

REFRESH[®]

KREATE⁺
designed by technology

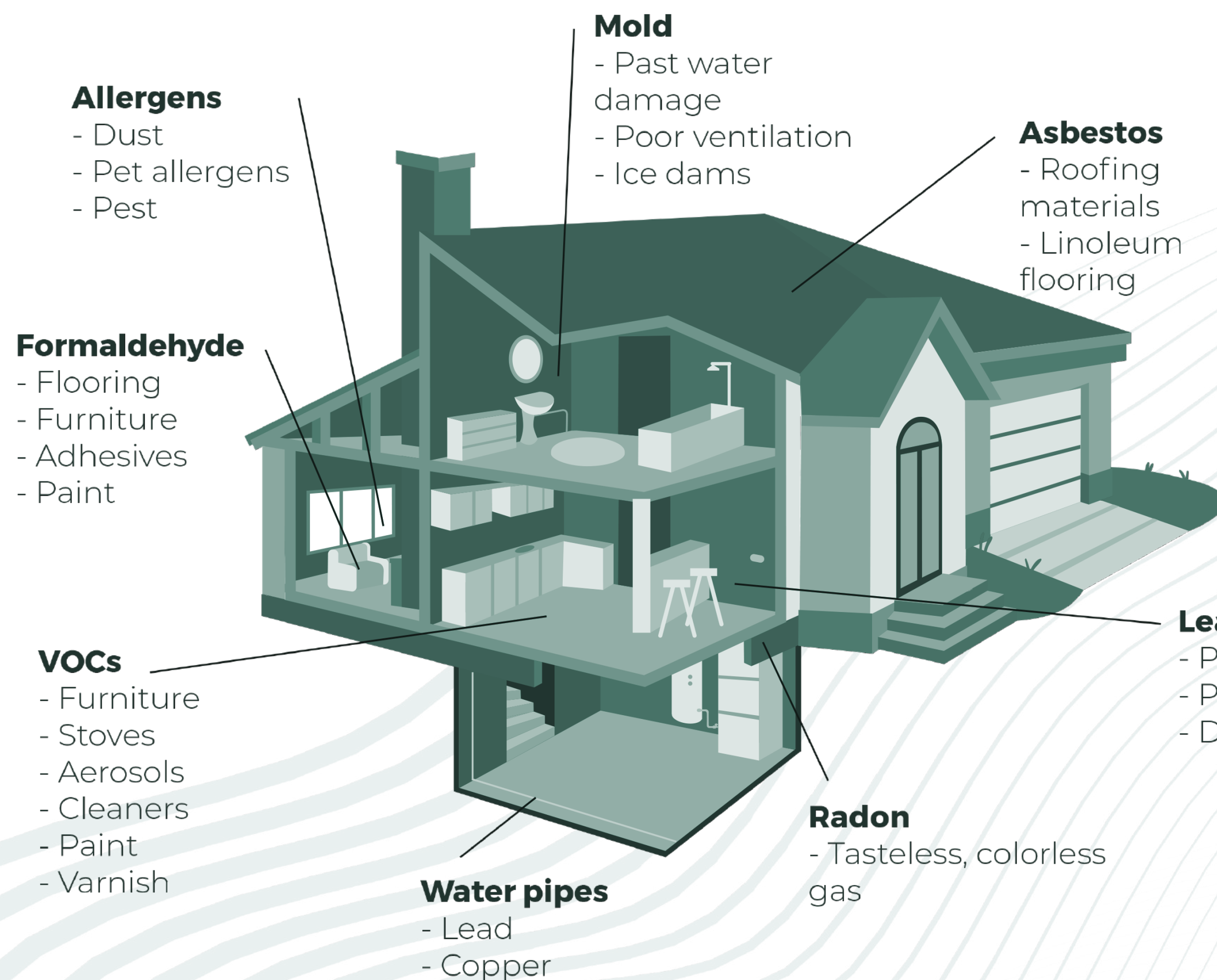
**BOOST AIR
QUALITY OF
INTERIORS &
IMPROVE YOUR
LIFE QUALITY**

