BEUC The European Consumer Organisation

The Consumer Voice in Europe

Acrylamide in Food

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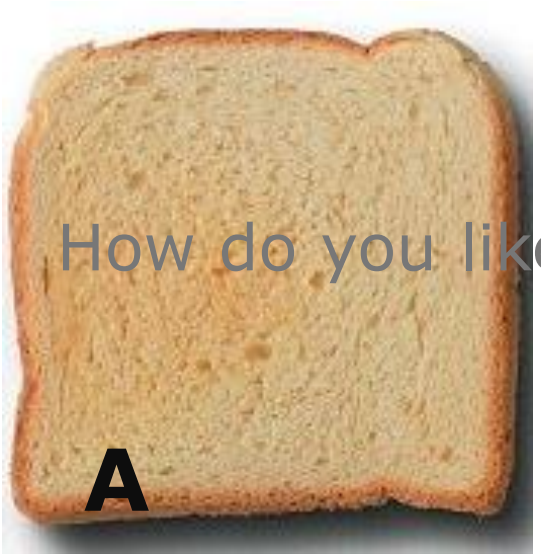
Self-Regulation: a false promise for public health?

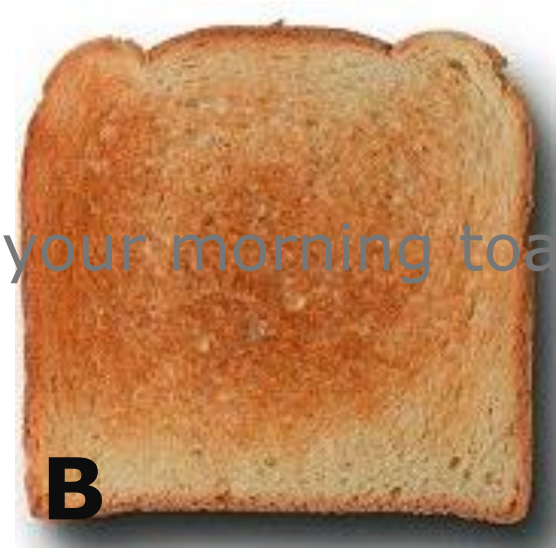
European Parliament

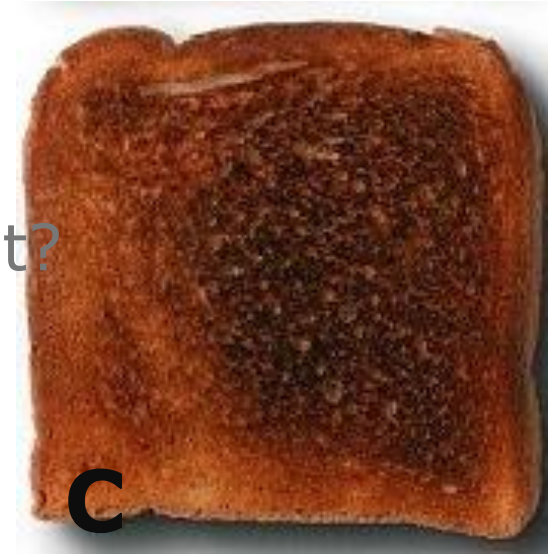
18th October

A quick poll ….

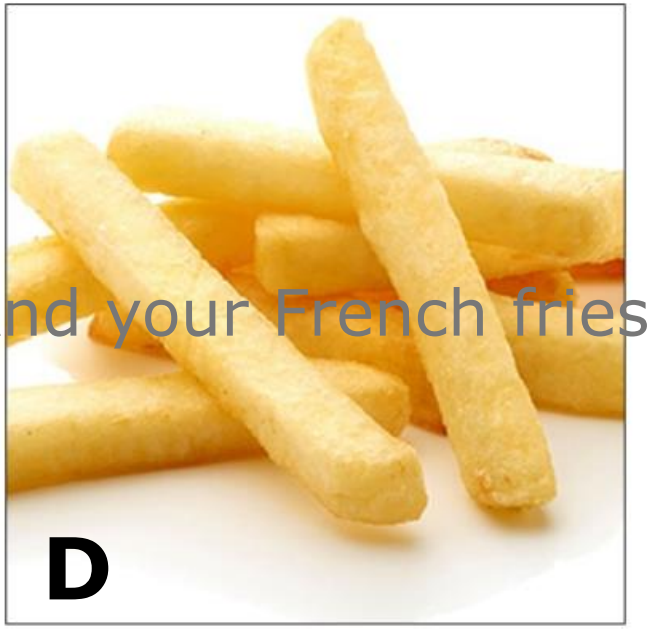
How do you like your morning toast?







