



1

TEK 17 – Norwegian technical description for building houses.



§ 13-1. *Generelle krav til ventilasjon*

- (6) Omluft skal ikke benyttes dersom den forurenses rom hvor mennesker er til stede.
- (6) Recirculation shall not be used if it contaminates rooms where humans are present.

§ 13-2. *Ventilasjon i boligbygning*

- (4) Kjøkken, toalett og våtrom skal ha avtrekk med tilfredsstillende effektivitet.
- (4) Kitchen, toilet and bathroom needs extraction with satisfactory efficiency.

§ 13-2 Tabell 1: Avtrekksvolum i bolig.

**Rom      Grunnventilasjon                      Forsert ventilasjon**

Kjøkken	36 m <sup>3</sup> /h	108 m <sup>3</sup> /h
Bad	54 m <sup>3</sup> /h	108 m <sup>3</sup> /h
Toalett	36 m <sup>3</sup> /h	Som grunnventilasjon
Vaskerom	36 m <sup>3</sup> /h	72 m <sup>3</sup> /h

2



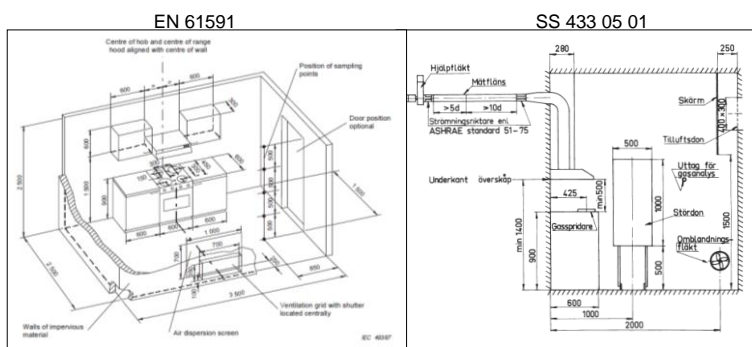
**Stk. 3. Køkkener i boliger skal forsynes med emhætte med udsugning over kogepladerne. Emhætten skal have regulerbar, mekanisk udsugning og afkast til det fri og have tilstrækkelig effektivitet til at fjerne fugt og luftformede forureninger fra madlavning. Udsugningen skal kunne forøges til mindst 20 l/s.**

Paragraph 3. Kitchens in homes must be equipped with an extractor hood with extraction over the hobs. The hood must have adjustable, mechanical extraction and return to the open air and have sufficient efficiency to remove moisture and gaseous contaminants from cooking. The extraction must be capable of being increased to at least 20 l/s.

In kitchens there is a requirement that there must be a hood with extraction over the hobs and into the outside air. This requirement will always apply when installing cooking plates in a home. **Recirculation hoods will not normally meet this requirement, including recirculation hoods with carbon filter.** The extraction of the hood must be able to be increased to at least 20 l/s. If the hood has an extractive capacity of 75 per cent or higher than the hood, the hood shall be 75 per cent more effective. DS/EN 61591 or DS/EN 13141-3 will normally meet the requirement for sufficient efficiency to remove moisture and gaseous contaminants from cooking. Hotplates may be, for example, electric or gas-heated and built into a stove.

