



Funded by the Horizon 2020 Framework Programme
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PAMETNA EMBALAŽA ZA ŽIVILA NA TRŽIŠČU

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UL, NARAVOSLOVNOTEHNIŠKA FAKULTETA



SRIHRANA

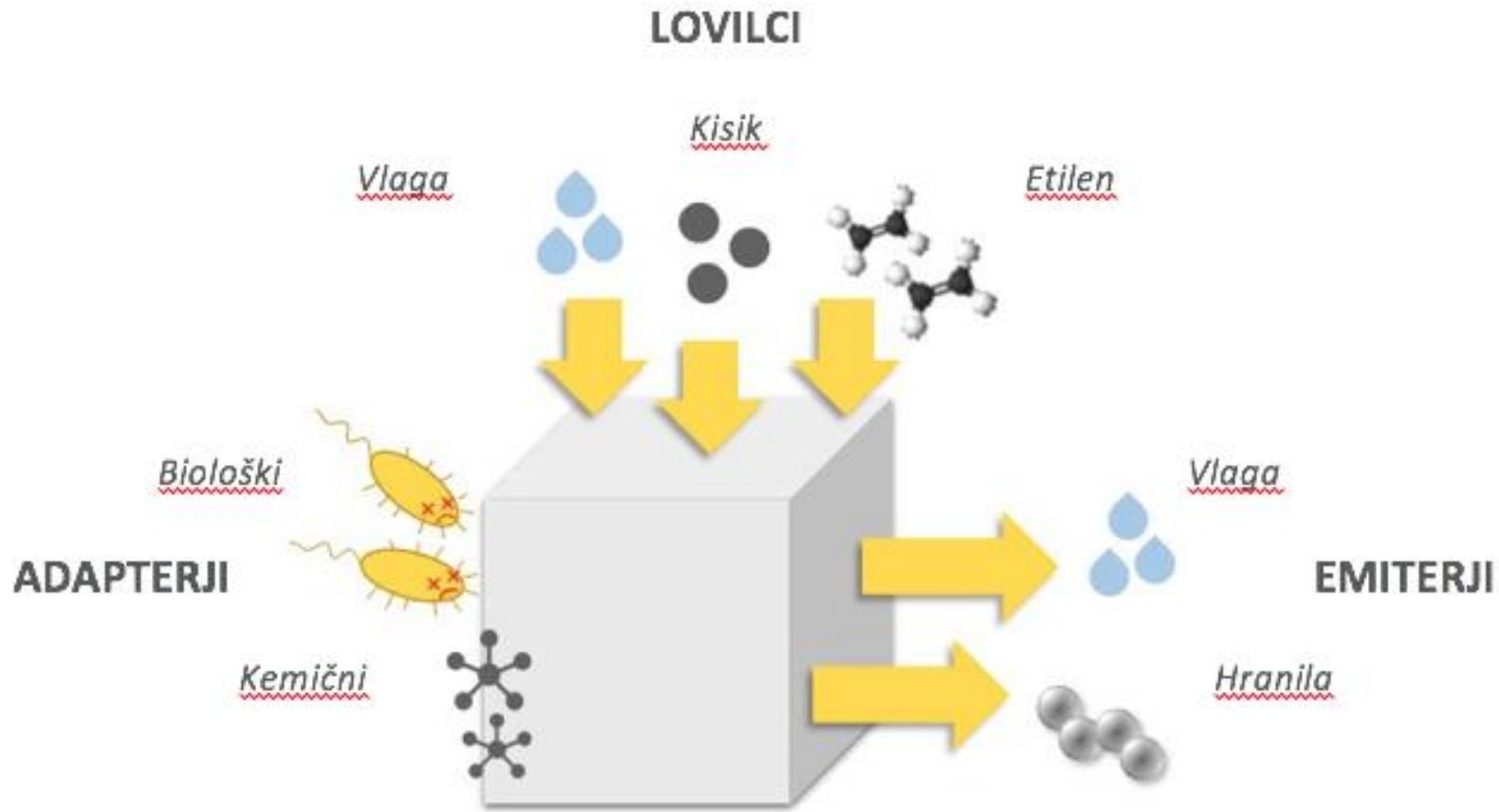
19. 4. 2018, GZS, Ljubljana

Univerza
v Ljubljani

Naravoslovnotehniška fakulteta
Oddelek za tekstilstvo, grafiko in oblikovanje



