A microscopic view of numerous oil droplets of various sizes, some containing smaller droplets, creating a complex, multi-layered structure. The droplets are translucent and yellowish, set against a white background.

Current study on
acrylamide
formation
by the ZHAW Zurich

Make the most of your oil with Maxfry®

30-50% less acrylamide, better sensory properties, significantly
lower thermal-oxidative stress using Maxfry®

Maxfry®
advanced food ingredient.

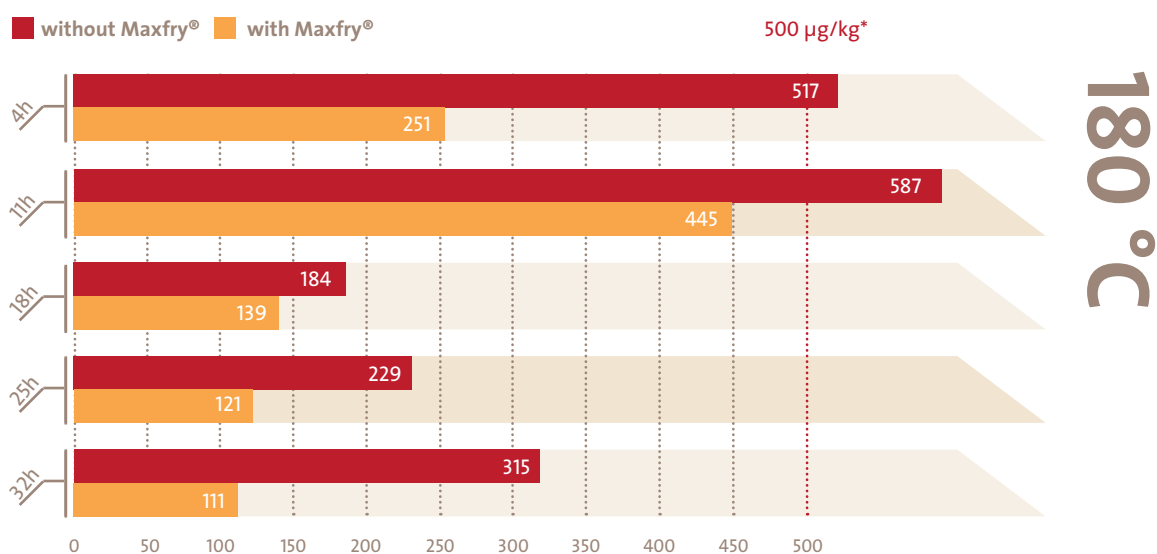
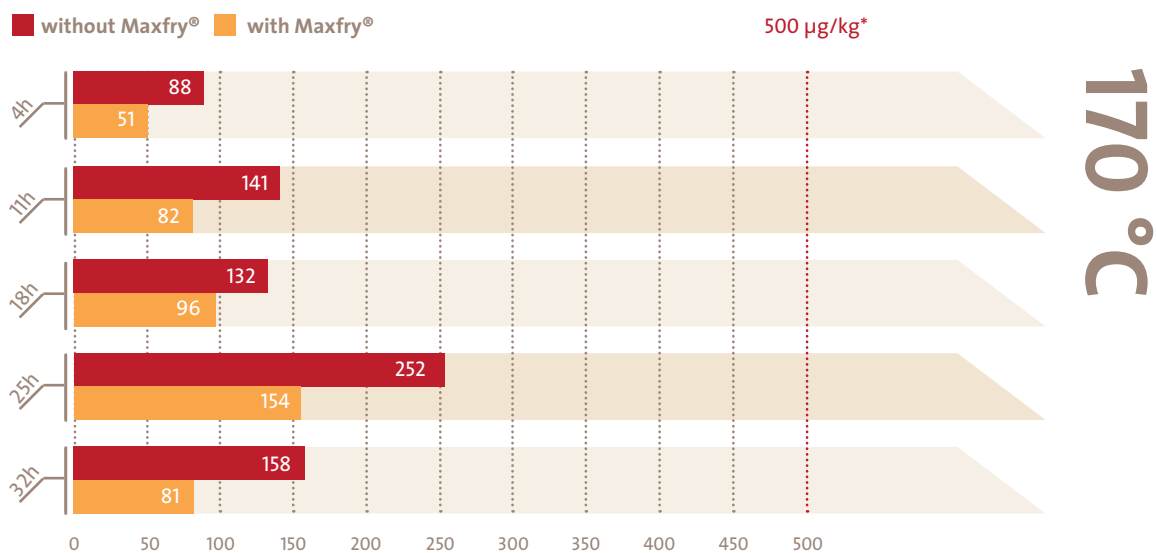
Safer and better products

Monitoring and minimising acrylamide formation continues to be a major part of product safety when it comes to fried foods that contain starch.