3

## Test room EN 61591

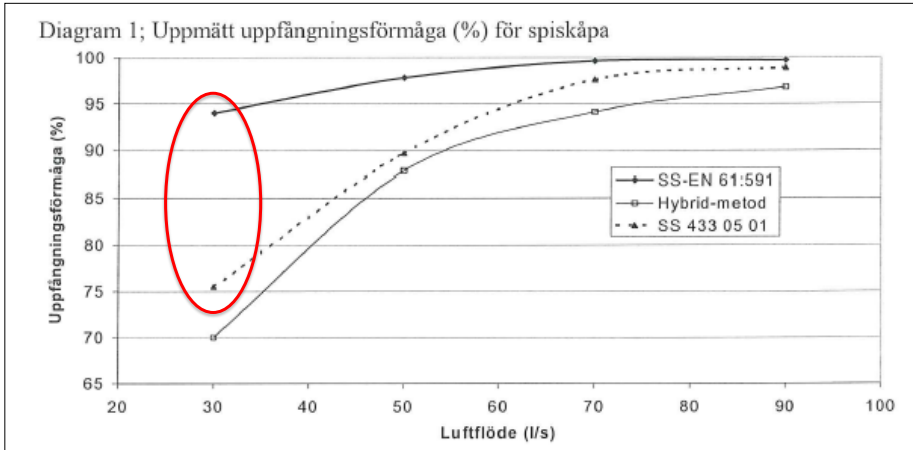


Test WITHOUT ANY air disturbance

Test WITH air disturbance

4

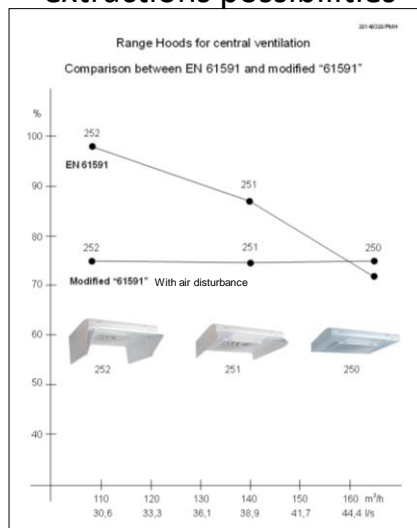
# Odour reduction factor



5

## Odour reduction factor For the Nordics we are working with very limited extractions possibilities

108m<sup>3</sup>/h  
140m<sup>3</sup>/h  
165m<sup>3</sup>/h



108m<sup>3</sup>/h  
140m<sup>3</sup>/h  
165m<sup>3</sup>/h

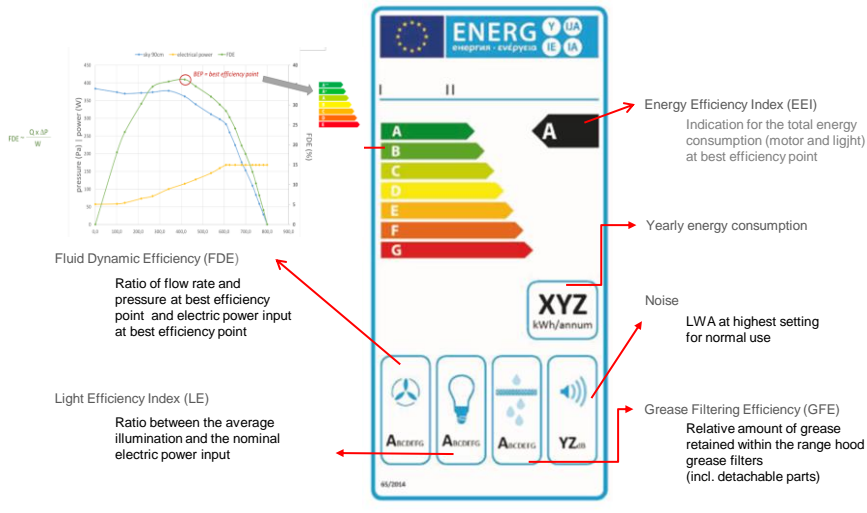
108m<sup>3</sup>/h  
140m<sup>3</sup>/h  
165m<sup>3</sup>/h

108m<sup>3</sup>/h  
140m<sup>3</sup>/h  
165m<sup>3</sup>/h

6

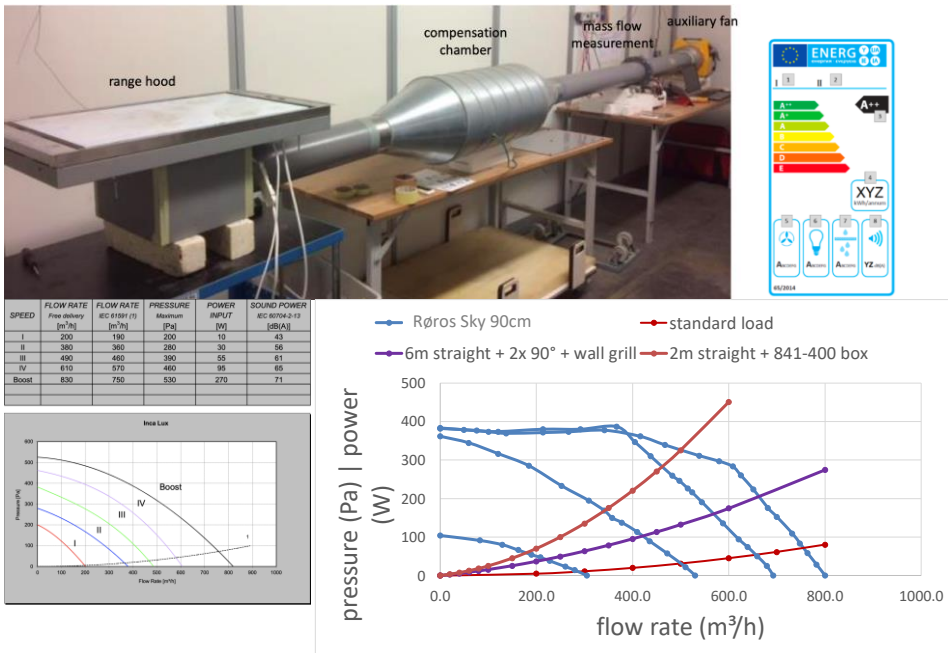
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EN table – does not say anything about odour reduction level/efficiency and and the airflow is significant higher the the inlet-air can handle