THE IMPACT OF POOR AIR QUALITY ON HEALTH

- Irritates the eyes, nose, and throat, headaches, dizziness and fatigue,
- Cause shortness of breath, aggravate asthma and other respiratory conditions
- Affect the heart and cardiovascular system.
- Negative impacts of poor air quality has been defined as SBS



CAUSE OF INDOOR AIR POLLUTION



- Fuel-burning combustion appliances
- Tobacco products
- Newly installed flooring, Wall coverings paintings, sofas or carpet
- Cabinetry or furniture made of certain pressed wood products
- Products for household cleaning and maintenance, personal care, or hobbies
- Central heating and cooling systems and humidification devices"
- Disinfection materials & detergents
- Bathroom garbages,
- Food scraps in kitchen



SOURCES OF POLLUTION

POLLUANT	ODORANT	SOURCE
FORMALDEHYDE	STINGING	FURNITURE / PLASTICS
ACETALDEHYDE	STINGING	PLASTICS
AMMONIA	LIKE FECES	URIN PERSPIRATION
NICOTINE	CIGARETTES	CIGARETTES
METHYL MERCAPTAN	LIKE ROTTEN VEGETABLES	KITCHEN WASTS
ACETIC ACID	VINEGAR	WOOD BEAMS
HAYDROGEN SULFIDE	LIKE ROTTEN EGGS	FECES

REFRESH[®]



REFRESH[®] IS A PERMANENT TECHNOLOGY

- 1 Breaks down the gases and cleans the indoor air from the volatile and harmful gases that causes odors.
- 2 Improves the occupants' well-being, satisfaction and productivity.
- 3 Always activated. Continuous improved air quality without the need of UV light
- 4 Eliminates risk factors that may cause of headache, eye burning, chest tightness caused by poor indoor air quality.
- 5 **REFRESH[®]** is a permanent technology



REFRESH[®]

HOW THE REFRESH[®] MAKES THE AIR CLEAN AND ODORLESS?



The volatile organic materials like ammonia and aldehydes etc. can oxidize and decompose. But the conditions for this reaction depend on an enthalpy of reaction. This phenomenon occurs through an oxidative reaction and endless reactive-reaction with organic nitrogen compounds in the technology. Two different functional particles used to achieve a rapid breaking down the gases and cleaning of the indoor air from the volatile and harmful gases that causes odors.



REFRESH[®]

All the active ingredients used in our
REFRESH[®] technology are organic and
natural minerals coming from the nature



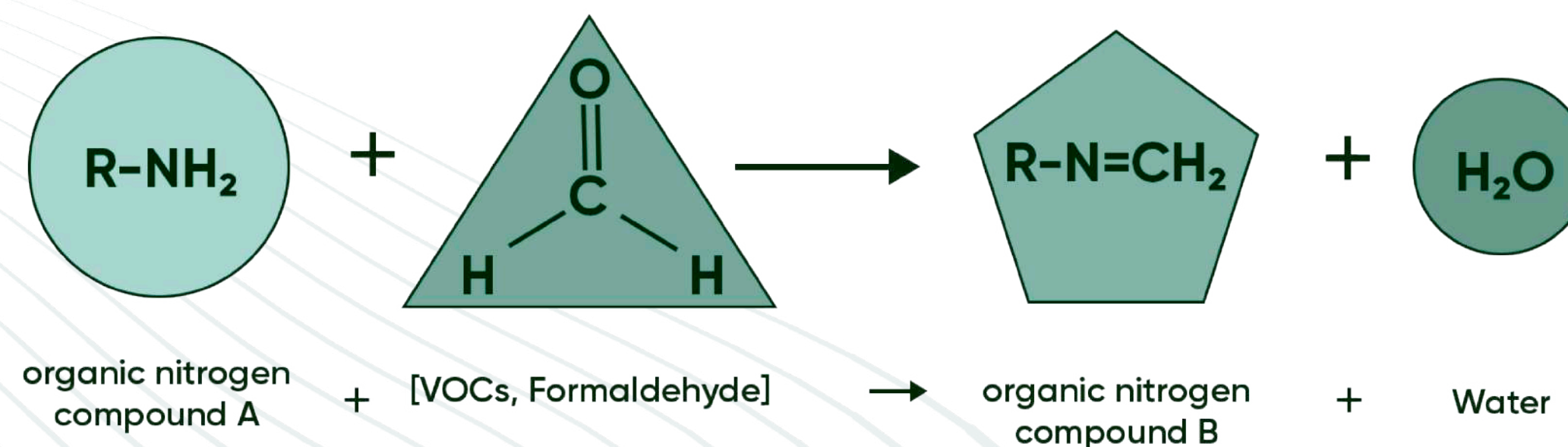
How can **REFRESH[®]** breaks down the gases?

