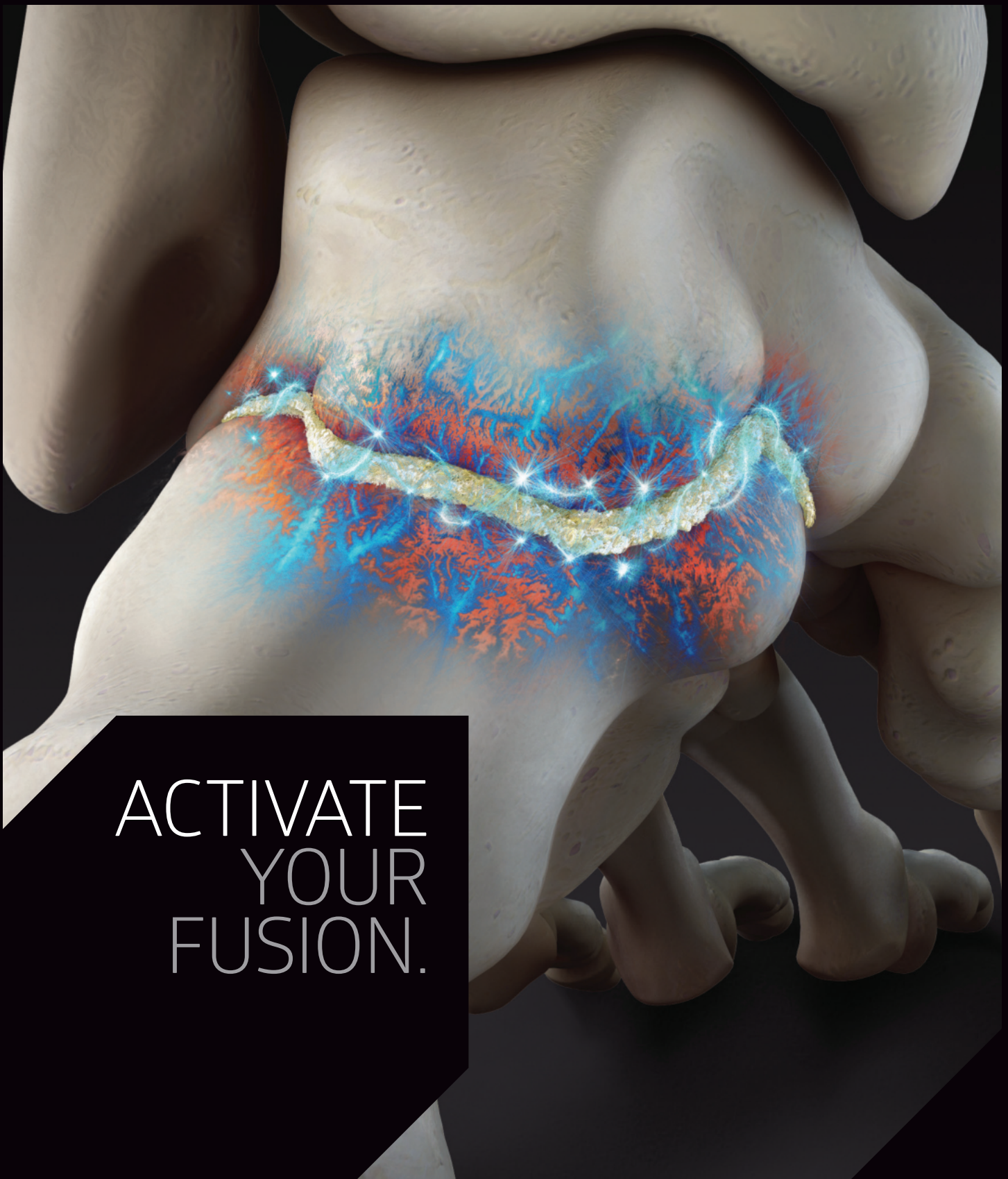




**UNITE**<sup>®</sup>  
ORTHOBIOLOGICS

Advanced Orthobiologic Solutions  
Intelligently designed to support bone healing.



ACTIVATE  
YOUR  
FUSION.