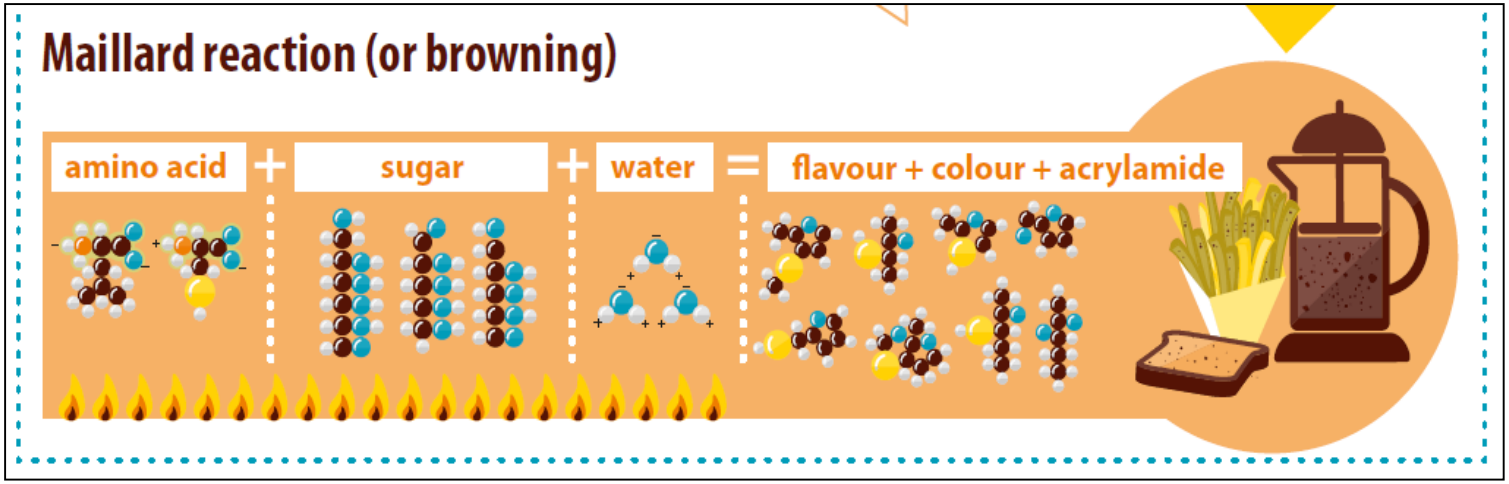
And your French fries?



What is acrylamide (AA)?

- AA is a chemical used in certain industrial processes (e.g. in making paper, dyes, and plastics). Small amounts are also found in some consumer products (caulk, some adhesives) and in cigarette smoke.

- AA also naturally forms when starchy food products are cooked at high-temperature (home-cooking and industrial processing). The main chemical reaction is known as the "Maillard reaction" (or browning).



Source: EFSA, 2014

How was acrylamide discovered in food?

- In 2002, Swedish scientists released new findings that AA is formed during food processing/preparation and occurs in a variety of fried and baked common foodstuffs.

- New analytical methods were developed and Swedish findings were rapidly confirmed in several countries (UK, Switzerland, Norway and USA).

- AA found in a range of foodstuffs. The duration and temperature of cooking determines the amount of acrylamide produced.