We use two different functional particles to remove volatile pollutants from the indoor air or to make the air healthier.

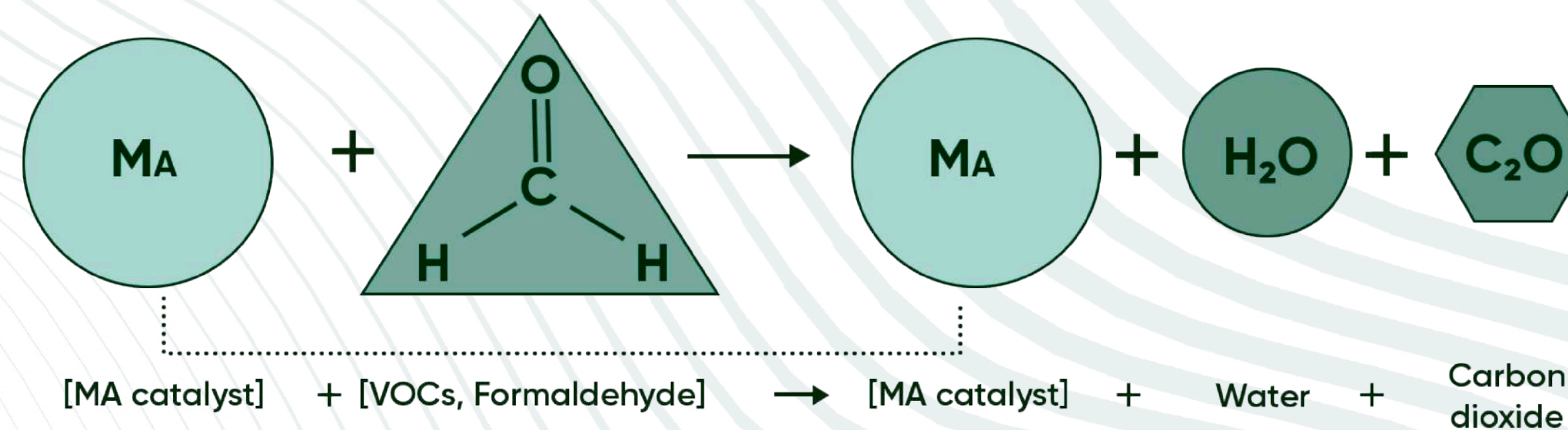
As shown in the illustration, one of the effect based on the reaction with nitrogen compounds for transforming the volatile substances into a non-volatile complex. This reaction is also endless.