# A force of nature against non-unions.

Literature shows that non-union rates are notoriously high for hindfoot and ankle fusions due to the physical challenges of those mobile areas: increased mechanical load, restricted blood supply and thin soft tissue coverage.<sup>1</sup> That risk dramatically increases with patient co-morbidities.<sup>1</sup>

But it doesn't have to be the case. Research shows that orthobiologics, including bone graft and bone graft substitutes, can help improve fusion rates.<sup>2</sup> Although autograft is ideal, it has many limitations, including donor site morbidity, increased operative time and limited autograft material.<sup>3</sup> **That's where we step in.**

Hindfoot and ankle fusions  
in healthy patients



10–18%  
non-union rate<sup>4,5</sup>

Patients with co-morbidities  
such as diabetes and smoking



41%  
non-union rate<sup>6</sup>



## Build new life at the site.

Biologically active grafts fused with  
superior handling characteristics.

To rebuild bone and revitalize tissue, the most viable solutions are full of life. That's the science behind our next-generation portfolio of orthobiologics. They're intelligently designed to nurture recovery through vitality, combining the power of biologically active cells and growth factors with superior handling characteristics. Our solutions stand up to every challenge and fill every void, helping to stimulate new life at the surgical site.

**Activate your fusion with Medline UNITE orthobiologics.**

# 4 factors for better bone regeneration.

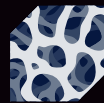
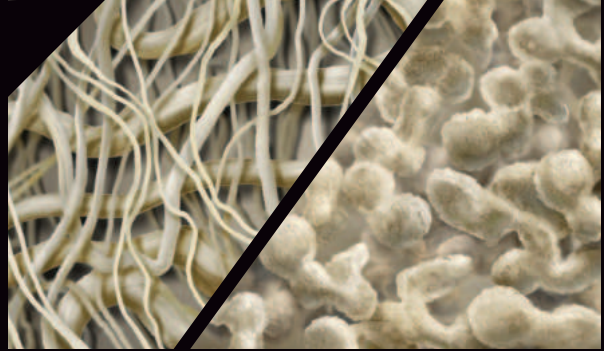
Our advanced orthobiologics deliver on them all.



## Superior Handling Shape

Moldability and irrigation resistance to fill voids and defects of all shapes and sizes

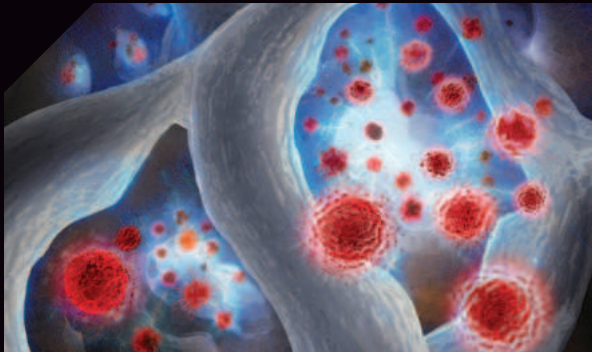
**Sources:** Cortical Fibers, Synthetic Carriers



## Osteoconductive Support

Physical scaffold that supports cellular activity and bony ingrowth

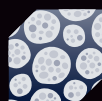
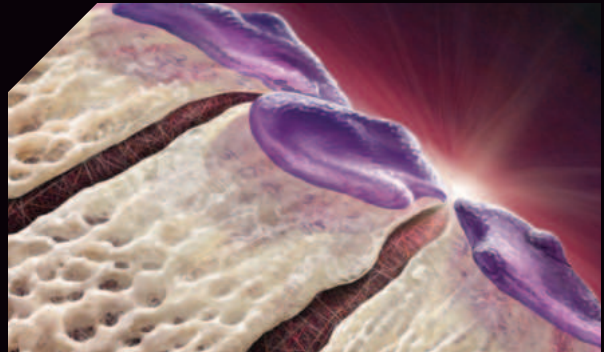
**Sources:** Allograft bone chips, bone fibers, and synthetics/ceramics, such as  $\beta$ -TCP and HA



## Osteoinductive Stimulate

Growth factors such as BMPs that recruit and stimulate a patient's own cells to differentiate into osteoblasts