Source: UK Food Standards Agency, 2015

Health risks from acrylamide

- Lab tests show that AA in the diet causes cancer in animals.
- Scientists conclude that regularly eating food containing high levels of AA potentially increases the cancer risk for consumers of all ages.
- Other possible, but less likely, consequences are damage to the nervous and reproductive systems.
- It is virtually impossible to eliminate AA from cooked starchy foods. AA amounts found in food should be reduced as much as possible.

An old story …

- FAO/WHO consultation (2002): AA presence in food recognised as a major concern for humans based on the ability of AA to induce cancer. Recommendation for further studies.

- Scientific Committee on Food (2002): recommended that levels of AA in food should be as low as reasonably achievable (ALARA).

- JECFA (2005), EFSA (2005): efforts to reduce AA concentrations in foodstuffs should continue. More data needed on carcinogenicity and long-term neurotoxicity.

- JECFA (2010): confirmed previous evaluation.

- German Federal Institute for Risk Assessment (2011), Danish National Food Institute (2012)

- EFSA (2015): acrylamide in food potentially increases the risk of developing cancer for consumers in all age groups.

Actions so far

- **Voluntary efforts** by industry to reduce AA levels in processed foods since 2002
  - "toolbox" and Codes of Practice with mitigation measures per category of products

- **Monitoring** of AA concentrations in food over time
  - Recommendation 2007/331/EC: 3-year monitoring programme (2007 – 2009)
  - Recommendation 2010/307/EU: No time-limit, regular assessment of need to continue monitoring
  - AA data collected and compiled by EFSA in several reports (2007, 2008, 2007-2009, 2007-2010).

- Setting of **"indicative values"** in 2011
  - For foodstuffs known to contain high AA levels (incl. French fries, potato crisps, soft bread, breakfast cereals, instant coffee, etc.)
  - Member States required to investigate cases where AA levels above the indicative values
  - Indicative values reviewed in 2013. Monitoring to continue.

What effect, if any, on acrylamide levels in food?

- **EFSA (2012) -** Update on AA levels in food from monitoring years 2007 to 2010
  - **No consistent downward trend** in all relevant foodstuffs
  - Indicative values exceeded for 3–20 % of samples in different food categories (2010 monitoring data)
- Implementation of toolbox/mitigation measures by food business operators (especially small ones) insufficient.

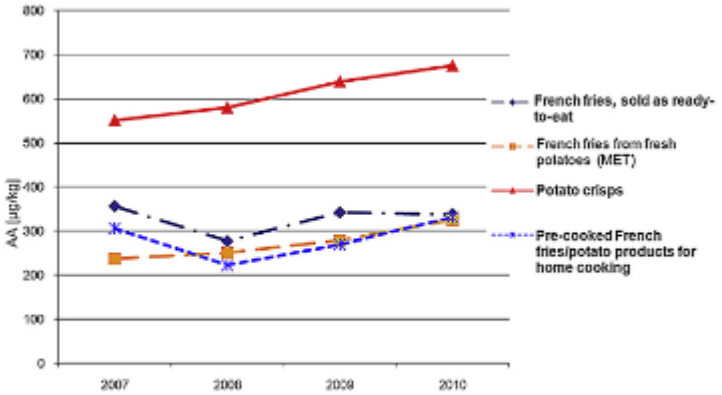


Figure 3 The time trends of changes in acrylamide levels for potato products. *Developed on the basis of EFSA, 2012 [11].*

