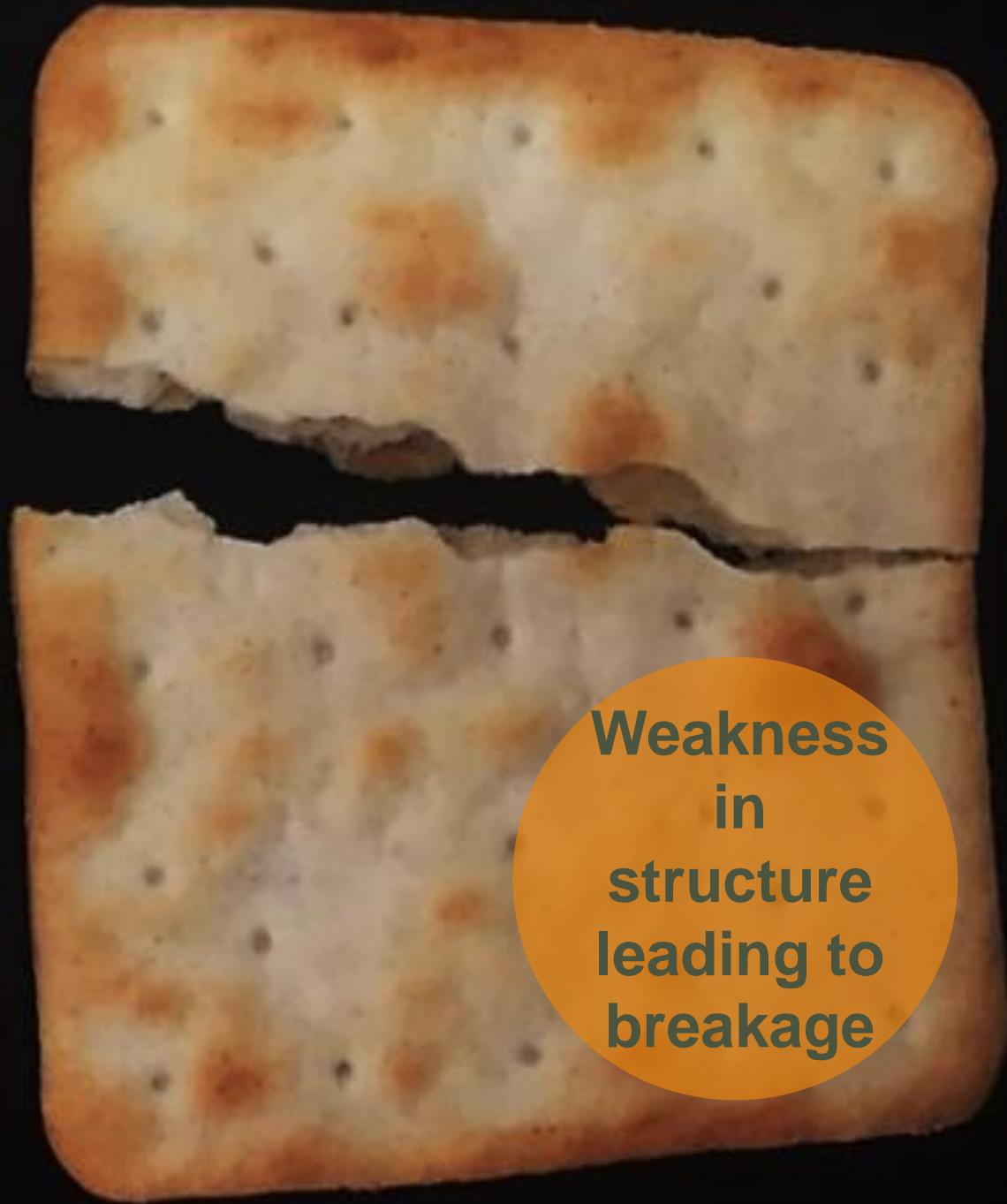
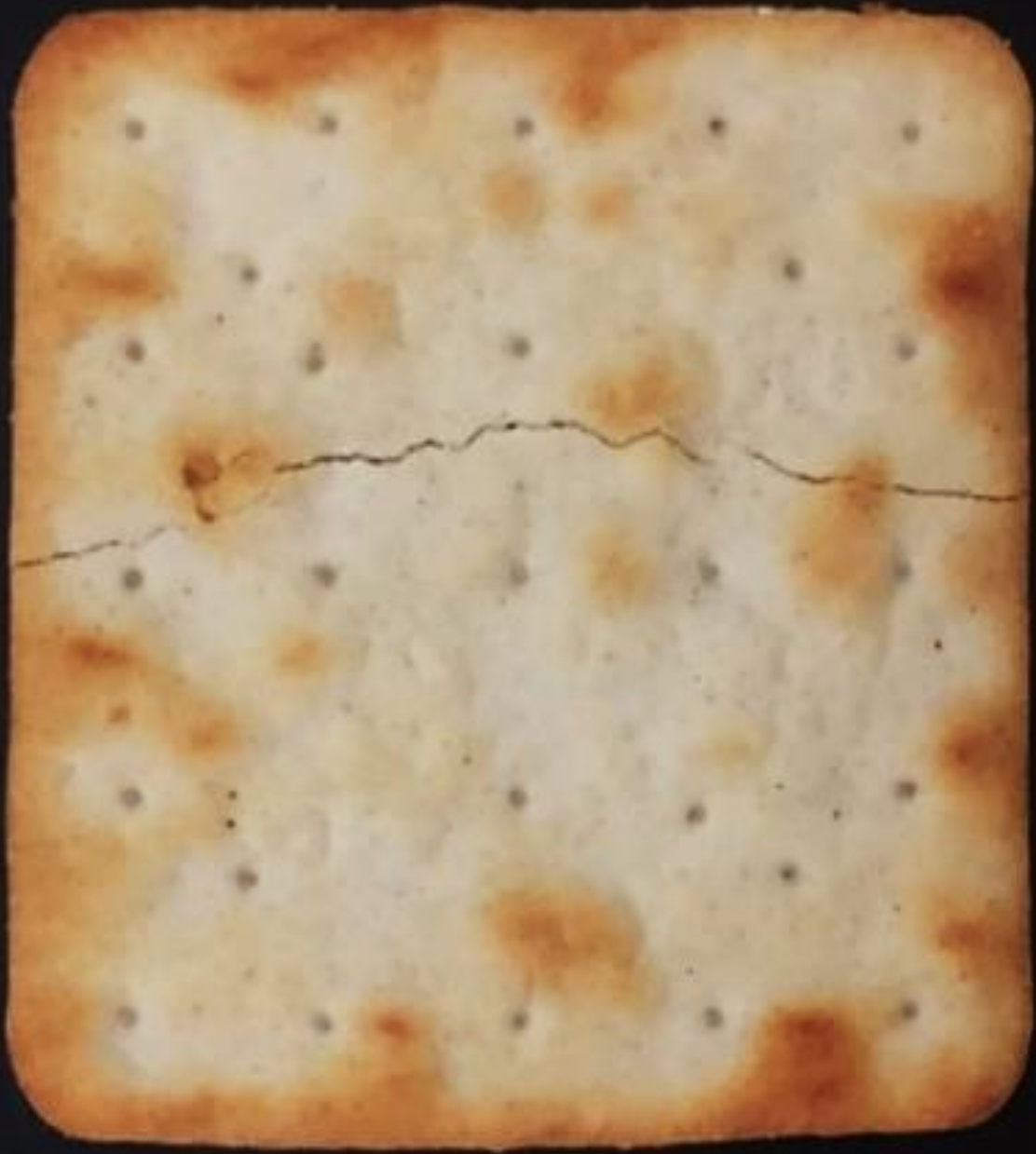
Can be enjoyed on their own, with cheese or spreads.



