

Application Note

CELLINK START X

Description

With a new and improved formulation, CELLINK® START X is an ink developed for demonstrations and educational purposes which has the ability to be crosslinked with 405 nm light. CELLINK START X prints well through a wide range of nozzle shapes and diameters. This ink can be utilized both for evaluation of construct geometry and for education and training purposes. CELLINK START X additionally can be utilized as a long lasting ink for structural support, as a soft surface for printing, components in perfusable organ-on-a-chip, and for educational purposes as permanent models with tailorable mechanical characteristics. CELLINK START X is non-toxic and can be utilized in conjunction with a wide range of bioinks.

Application

Primary applications of CELLINK START X include the fabrication of crosslinked models for validation of construct geometries, bulk material for perfusable chips, and mechanically tailorable structures for soft robotics and bioink standardization.

Storage

CELLINK START X should be stored between four and eight degrees Celsius. Note that CELLINK START X is liquid at temperatures below twelve degrees Celsius. The shelf life of CELLINK START X is four months. The valid expiration date is always stated on the package. Ensure the cartridges are capped prior to storage to prevent drying. Keep CELLINK START X unfrozen – placing CELLINK START X in the freezer risks impairing its printability. Ensure the bioink is protected from light. Remove the nozzle after bioprinting and recap to prevent unwanted crosslinking.

Mixing with Cells

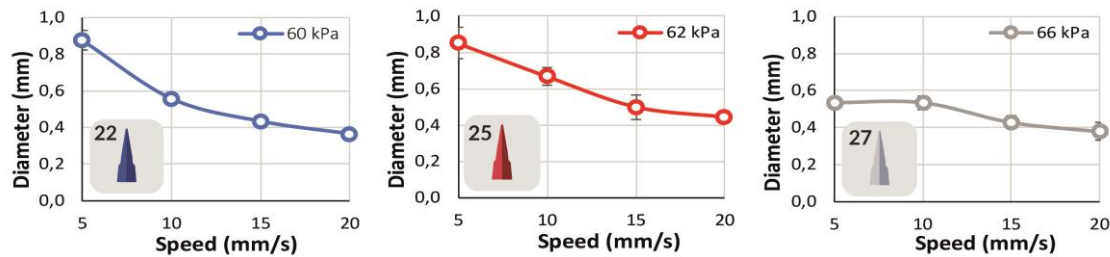
It is not recommended to blend cells with CELLINK START X. Other bioinks can be printed on the surface and directly crosslinked to it.

Crosslinking

CELLINK START X is crosslinkable under 405 nm light. After or during bioprinting, expose CELLINK START X to 405 nm light for approximately 10-30 seconds at a layer height of 3-6 cm.

Printing Parameters

For optimal printability we recommend you use the following parameters. Layer height should be set to equal to the nozzle inner diameter. Optimal printing temperature is between 20-30 degrees Celsius.



Printability Observations

CELLINK START X can be considered an average nozzle fidelic ink. This means that the resulting filament diameter may be slightly larger than the diameter of the extrusion nozzle. To account for this, we recommend printing CELLINK START X with a high printing speed (up to 20 mm/s) and the lowest pressure possible.

2

CELLINK START X is sensitive to the thermal environment during printing. It is recommended to not use CELLINK START X below 20 degrees Celsius and beyond 30 degrees Celsius, as the viscosity of the ink will drastically change.

It is recommended that the nozzle be replaced if printing is paused for more than 15 minutes as CELLINK START X may dry or crosslink at the tip and clog the nozzle during inactivity. This may especially occur when using the 27G nozzle, since it is transparent.

If needed, CELLINK START X can be dyed to better visualize the filaments after deposition. This is recommended during printability observation or testing of vascular network generation codes.