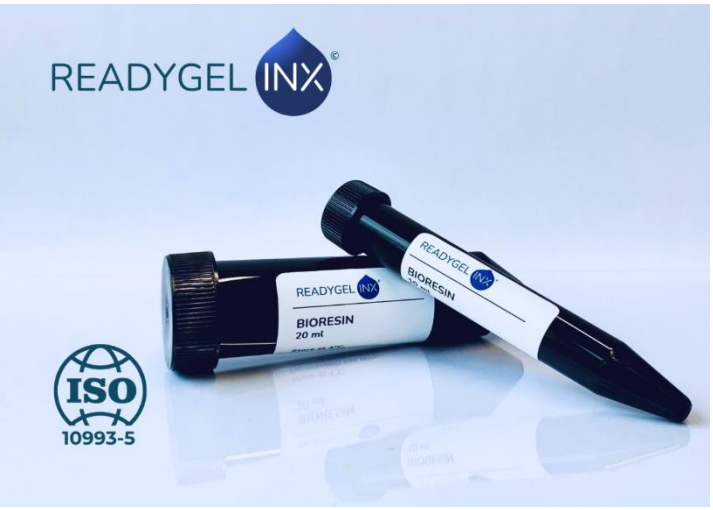
READYGEL INX© X100

Printing with the speed of light



READYGEL INX© is a Gel-MA bioresin derived from natural collagen, featuring RGD motifs in its structure, thereby mimicking the extracellular matrix. The bioresin can be remodeled by cells and is compatible with volumetric bioprinting (VBP), enabling rapid printing (10 - 20 s) into complex centimeter-scale structures regardless of their size. After photo-crosslinking, it achieves physiological stability, forming a non-soluble, yet biodegradable network.

BIOLOGICAL APPLICATIONS

READYGEL INX© is a versatile bioink due to its strong resemblance to the natural extracellular matrix and cell interactive behaviour. It can easily be printed via VBP technology in the presence of living cells.

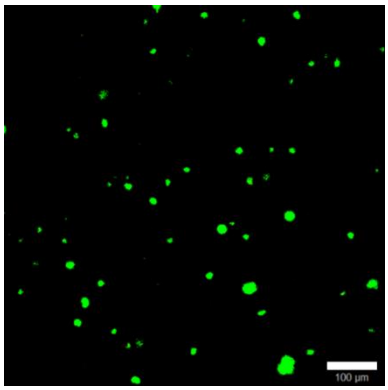


Figure 1 Confocal microscope images of Human Foreskin Fibroblasts (HFFs) encapsulated in READYGEL INX© and printed using VBP. The images were taken after staining the cells via calcein AM/propidium AM, on the 4th day of the culture.

For more information on the biological applications of READYGEL INX© and the parameters used to generate these 3D cellular structures, contact us on info@bioinx.com

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BENEFITS OF READYGEL INX©

✓	Biocompatibility	Exceptional biocompatibility (ISO 10993-5) with no toxic effect on living cells
✓	Cell interactivity	Supports cell encapsulation and adhesion
✓	Biodegradability	Enables cellular remodeling of the printed matrix
✓	Easy Handling	Provided as a ready-to-use solution
✓	High speed	Provides rapid printing (5 – 10 s) via VBP technology
✓	Reproducibility	Production under strict quality control

PROPERTIES & PROCESSING

READYGEL INX© is a transparent, clear gel at room temperature, which turns into a liquid after heating above 30°C. Some physical characteristics of READYGEL INX© are listed in Table 1. At the end of the printing and post-printing process, the ink exhibits a storage modulus in the range of 10 to 18 kPa, meaning that the material exhibits sufficient mechanical integrity to maintain shape retention, while being suitable for a whole range of soft tissue applications. The resin can be printed into structures with a negative resolution down to 100 µm, allowing to print structures with hollow channels. As an example, a printed blood vessel structure is demonstrated in Figure 2.