# What is Checking?

- Checking is a phenomenon which occurs when small hairline cracks develop in biscuits and crackers.
- This may consequently result in breakage when the product is exposed to minimal force.

Checking in Crackers



**Weakness  
in  
structure  
leading to  
breakage**

## INGREDIENTS

- Recipes with higher fat levels tend to be more flexible and stresses are relieved more easily after baking,
- Recipes with a higher water content tend to be more prone to checking.
- Use of very strong flours may also be conducive to checking due to the higher water adsorption capacity and stronger gluten formation ability.





## MIXING

- The use of a well-balanced recipe is important
- The mixer type, mixing time and mixer speed used are also key in ensuring a consistent and homogenous dough where all the ingredients are evenly distributed.
- High levels of inclusions within the recipe may also promote checking. The bigger the ingredient particles the more the crackers will be prone to checking.
- Excessive use of rework used may give rise to internal stresses within the dough.

# DOUGH STANDING TIME

- The final dough temperature of fermented dough's or when enzymes/dough improvers are used may also effect checking levels.
- Short fermentation times may result in a tough dough which will enhance stresses during sheeting.
- The longer the dough is left to stand the softer it becomes and consequently the water added to the mix may also be reduced.



# SHEETING

- The higher the number of laminations used the lower the tendency for the crackers to check due to the achievement of a more open texture.
- The uniformity of dough piece weight across the conveyor belt is important for an even bake.
- Fresh and recycled dough from the cutting stage should be evenly mixed together and have a similar temperature.