označuje material, ki je sestavljen tako, da sprošča aktivne komponente v živila ali jih absorbira iz živila z namenom podaljšati trajnost ali zboljšati pogoje pakiranja (EU odredba – 1935/2004).



AKTIVNA EMBALAŽA – LOVILCI KISIKA

OxyGuard®
OxyCatch®
FreshPax®
Bioka®
Atco®
Ageless®

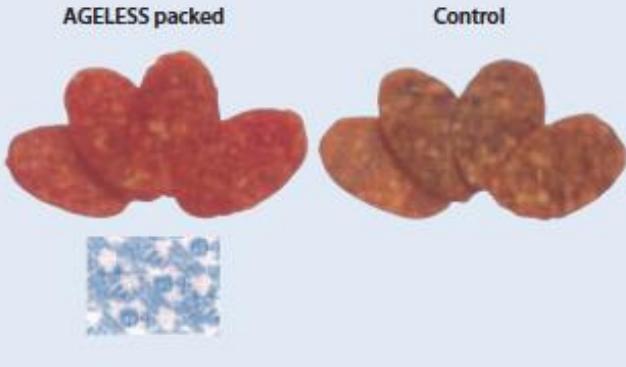


Fig. 1. Oxygen absorber used in pizza (Ageless SS 100).



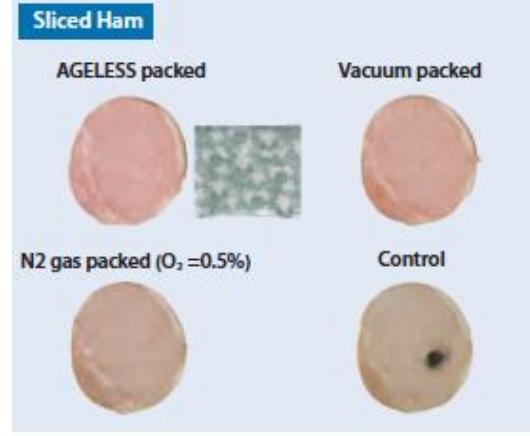
3. Prevention of Oxidation of Oils and Fats (20°C x 1 week)