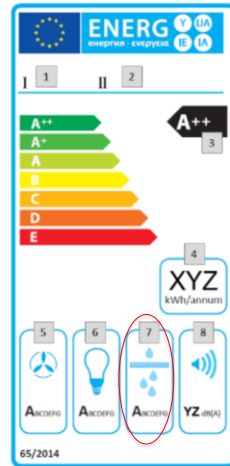
7

Is the EN Label valid for hood performance or just a tool for comparance?



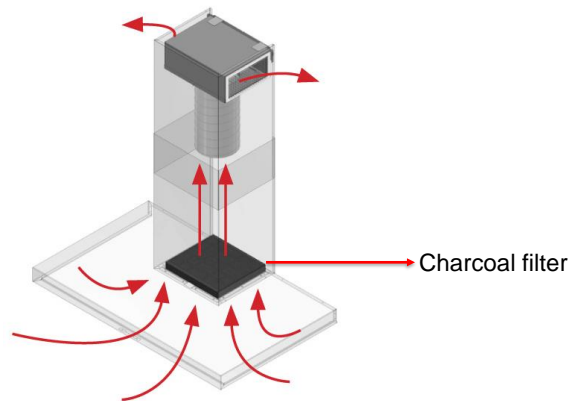
8

# Grease filter



9

# Different charcoal filters



Plasma filter

Active carbon filter

Monoblokk filter

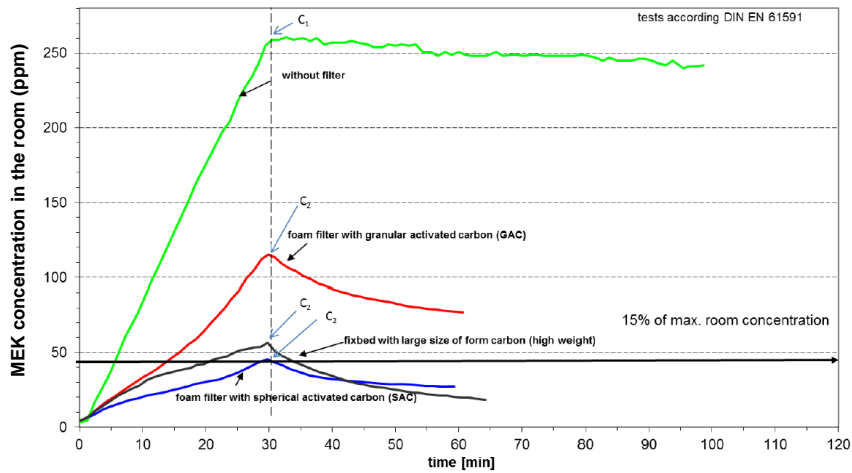
No measurement standard

Measured after EN 61591  
MetylEtylKotan.  
Cooker hood level max normal

Measured after EN 61591  
MetylEtylKotan  
Cooker hood level maw normal

10

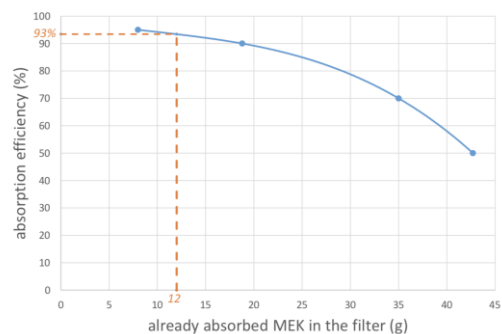
The different carbon filters have different performance of MEK reduction of course