The second is the breakdown of gases through oxidation

Degradation of VOCs with organic nitrogen compounds



Catalytic degradation of VOCs



90%

Formaldehyde Reduction
after 8 hours

ABILITY TO REDUCE INDOOR POLLUTION

POLLUANT	REDUCTION BY	TIME
ACETALDEHYDE	95%	After 8 hours
AMMONIA	95%	After 2 hours
FORMALDEHYDE	90%	After 2 hours
ACETIC ACID	85%	After 8 hours
NICOTINE	70%	After 2 hours

REFRESH[®]





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2019-02-11

Customer / subject: KETS Mensucat Sanayi A.S.
Material: Woven fabric, finished by customer
A – Blanc, 100% PP art. Surprise, without KETS FRESH
Sample 1A, 100% PP art. Surprise, with KETS FRESH
Sample 2A, 100% PP art. Surprise, with KETS FRESH
B – Blanc, 100% PES art. Dock 02, without KETS FRESH
Sample 1B, 100% PES art. Dock 02, with KETS FRESH
Sample 2B, 100% PES art. Dock 02, with KETS FRESH
Tests: KETS FRESH test for ammonia and formaldehyde (Gastec-method)

1. Ammonia

	Dosage	Initial concentration ammonia [ppm]	Conc. ammonia after 23 min [ppm]
A - blanc	10 µl 5%	520	480
Sample 1A	10 µl 5%	520	50
Sample 2A	10 µl 5%	520	200
B - blanc	10 µl 5%	320	140
Sample 1B	10 µl 5%	320	20
Sample 2B	10 µl 5%	320	10



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2. Formaldehyde

	Dosage	Initial concentration formaldehyde [ppm]	Conc. formaldehyde after 60 min [ppm]
A - blanc	10 µl 37%	1200	900
Sample 1A	10 µl 37%	1200	190
Sample 2A	10 µl 37%	1200	5
B - blanc	10 µl 37%	1200	500
Sample 1B	10 µl 37%	1200	20
Sample 2B	10 µl 37%	1200	30


Angela Geu
Product Management

ZSCHIMMER & SCHWARZ
MICHSDORF GmbH & Co KG
Chemnitzstraße 1
08217 Burgstädt



**EKOTEKS LABORATUVAR ve GÖZETİM
HİZMETLERİ A.Ş.**
Esenyurt Firuzköy Bulvarı No:29 34325 Avcılar
İstanbul/ TÜRKİYE

TEST REPORT
DENEY RAPORU

19037998

10-19

EKOTEKS

Customer name: KADİFETEKs MENSUCAT SAN. A.Ş.
Address: İKİTELLİ OSB MAH. ESKİ TURGUT ÖZAL CAD. NO:40
BAŞAKŞEHİR/İSTANBUL
Buyer name: -
Contact Person: ÜMİT YAKA
Order No: -
Article No: MASTER VELOUR
Name and identity of test item: One sample of yellow, red, black designed, back face white membran coated upholstery woven fabric.
The date of receipt of test item: 11.10.2019
Re-submitted/re-confirmation date: -
Date of test: 11.10.2019-21.10.2019
Remarks: -
Sampling: The results given in this report belong to the received sample by vendor.
End-Use: -
Care Label: Not specified.
Number of pages of the report: 6

Seal

Date
21.10.2019

Customer Representative
Zahide TAPAN

Head of Testing Laboratory
Sevim A. RAZAK

**EKOTEKS LABORATUVAR ve GÖZETİM
HİZMETLERİ A.Ş.**

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REQUIRED TESTS	RESULT	COMMENTS
Determination of Ammonia Gas Removal Rate	-	
Determination of Formaldehyde Gas Removal Rate	-	

No requirements were given by vendor.

REMARK: Original samples are kept for 3 months and all technical records are kept for 5 years unless otherwise specified. The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95 %. Tests marked (*) in this report are not included in the accreditation schedule.



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Testing reports without signature and seal are not valid.

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TEST RESULTS

AMMONIA GAS REMOVAL CAPACITY REPORT

Reference Methods : CEN/TC 264 "Air Quality" and ISO/TC 146/SC 6

This study and assessment report is generated for detection of decomposition and elimination of ammonia gas property of processed fabric samples.

Test Sample : Test sample with 20x 20 cm dimensions

Compound removed: Ammonia,NH₃

Sensor used: X-am 5000 Draeger NH₃ sensor
Serial number: Lower detection limit of XXS sensor (ARDA -0295 68 10 888) is 5 ppm.
Its resolution is 1 ppm. Mainly it has cross-sensitivity to ethanol, NO and NO2.