Acrylamide in Food

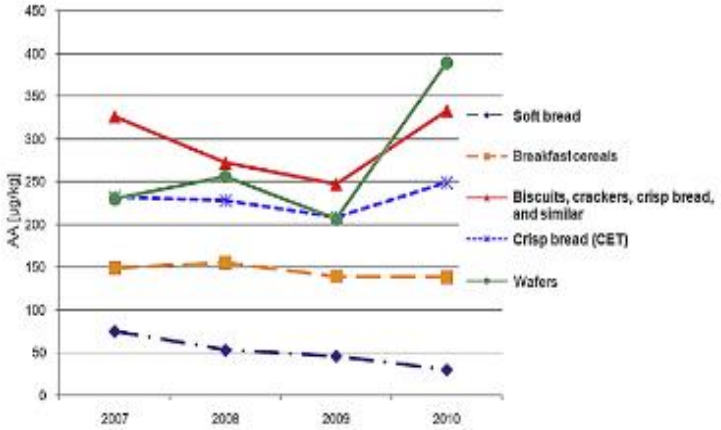


Figure 4 The time trends of changes in acrylamide levels for soft bread, biscuits, wafers, and breakfast cereals. *Developed on the basis of EFSA, 2012 [11].*

Source: Mojska, H. (2015). Secular Trends in Food Acrylamide. In *Acrylamide in food: Analysis, content & Potential Health Effects*. pp39-59

Tests by consumer organisations (I)

En test : chips, pains suédois et frites maison

Selon les valeurs directives de la Commission européenne les frites peuvent contenir au max. 600 µg/kg d'acrylamide, les chips 1 000 µg/kg et les petits pains suédois 450 µg/kg. Certains des échantillons analysés, principalement des chips, obtiennent un — ou un ⊖, ce qui signifie qu'ils contiennent plus ou beaucoup plus d'acrylamide que ce qui est autorisé.

	frites : 9 échantillons	chips : 46 échantillons	pains grillés : 10 échantillons
⊞ Très bon	4	12	8
+ Bon	3	19	2
□ Moyen	1	6	0
— Médiocre	0	3	0
⊖ Mauvais	1	6	0

28 Test-Achats 583 • février 2014

Source: Test-Achats, Belgium, 2014 (French fries, crisps and toasted bread)

Source: FRC, Switzerland, 2016 (beers)

SUR ONZE BIÈRES ARTISANALES, UNE SEULE SE DÉMARQUE VRAIMENT

MARQUE	LA NÉBULEUSE Stirling	BRASSERIE DES TROIS DAMES Voisine	DOCTEUR GAB'S Tempête	BRASSERIE DES TROIS DAMES Pacifique	DOCTEUR GAB'S La Houleuse	BRASSERIE DES TROIS DAMES La Fraîcheur	LA NÉBULEUSE Überweiss Dunkel
TYPE	Blonde	Blonde	Blonde	Blonde	Blanche	Blanche	Blanche
LIEU DE FABRICATION	Renens	Sainte-Croix	La Claie-aux-Moines	Sainte-Croix	La Claie-aux-Moines	Sainte-Croix	Renens
DISTRIBUTEUR	Manor	Coop	Manor	Globus	Manor	Globus	Manor
PRIX | PRIX AU LITRE	3.60 | 10.91	3.90 | 11.82	3.80 | 11.52	4.80 | 14.55	3.50 | 10.61	4.80 | 14.55	4.- | 12.12
GLYPHOSATE (15%)	●●	▲	■	■	■	●	■
AMPA (15%)	▲▲	▲	▲	▲▲	●●	■	▲
GLUFOSINATE (15%)	●●	●●	●●	●●	●●	●●	●●
ACRYLAMIDE (15%)	●●	●●	●●	●●	▲	▲	●●
DÉGUSTATION (40%)	●●	●	■	●	■	■	■
APPRÉCIATION GLOBALE	●● 83%	● 69%	● 66%	● 66%	● 63%	■ 56%	■ 54%

frc mieux choisir | juin 2016 | N°89

Prix indicatifs basés sur les références fournies en magasin

Tests by consumer organisations (II)

