



3D Bioprinting with Lifeink®

Collagen Bioinks for Tissue Engineering



The Technology

Advanced BioMatrix has utilized proprietary technology to manufacture highly purified collagen bioinks, known as Lifeink®. Our bioinks are 35 mg/ml type I collagen and do not contain additional additives or crosslinkers. Lifeink® can be printed through small needles for high resolution bioprinting. Printing pure collagen provides cells with a native environment for tissue engineering. Lifeink® is printed using the FRESH method, conveniently achieved through our LifeSupport® product.

Lifeink® Attributes

- Highly purified Type I Collagen
- Available as pH 7 (Lifeink® 200) or pH 4 (Lifeink® 240)
- 35 mg/ml concentration
- No additional impurities, crosslinkers, secret additives, or “non-native” materials (ie. alginate, cellulose, gellan gum, etc...)
- Printable through 30-gauge needles (or even smaller!)

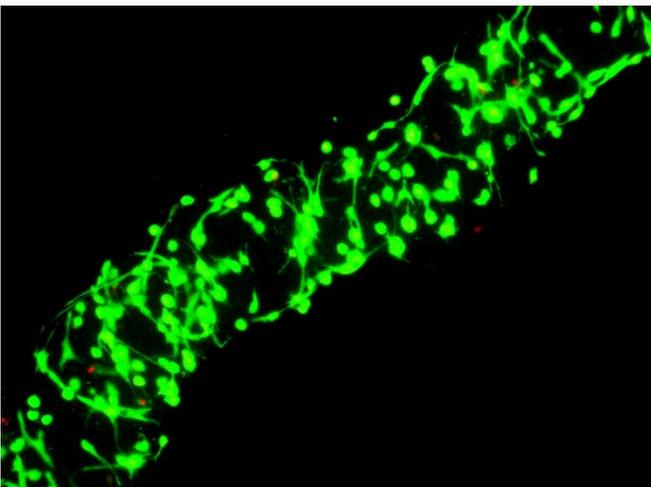
Lifeink® 200

Type I Collagen Bioink, pH neutral, 35 mg/ml

Lifeink® 200 is a 35 mg/ml type I collagen bioink for extrusion based FRESH bioprinting.

Lifeink® 200 comes as a pH neutral, isotonic collagen bioink and is ready for cell addition and bioprinting.

Lifeink® 200 is extrudable through a 30-gauge needle. The pure collagen composition allows for superior cytocompatibility and cellular remodeling.



Parameter, Testing, and Method	Lifeink® 200 #5278
Sterilization Method	Filtration, Aseptic Processing
Sterility - USP modified	No growth
Form	Opaque Gel/Paste
Package Size	5 mL
Storage Temperature	2-8°C
Print Temperature	2-8°C
Shelf Life	Minimum of 1 year from date of receipt
Endotoxin - LAL	< 10.0 EU/mL
pH	6.9-7.6
Osmolality (mOsmo H2O/kg)	290-370
Source Material	Bovine Collagen
Electrophoretic Pattern - Coomassie Blue	Characteristic
Collagen Concentration - Biuret	30-45 mg/mL
Collagen Purity - Silver Staining	>99%
Continuous Flow Extrusion	Pass

Lifeink® 240

Type I Collagen Bioink, Acidic, 35 mg/ml

Lifeink® 240 is a 35 mg/ml type I collagen bioink for extrusion based FRESH bioprinting.

Lifeink® 240 comes with acidic pH and when FRESH printed into LifeSupport®, yields a neutralized, high resolution collagen scaffold.

Lifeink® 240 is a high concentration solution, allowing it to be extruded through tiny needles (like a 32-gauge)!



Parameter, Testing, and Method	Lifeink® 240 #5267
Sterilization Method	Filtration, Aseptic Processing
Sterility - USP modified	No growth
Form	Clear Viscous Solution
Package Size	5 mL
Storage Temperature	2-8°C
Print Temperature	2-25°C
Shelf Life	Minimum of 6 months from date of receipt
Endotoxin - LAL	< 10.0 EU/mL
pH	3.0-5.0
Osmolality (mOsmo H ₂ O/kg)	450-700
Source Material	Bovine Collagen
Electrophoretic Pattern - Coomassie Blue	Characteristic
Collagen Concentration - Biuret	30-40 mg/mL
Collagen Purity - Silver Staining	>99%
Continuous Flow Extrusion	Pass

