

- 1) GROWLAY - Filament / what is it ?
- 2) product info – how to use
- 3) special printing info



1) GROWLAY - Filament / what is it ?

**GROWLAY filament**

(patent pending) bio-degradable / indoor farming

print 3D objects and let biological cultures grow on it

1. grass; moss
2. fungus ; mildew
3. lichen
4. mycelium
5. pharma-cultures, mother cells

GROWLAY works like a breeding ground. Add seeds or spores to them and they will grow.

**GROWLAY properties:**

- GROWLAY is microcapillary. Its cavities absorb and store water, dissolved liquid nutrients or fertilizer. Promoted because of the capillary action throughout the printed object.
- Mold grows through the open-cell capillaries and forms a mycelium.
- Seeds of grasses can get caught and grow in Growlay.
- Spores find room to germinate in small cavities. (see SEM-Pics)
- Roots cling to the structures of the object filling.
- Even lichens grow on Growlay. These usually grow preferentially on stones of walls or trees.
- GROWLAY can be sterilized (for food use and research) with gases or wet (but not thermally)
- For color differentiation, objects printed with Growlay can be subsequently colored with food colors.
- is an absorptive carrier for agents

**GROWLAY is available in the functionally different versions white and brown**

- Version white is an experimental filament & fully compostable
- The brown version contains not only pores but also built-in "food" in the form of cell material which is needed for growth

Available at your local filament dealer from middle of June 2018

**keywords:**

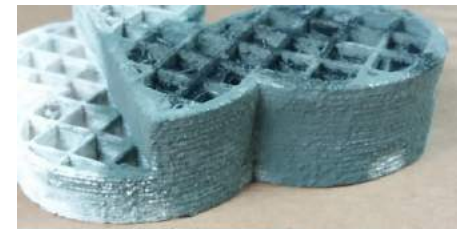
living sculptures, living landscapes, farming, 3d-gardening, breeding ground

**GROWLAY - two versions**

| <b>GROWLAY-white</b><br><b>pure porous</b>   | <b>GROWLAY-brown</b><br><b>porous +woodparticles</b>   |
|--|--|
| <ul style="list-style-type: none"> <li>• <b>compostable</b> polymer</li> <li>• with open capillaries</li> <li>• white filament</li> <li>• experimental filament for experienced users</li> </ul> | <ul style="list-style-type: none"> <li>• <b>not compostable</b></li> <li>• with open capillaries</li> <li>• polymer contains <b>organic nutrients</b> (wood particles)</li> <li>• <b>higher</b> tensile strenght</li> <li>• <b>more rigid</b> as version –white-</li> <li>• increased temperature stability</li> <li>• the filament can be printed just as easily as Laywood,</li> <li>• brown filament</li> <li>• for any user</li> </ul> |



1) GROWLAY after some days with grass seed put on it

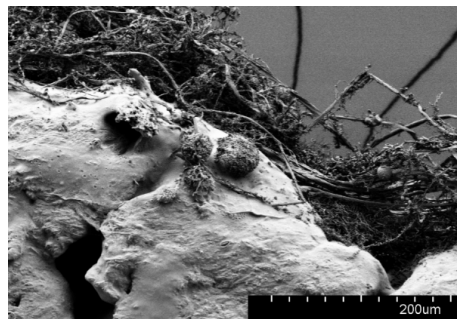


2) above: Gorgonzola chees (blue) grows on Growlay  
below: white cheese

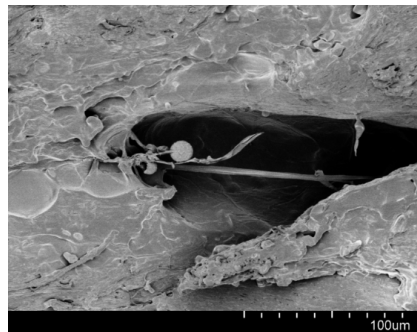


3)  
left: fresh printed GROWLAYbrown  
middle: cotton-like mold growth  
right: slow-growing lichen

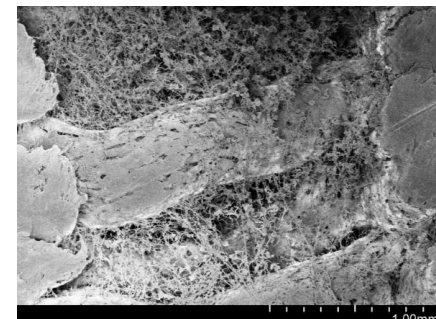
below,  
pics by scanning electron microscope (SEM; REM)



4) SEM, Lichen inside GROWLAY (Flechte)



5) SEM, Lichen inside GROWLAY (Flechte)



6) SEM, white Cheese inside GROWLAY