

# WishBONE Mg™

MAGNESIUM-BASED BONE VOID FILLER

## Surgical Technique





# High Strength. Lightweight. Resorbable.

WishBONE Mg is a moldable/injectable Magnesium-based bone void filler that has a unique resorption profile that provides stability while also increasing cell proliferation, advancement of mineralization with a result of enhanced bone regeneration for multiple types of orthopedic applications.<sup>1-8, 13-15</sup>

WishBONE Mg made from a pre-measured blend of magnesium, phosphates and a pre-measured proprietary solution. When mixed and molded/injected according to the instructions for use, the product will harden in situ at the defect site.<sup>12</sup>

- 80% resorbable in 26 weeks<sup>9</sup>
- Remodels to normal bone<sup>10, 11</sup>
- Quicker time to union compared to calcium-based BVFs<sup>9, 12</sup>

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# System Components

## BONE VOID FILLER KITS

- 1 Liquid & Powder Set (5cc, 10cc, or 15cc)
- 2 Mixing Syringe
- 3 Funnel
- 4 Basin
- 5 Spatula
- 6 11GA Cannula

Not pictured:  
Sterile Implant Kit IFU



## MIXING AND DELIVERY SYSTEM

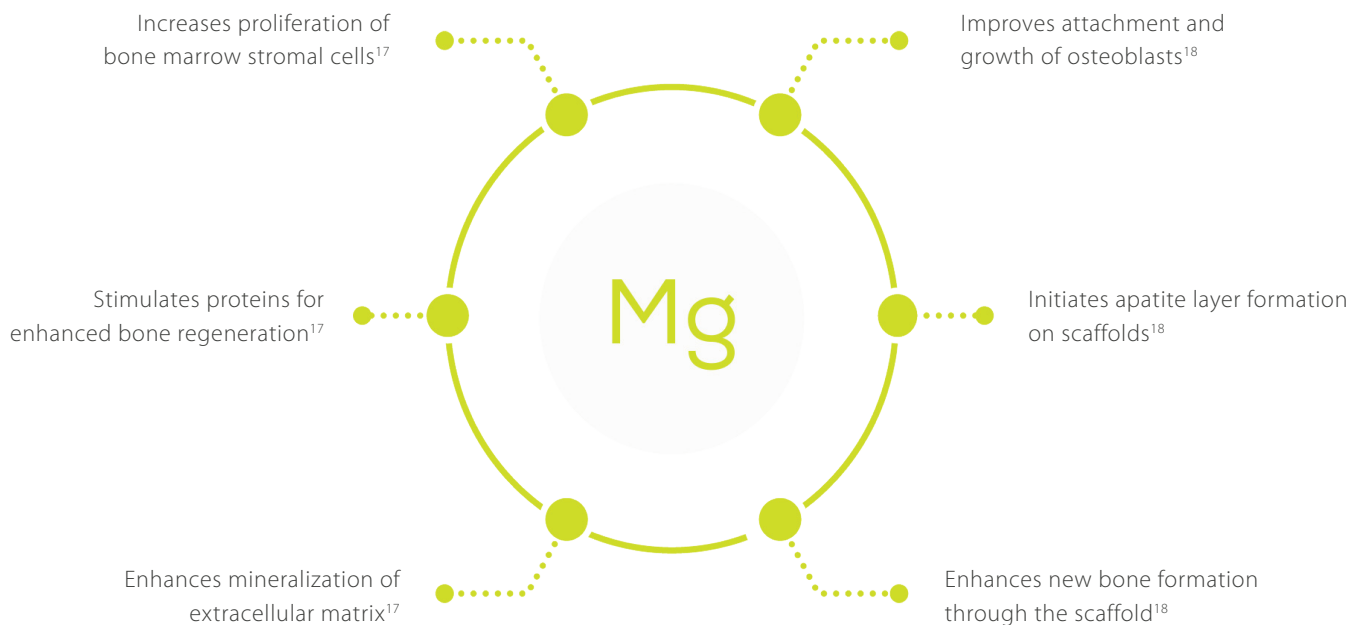
- 1 Mixing Syringe
- 2 Funnel
- 3 Open Bore Cap
- 4 11GA Cannula
- 5 2GA Cannula
- 6 Mechanical Advantage
- 7 Open Pusher



## WHY MAGNESIUM?

A natural nutrient essential for building healthy bones, magnesium is an attractive orthopedic alternative because, unlike stainless steel or titanium, it is biodegradable – eliminating the need for an invasive procedure to remove surgical hardware after initial surgery.