Salami



4. Prevents color changes (5°C x 1 month)

Sliced Ham



5. Prevents color changes (-20°C x 6 months)

Salmon roe



Shelfplus®O₂



OxyRx®

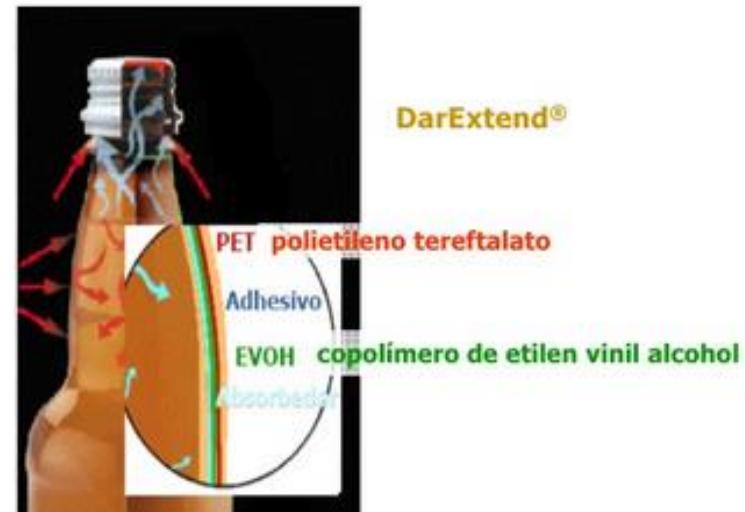


AgelessOmac®



ZerO₂®
Cryovac®OS

DarExtend®
Pureseal®



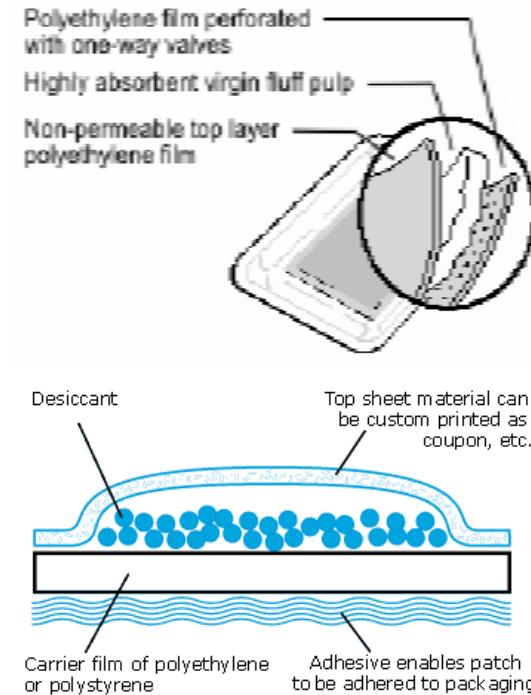
MeatGuard®
Toppan Sheet™
Peaksorb®



DesiMax®
NatraSorb®



Fresh-R-Pax®
Dri-It®
Dri-Fresh®



ETILEN

GreenPack®
Ethysorb™



PeakFresh™
Evert-Fresh®
Orega Plastic film



AROME

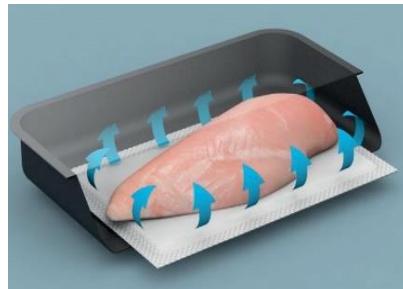
Cryovac®
Bynel IXP101®
Anico®



- sproščanje CO₂

Verifrais®

Cellcomb®



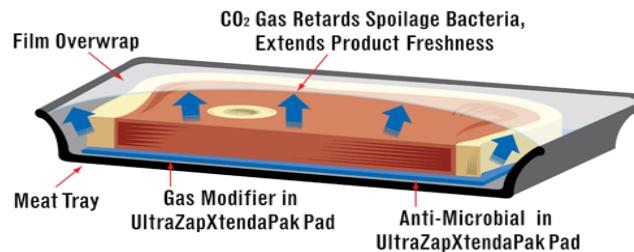
- absorpcija O₂ in sproščanje CO₂

Vitalon G®

FreshPax M®

Ageless GE®

UltraZAP®Xtenda Pak



izdelava embalaže,
premazi

Bactiblock®

Aglon®

IonPure®

Irgaguard®

Surfacine®



Food Touch®
Sanic films®

Biomaster®

Rycoat®

Flower transport gel



Efficacy of ethanol releaser on mould growth on bake off buns

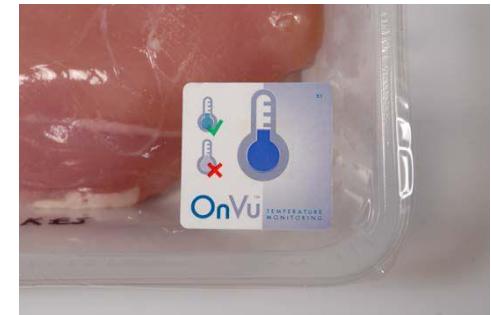


Obtained from Krista Bouma, Enforcement lab, Netherlands



označuje materiale, ki spremljajo stanje pakiranih živil ali okolja, ki živila obdaja z namenom podati informacijo o njegovi kakovosti med transportom in skladiščenjem (EU odredba – 1935/2004).

