Adulteration of beeswax intended for honey production with stearin and paraffin.
**FOOD GRADE**
Beeswax - natural wax obtained by melting the walls of the honeycomb made by the honey bee.

**Authorised food additive under Reg. (EU) 231/2012**

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Beeswax on the EU market

Natural beeswax is limited and expensive – bees produce only 1 kg of wax for each 8 kg of honey.

European production of beeswax is not sufficient to cover demand.

**Mix of natural beeswaxes**

- Mineral waxes (paraffin and microcrystalline waxes)
- Industrially-produced fatty acids (stearic acid, palmitic acid)
- Plant waxes (including Sumac wax)
- Waxes of ester type combined with mineral hydrocarbons (synthetic waxes)

Sales of beeswax without indicating that it contains other "waxes" is misleading and thus illegal.**

Animal By-Products cat. 3***

Imported beeswax and its products must be processed; apiculture by-products are not intended for human consumption.

Reg. (EC) 1069/2009

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**Directive 2006/114/EC concerning misleading and comparative advertising prohibits traders to conduct misleading advertising vis-à-vis other traders (B2B)


****Art. 3 Directive 2006/114/EC
Adulterated Beeswax Economic Gain

Average price of paraffin/stearin: 6 € per kg
Average price of beeswax: 13 € per kg

Ukrainian batch of 7 010kg:
52% of paraffin – economic gain = 25 516 €
(3,64 € per kg)

Chinese batch of 20 000kg:
5,5% of paraffin – economic gain = 7 700 €
(0,39 € per kg)

Chinese batch of 20 000kg:
12,2% of stearin – economic gain = 17 080 €
(0,85 € per kg)
Potential effects of stearic and palmitic acid on Bee health

Beeswax sheets

Adulterated embossed waxes have been incriminated in a number of brood mortality incidents in Europe: BE, DE, NL...
Potential effects of stearic and palmitic acid on Bee health

Various field studies appear to confirm this risk
Example: Reybroeck W. ILVO, 30 June 2017, Research Institute for agriculture, fisheries and food ILVO.vlaanderen

- Addition of 15-35% stearic acid to beeswax = Impact on brood.
- Mean larva mortality of 49-71% observed in broods where stearic acid is present.
Public health: Potential risk related to the use of adulterated beeswax in the food chain?

Companies are offering honeycomb in jar to demonstrate what controls are put in place to ensure that only pure beeswax intended for human consumption are in the jar?

What are the risks?
Lack of EU regulatory specification for beeswax

Lack of an EU official method for adulteration detection

Chromatogram of alkanes in natural beeswax

Chromatogram of alkanes in samples of paraffin – adulterated beeswax

Author: http://www.ihc-platform.net/ewawax2008.pdf
Fraud Criteria

1. Violation of EU Food Law
   - Directive 2006/114/EC (not EU Food Law)
     Misleading advertising to other traders (B2B)
   - Reg. 1069/2009 Animal By-Product:
     Beeswax imported as Cat. 3 (beekeeping) instead Cat. 2 (candles)
   - Reg. 231/2012 on food additives:
     Introduction in the Food Chain (additive, food supplements, honeycomb)

2. Intention
   Adulteration of beeswax with cheaper "waxes"

3. Economic gain
   - Retail price of beeswax is 13 €/kg vs paraffin (candlewax) 6 €/kg
   - Economic gain: 1 tonne of 30% adulterated beeswax = 2100€

4. Deception of Customers
   - Customers believe they are using an authorised and safe product
   - Bee health: negative issues on brood development – significant mortality of bees
   - Public health: consumption of beeswax containing non-food grade ingredients
Beeswax issue Timeline

2017

- BE informed the EU about imported adulterated beeswax
- EU Food Fraud Network alerted

2018

- Data collection
  - EC Questionnaire to Member States
- Raising Awareness
  - Civil Dialogue Group – beekeeping DG AGRI
  - Letter to EU stakeholders
- Beecome 2018
  - International Apiculture Congress
  - Austria
- Chief Veterinary Officers
  - Feedback from MS on data collection
- EC Joint Research Centre
  - Assessment on analytical methods
- EP question - COM ENVI
  - (European Parliament)

Timeline:
- January
- February
- March
- June
- July
- August
- Sept.
- Oct.
- Nov.
What could be the next steps?

- **Risk assessment by EFSA?** (depending on data)
- **Advice to stakeholders:**
  
  *request guarantees that you buy pure beeswax!*
- **EU coordinated control plan on beeswax?**
- **Legislation including beeswax purity criteria in relation to food safety/bee health?**
Useful links and mailboxes

**DG SANTE Website – Food fraud**

**EU Food Fraud Network: Contact points**

**DG SANTE mailbox:** [SANTE-FOOD-FRAUD@ec.europa.eu](mailto:SANTE-FOOD-FRAUD@ec.europa.eu)