# CUTTING

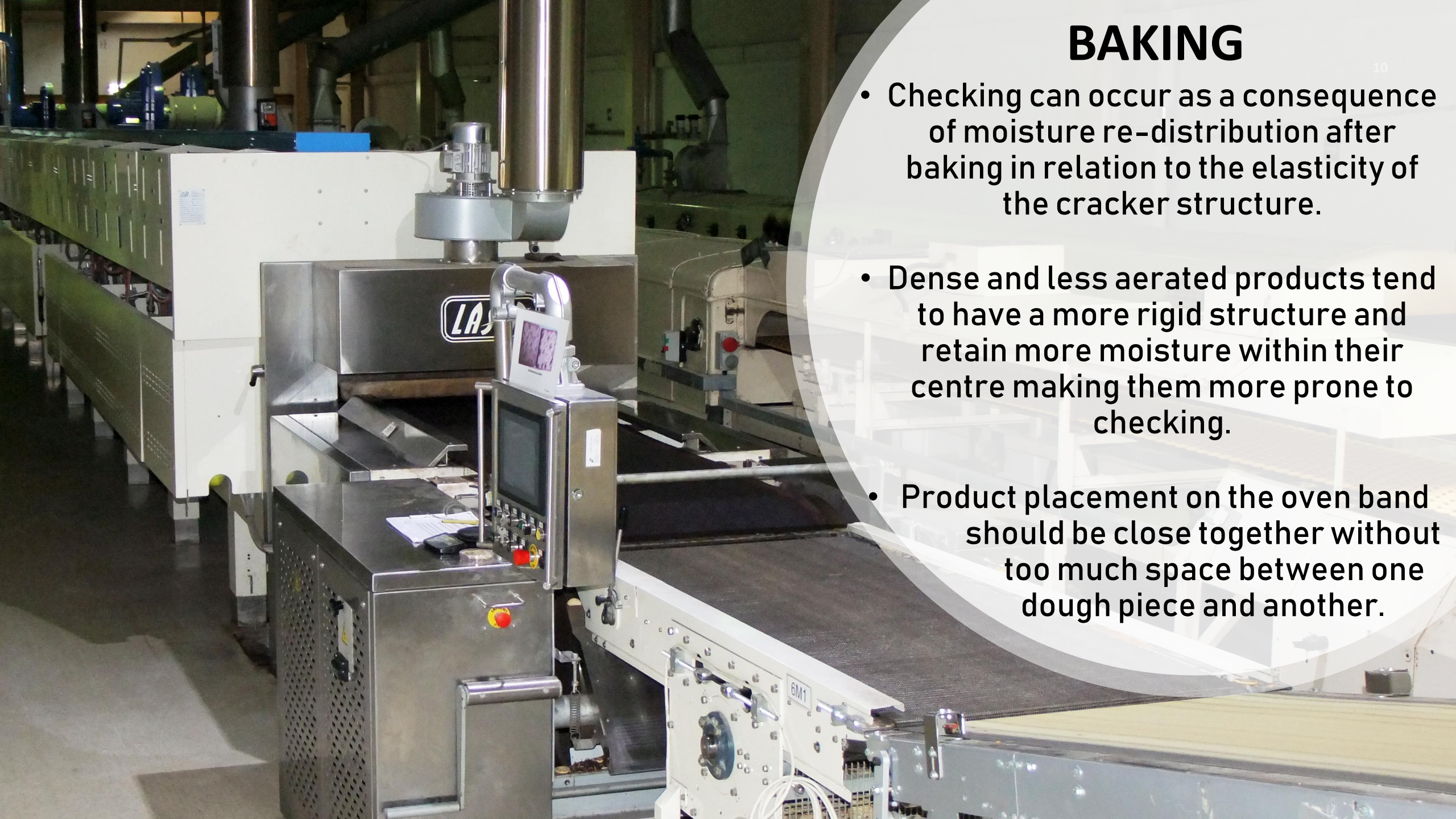
- Checking can take place in any size of cracker however larger or denser crackers have a higher tendency to check since they tend to be more rigid.
- The type of cutter also effects, including the docker pins present through their:
  - Number
  - Distribution
  - Size
- The level of shrinkage of the dough piece after cutting should be kept to a minimum.



