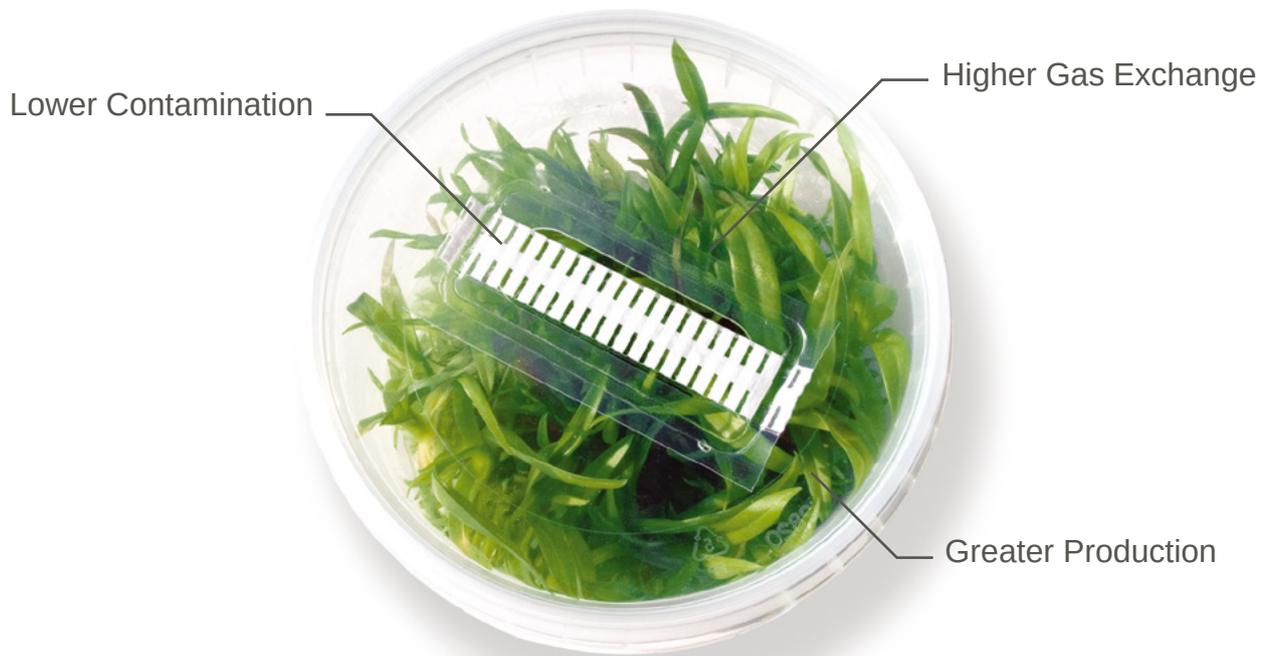




We make the filter
that makes *all* the difference.



Microbox revolutionary depth-filtration system allows for air flow, but blocks contamination.

Microbox micropropagation containers feature a patented depth-filtration system you won't find on any other micropropagation vessel, anywhere.