- Nosiči informacij: sledenje izdelka v dobavni verigi
- Senzorji: hitra in kvantitativna določitev analizirane snovi v embalaži
- Indikatorji: vizualna sprememba, ki poda stanje pakiranega živila



OxySense
Portable Oxygen Analyzer

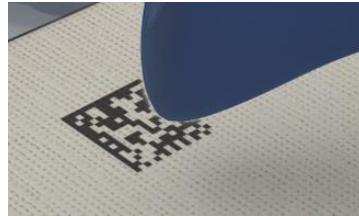
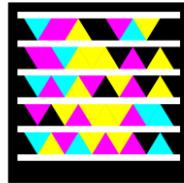
Take your lab to the field and back with this powerful and easy to use portable oxygen analyzer.

Incorporates to Acer Iconia W3 tablet



INTELIGENTNA EMBALAŽA – 2D kode, RFID, NFC

- 2D kode



DATAG™

X'track™



- RFID, NFC

Thinfilm®

TempTrip®

TurboTag®

Blulog®



- Plinski senzorji

OxySense®
O2xyDot™

Positioning of the O2xyDot® Sensors

Within a Package



The O2xyDot® is placed in the package/container prior to filling and sealing. Afterwards, the oxygen concentration can be determined through the power of non-invasive measurements.

Within A Pet Bottle



Biosenzorji

Toxin Guard™
Food Sentinel System®

SAFE PRODUCT

Bar Code Food Safety Label Safe Food Handling Instructions

Keep refrigerated or frozen.
Wash working surfaces (including cutting board(s), utensils, and hands after touching raw meat or poultry).
Cook thoroughly.
Keep hot foods hot. Refrigerate leftovers immediately or discard.

FOOD SENTINEL SYSTEM: To assure safe handling, this package is being automatically monitored for proper refrigeration and shelf life by time and temperature-sensitive barcodes. Abused product can also be visually identified by an extra wide, colored bar in the lower bar code.



Tare	Store No.	Sell By
Net wt/ct	Unit Price	Total Price

UNSAFE PRODUCT

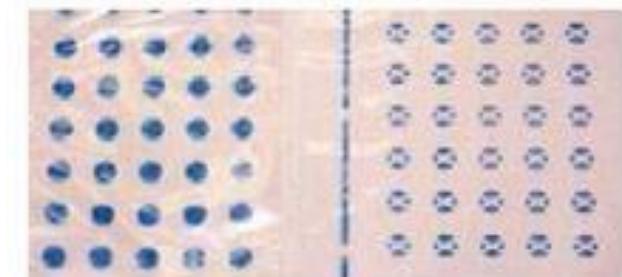
Bar Code Food Safety Label Safe Food Handling Instructions