# BAKING

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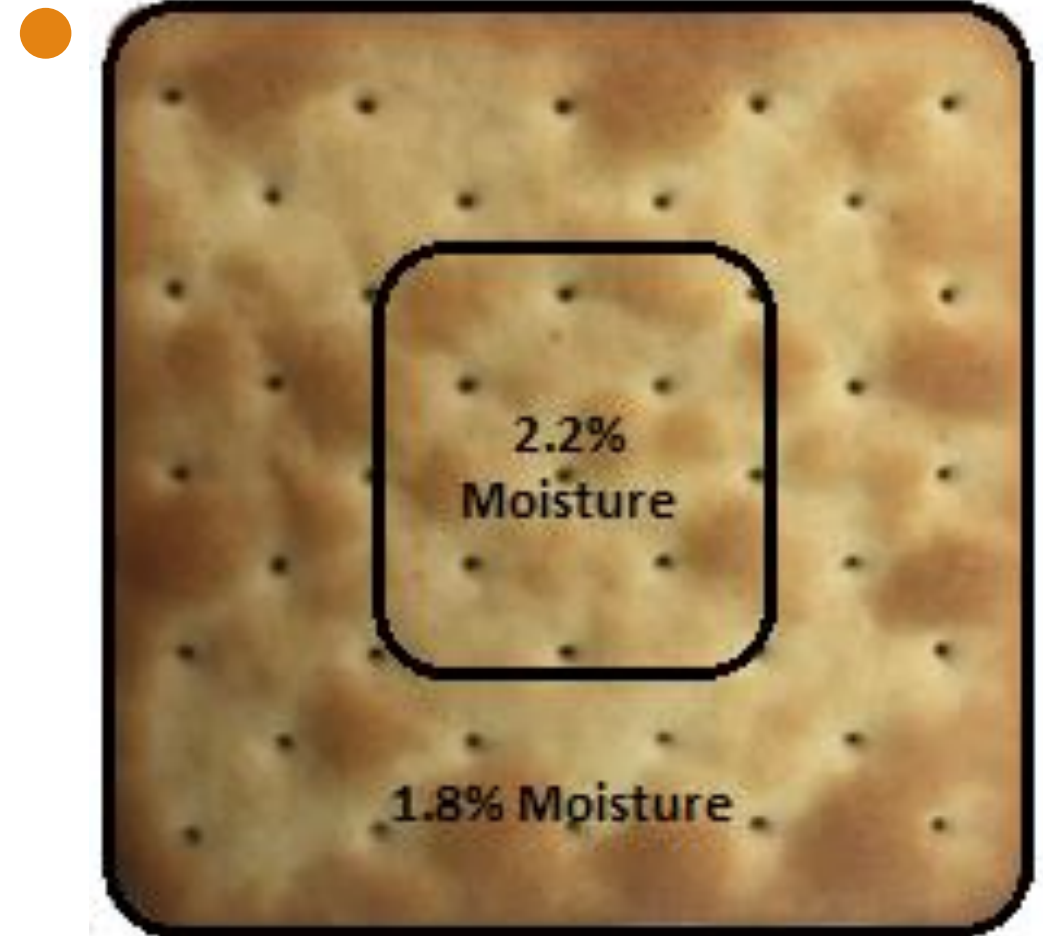
- Checking can occur as a consequence of moisture re-distribution after baking in relation to the elasticity of the cracker structure.
- Dense and less aerated products tend to have a more rigid structure and retain more moisture within their centre making them more prone to checking.
- Product placement on the oven band should be close together without too much space between one dough piece and another.



Under-baked crackers with high overall moisture content should be avoided.

One should check the moisture gradient within the product, this can be found by separating the centre part of the cracker from the periphery and taking individual moisture readings of the two, ideally only a small difference should be present.

Post baking dryers at the oven exit will significantly reduce the moisture gradients and therefore eliminate checking arising from this cause.





# BAKING

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- Control of oven temperatures, air circulation and humidity levels are important to achieve a balanced within the oven.
- It is important to utilise as much of the oven as possible, maintaining a balance between top and bottom heat.
  - The cracker should be flat to maximise the contact area with the oven band.

TOP SURFACE OF CRACKER



BOTTOM SURFACE OF CRACKER



Apart from the moisture gradient between the centre and edge of the cracker one must also ensure an even bake between the top and bottom of the cracker to avoid having a moisture gradient in this manner.

After baking, moisture will migrate from an area of high concentration to areas of lower concentration to achieve equalisation. This movement creates strains on the internal matrix and a crack can form if this is not strong enough.

# COOLING

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- On transfer to the cooling conveyors, moisture loss, temperature reduction and subsequent changes in the state of the main ingredients may cause stresses to form within the cracker until an equilibrium is reached.
- The rate of cooling should be mild to ensure proper moisture equilibration.
- Where long cooling belts are used the relative humidity, presence of draughts and temperature of the environment may also play a role. Sudden temperature changes should be avoided.





## PACKING

- Crackers should not be left exposed to air for too long before packing due to moisture uptake from the environment.
- Absorption of moisture from the air by the outer layers of the crackers may take place and further stresses may develop which can eventually also result in checking.



## SUMMARY

*Every stage of production, from mixing to packing can contribute to checking. Crackers made from a well balanced recipe, optimal process parameters and thoroughly baked with a minimal moisture gradient between the centre and periphery of the cracker will show a lower tendency to check.*





**WHOLE  
CRACKERS...  
HAPPY  
CUSTOMERS**

# THANK YOU

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