**Sources:** BMPs (growth factors) from allograft demineralized bone matrix



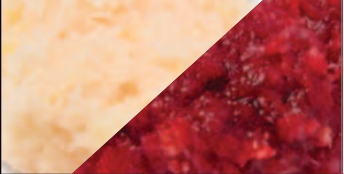
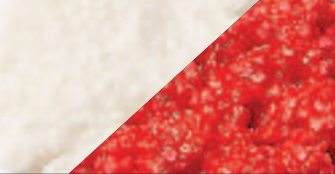

## Osteogenic Start

Cells that differentiate and develop into osteoblasts which form new bone

**Sources:** Cells from autograft bone, bone marrow aspirate (BMA), cryopreserved allograft bone cells



# Activate the right bone grafting solution for every case.

|                       | Cellular Bone Graft  | Synthetic Bioactive Putty   | Demineralized Fiber Putty  |
|-----------------------|--|---|--|
| Graft texture         |                                   |   |   |
|                       | Viable Matrix <b>Plus</b>  | ACTI <b>GLASS</b> ®   | ACTI <b>STIM</b> ®   |
| Osteoconductive       | Yes  | Yes   | Yes  |
| Osteoinductive        | Yes  | —   | Yes  |
| Osteogenic            | Yes  | —   | —  |
| Osteostimulative      | —  | Yes   | —  |
| Source                | Allograft  | Bioactive glass, beta tricalcium phosphate, hydroxyapatite  | Allograft  |
| Clinical applications | Situations where viable cells are desired (primary fusions for smokers and diabetics, revisions, and non-unions).* | Situations where moldability, graft containment and irrigation resistance are the primary consideration (larger bone voids).* | Situations where the use of allograft is desired, but viable cells are not necessary (smaller voids in otherwise healthy patients).* |
| Storage               | Cryopreserved (-65° C)   | Ambient Temp  | Ambient Temp   |
| Preparation           | Thaw only (no mixing or decanting required)  | Ready to use  | Ready to use   |

\*Based on a survey completed by surgeons.

Viable Matrix **Plus**

ACTI**GLASS**®

ACTI**STIM**®

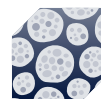


# Viable Matrix **Plus**

## Bone Allograft



Packaged in easy-to-use syringe with four-hour working window for implantation once thawed.



VIALE  
CELLS



GROWTH  
FACTORS



FIBER  
SCAFFOLD



POROUS  
SCAFFOLD

## Next generation solution for bone formation.

Quality and quantity for unparalleled results. Patented and proprietary cryoprotectant is used to preserve 1.5 million viable cells per cc, providing an optimal environment for osteogenesis.<sup>7</sup> Demineralized cortical fibers are supplemented with cancellous chips to deliver a 100% human-derived product that mimics the particulate structure of native bone.

1.5 MM  
viable  
cells per cc.

**Osteogenic potential** including cell viability and progenitor cellular expression verified through multiple assays<sup>7</sup>

**Osteoinductive potential** from endogenous factors in demineralized cortical bone

**Osteoconductive 3D scaffold** comprised of mineralized cancellous bone to mimic particulate structure of native bone



**Patented processing technology**  
DMSO-free cryoprotectant eliminates rinsing step and retains over 92% viability post thaw<sup>7</sup>

**Improved handling and wicking** vs. traditional cellular bone allografts

### Viable Bone Allograft

| Item No. | Size   |
|----------|--------|
| MVBG1025 | 2.5 cc |
| MVBG1050 | 5 cc   |
| MVBG1100 | 10 cc  |

Manufactured by **VIVEX** BIOLOGICALS



VIALE MATRIX PLUS



PARTIALLY HYDRATED



FULLY HYDRATED

# ACTIGLASS<sup>®</sup>

## Synthetic Bioactive Putty



Bioactive glass kickstarts the healing process with an osteostimulative effect.



BIOACTIVE GLASS



POROUS SCAFFOLD

## Build bone with a pliable synthetic putty that mimics the power of nature.

Surgery-ready and designed to provide a rapid, bioactive response, optimized resorption profile and unparalleled handling characteristics.