11

## What happens with charcoal filters after some periode of time with »bad handling« of grease filters?

- Active carbon filters 'capture' the smells. The filter capacity for smell absorption decreases as more smell is absorbed. The filter thus has a 'limited' lifetime.
- Breakthrough measurements show this decrease in absorption efficiency
- Test procedure:
  - Constant concentration of MEK upstream the filter (i.e. 80ppm)
  - Measure the concentration downstream the filter as function of time



12

## Monoblock filter efficiency measured by SLG



SLG Prüf- und  
Zertifizierungs GmbH

**Certificate**  
"Odour reduction"

Certificate holder: NCOY International NV  
Type of cooking fume extractor: NCOY A630  
Number of certificate: 1096/2018-03  
Valid from: 2018-05-03  
Valid until: 2021-05-03

SLG Prüf- und Zertifizierungs GmbH certifies that the above mentioned product has completed the test for "Odour reduction" and has achieved the grade

**"VERY GOOD"**

SLG Prüf- und Zertifizierungs GmbH grants the company NCOY International NV the right to hold for their Range Hood SLG's Testing Certificate



Test report: 2020-10-09-18-F0004  
Test basis: EN 61391:1997 + A1:2006 + A2:2011 + A11:2014 + A12:2015  
Test filter equipment: Monoblock Filter E30005  
Active Carbon mat



SLG is an ISO 9001  
This certificate is based on the SLG regulations for testing and certification of products used in food processing.  
The certificate is valid only if used in the context of the product.

www.slg.de.com

Summary

Certificate			
Odour reduction of cooking fume extractors			
Description of test item			
Model name: NCOY A630			
Ceiling based (flown outlet) equipped with 2 speed settings and 1 boost setting, odour function, vibration indicators, light dimming function, possibility to change the colour temperature and RF remote control (operation can be controlled by the switches on the hood or by the RF remote control supplied)			
Odour filter type: Monoblock Filter E30005			
Active carbon mat installed in a separate filter module, type: Monoblock Filter E30005			
Test results			
Measured airflow in recirculation mode	442,5 m³/s (setting 3)		
Odour reduction level (O <sub>1</sub> )			
Filter 1	93,7%		
Filter 2	96,4%		
Filter 3	95,4%		
Average	95,2%		
Verdict	"VERY GOOD" (5 stars *****)		
List of Measuring Equipment			
Name of measuring equipment	Place of application	Calibration frequency	Last calibration
Mobile Measuring Station 591-8803, no 2004, 5884 (FM 8803-01, FM 8803-02) (Bosch Messungstechnik GmbH, Germany, 1994)	Measurement of electrical parameters	annually	13.2017
Laboratory Reference Technique 51020001-014 (VDA 4.10, 1st Ed., EN 18207:2015)	Production of test solution (21°C)	annually	06.2017
Humidity Reference Unit 100, Eutech Instruments, USA 1999	Measurement of gas temperature	annually	06.2017
Temperature - Humidity sensor (Relative Humidity: RH 40-90%, 0-50 °C)	Measurement of the laboratory's temperature and humidity	annually	05.2017
Temperature - Humidity sensor (Relative Humidity: RH 40-90%, 0-50 °C)	Measurement of the chamber's temperature and humidity	annually	05.2017
Flow (velocity) detector (Sensidyne Model 3007 100)	Measurement of test concentration in test chamber	annually (check)	

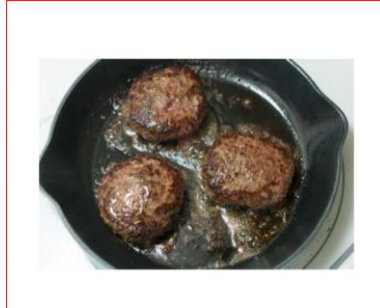
13

## Shall tests also be based on «fish odour» Or real life cooking situations?

Measuring data of odour extraction in recirculation mode with Trimethylamine	
Weight of odour filter(s) after conditioning	586 g
Setting (max. fan speed in normal use)	3
Background value before test of C <sub>1</sub>	1,1 ppm
Maximum concentration in the test room	53,2 ppm
Maximum concentration – background value (C <sub>1</sub> )	52,1 ppm
Background value before test of C <sub>2</sub>	1,0 ppm
Concentration after 30min operating time	2,7 ppm
Concentration after 30min – background value (C <sub>2</sub> )	1,7 ppm
Time from C <sub>2</sub> to 15 % of C <sub>1</sub> – Odour dispersion time	0 min
Value after C <sub>2</sub> + 60 min operating time	not applicable
Odour reduction level (O <sub>1</sub> )	96,7 %