Test Conditions: A gas-tight 30 L glass bell-jar was used.
10 µl of 13% (910 g/L) Ammonia solution that was heated to 160°C in an injection block was vaporized by injecting into the bell-jar.

Gas-tightness of bell-jar was tested by conducting measurements in the laboratory environment without using any sample in the bell-jar and injecting ammonia into the bell-jar.

Laboratory study was conducted in two stages:

1. Initial NH₃ concentration (34 ppm) was preserved for an hour according to the measurements made in consecutive days.
2. Temporal decrease of injected ammonia concentration by deterioration and adsorption was observed in a study conducted with a treated fabric sample which was laterally placed inside the bell-jar.

Test Environment Temperature, % Relative Humidity: 23°C , % 50

Measurement Method: Concentration (ppm) measurements were conducted using X-am 5000 Draeger NH₃ sensor.

Sonuç: 1217,5 NH₃ (ppm)/m² fabric /hour

(1217,5 ppm Ammonia was removed using 1 m² fabric per hour.)

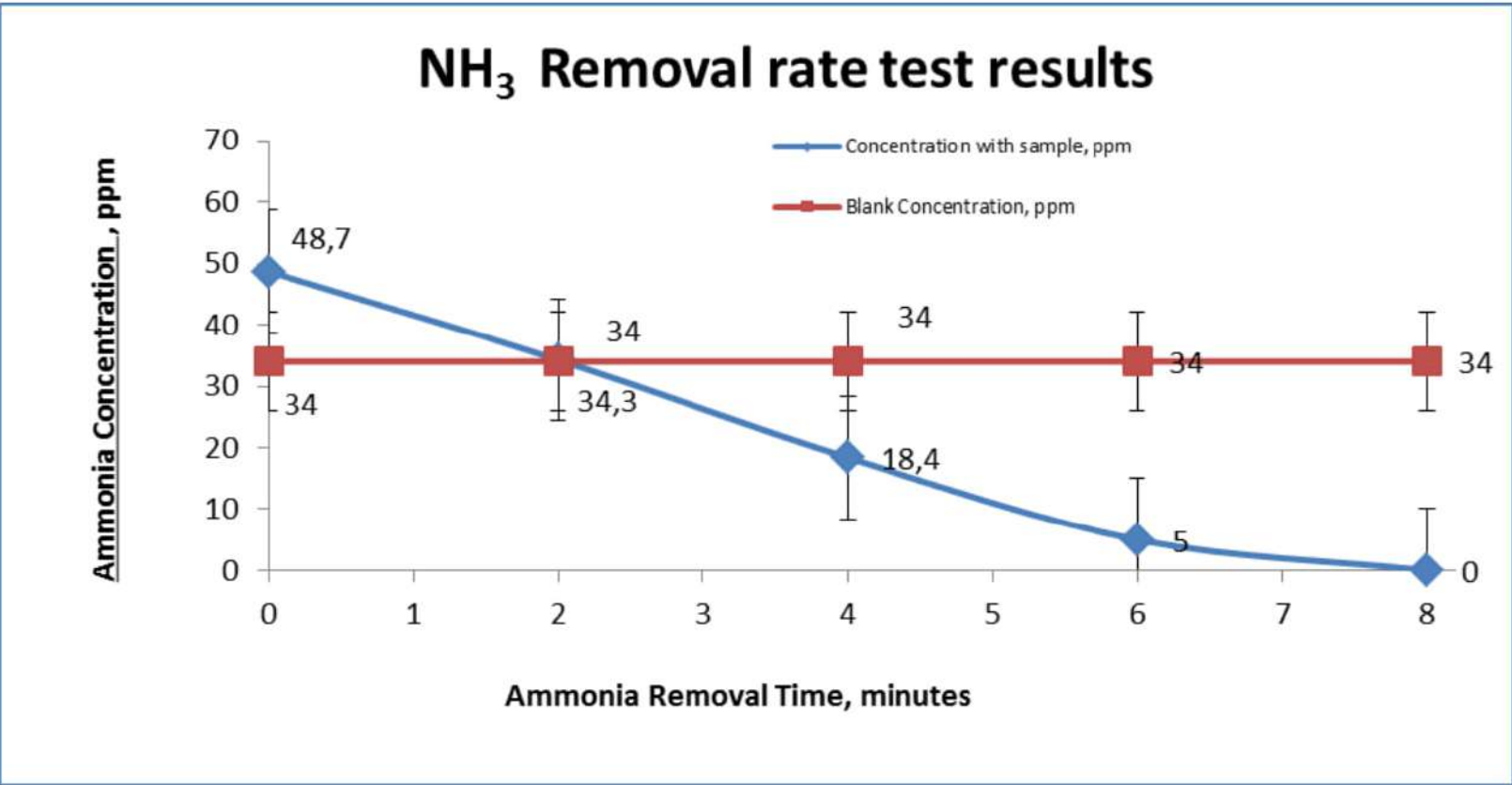
Removal rate: Expresses ammonia removal rate through deterioration and adsorption