Forms an osteoconductive apatite layer as early as **7 days.**

**Optimized combination** and ratio of biomaterials to support bone healing at all stages

**Bioglass facilitates a rapid biological response** and stimulates the formation of an osteoconductive apatite layer

**Optimized granule structure and porosity** mimics human cancellous bone



**Controlled resorption profile** with biphasic granules ( $\beta$ -TCP and HA components)

**Highly moldable and waxy consistency** in a rapidly resorbing Alkylene Oxide Polymer carrier

### Synthetic Bioactive Putty

| Item No. | Size   |
|----------|--------|
| MSBG0375 | 3.75 g |
| MSBG0750 | 7.5 g  |



ACTIGLASS



PARTIALLY HYDRATED



FULLY HYDRATED

# ACTISTIM®

## Demineralized Fiber Putty



Demineralized cortical fibers increase graft surface area to promote osteoconductivity, powered by the presence of bone morphogenetic proteins (BMP-2).



GROWTH  
FACTORS



FIBER  
SCAFFOLD



POROUS  
SCAFFOLD

## Actively stimulate bone growth at the source.

100% human allograft fuses ideal biological properties with excellent handling characteristics to help aid in bone healing.

18x  
greater  
surface area to  
volume ratio.\*

**Versatile graft option**  
for small voids

**3D interwoven fiber scaffold**  
offers greater osteoconductive  
surface area vs. traditional  
crushed cancellous bone

**Improved handling and wicking**  
vs. traditional putties and chips



**Carrier-free formulation** allows  
for immediate start to the bone  
healing process

### Demineralized Fiber Putty

| Item No. | Size   |
|----------|--------|
| MDBM1010 | 1 cc   |
| MDBM1025 | 2.5 cc |
| MDBM1050 | 5 cc   |
| MDBM1100 | 10 cc  |



ACTISTIM



PARTIALLY HYDRATED



FULLY HYDRATED

\*Compared to 1-4mm cancellous chips.



# REVITALON™

## Amnion Chorion Membrane



REVITALON is placed in the pouch amnion-side down. A notch is cut in the top left corner of the graft to indicate that the amnion-side is oriented down.

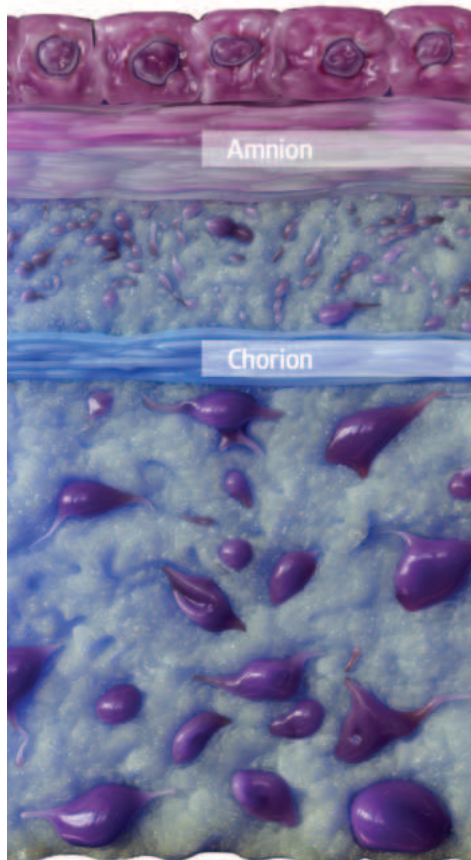
REVITALON has increased thickness to improve suture passing capabilities during implantation and may be anchored by method of choice. The graft's solubility allows for rapid rehydration once in place.

## Advanced wound coverage solution.

As a natural layer surrounding the fetus, the amniotic membrane is composed of two layers: the amnion—the layers closest to the fetus, and the chorion—the layers closest to the mother.

Together, these layers provide a barrier adept at remodeling to accommodate the growing fetus. Protective features within these layers make amnion chorion membranes ideal for homologous use as a barrier in a variety of applications.