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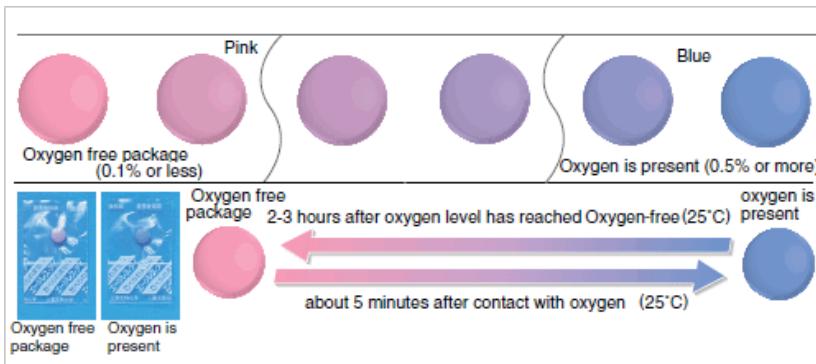
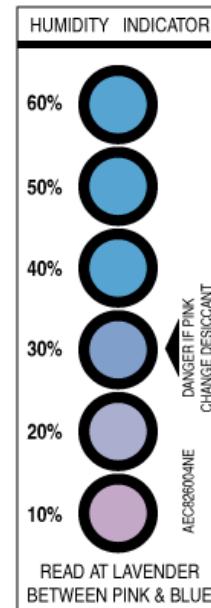
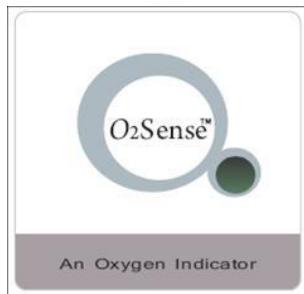
Toxin Guard®

- Plinski indikatorji

Ageless-eye®

Timestrip®

O2Sense™



Indikatorji svežine

FreshTags®

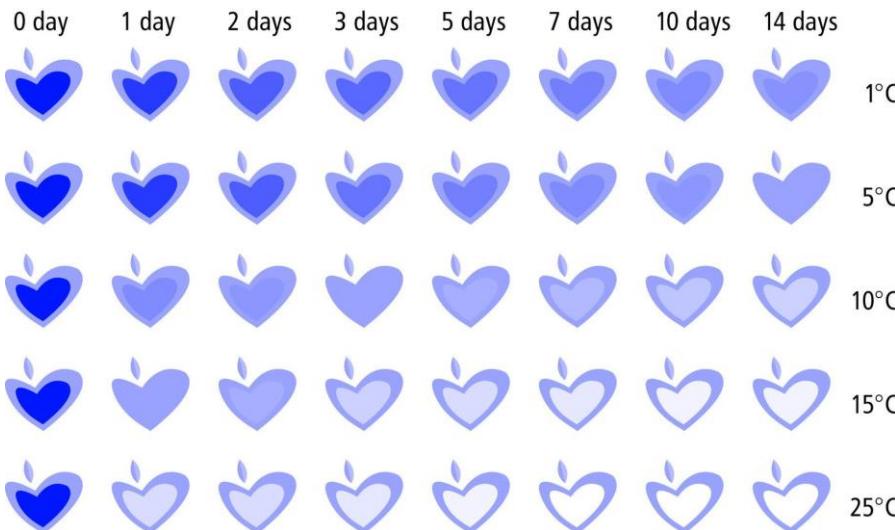
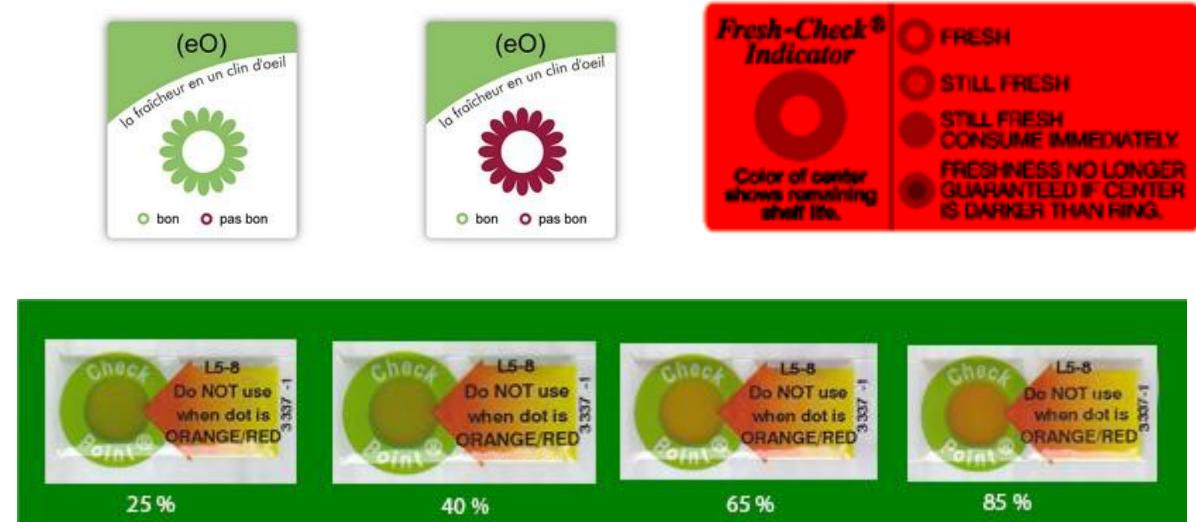
SensorQ™

