

**GROWLAY Filament**

print 3D objects and let biological cultures grow

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.
- absorptive carrier for agents

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

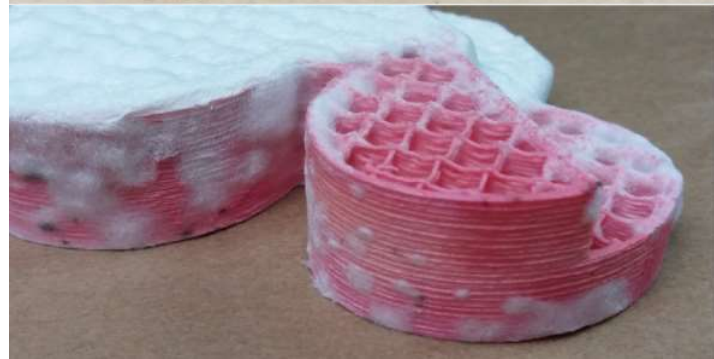
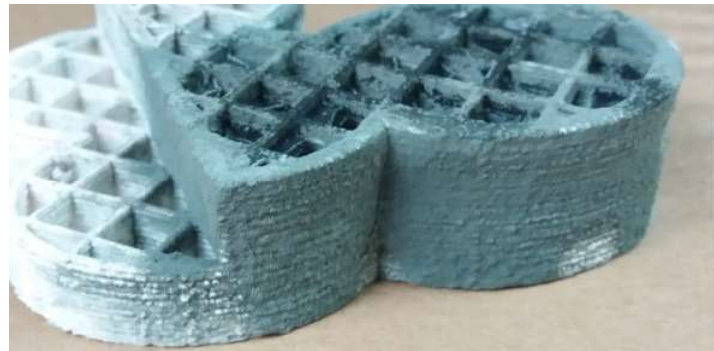
- Version white is an experimental filament & fully compostable
- The brown version contains not only pores but also built-in "food" in the form of cell material which is needed for growth



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



GROWLAY after some days with grass seed put on it

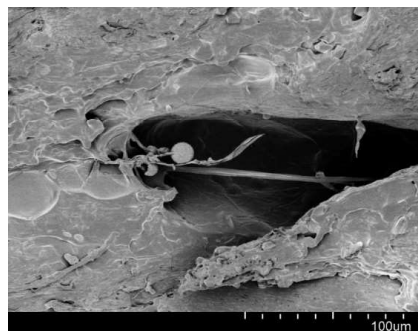


above: Gorgonzola chees (blue) grows on GROWLAY  
below: white cheese

**NEW**



pics by scanning electron microscope  
4) SEM, Lichen inside GROWLAY (Flechte)



5) SEM, Lichen inside GROWLAY



6) SEM, white Cheese inside GROWLAY

**GROWLAY - two versions**

**GROWLAY-white pure porous**

- **compostable** polymer
- with open capillaries
- white filament
- experimental filament for experienced users

**GROWLAY-brown porous +woodparticles**

- **not compostable**
  - with open capillaries
  - + polymer contains **organic nutrients** (wood particles)
  - **higher** tensile strenght
  - **more rigid** as version -white- ;
  - increased temperature stability
- the filament can be printed just as easily as Laywood, brown filament // for any user