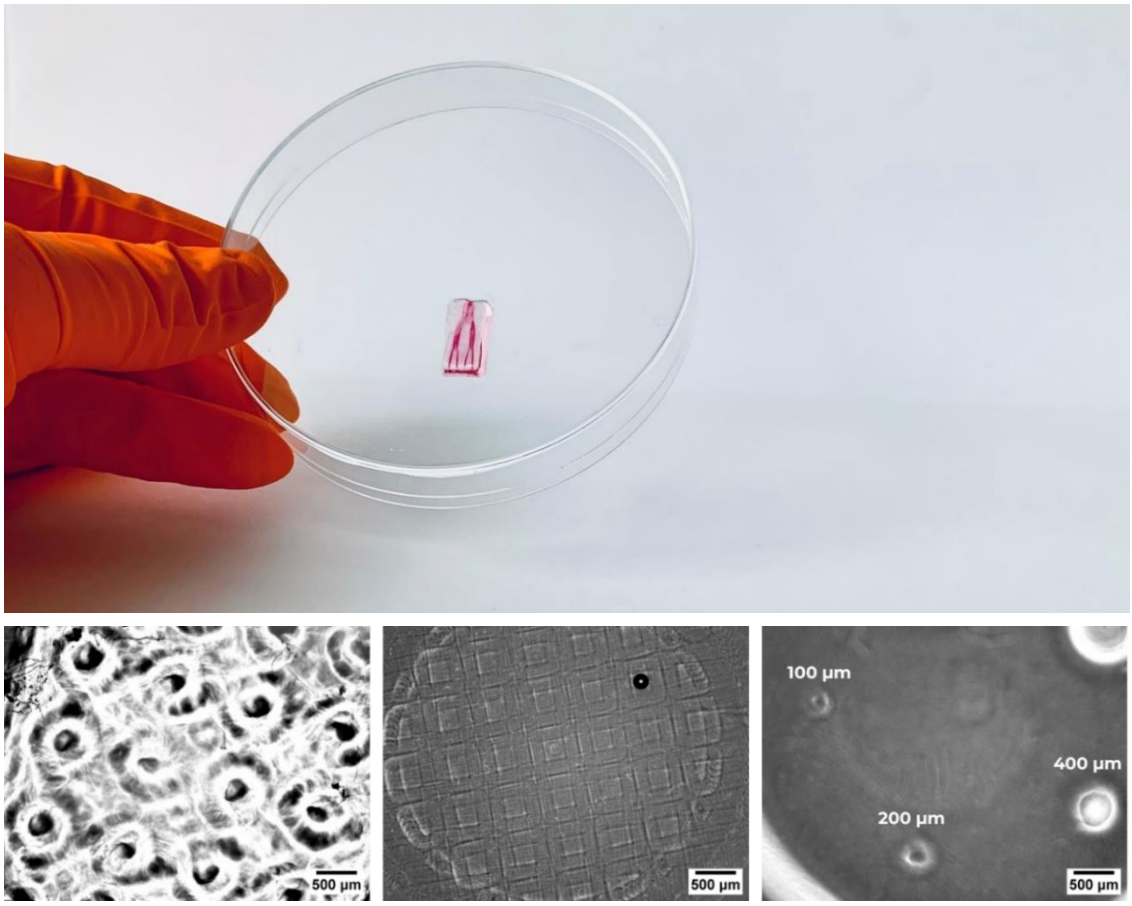

Figure 2: Top: Blood vessel structure with hollow channels perfused with a dye, Bottom: Porous structures printed with READYGEL INX©.

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

Appearance (20 °C)	Transparent gel
pH	6.5 – 8.5
Total degree of functionalization	70 – 80%
Storage modulus after printing	10 – 18 kPa
Refractive Index	1.34 – 1.36
Negative Resolution	100 µm
Required dose for printing	188 mJ cm^{-2}

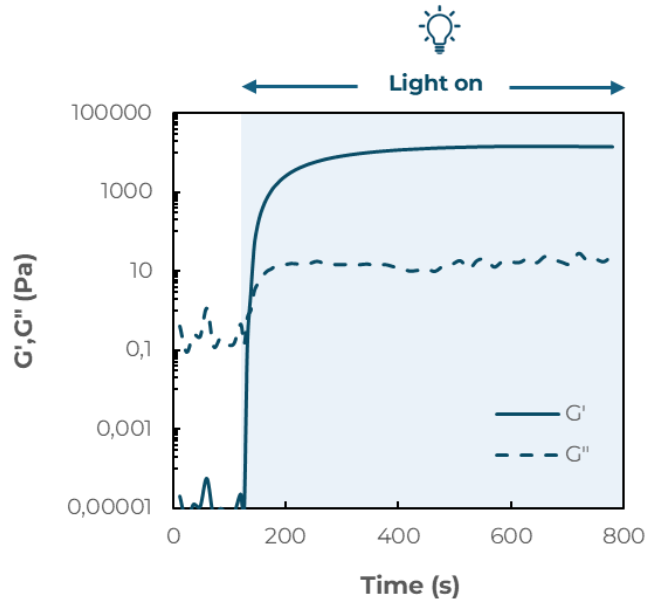

Figure 3: Storage (G') and loss (G") modulus of READYGEL INX© during irradiation with light (400 – 500 nm)

3D PRINTER COMPATIBILITY

READYGEL INX© X100 has been used repeatedly and successfully with the following printer:

- ✓ Tomolite (Readily3D)

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