- Plays a role in the active transport of calcium and potassium ions across cell membranes<sup>1</sup>
- Contributes to the structural development of bone<sup>1-8</sup>
- Approximately 60% of Mg in the body resides in bones<sup>16</sup>

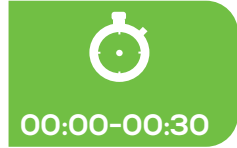


For product information, including indications, contraindications, warnings, precautions and potential adverse effects, visit WishBone Medical's Instructions for Use page online: [www.WishBoneMedical.com/IFU](http://www.WishBoneMedical.com/IFU).

# STI MIXING USAGE GUIDE: MIXING & DELIVERY SYSTEM

## 1 MIX

Combine powder (Fig. 1A) and saline in syringe (Fig. 1B). Start timer. Remove support rod and mix with plunger (Fig. 1C).



**NOTE:** Do not remove tip from syringe until ready to inject.



Fig. 1A



Fig. 1B



Fig. 1C

## 2 SPINDLE DRIVE DELIVERY

Remove support rod (Fig. 2A) and snap wedge tip off from mixing stick (Fig. 2B). Attach spindle nut to base of syringe. Insert threaded spindle over mixing stick and advance spindle through nut (Fig. 2C). Remove winged cap from syringe cap and purge excess air by rotating handle clockwise (Fig. 2D).

Optional



Fig. 2A



Fig. 2B

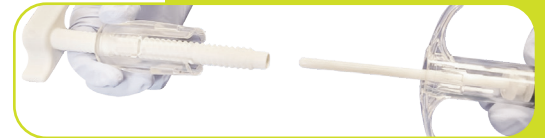


Fig. 2C



Fig. 2D

## 3 REGULATE CONSISTENCY

Stop mixing. Avoid further manipulation (Fig 3A, 3B).



**NOTE:** If product is not ready to be implanted or a higher viscosity is desired, a mechanical advantage will be required.

## 4 INJECT

Remove tip from syringe, attach cannula and inject product into defect.



Do not touch for 2 mins to allow time for initial curing. Hardware placement and/or drilling can occur at this time.



Fig. 3A

LOW VISCOSITY



Fig. 3B

HIGH VISCOSITY

\*All curing times after mixing are dependent upon ambient temperature.

# STI MIXING USAGE GUIDE: 5CC MIXING SYRINGE

## 1 MIX

Combine powder (Fig. 1A) and saline in syringe (Fig. 1B). Start timer. Remove support rod and mix with plunger (Fig. 1C).



**NOTE:** Do not remove tip from syringe until ready to inject.

## 2 REGULATE CONSISTENCY

Stop mixing. Avoid further manipulation.



**NOTE:** If product is not ready to be implanted or a higher viscosity is desired, a mechanical advantage will be required.

## 3 INJECT

Remove tip from syringe, attach cannula and inject product into defect (Fig. 3).

## 4 INITIAL CURING

Do not touch for 2 mins to allow time for initial curing. Hardware placement and/or drilling can occur at this time.



Do not touch for 2 mins to allow time for initial curing. Hardware placement and/or drilling can occur at this time.



Fig. 1A



Fig. 1B



Fig. 1C



Fig. 2A

LOW VISCOSITY



Fig. 2B

HIGH VISCOSITY



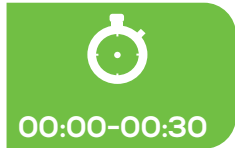
Fig. 3

\*All curing times after mixing are dependent upon ambient temperature.