The compound, which is classified as a carcinogen, cannot be entirely avoided. However, the acrylamide level can be significantly reduced by adjusting the process parameters of frying temperature and duration. Another determin-

ing factor for acrylamide reduction is the use of Maxfry®. This ensures that **30-50%** less acrylamide is produced in direct comparison with processes without the vegetable ingredients. A current study by the ZHAW Zurich verifies this effect. The study also concludes that using Maxfry® products achieves a product with consistently better sensory qualities.

Acrylamide development (µg/kg) in French fries fried in rapeseed oil with and without Maxfry® at 170 °C/180 °C



* 500 µg/kg is the EU guideline for the level of acrylamide in French fries

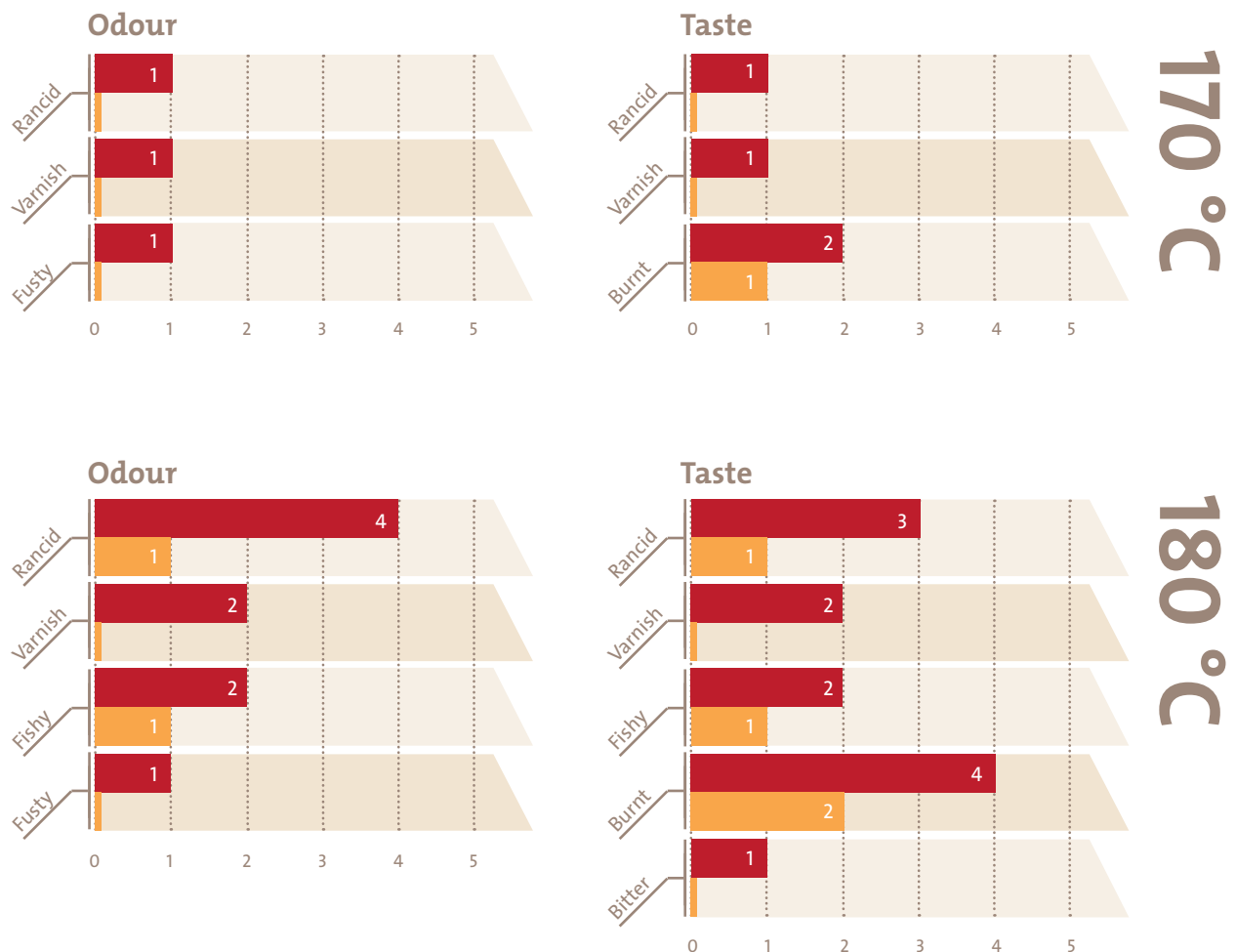
Better taste

In addition to acrylamide stress, the ZHAW study also looked at sensory quality. A trained panel of four sensory experts tasted and evaluated the sensory properties of the fried French