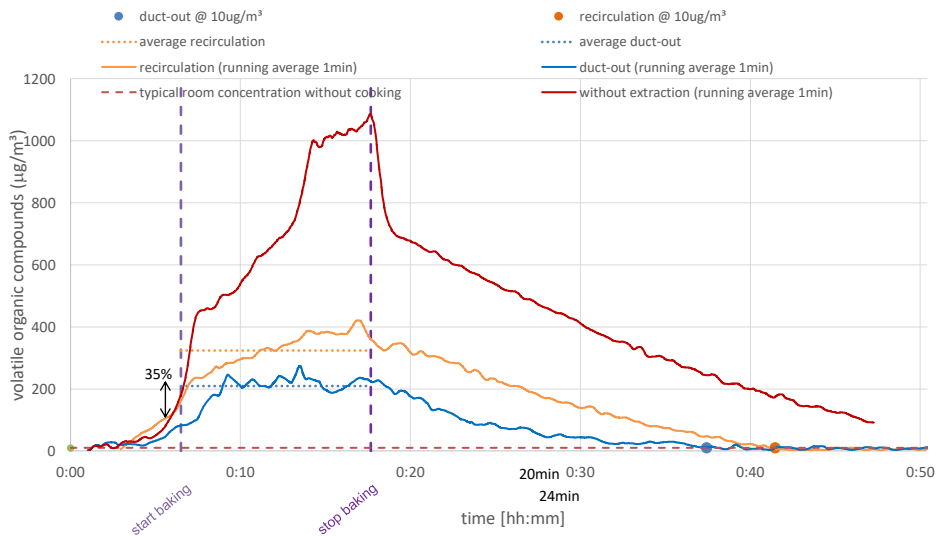
14

# Metyl Etyl Kotan does not represent «real life cooking»



TVOC:	Performed test:
Amino	3 hamburgers
Sulphide	12 min cooking sequence
Aldehydes	Enough inlet air when duction out
Ketones	Identical plates, butter in frying pan, external circumstances
Organic acids	Setting level 3 on cooker hood.

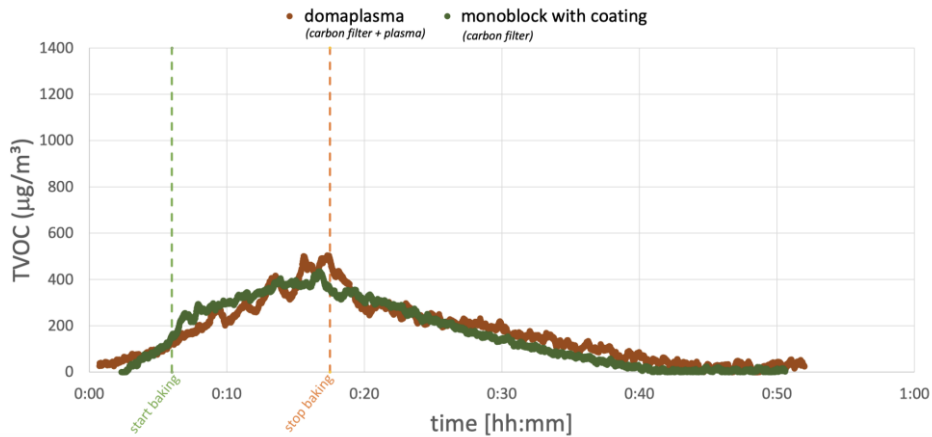
15



16



# Plasma filter ↔ Monoblokkfilter



TVOC = Smell/fumes from 3 hamburgers like the previous test  
 No difference between a Monoblokk filter and Plasmafilters.  
 Our conclusion – plasma has little effect, the importance is having a good recirculation filter

17

With the information we have at the present time, duct out is 35% better than recirculation in this performed test.

Thank you for listening

18