



EU ACRYLAMIDE LEGISLATION

How does this affect your business?

EU Regulation No. 2017/2158, which came into force on 11th April 2018, establishes mitigation measures and benchmark levels for reducing the presence of acrylamide in food.

WHAT IS ACRYLAMIDE?

Acrylamide is a naturally occurring chemical substance formed by a reaction between amino acids and sugars. It typically occurs when foods with high starch content, such as potatoes, root vegetables and bread, are cooked at high temperatures (over 120° C) in a process of frying, roasting or baking.



WHAT IS THE RISK OF HIGH LEVELS OF ACRYLAMIDE IN FOOD?

Studies have shown that levels of acrylamide in the diet can cause cancer in animals. The European Food Safety Authority have concluded that acrylamide has the potential to cause cancer in humans.

It is not possible to eliminate acrylamide from foods, but actions can be taken to ensure that acrylamide levels are as low as reasonably achievable.

WHAT TYPES OF FOODS ARE TYPICALLY AFFECTED?

- > French fries, other cut (deep fried) products and sliced potato crisps from fresh potatoes
- > Potato crisps, snacks, crackers and other potato products from potato dough
- > Bread
- > Breakfast cereals (excluding porridge)
- > Fine bakery ware such as wafers, gingerbread, crackers, biscuits and scones
- > Coffee (roast, instant and substitutes)
- > Pastry products
- > Roasted vegetables such as parsnips, carrots and sweet potatoes

WHAT DO YOU NEED TO DO?

Food businesses need to be aware of acrylamide as a food safety hazard and have a general understanding of how acrylamide is formed in the food they produce and include this in their food safety management systems. They are also required to put in place practical steps to manage acrylamide within their food safety management systems, which can include:

- > Ensuring all staff are aware of the steps required to manage acrylamide (e.g. revised storage and cooking instructions)
- > Undertaking representative sampling and analysis where appropriate to monitor the levels of acrylamide in products as part of their assessment of the mitigation measures
- > Keeping appropriate records of the mitigation measures undertaken, together with sampling plans and results of any testing



- > Ensuring any primary authority arrangements are updated with any changes to your food safety management system
- > Informing any external auditing services of your measures to manage acrylamide



SUGGESTED GENERAL CONTROLS

- > Ensure specifications to suppliers include consideration for acrylamide control
- > Make sure ready-to-eat precooked products comply with the “golden yellow” colour guidance
- > Reject precooked products that are overcooked
- > Where products are cooked on site, obtain and display colour charts to show properly cooked colour for the final product
- > Use the following temperature guidelines:

Deep fried foods: Maximum oil temperature of 175° C

Double or triple frying: Pre-cooks in oil at 130° C. (If triple frying, the first cook should not result in any colour change to the food.)

Oven baked food: Maximum temperature of 220° C (lower for fan-assisted ovens)

- > Change and filter cooking oil regularly
- > Discard any foods that are overcooked

ADDITIONAL GUIDANCE FOR SPECIFIC FOODS

Potatoes

- > Ensure suppliers are taking measures to avoid bruising
- > Perform delivery checks to reject bruised potatoes
- > Store whole potatoes above 6° C (dry goods store is ideal) and protected from light
- > Obtain details from supplier of potato products on correct cooking time and temperature to achieve the required golden yellow final colour
- > Don't over fill cooking baskets or trays to ensure all products cook at the same rate
- > Use equal size potatoes and potato products to help achieve uniform cooking



Par-baked bread and bakery goods

- > Obtain details from supplier on correct cooking time and temperature to achieve the required golden yellow final colour
- > Pre-heat ovens

Coffee

- > Specify to suppliers an expectation that acrylamide levels in coffee supplied are as low as reasonably achievable



EXAMPLE CONSIDERATIONS FOR CONTROL IN CATERING STEPS (Potato And Potato Products)

PURCHASING

- Variety and type of potato: pick lower sugar content
- Reduce starch
- Use a cooking oil that allows frying quicker and/or at lower temperatures

STORING

- Temperatures matter to potatoes
- Sugar increases at lower temperatures
- Keep potatoes above 6° C
- Avoid exposure to light
- Don't bruise potatoes as this increases the starch

PREPARING

- Wash, soak
- Par-boil (can reduce acrylamide by 50%)
- Reduce surface area to reduce acrylamide -- less on roast potatoes than on thin cut chips

COOKING

- Cook at 160 to 175°C in the fryer
- For twice cooked, use 130° C for first cook
- Set oven at a max of 220° C
- Cook french fries to golden yellow colour
- Avoid frying to brown/dark
- Maintain good frying oil quality
- Skim frequently to remove 'bits'
- Regularly refresh the oil used for deep frying
- Follow manufacturer's instructions
- Use cooking colour chart to cross check

TESTING FOR ACRYLAMIDE

The levels of acrylamide in both raw and supplier goods, as well as those prepared on site, can be determined by chemical analysis performed by an accredited laboratory service.

To demonstrate that you are controlling acrylamide as far as reasonably practical, a range of analyses is likely to be required. This will establish any background levels of acrylamide in raw ingredients and then compare them to the final ready-to-eat product. The difference determines if the controls are sufficient or if more stringent controls need to be implemented.

Once the control measures have been demonstrated to achieve the lowest possible acrylamide levels in the ready-to-eat product, routine sampling should be undertaken to consider natural seasonal variations, ingredient changes, cooking method changes and staff changes.

BENCHMARK LEVELS

The benchmark levels (BMLs) are set out in an annex of the legislation. BMLs are generic performance indicators for the food categories covered by the regulation. They are not maximum limits and are not intended to be used for enforcement purposes. Example benchmark levels are listed below.

FOOD	BENCHMARK LEVEL (µG/KG)
French fries (ready-to-eat)	500
Potato crisps from fresh potatoes and from potato dough	750
Potato-based crackers	750
Other potato products from potato dough	750

NSF INTERNATIONAL

Hanborough Business Park | Long Hanborough, Oxfordshire, OX29 8SJ, UK | T +44 (0)1993 885600

E contactuk@nsf.org | www.nsfinternationalfood.co.uk