PATATAS FRITAS Y APERITIVOS		PRECIO		RESULTADOS								CALIFICACIÓN GLOBAL
	Envase (g)	Del envase	Medio por kg	Etiquetado	Sal	Grasa	Grasa saturada	Nutricional	Acrilamida	Defectos	Degustación	
PATATAS FRITAS LISAS												
FRITRAVICH Al estilo tradicional	170	1,36 – 1,75	9,18	■	–	+	■	□	+	+	+	67
CELIGÜETA Sal de mar	135	1,43 – 1,69	11,06	■	–	+	■	□	+	+	+	66
AUCHAN Lisas (Alcampo)	170	0,51 – 0,55	3,08	■	+	+	■	+	□	+	+	65
LAS PATATAS DEL ABUELO	130	1,43 – 1,53	11,31	■	□	□	■	□	□	+	+	64
CARREFOUR DISCOUNT Lisas	150	0,52 – 0,59	3,56	■	□	□	■	□	□	■	+	62
ALIPENDE (Ahorramás)	170	0,85	5,00	■	□	+	■	+	□	□	□	62
LAY'S Al punto de sal	170	1,00 – 1,15	6,34	–	–	+	■	□	■	+	+	62
CARREFOUR Lisas	170	0,58 – 0,75	3,67	■	+	+	■	+	□	□	□	61
CHURRIRI Artesanales	2 x 220	2,60 – 3,20	6,75	–	+	–	■	+	+	+	+	61
EROSKI BASIC	170	0,55 – 0,60	3,45	■	□	+	■	□	–	+	+	60
EROSKI Estilo caseras	2 x 150	1,35	4,50	■	□	□	■	+	–	■	□	60
ALIADA (Grupo El Corte Inglés)	160	0,91 – 0,98	5,89	□	+	■	■	+	–	+	+	60
SANTA ANA	190	0,99 – 1,30	5,80	+	–	+	■	□	+	□	+	60
HACENDADO Lisas (Mercadona)	250	0,86	3,44	+	–	□	■	□	□	+	□	58
DIA Lisas	200	0,71 – 0,73	3,56	+	–	+	■	□	□	+	+	58
THE SNACK COMPANY Artesanales	170	1,81 – 2,45	13,06	□	–	■	+	□	■	+	□	58
SNACK DAY Lisas (Lidl)	170	0,59	3,47	+	–	■	■	□	–	+	□	56
SANTA CLARA CHURRERÍA	200	0,95 – 1,01	4,92	–	□	□	■	□	+	+	□	56
VICENTE VIDAL Artesanales	210	1,23 – 1,62	6,63	+	□	+	■	□	–	+	□	56
SUPERSOL	170	0,65 – 0,87	4,55	+	–	–	■	□	□	●	+	55
LA GOLONDRINA Artesanas	2 x 150	1,69 – 2,24	7,01	–	–	□	■	□	+	□	□	51
APERITIVOS DE PATATA												
CARREFOUR	170	1,55 – 1,69	9,56	■	■	■	–	+	+	n.p.	□	66
AUCHAN Tejas con sal (Alcampo)	170	1,00 – 1,49	6,60	■	+	■	–	□	+	n.p.	□	63
PRINGLES Original	150	1,47 – 1,99	11,70	□	□	+	–	□	■	n.p.	+	62

Source: OCU, 2012 (crisps)

10 Tra'fo
Deze biologische chips zijn handcooked. Op de verpakking staat dat ze gebakken zijn bij 165 °C. Dat wekt de verwachting van minder acrylamide, maar helaas. Niet gelukt!
Te koop bij natuurvoedingswinkels als EkoPlaza: €1,59 voor 125 gram.

11 Kettle
De verpakking van deze chips staat vol claims: 'geen smaak- of kleurstoffen, in zonnebloemolie gebakken'. Op basis daarvan verwacht je uiterst gezonde chips. Maar dat valt dus te betwijfelen.
Te koop bij onder meer Albert Heijn: €1,94 voor 150 gram.