LifeSupport®

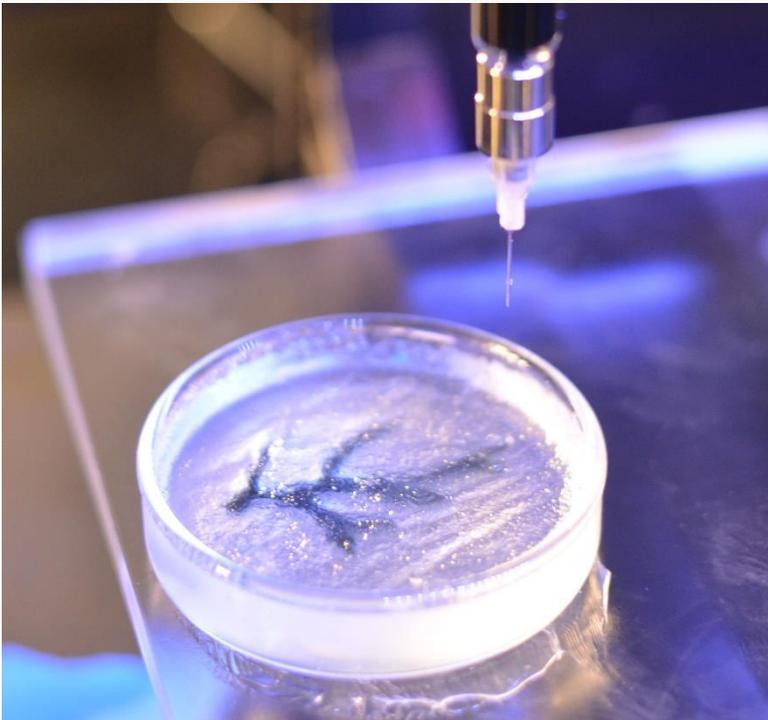
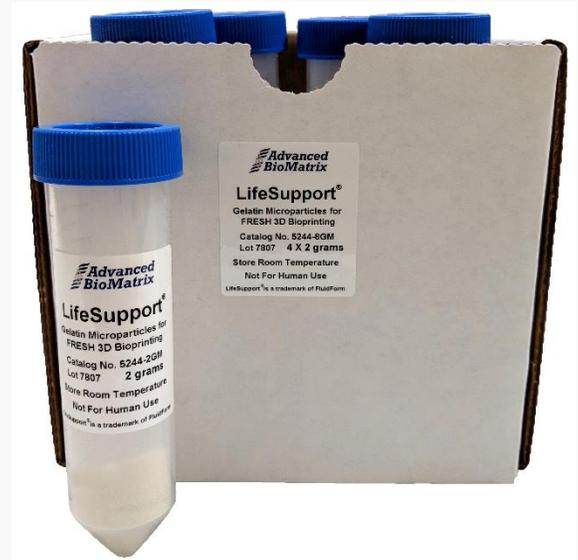
Gelatin Microparticles for FRESH 3D Bioprinting

LifeSupport® is the industry standard for FRESH bioprinting.

FRESH stands for Freeform Reversible Embedding of Suspended Hydrogels.

Each LifeSupport® printing kit comes with 4 units of 2 grams of sterile LifeSupport® powder.

Simply resuspend, centrifuge and print high resolution, complex tissues and constructs.



Parameter, Testing, and Method	LifeSupport® #5244
Sterilization Method	Irradiation
Sterility - USP modified	No growth
Form	Grounded Powder
Bioprinting	Supports Lifeink® Collagen Bioprinting
Average Particle Size Diameter	15-50 microns
Package Size	8 grams of powder (4 x 2 grams)
Rheology	Bingham Plastic Properties
Shelf Life	Minimum of 6 months from date of receipt
Source Material	Bovine Gelatin

Ordering Information

Product	Catalog #
Lifeink® 200 Type I Collagen, 35 mg/ml, pH neutral bioink	#5278
Lifeink® 240 Type I Collagen, 35 mg/ml, Acidic pH bioink	#5267
LifeSupport® for FRESH 3D Bioprinting	#5244

To order product or learn more, visit our website at

www.AdvancedBioMatrix.com

Lifeink® References

Lee, A. et al. 3D bioprinting of collagen to rebuild components of the human heart. *Science* 365, 482–487 (2019).

Maxson, Eva L., et al. "In vivo remodeling of a 3D-Bioprinted tissue engineered heart valve scaffold." *Bioprinting* (2019): e00059.

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Maxson, Eva L., et al. "In vivo remodeling of a 3D-Bioprinted tissue engineered heart valve scaffold." *Bioprinting* (2019): e00059.