In a study conducted using a single sample, decrease in ammonia gas concentration (ppm) between **0 hour** and 2, 4, 6 and 8 minutes marks were recorded. Ammonia adsorption rate of a 1 m² fabric in 1 hour was provided as 1217,5 ppm average value using this data.

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Ammonia gas concentration (ppm)

Removal Time, minutes	0	2	4	6	8
Concentration with sample, ppm	48,7	34,3	18,4	5	0
Blank Concentration, ppm	34	34	34	34	34
Initial concentration, ppm	30,02				
Sample area, m ²	0,04				
Removal rate, NH3 (ppm) / m ² fabric /hour	1217,5				



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FORMALDEHYDE GAS REMOVAL CAPACITY REPORT

Reference Methods : CEN/TC 264 "Air Quality" and ISO/TC 146/SC 6

This study and assessment report is generated for detection of decomposition and elimination of formaldehyhyde gas property of processed fabric samples.

Test Sample : Test sample with 20x 20 cm dimensions

Compound removed: Formaldehyde, CHOH

Sensor used : X-am 5000 Draeger Formaldehyde sensor
Serial number: Lower detection limit of XXS sensor (ARDA -0287 68 111530) is 5 ppm.
Its resolution is 1 ppm. Mainly it has cross-sensitivity to ethanol, NO and NO2.

Test Conditions: A gas-tight 30 L glass bell-jar was used.
10 µl of 37% (1009,9 g/L) Formaldehyde solution that was heated to 160°C in an injection block was vaporized by injecting into the bell-jar.

Gas-tightness of bell-jar was tested by conducting measurements in the laboratory environment without using any sample in the bell-jar and injecting formaldehyde into the bell-jar.

Temporal decrease of injected formaldehyde concentration by deterioration and adsoption was observed in a study conducted with a treated fabric sample which was laterally placed inside the bell-jar.

Environmental Temperature, % Relative Humidity: 23°C , % 50

Gas tight Syringe : 50 ml

Measurement Method: Absorbance and Concentration (ppm) measurements were conducted using NASH reagent in a UV-VIS spectrophotometer at 415 nm wavelength.