fries. Attributes were selected using other studies and applicable literature (Jans, 2017; Matthäus & Fiebig, 2013; Raoux, Morin, & Mordret, 1996). Consensus

profiling according to DIN EN ISO 13299 was used to evaluate the French fries. The study came to the conclusion that at a temperature of 170 °C and at 180 °C, the sensory quality of the French fries fried using Maxfry® is objectively better, as there are significantly fewer negative sensory attributes/off-flavours or they are not even perceptible.

Intensity of negative sensory attributes (intensity scale 1-5) in the odour/flavour of the French fries after 32 operating hours at a frying temperature of 170 °C/180 °C

■ without Maxfry® ■ with Maxfry®



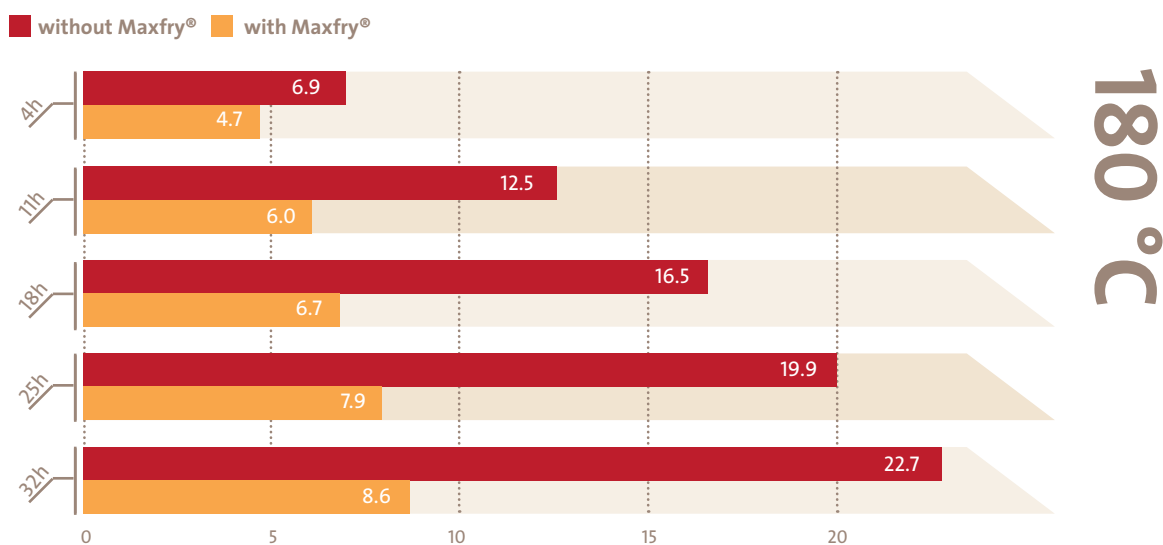
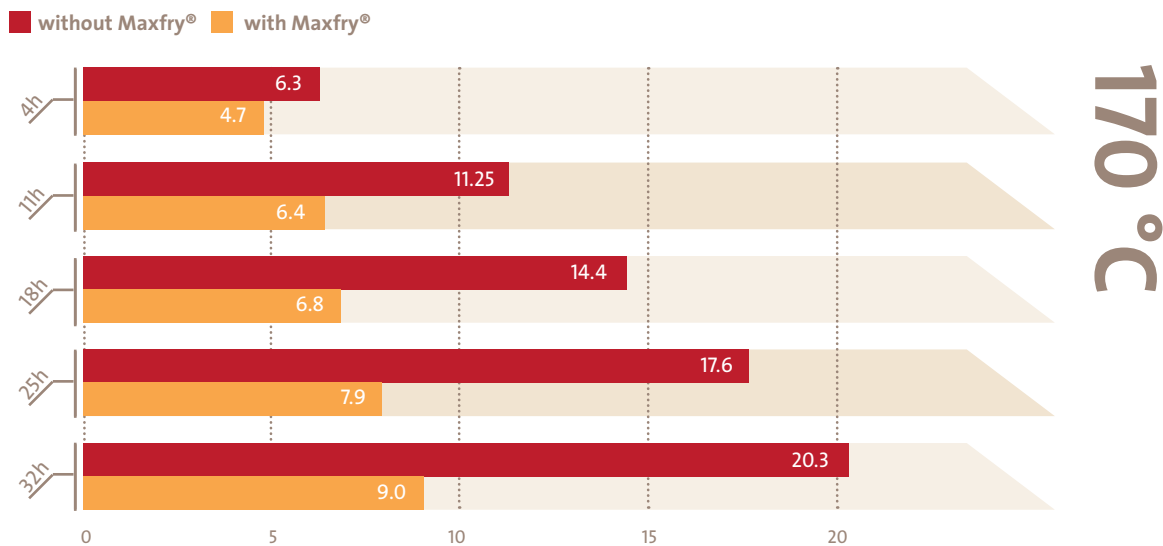
At 180 °C, a “fishy” attribute was apparent both in the odour and in the taste. Regardless of its degree, this sensory perception is caused by the rapeseed oil used and is typical of many oils that contain linolenic acid.