Dual  
layer



Epithelium

Basement membrane

Compact layer  
Fibroblast layer

Intermediate layer

Reticular layer

Basement membrane

Trophoblasts

### Amnion Chorion Membrane

| Item No. | Size     |
|----------|----------|
| MA915218 | 4 x 4 cm |
| MA915318 | 4 x 6 cm |
| MA917918 | 4 x 8 cm |
| MA915418 | 6 x 6 cm |
| MA918018 | 7 x 7 cm |



# AUTOGRAFT SOLUTIONS



## Autograft Harvester

Simplified harvesting  
of autogenous bone

## Seamless bone removal with the Autograft Harvester.

- AO/QC for faster assembly
- Built-in scoop feature
- Multiple sizes based on patient anatomy or desired harvest site (calcaneus, proximal or distal tibia, and iliac crest)



### Autograft Harvester

| Item No. | Size  | Qty. |
|----------|-------|------|
| MBGH0007 | Ø7 mm | 1 ea |
| MBGH0009 | Ø9 mm | 1 ea |

## Restore harvest sites with the ACTIGLASS® Backfill Plug.

- Synthetic backfill plug comprised of hydroxyapatite, tricalcium phosphate and Bioactive Glass in a collagen matrix
- Two pre-shaped sizes to match the voids created by the Autograft Harvester

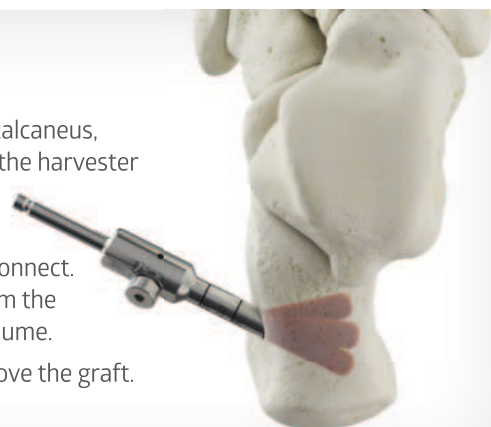


### Backfill Plug

| Item No. | Size         | Qty. |
|----------|--------------|------|
| MSBG6540 | Ø6.5 x 40 mm | 1 ea |
| MSBG8540 | Ø8.5 x 40 mm | 1 ea |

## Autograft Harvester surgical technique

- Step 1: Make a small incision and dissect down to the lateral wall of the calcaneus, If desired, a pilot hole can be created with a drill before inserting the harvester into the bone.
- Step 2: Ensure assembly is secure. If needed, a T15 driver can be used to tighten the screw. Connect the harvester to power via AO quick connect. Advance the harvester to the desired depth and then remove from the bone. Multiple passes may be needed to recover desired graft volume.
- Step 3: Unscrew the Autograft Harvester door and use the scoop to remove the graft.
- Step 4: Place the ACTIGLASS Bioimplant to backfill the harvester site.





Ready when  
you are.

## Pre-Hydrated Reconstructive Bioimplants

### Pre-hydrated for speed and strength

Bioimplants are processed, packaged and stored fully hydrated for immediate use.

- Eliminates idle time
- Preserves structural integrity of the graft
- Reduces the likelihood of intra- and post-operative graft crumbling and subsidence

### Pre-shaped for stronger performance

Made of dense cancellous bone, each bioimplant is pre-shaped to eliminate the time and waste of cutting a bone block.

- Withstands the physical demands placed on structural grafts
- Full incorporates and resorbs
- Removes easily if needed

| Item No. | Description  | Size  |
|----------|--------------|-------|
| MWCT0005 | Cotton       | 5 mm  |
| MWCT0006 | Cotton       | 6 mm  |
| MWCT0007 | Cotton       | 7 mm  |
| MWEV0006 | Evans        | 6 mm  |
| MWEV0008 | Evans        | 8 mm  |
| MWEV0010 | Evans        | 10 mm |
| MWEV0012 | Evans        | 12 mm |
| MWUT0012 | Utility      | 12 mm |
| MWMP0011 | MTP Revision | 11 mm |
| MWMP0018 | MTP Revision | 18 mm |

## Associated instrumentation

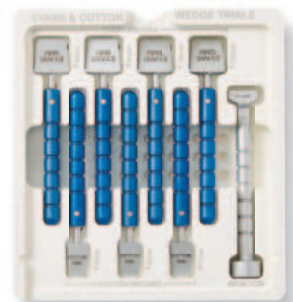
### Articulating Pin Distractor

Allows you to adjust the correction, while providing unobstructed access to the osteotomy.



### Wedge Trials

Allows you to view the correction visually and fluoroscopically before selecting the appropriate size wedge.