# STI MIXING USAGE GUIDE: IOCC MIXING SYRINGE

## 1 MIX

Combine powder and saline in mixing bowl (Fig. 1A). Start Timer. Mix with Spatula (Fig. 1B).



**NOTE:** Do not remove tip from syringe until ready to inject.



Fig. 1A



Fig. 1B

## 2 REGULATE CONSISTENCY

Stop mixing. Avoid further manipulation. Transfer to mixing syringe through funnel (Fig 2A). Keep plunger closed until product has been completely transferred. Then, retract plunger and allow product to flow into syringe (Fig. 2B).



**NOTE:** If product is not ready to be implanted or a higher viscosity is desired, a mechanical advantage will be required.



Fig. 2A



Fig. 2B

## 3 INJECT

Remove tip from syringe, attach cannula and inject product into defect (Fig. 3).



## 4 INITIAL CURING

Do not touch for 2 mins to allow time for initial curing. Hardware placement and/or drilling can occur at this time.



Do not touch for 2 mins to allow time for initial curing. Hardware placement and/or drilling can occur at this time.



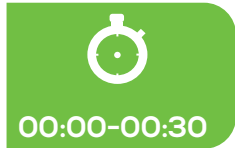
Fig. 3

\*All curing times after mixing are dependent upon ambient temperature.

# STI MIXING USAGE GUIDE: 15CC MIXING SYRINGE

## 1 MIX

Combine powder and saline in mixing bowl (Fig. 1A). Start Timer. Mix with Spatula (Fig. 1B).



**NOTE:** Do not remove tip from syringe until ready to inject.



Fig. 1A



Fig. 1B

## 2 REGULATE CONSISTENCY

Stop mixing. Avoid further manipulation. Transfer to mixing syringe through funnel (Fig 2A). Keep plunger closed until product has been completely transferred. Then, retract plunger and allow product to flow into syringe (Fig. 2B).



**NOTE:** If product is not ready to be implanted or a higher viscosity is desired, a mechanical advantage will be required.



Fig. 2A



Fig. 2B

## 3 INJECT

Remove tip from syringe, attach cannula and inject product into defect (Fig. 3).



## 4 INITIAL CURING

Do not touch for 2 mins to allow time for initial curing. Hardware placement and/or drilling can occur at this time.



Do not touch for 2 mins to allow time for initial curing. Hardware placement and/or drilling can occur at this time.



Fig. 3

\*All curing times after mixing are dependent upon ambient temperature.



# STI MIXING USAGE GUIDE: 5CC MIXING BOWL

## 1 MIX

Combine powder and saline in mixing bowl (Fig. 1).  
Start Timer.

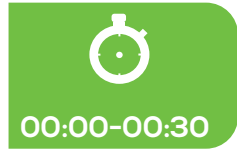


Fig. 1

## 2 WAIT

Stop mixing. Lay bowl on its side (Fig. 2).

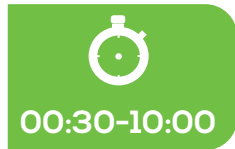


Fig. 2

## 3 EVALUATE CONSISTENCY

Product is ready once it no longer sticks to the spatula.  
Use the spatula to break up the putty and begin molding into desired consistency (Fig. 3).

## 4 REGULATE CONSISTENCY

Product can be molded into tackier putty by mixing in the bowl or kneading in the hand. Mix less for firmer putty, mix more for tacky putty. Knead at least once per minute to avoid premature setting.

- ↑ Manipulation = **Tacky Putty**
- ↓ Manipulation = **Firmer Putty**



Fig. 3

**NOTE:** If product is not ready to be implanted or a higher viscosity is desired, a mechanical advantage will be required.

## 5 PLACEMENT

Stop mixing. Avoid manipulation and place into defect. If product is tacky, spatula can be used to assist with placement (Fig. 3).

## 6 INITIAL CURING

Do not touch for 2 mins to allow time for initial curing. Hardware placement and/or drilling can occur at this time.



Fig. 3

\*All curing times after mixing are dependent upon ambient temperature.