12 Hoeksche Chips
Hoeksche Chips worden gemaakt door drie boeren uit de Hoeksche Waard van zelfgeteelde aardappelen, omdat ze 'de goede kwaliteit van onze aardappelen beter willen benutten'. Geen garantie voor een laag acrylamidegehalte, zo blijkt.
Te koop bij onder meer Plus: €2 voor 150 gram.

producten neemt de hoeveelheid acrylamide ook af, bevestigt Hans Jeuring, inspecteur bij de NVWA: 'De NVWA onderzoekt jaarlijks zo'n 100 monsters en we zien in de meeste productgroepen een daling. Waarschijnlijk is dit het gevolg van een aanpassing in het productieproces.' Jeuring doelt hiermee op de zogenoemde toolbox, ontwikkeld door FoodDrinkEurope, het overkoepelende orgaan voor de Europese voedingsmiddelenindustrie. Hierin staan handvatten om acrylamidevorming in het productieproces zo veel mogelijk te beperken en bedrijven volgen over het algemeen deze werkwijze. Zij worden namelijk op de vingers getikt door de voedselautoriteiten als ze de signaalwaarde van de Europese Commissie overschrijden.

Uitschieters
Cijfers van de Europese voedselautoriteit EFSA bevestigen dat acrylamide in veel productgroepen afneemt, maar dat er uitschieters blijven bestaan.

ACRYLAMIDE IN CHIPS

	Merk	Type	Prijs	Inhoud (gram)	Prijs per portie	Acrylamide
1	Pirato	Naturel	€0,79	250	€0,08	+
2	C1000	Naturel	€0,92	200	€0,12	+
3	Jumbo	Naturel	€0,92	200	€0,12	+
4	Albert Heijn	Naturel	€0,97	200	€0,12	+
5	Plus	Naturel	€0,97	200	€0,12	+
6	Croky	Naturel	€1,29	250	€0,13	+
7	Lay's	Naturel	€1,25	225	€0,14	+
8	Hatherwood	Handcooked, lightly salted crisps	€0,95	150	€0,16	+
9	Lay's	The Oven from Lay's, naturel	€1,20	150	€0,20	+
10	Tra'fo	Bio-organic handcooked chips, seasalt	€1,59	125	€0,32	–
11	Kettle	Handcooked, seasalt	€1,94	150	€0,32	–
12	Hoeksche Chips	Met zeezout	€1,99	150	€0,33	–

++ = zeer goed + = goed □ = redelijk – = matig – – = slecht Eén portie is 25 gram.
TE KOOP BIJ Hatherwood is te koop bij Lidl, Pirato bij Aldi, Hoeksche Chips bij Plus en Tra'fo chips

Source: Consumentenbond, 2013 (crisps)

What is the European Commission proposing?

- Mandatory application **of industry Codes of Practice (CoPs)**.

- Food business operators would be required to:
  - Assess suitability of CoP mitigation measures and apply those that are "*effective and reasonable*" in order to reduce AA in their products to levels which are 'As Low As Reasonably Achievable' (ALARA)
  - Monitor AA levels in finished products at least annually.

Why it is not enough

- Indicative values for AA levels are too high

Product type	MS-reported mean AA values (2010-2013)	MS-reported P95 AA values (2010-2013)	EU indicative values (2013)	Danish indicative values (2016)
French fries ready-to-eat	**332**	**1115**	**600**	550
Potato crisps & snacks	**580**	**1841**	**1000**	750
Wheat-based soft bread	**38**	**120**	**80**	50
Non-wheat based soft bread	**46**	**203**	**150**	100
Roasted coffee	**244**	**563**	**450**	400
Instant coffee	**674**	**1133**	**900**	800

- Based on AA data reported in EFSA 2015 scientific opinion on acrylamide (pp37-38). AA levels expressed in µg/kg.
- MS data collected between 2010-2013.
- EU values established by EC Recommendation 2013/647/UE
- Danish values adopted in January 2016

Why it is not enough (cont'd)

- Industry not taking acrylamide issue seriously enough even when aware of toolbox/CoPs.

Commission

Investigations on increased levels of acrylamide - outcome

Implementation of the toolbox among those FBOs who were aware of the toolbox:

In large industrial-scale manufacturers where the toolbox was well known, some elements of it had been implemented or at least tried out in studies.

