BIORES INX© X100

Liquid Gel-MA Resin

BIORES INX© is a resin designed for digital light projection (DLP) technology, formulated from gelatin methacrylamide (Gel-MA). Gel-MA, derived from natural collagen, is widely regarded as a gold standard in tissue engineering and biofabrication.

BIORES INX© remains liquid at room temperature, eliminating the need for heating during the printing process. Once printed, it forms a strong, biocompatible, and biodegradable hydrogel network ideal for various biomedical applications.

BIOLOGICAL APPLICATIONS

BIORES INX© is based on a natural polymer with properties similar to that of natural extracellular matrix (ECM), such as RGD sequences and matrix metalloproteinase (MMP) target sites, ensuring biocompatibility and biodegradability. It can be readily seeded with cells after printing with a DLP printer (Figure 1) and is suitable for soft and hard tissue regeneration

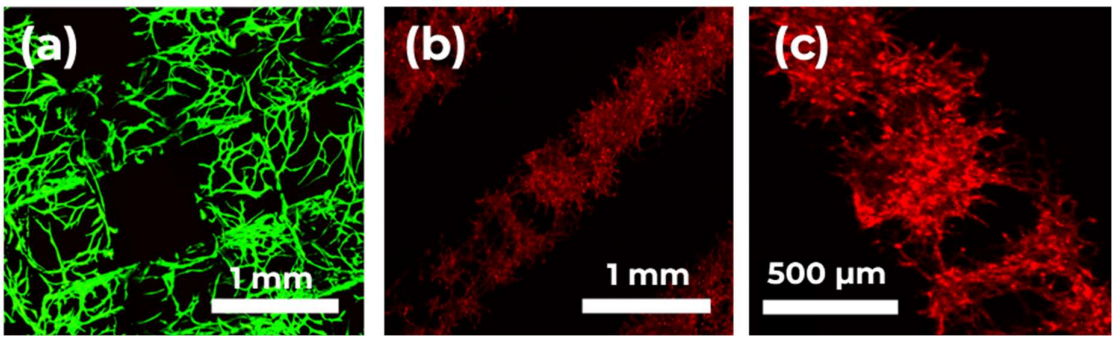

Figure 1 Confocal microscope images of (a) Human Foreskin Fibroblasts (HFFs) stained with Calcein AM and propidium iodide, (b) and (c) mCherry-labelled human osteoblasts (HuOBs, InSCREENex) seeded on BIORES INX© scaffolds that were printed using DLP.

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BENEFITS OF BIORES INX©

✓	Biocompatibility	Exceptional biocompatibility (ISO 10993-5) with no toxic effect on living cells
✓	Sterile Production	Produced under aseptic conditions
✓	Cell Interactivity	Suitable for cell seeding
✓	Biodegradability	Enables cellular remodeling of the printed matrix
✓	Easy Handling	Provided as a ready-to-use solution
✓	Easy Printing	Printable at room temperature
✓	Reproducibility	Production under strict quality control

PROPERTIES & PROCESSING

BIORES INX© is a translucent, yellow-colored liquid at room temperature. It facilitates efficient printing at room temperature, reducing the risk of resin drying during the printing process and eliminating issues related to uneven heat distribution within the VAT and the printing platform. Some physical characteristics of BIORES INX© are listed in Table 1. At the end of the printing process, the ink has a storage modulus in the range of 20 to 40 kPa, exhibiting sufficient mechanical integrity for easy handling, while being suitable for a range of tissue engineering applications. The resin can be printed into structures with a negative resolution down to 200 µm, allowing to print structures with hollow channels. Example structures printed using BIORES INX are shown in Figure 2.

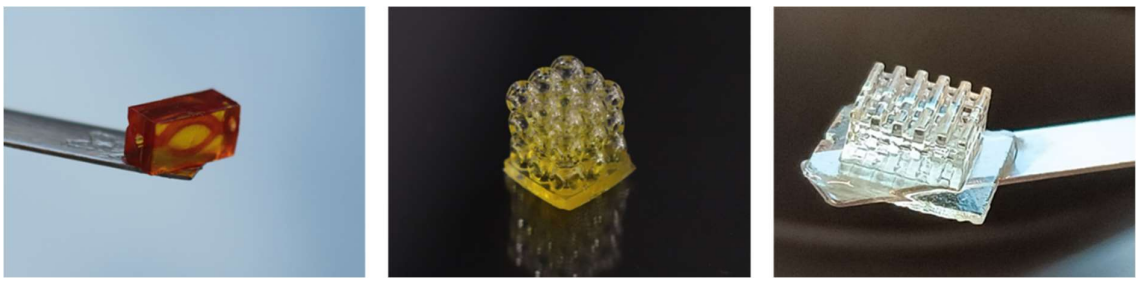

Figure 2: Left: Blood vessel structure with hollow channels perfused with a dye, Middle: Egg-shell structure and right: porous scaffold printed with BIORES INX©

Table 1: Physical properties and processing parameters of BIORES INX©

Appearance (20 °C)	Yellow translucent liquid
pH	6.5 – 8.5
Total degree of functionalization	90 – 100%
Viscosity	5 – 20 mPa.s
Storage modulus after printing	20 – 40 kPa
Negative Resolution (Z)*	500 – 600 µm
Negative Resolution (X-Y)*	200 µm
Positive Resolution (Z)*	300 – 400 µm
Positive Resolution (X-Y)*	300 µm
Exposure time per layer*	10 – 12 s
Printing temperature	Room temperature
Volumetric shrinkage afer post-processing	33%

* Intensity: 20 mW/cm^2, wavelength: 405 nm, layer height: 50 µm

3D PRINTER COMPATIBILITY

BIORES INX© X100 has been used repeatedly and successfully with the following printers:

- ✓ LUMEN X
- ✓ LUMEN X+

If you would like to discuss your printer's compatibility with our bioinks, please contact us at info@bioinx.com