# STI MIXING USAGE GUIDE: 10CC MIXING BOWL

## 1 MIX

Combine powder and saline in mixing bowl (Fig. 1).  
Start Timer.

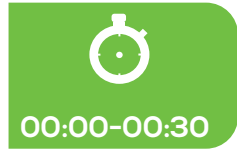


Fig. 1

## 2 WAIT

Stop mixing. Set bowl on a flat surface (Fig. 2).

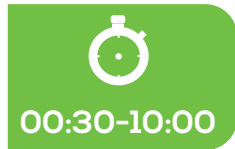


Fig. 2

## 3 EVALUATE CONSISTENCY

Product is ready once it no longer sticks to the spatula.  
Use the spatula to break up the putty and begin molding into desired consistency (Fig. 3).

## 4 REGULATE CONSISTENCY

Product can be molded into tackier putty by mixing in the bowl or kneading in the hand. Mix less for firmer putty, mix more for tacky putty. Knead at least once per minute to avoid premature setting.

- ↑ Manipulation = **Tacky Putty**
- ↓ Manipulation = **Firmer Putty**



Fig. 3

**NOTE:** If product is not ready to be implanted or a higher viscosity is desired, a mechanical advantage will be required.

## 5 PLACEMENT

Stop mixing. Avoid manipulation and place into defect. If product is tacky, spatula can be used to assist with placement (Fig. 3).

## 6 INITIAL CURING

Do not touch for 2 mins to allow time for initial curing. Hardware placement and/or drilling can occur at this time.



Fig. 3

\*All curing times after mixing are dependent upon ambient temperature.

# STI MIXING USAGE GUIDE: 15CC MIXING BOWL

## 1 MIX

Combine powder and saline in mixing bowl (Fig. 1).  
Start Timer.

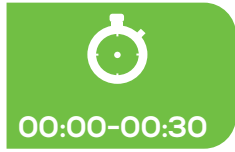


Fig. 1

## 2 WAIT

Stop mixing. Set bowl on a flat surface (Fig. 2).

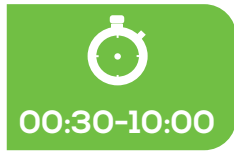


Fig. 2

## 3 EVALUATE CONSISTENCY

Product is ready once it no longer sticks to the spatula.  
Use the spatula to break up the putty and begin molding into desired consistency (Fig. 3).

## 4 REGULATE CONSISTENCY

Product can be molded into tackier putty by mixing in the bowl or kneading in the hand. Mix less for firmer putty, mix more for tacky putty. Knead at least once per minute to avoid premature setting.

- ↑ Manipulation = **Tacky Putty**
- ↓ Manipulation = **Firmer Putty**



Fig. 3

**NOTE:** If product is not ready to be implanted or a higher viscosity is desired, a mechanical advantage will be required.

## 5 PLACEMENT

Stop mixing. Avoid manipulation and place into defect. If product is tacky, spatula can be used to assist with placement (Fig. 3).

## 6 INITIAL CURING

Do not touch for 2 mins to allow time for initial curing. Hardware placement and/or drilling can occur at this time.