Several FBOs replied that although aware of the toolbox, they had not implemented the relevant parts of it. The following reasons were given:
- HACCP plan already considers this aspect, no need for further action
- too costly to implement, laboratory testing too costly (several replies)
- there are no legal limits (several replies)
- not acceptable to make changes / organoleptic properties altered if changes to process conditions or recipees are made
- lack of expertise

Health and

Source: European Commission presentation (2014)

- CoPs leave too much leeway to food businesses to ignore mitigation measures

What is needed

- **Legally binding** maximum limits must be set.
- Existing "indicative values" are outdated and need **immediate revision and then regular update** to keep up with technological progress.
- CoPs need to make it clearer to food businesses that they ***have to* apply mitigation measures** to avoid or minimise acrylamide formation.
- **Minimum frequencies of controls** by national authorities must be set to verify that the AA maximum limits are complied with.

What about consumers at home?

HOW TO CUT DOWN ON ACRYLAMIDE (TIPS)

National authorities in the EU offer advice to consumers tailored to national eating habits and culinary traditions. Also, a careful selection of raw materials and cooking practices can help limit acrylamide formation. A rule of thumb is: "**Don't burn it, lightly brown it**". Further examples of tips from national authorities:

- During **frying**, follow recommended frying times and temperatures to avoid overcooking, excessive crisping and burning.
- **Toast** bread to a golden yellow rather than brown colour.
- **Cook potato products** like French fries and croquettes golden yellow rather than brown.
- **Do not store potatoes in the refrigerator** as this incr (potentially increasing acrylamide production during c in a dark, cool place.

Source: EFSA

L'ART DE BIEN CUIRE LES FRITES

Le mode de préparation des frites influence la formation d'acrylamide. Quelques conseils.

Conservez les pommes de terre à l'abri de la lumière, entre 4 et 8°C. En deçà, des sucres se forment, ce qui favorise la formation d'acrylamide.

Evitez les "vieilles" pommes de terre car elles contiennent plus de sucres et brunissent donc plus vite pendant la cuisson. Or les frites brunes contiennent généralement beaucoup d'acrylamide.

Plongez d'abord les pommes de terre dans de l'eau chaude ou blanchissez-les pour réduire la teneur en sucres réducteurs, qui sont ensuite transformés en acrylamide. Séchez bien les frites en les tamponnant avant de les plonger dans l'huile.

Précuisez les frites entre 140 et 160°C, puis cuisez-les à 175°C. Une température plus élevée favorise la formation d'acrylamide. Ne les cuisez pas trop longtemps. Plus elles foncent, plus elles contiennent d'acrylamide. Elles doivent être dorées.

Des frites surgelées ? Un emballage réglementaire doit indiquer le mode de cuisson. Depuis peu, la température de cuisson mentionnée ne peut dépasser 175°C, afin justement de limiter la formation d'acrylamide. La consigne est-elle respectée ? Aldi indique toujours 180°C...

Sur les frites Aldi All Seasons, on conseille encore 180°C à la place de 175°C.

s Allumettes
: A la friteuse: plongez par pet
s l'huile à 180°C pendant 3 à
n: Dans un réfrigérateur: 2 jo
artiment à glace d'un réfrigéra
semaine,

Source: Test-Achats

MODELO CONVENCIONAL MAIS BARATO

Com óleo

A resistência situa-se no fundo da cuba, junto ao sensor de temperatura que está ligado ao termóstato. Este liga ou desliga a corrente, para manter a temperatura definida.

- \+ Mais barata
  Proporciona fritos mais saborosos
- − Maior quantidade de gordura nos fritos
  Requer maior quantidade de óleo

Sem óleo

A resistência elétrica aquece o ar que, devido a um ventilador, circula pelo interior do recipiente onde estão os alimentos.

- \+ Requer pouco ou nenhum óleo para fritar
- − Mais cara e demora mais tempo a fritar
  Origina formação de maior quantidade de acrilamida

Source: DECO

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Thank you for your attention

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