### MTP Reamers

Cup, Cone and Acorn reamers allow you to match up the graft and the patient's bone for a perfect fit.



# Complete ordering information

## Viable Matrix Plus Bone Allograft

| Item No. | Size   | Qty. |
|----------|--------|------|
| MVBG1025 | 2.5 cc | 1 ea |
| MVBG1050 | 5.0 cc | 1 ea |
| MVBG1100 | 10 cc  | 1 ea |

## ACTIGLASS® Synthetic Bioactive Putty

| Item No. | Size   | Qty. |
|----------|--------|------|
| MSBG0375 | 3.75 g | 1 ea |
| MSBG0750 | 7.5 g  | 1 ea |

## ACTISTIM® Demineralized Fiber Putty

| Item No. | Size   | Qty. |
|----------|--------|------|
| MDBM1010 | 1 cc   | 1 ea |
| MDBM1025 | 2.5 cc | 1 ea |
| MDBM1050 | 5 cc   | 1 ea |
| MDBM1100 | 10 cc  | 1 ea |

## Cancellous Chips

| Item No. | Size           | Qty. |
|----------|----------------|------|
| MCAN0100 | 1-4 mm, 10 cc  | 1 ea |
| MCAN0150 | 1-4 mm, 15 cc  | 1 ea |
| MCAN0300 | 1-4 mm, 30 cc  | 1 ea |
| MCAN1100 | 4-10 mm, 10 cc | 1 ea |
| MCAN1150 | 4-10 mm, 15 cc | 1 ea |
| MCAN1300 | 4-10 mm, 30 cc | 1 ea |

## Pre-Hydrated Cotton Wedges

| Item No. | Size | Qty. |
|----------|------|------|
| MWCT0005 | 5 mm | 1 ea |
| MWCT0006 | 6 mm | 1 ea |
| MWCT0007 | 7 mm | 1 ea |

## Pre-Hydrated Evans Wedges

| Item No. | Size  | Qty. |
|----------|-------|------|
| MWEV0006 | 6 mm  | 1 ea |
| MWEV0008 | 8 mm  | 1 ea |
| MWEV0010 | 10 mm | 1 ea |
| MWEV0012 | 12 mm | 1 ea |

## Pre-Hydrated Utility Wedge

| Item No. | Size  | Qty. |
|----------|-------|------|
| MWUT0012 | 12 mm | 1 ea |

## Pre-Hydrated MTP Revision Bioimplants

| Item No. | Size  | Qty. |
|----------|-------|------|
| MWMP0011 | 11 mm | 1 ea |
| MWMP0018 | 18 mm | 1 ea |

## REVITALON™ Amnion Chorion Membrane

| Item No. | Size     | Qty. |
|----------|----------|------|
| MA915218 | 4 x 4 cm | 1 ea |
| MA915318 | 4 x 6 cm | 1 ea |
| MA917918 | 4 x 8 cm | 1 ea |
| MA915418 | 6 x 6 cm | 1 ea |
| MA918018 | 7 x 7 cm | 1 ea |