RipeSense®



- Temperatura/čas indikatorji

eO® in TopCryo®
MonitorMark™
CheckPoint®
Fresh-Check®
OnVu™

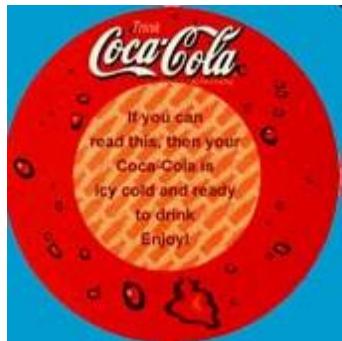
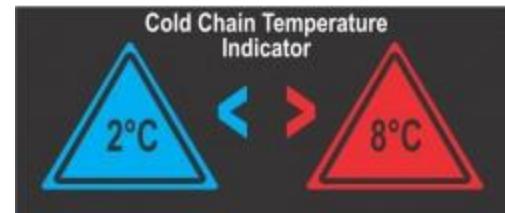


INTELIGENTNA EMBALAŽA – INDIKATORJI TEMPERATURE

kigt

Katedra za informacijsko
in grafično tehnologijo

- Temperaturni indikatorji



THERMOCROMATIC INK COLD
When the beer is perfect cold,
the color ink appears, is the
"sign of the gods".

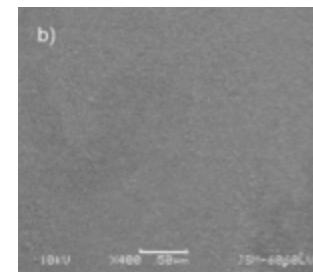
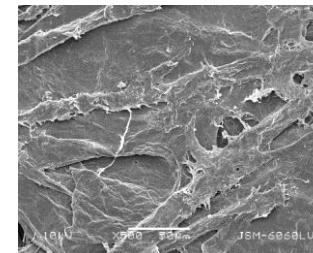




- Aktivna embalaža



Bariera za olja in maščobe:
ocena KIT = 12; oljevpojnost
Cobb-Unger = 0,14 g/m²



papir
premazan s
hitozanom

folija iz
hitozana

- Aktivna embalaža - večfunkcionalna bombažna tkanina



- Tiskana elektronika



HVALA ZA VAŠO POZORNOST!

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COST Action FP1405

*Active and intelligent fibre-based packaging –
innovation and market introduction
(ActInPak)*

ActInPak is a pan European (COST) network of the leading experts in active and Intelligent packaging of over 50 institutes and universities of 28 different countries. Main goal is to develop a knowledge-based network on sustainable, active and intelligent fibre-based packaging in order to facilitate its introduction on the market.

http://www.cost.eu/COST_Actions/fps/Actions/FP1405

<http://www.actinpak.eu>

<https://www.linkedin.com/groups/COST-FP1405-ActInPak-8254568/about>



SmartFlowerPack KCPK ©Bumaga



©VTT



VTT A. M. ©VTT



©NTF

Več informacij je na spletni strani COST Akcije ActInPak: www.actinpak.eu