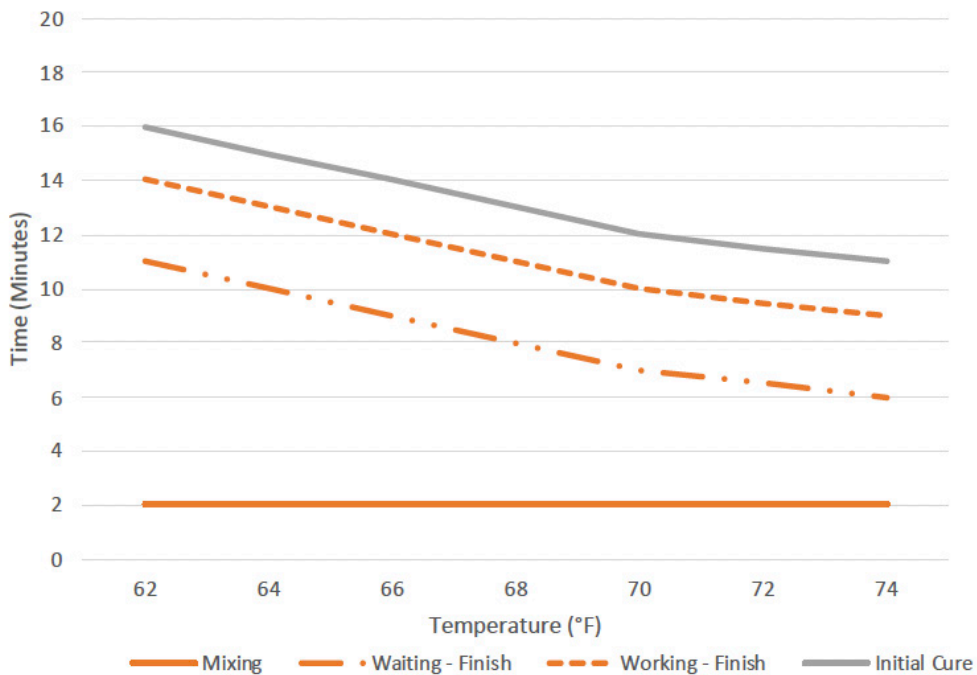


Fig. 3

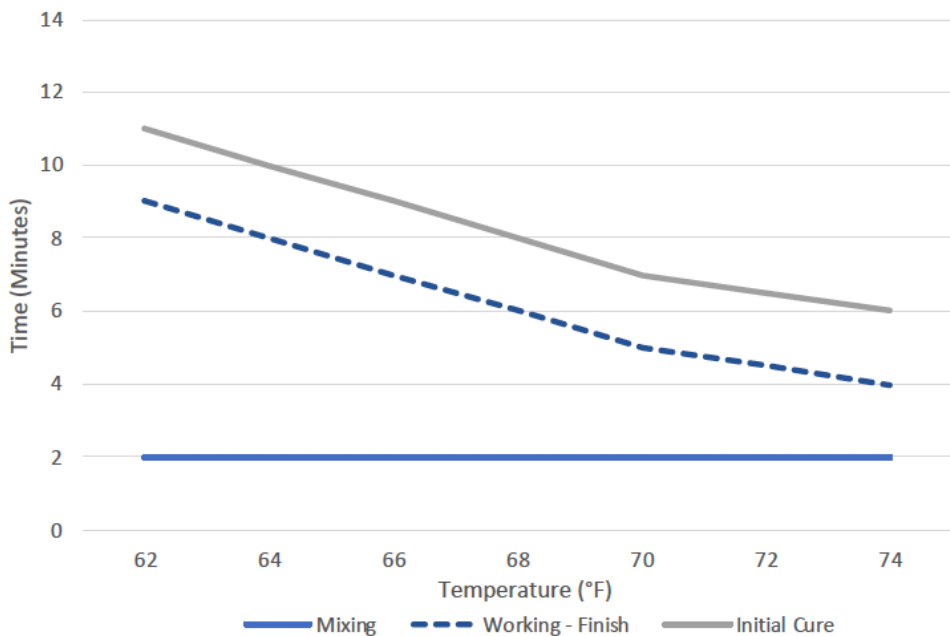
\*All curing times after mixing are dependent upon ambient temperature.

# WISHBONE MG: WORKING GUIDELINES

## MOLDABLE (5CC)



## INJECTABLE (5CC)



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24. Ref. Skeletal Kinetics Literature Number: LBL 10208 Rev AD & 510(k) Summary K100986.
25. Ref. Bone Solutions Test Report: TD-328 [A] - OsteoCrete Specification Setting and Sample Size - 5cc

*Claims based on critically sized rabbit lateral condyle defect model, rabbit anterior cruciate ligament reconstruction, equine metacarpal and metatarsal fracture fixation, and equine metatarsal osteotomy. It is unknown how results from the rabbit or equine models compare with clinical results in humans.*



WishBoneMedical.com

100 Capital Drive  
Warsaw, IN 46582  
+1-574-306-4006

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