## Autograft Harvester

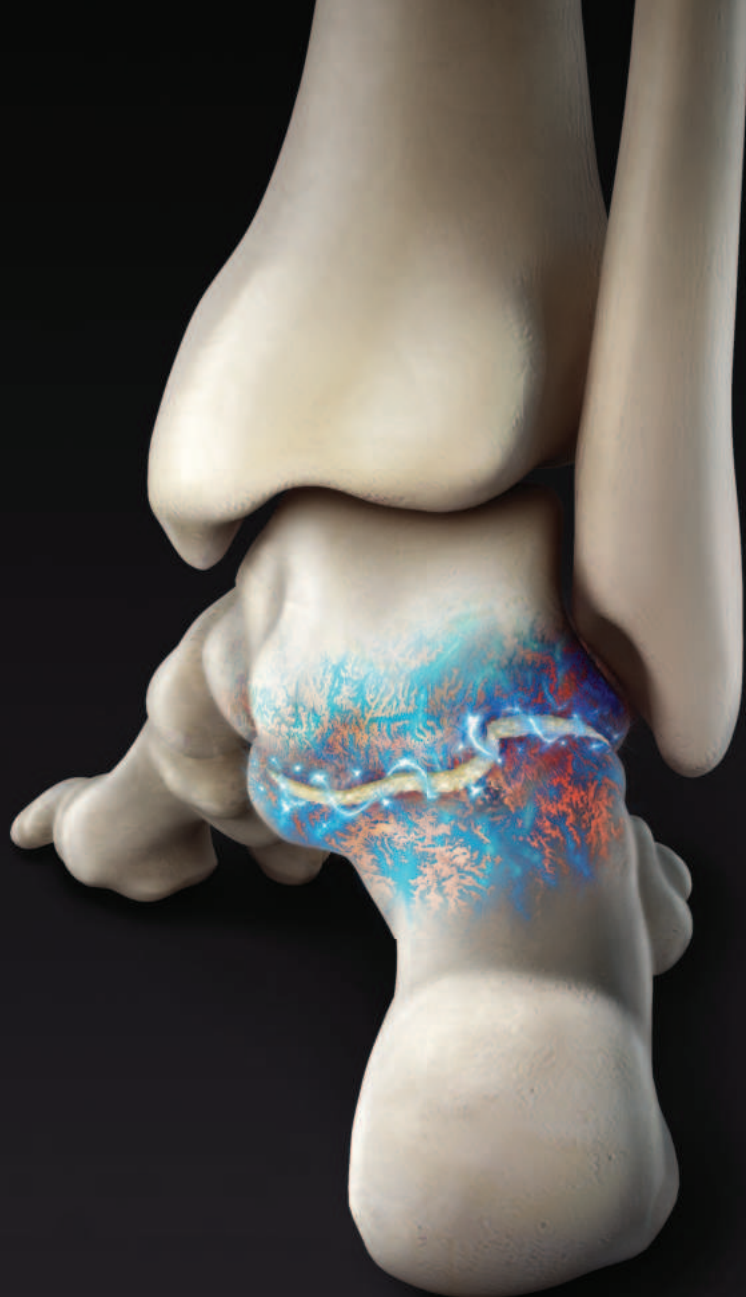
| Item No. | Size  | Qty. |
|----------|-------|------|
| MBGH0007 | Ø7 mm | 1 ea |
| MBGH0009 | Ø9 mm | 1 ea |

## ACTIGLASS® Backfill Plug

| Item No. | Size         | Qty. |
|----------|--------------|------|
| MSBG6540 | Ø6.5 x 40 mm | 1 ea |
| MSBG8540 | Ø8.5 x 40 mm | 1 ea |







# One step ahead.

For more than 50 years, we've been making healthcare run better as the nation's largest privately held manufacturer and distributor of medical products. We're your strategic partner, empowered to innovate and tailor healthcare solutions that flex with your ever-changing needs. So you're always one step ahead.

**To learn more or schedule a case,** contact your Medline UNITE Representative or visit [medlineunite.com](https://medlineunite.com).



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REFERENCES. 1. Muller, M.A., et al., Substitutes of structural and non-structural autologous bone grafts in hindfoot arthrodeses and osteotomies: a systematic review. BMC Musculoskelet Disord, 2013. 14(59): p. 1-10. 2. Arner, J.W. and R.D. Santrock, A historical review of common bone graft materials in foot and ankle surgery. Foot Ankle Spec, 2014. 7(2): p. 143-51. 3. Fitzgibbons, T.C., et al., Bone grafting in surgery about the foot and ankle, indication and techniques. J Am Acad Orthop Surg, 2011. 19(2): p. 112-20. 4. Haddad, S.L., et al., Intermediate and long-term outcomes of total ankle arthroplasty and ankle arthrodesis. A systematic review of the literature. J Bone Joint Surg Am, 2007. 89(9): p. 1899-905. 5. Tricot, M., et al., Clinical assessment of 115 cases of hindfoot fusion with two different types of graft: Allograft + DBM + bone marrow aspirate versus autograft + DBM. Orthopaedics & Traumatology: Surgery & Research, 2017(103): p. 697-702. 6. Frey, C., et al., A review of ankle arthrodesis: predisposing factors to nonunion. Foot Ankle Int, 1994. 15(11): p. 581-4. 7. Data on file at Vivex Biologics, Inc.

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