Result: 1458,3 Formaldehyde $\frac{ppm}{hour \times m^2}$

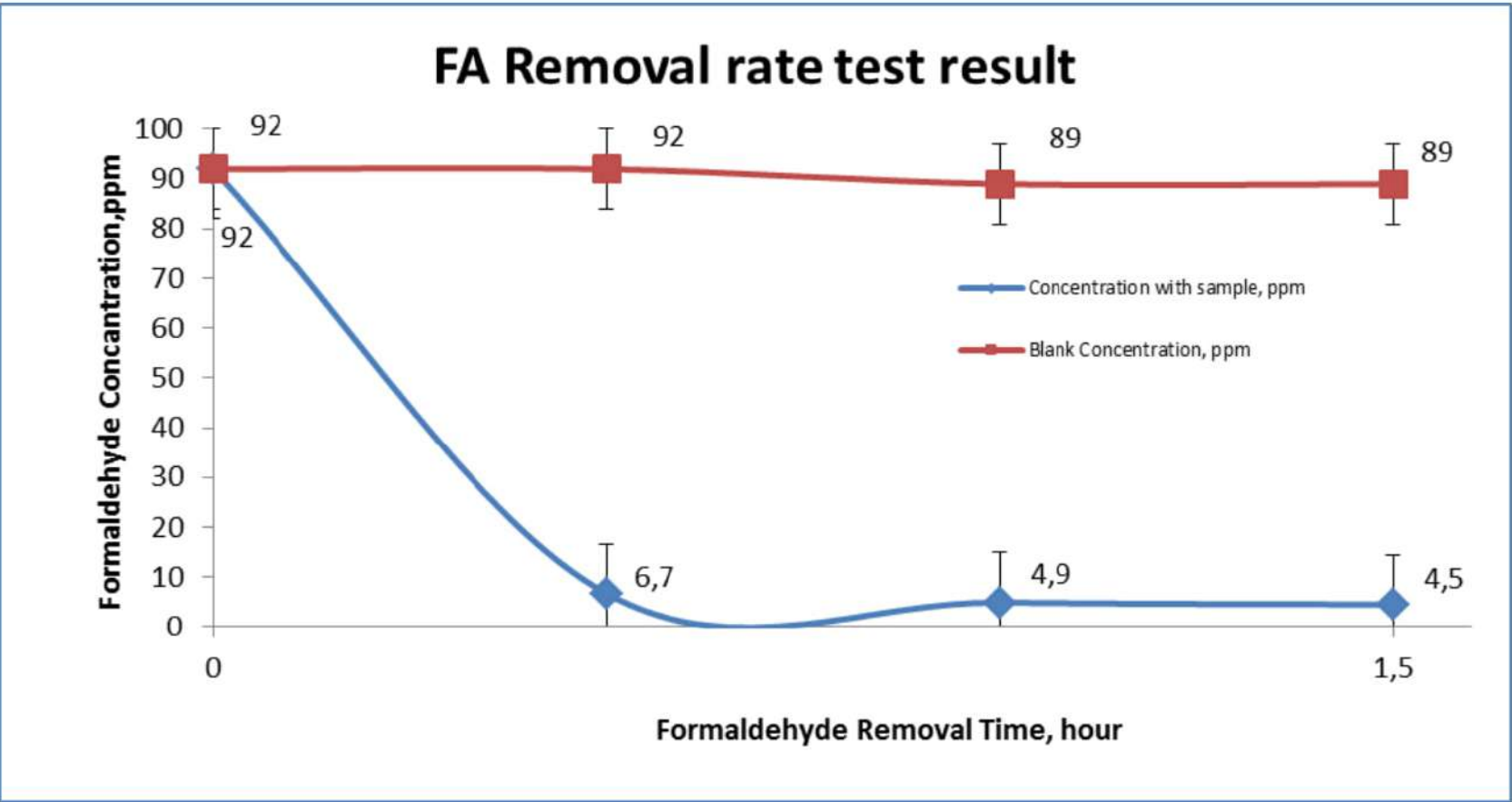
(1m² fabric is able to remove 1458,3 ppm formaldehyde per hour.)

“Removal rate: Expresses formaldehyde removal rate through deterioration and adsorption

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Formaldehyde gas concentration (ppm)

Removal Time, hours	0	0,5	1	1,5
Concentration with sample, ppm	92	6,7	4,9	4,5
Blank Concentration, ppm	92	92	89	89
Initial concentration, ppm	92			
Sample area, m²	0,04			
Removal rate, FA (ppm) / m² fabric /hour	1458,3			



REFRESH[®]

For a healthy and improved indoor air quality

kreateplus.com



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STANDARD 100