Superior stability

The quality of the frying oil was monitored for the entire trial period and the key parameters relating to chemical and physical changes were determined. You can see the highly stabilising effect of the Maxfry® product used from the development of polar components (in %) shown here over the observed period. The thermal-oxidative stress of the oil and the formation of acryla-

mid in food at comparable times suggests a general link, however a direct correlation cannot be established. Accordingly, the lower acrylamide stress on the French fries fried in rapeseed oil with Maxfry® is not solely attributed to the lower thermal-oxidative stress of the oil. Maxfry® evidently interferes in the acid-catalysed synthesis system of the acrylamide formation.

Development of polar components (in %) in rapeseed oil with and without Maxfry® after 4, 11, 18, 25, 32 operating hours at a frying temperature of 170 °C/180 °C



Source of all data in this folder:
 Study "Einfluss der thermischen Belastung auf die Acrylamidbildung und die sensorische Qualität von Pommes frites" [Impact of thermal stress on the acrylamide formation and the sensory quality of French fries] (August 2019) at Zurich University of Applied Sciences, Institute of Food and Beverage Innovation.

The ingredients for your success

Fried food is enjoying steadily increasing popularity among consumers. Technical advances, scientific findings and the pursuit of standardised quality place high requirements on all raw materials used during its production. Maxfry® GmbH has been meeting these requirements since it was founded in 2002.

Ever since its foundation, Maxfry® has focused on optimising the technical properties of vegetable oils and fats. The main objective is to improve the thermal-oxidative stability of vegetable frying oils and fats. Highly effective vegetable antioxidants are developed, manufactured, and marketed for this purpose. In this context we are aware of our

responsibility as a supplier to the food industry. We carefully select our raw materials and suppliers and maintain comprehensive quality management as standard. Maxfry® GmbH is IFS (International Food Standard) certified to Higher Level. All Maxfry® products have also been categorised as kosher and halal-compliant.

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Maxfry 
advanced food ingredient.

The Maxfry logo graphic features a red square with a white registered trademark symbol (®) and an orange square, both overlapping the top right corner of the 'Maxfry' text.