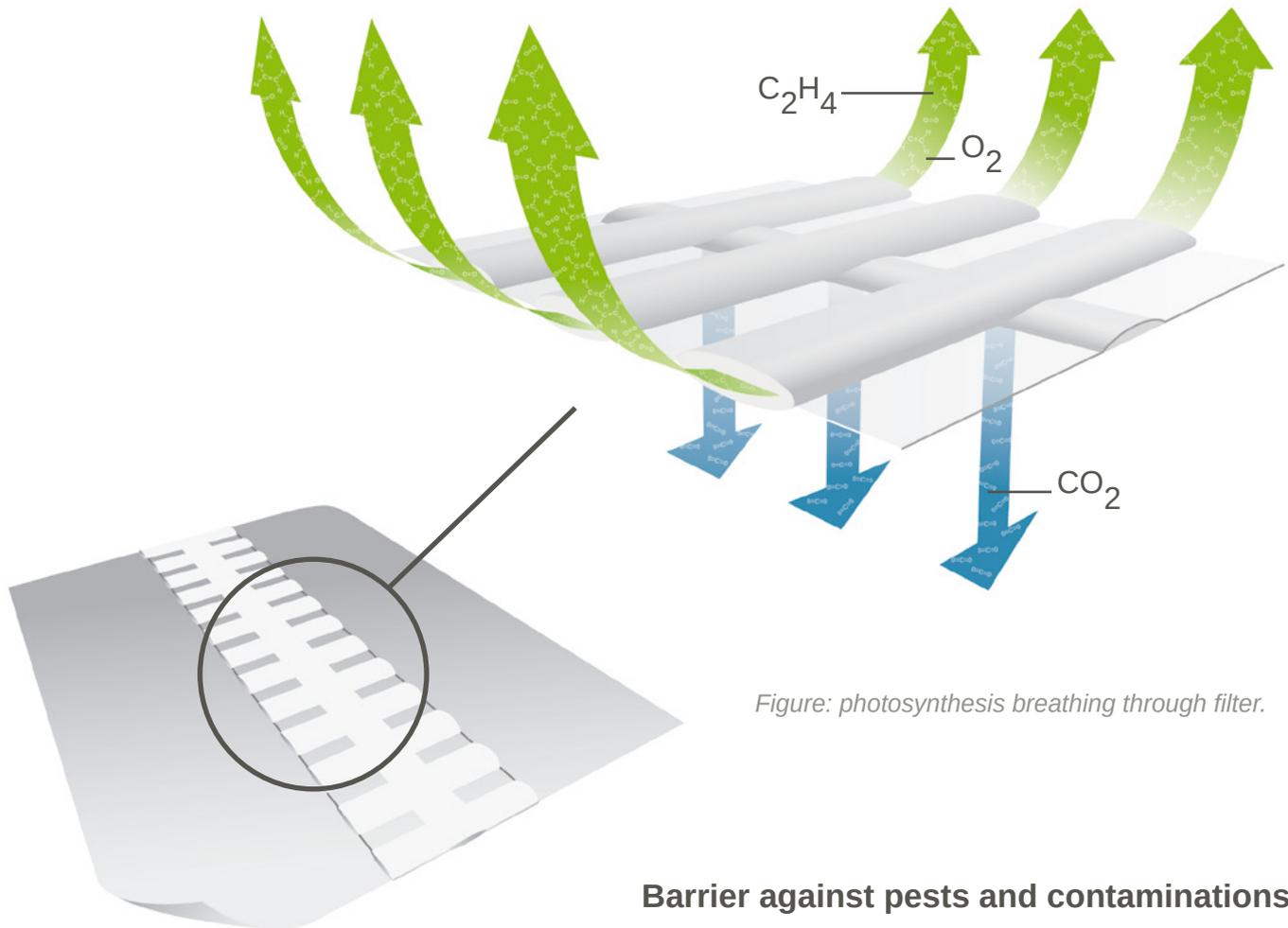


Figure: photosynthesis breathing through filter.

Barrier against pests and contaminations.

The depth-filtration of each patented Microbox uses randomly arranged fibers (HEPA principle) to effectively trap fungi spores, mites, trips and other contaminants. The result is astounding: extremely high gas exchange with limited dehydration, an impossibility with surface filtration alone.

No more makeshift filters.

The Microbox's hermetically-sealing lid is the key. We've pioneered a breathing filter into the lid for exceptionally efficient gas exchange. No more cutting holes and stuffing cotton wool as an improvised filter to keep out pests.



Eco-responsible. Reusable. Sensible.

Autoclavable up to 7 times*, each Microbox is 100% recyclable. Lid and container are both ecologically and economically smart. And recyclable doesn't mean compromising integrity.



* Only our untreated Microboxes are autoclavable. The gamma-sterilized ones are not.



Clearly superior.

The hermetically-sealing lid with filter, and the box itself, are made of clear, resilient polypropylene. You have an accurate view of your work for greater quality control. To guarantee a hermetic and contaminant-resistant seal, make sure to securely snap the lids. Specially for this perfect closure, we have developed our easy-to-use compact lid sealer for the most reliable seal of all.

About the Microbox filter

Your choice will depend on a number of parameters, such as:

- plant variety – even different cultivars of the same species may behave differently
- generation time – i.e. time span needed for growth
- conditions in the incubation chamber – presence of floor cooling; type of shelves; number and position of the plants on the shelves; air circulation; light regime and intensity; temperature
- number of plants per container
- developmental phase of the plants
- volume and composition of substrate in the culture vessel

As a rule, L, XL and XXL filters are designed for plants with a long generation time, whereas the XXL+ filters are well suited for plants in need of a high gas exchange and/or plants that spend less time in the Microbox.

Comparative in-situ tests are necessary to decide which filter type is appropriate.

Exceptionally efficient gas exchange capacity of the filters

Gas exchange capacity depends on the Kv value of the corresponding filter types.

Kv is the volumetric gas exchange coefficient by means of diffusion throughout the filters. It represents the number of gas replacements in the vessels per time unit (unit: GE/day).

The Kv is determined by the type of filter, filter length and gas volume in the containers.

The measurements were obtained with empty vessels in standard conditions, hence these values are not indicative of the real behavior of a plantlet under specific growing conditions.

Gas exchange is achieved by diffusion throughout a series of depth filters.

These conditions ensure optimal functioning:

- keep the filter zones free of labels or any other objects
- avoid wetting filters; air dry filters when wet
- before re-using the lids, clean them with damp cloth (do not soak) and let dry completely
- choose the suitable filter type (L, XL, XXL, XXL+) with the proper ventilation ratio to achieve an ideal gas exchange with minimal dehydration

Code Filters	Round Microboxes (O118/80)	Oval Microboxes (OV80/80)
 L: white filter	9,87 GE / day	7,44 GE / day
 XL: yellow filter	13,09 GE / day	9,84 GE / day
 XXL: red filter	15,58 GE / day	10,83 GE / day
 XXL+: green filter	81,35 GE / day	62,87 GE / day

GE= Gas Exchanges

List of models

Transparent polypropylene containers with cover with filter

All the microboxes below are available either  gamma-sterile = not autoclavable & not re-usable
not gamma-sterile = autoclavable & re-usable

Code filters

Please mention which option you need when you order.

-  L: white filter
-  XL: yellow filter
-  XXL: red filter *
-  XXL+: green filter

All the lids are available with these type of filters (per carton).

The choice of the ideal filter type will depend on a number of parameters.
For more information, please go to www.combiness.com/en/about-the-box

Round	Model type: O118/50+OD118
	Cover: 110 mm diameter Base: 97 mm diameter Height: 50 mm Volume: 300 ml Packaging: 400 covers + 400 vessels

Round	Model type: OS40+ODS40
	Cover: 90 mm diameter Base: 80 mm diameter Height: 40 mm Volume: 210 ml Packaging: 500 covers + 500 vessels

Round	Model type: O118/80+OD118
	Cover: 110 mm diameter Base: 97 mm diameter Height: 80 mm Volume: 565 ml Packaging: 240 covers + 240 vessels

Round	Model type: OS60+ODS60
	Cover: 90 mm diameter Base: 80 mm diameter Height: 60 mm Volume: 280 ml Packaging: 440 covers + 440 vessels

Round	Model type: O118/120+OD118
	Cover: 110 mm diameter Base: 97 mm diameter Height: 120 mm Volume: 870 ml Packaging: 240 covers + 240 vessels

Round	Model type: OS114+ODS114
	Cover: 90 mm diameter Base: 80 mm diameter Height: 114 mm Volume: 520 ml Packaging: 400 covers + 400 vessels

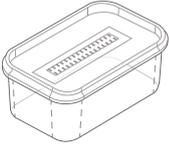
Round	Model type: OS140+ODS140
	Cover: 110 mm diameter Base: 90 mm diameter Height: 140 mm Volume: 1000 ml Packaging: 180 covers + 180 vessels

Rectangular	Model type:OV80+OVD80
	Cover: 150 × 90 mm Base: 125 × 65 mm Height: 80 mm Volume: 540 ml Packaging: 350 covers + 350 vessels

Square	Model type: TP2100+TPD2100 *
	Cover: 195 × 195 mm Base: 185 × 185 mm Height: 78 mm Volume: 2100 ml Packaging: 100 covers + 100 vessels

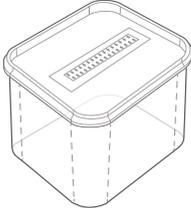
Rectangular	Model type: TP750+TPD750 *
	Cover: 182 × 120 mm Base: 170 × 110 mm Height: 45 mm Volume: 750 ml Packaging: 162 covers + 162 vessels

Square	Model type: TP2500+TPD2500 *
	Cover: 195 × 195 mm Base: 185 × 185 mm Height: 89 mm Volume: 2500 ml Packaging: 90 covers + 500 vessels

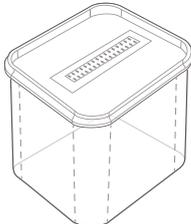
Rectangular	Model type: TP1200+TPD1200 *
	Cover: 180 × 120 mm Base: 170 × 110 mm Height: 70 mm Volume: 1200 ml Packaging: 150 covers + 150 vessels

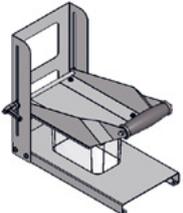
Square	Model type: TP3000+TPD3000 *
	Cover: 195 × 195 mm Base: 185 × 185 mm Height: 112 mm Volume: 3000 ml Packaging: 80 covers + 80 vessels

Rectangular	Model type:TP1600+TPD1600 *
	Cover: 182 × 120 mm Base: 172 × 110 mm Height: 92 mm Volume: 1600 ml Packaging: 100 covers + 100 vessels

Square	Model type: TP4000+TPD4000 *
	Cover: 195 × 195 mm Base: 185 × 185 mm Height: 150 mm Volume: 4000 ml Packaging: 70 covers + 70 vessels

* These models are available with filter code: XXL Extra Extra Large (white, not red) and filter code XXL+ (green)

Square	Model type: TP5000+TPD5000 *
	Cover: 195 × 195 mm Base: 185 × 185 mm Height: 191 mm Volume: 5000 ml Packaging: 60 covers + 60 vessels

Compact lid closer	Dimensions	Packaging
	Width: 300 mm Length: 600 mm Height: 300 mm	1 envelope dimensions: 37×29×10 cm weight: 2 kg

Microbox-grown plantlets have less problems with weaning.

Thanks to an adequate gas exchange, the plantlets have been well prepared for their autotrophic life during their stay in the vessels, so weaning is no problem.



Does the medium in the Microbox dry out when plants stay in the boxes for a long time?

Microbox filters are based on a depth-filtration principle as opposed to membranes, which are surface filters. Depth filters limit dehydration: the longer the filter plug, the less dehydration. By varying the gas exchange we can influence the de-hydration. With our white filter we have the least gas exchange thus the least dehydration. Another factor influencing dehydration is growing medium volume.

Microbox vs regular containers

When using hermetically closed containers without filters: problems caused by poor gas exchange of CO₂, O₂ and especially ethylene concentrations can be far from optimal. Another common complication of poor gas exchange is hyperhydricity.

The gas exchange capacity of the Microbox was found to have a gas exchange which is as high as the classic, 'open' containers without filtration system.

When using loose covers: occurrence of secondary infections, transported by air or by mites and trips. Barrier against pests and diseases: a very important advantage of the Microbox is the perfect protection against micro-organisms, mites and trips.

How to autoclave the untreated Microbox. (not gamma-irradiated)

Preferable procedure:

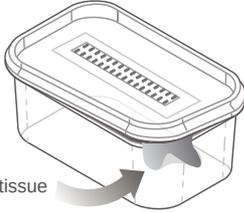
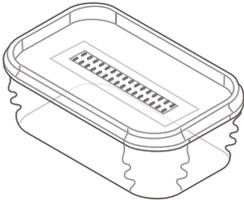
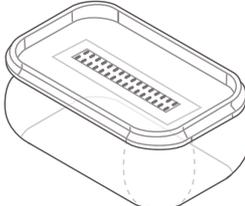
Autoclave containers and medium separately, so polypropylene containers hold their shape and can be re-used a number of times.

- Step 1: Pack stacked containers and covers separately in an autoclavable bag
- Step 2: Autoclave containers and covers
- Step 3: Unwrap containers and covers in sterile conditions
- Step 4: Fill containers with warm sterilized medium under LAF (Laminar Air Flow)
- Step 5: Carefully snap cover around entire rim to securely close
- Step 6: Store containers with medium in a clean area until time of use

Alternative procedure:

Autoclave containers filled with medium

- Step 1: Fill the containers with medium
- Step 2: Place a piece of non-woven tissue on one edge of each container before closing the lids, allow vapor to enter the Microbox during autoclaving
- Step 3: If condensation is a problem, cover lids loosely with aluminum foil to prevent filters from getting soaked
- Step 4: Put containers in autoclave
- Step 5: Slowly build up pressure to prevent lids from closing
- Step 6: After sterilization, slowly reduce the pressure in the autoclave. As soon as the containers are removed from the autoclave, remove the non-woven tissue and snap to close each cover completely
- Step 7: Store containers with medium in a clean area until time of use

Corner of lid left open: no deformation	Hermetically-sealed lid: containers distort with pressure changes	
 <p data-bbox="135 1736 284 1760">non-woven tissue</p>		
gas has free passage	quick pressure increase	quick pressure reduction

Gamma-irradiated Microboxes or not.

Untreated:

In an autoclave based system, the Microboxes should not be sterilized by means of gamma irradiation.

These boxes are re-usable 7 to 10 times if treated with care.

Gamma-Sterile:

In a fully automated and sterile system, the Microboxes should be sterilized by means of gamma irradiation.

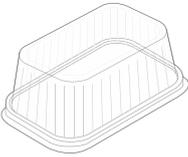
These boxes are not re-usable. The irradiation and sterile packing take place immediately after the production, prior to shipment.



Rectangular polystyrene containers and cover without filter

Gamma irradiated, **not autoclavable**, not re-usable and not hermetically closing.

Rectangular lid	Model type: RDA145
	Length: 145 mm Width: 100 mm Height: plain Packaging: 600 pcs / box

Rectangular lid	Model type: RDA60
	Length: 145 mm Width: 100 mm Height: 60 mm Packaging: 600 pcs / box

Rectangular box	Model type: RA40
	Length: 145 mm Width: 100 mm Height: 40 mm Packaging: 600 pcs / box

Rectangular box	Model type: RA60
	Length: 145 mm Width: 100 mm Height: 60 mm Packaging: 600 pcs / box

Rectangular box	Model type: RA85
	Length: 145 mm Width: 100 mm Height: 85 mm Packaging: 600 pcs / box

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