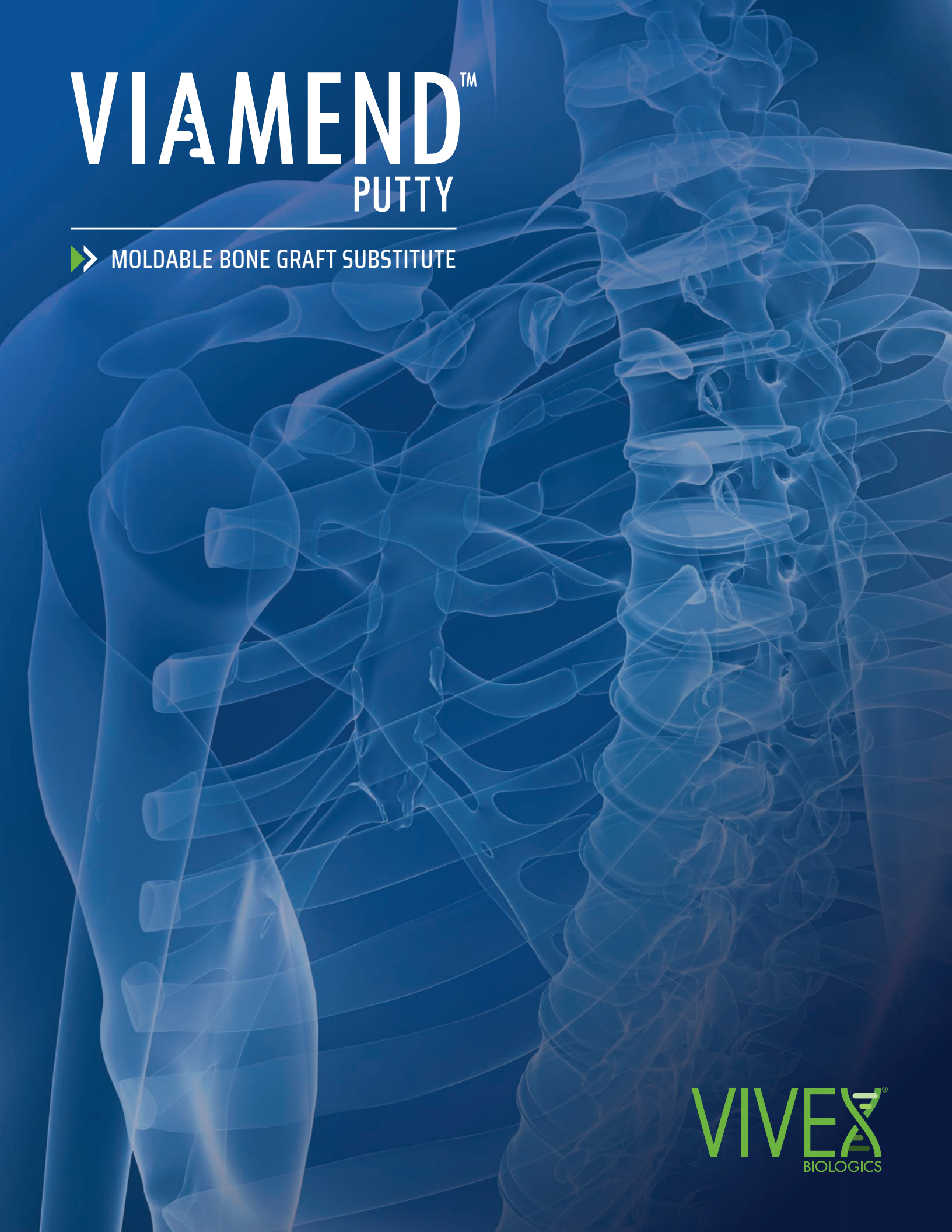
VIAMEND™ PUTTY

MOLDABLE BONE GRAFT SUBSTITUTE



VIVEX® BIOLOGICS

VIA MEND™ PUTTY

VIA Mend™ Putty, a highly absorbent moldable biocomposite putty, is available in cylinder shaped pucks and when hydrated with autogenous bone marrow can be molded. It maintains its integrity upon post-surgical irrigation and is fully resorbed during bone formation and remodeling. It is osteoconductive and when mixed with autogenous bone marrow becomes osteoinductive and osteogenic.

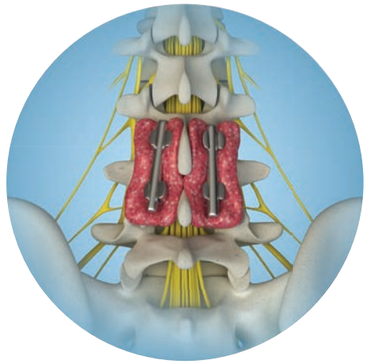
VIA MEND™ PUTTY FEATURES AND BENEFITS

ROBUST & COHESIVE HANDLING

- Highly moldable to fit defect sites
- Resistant to irrigation, does not wash away

MORE THAN DOUBLE THE COLLAGEN THAN OTHER LEADING BRANDS

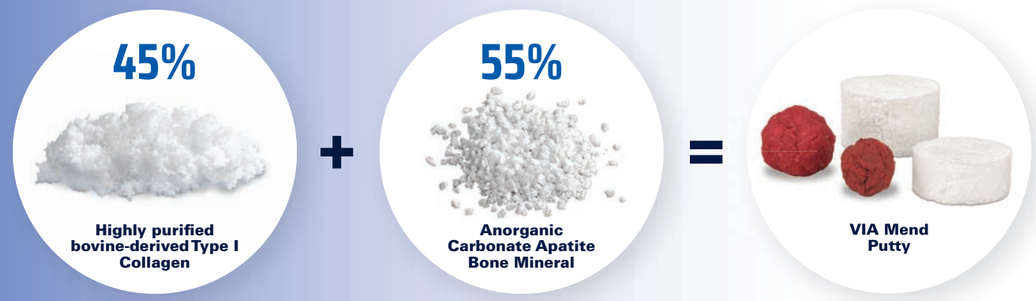
- 45% collagen, compared to 20% collagen, which is typically found in other matrices
- Highly absorbent



Cohesive moldability maintains integrity upon irrigation

OVER 4X MORE ABSORBENT THAN VITOSS® FOAM STRIP[1]

PRODUCT	ABSORBENCY (mL/g)
VIA Mend™ Putty	9.1 ± 0.5
Vitoss® Foam Strip	2.1 ± 0.1



WHY TYPE I COLLAGEN?

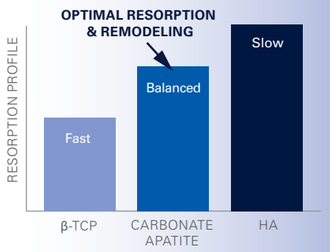
HOMOLOGOUS MOLECULAR STRUCTURE TO HUMAN COLLAGEN[2]

- Highly purified for biocompatibility
- 100% resorbable through normal metabolic pathways[3]
- Intrinsic hemostatic properties control minor bleeding[3,4]
- Well-established long clinical history[3]
- Versatile for matrix engineering

WHY CARBONATE APATITE BONE MINERAL?

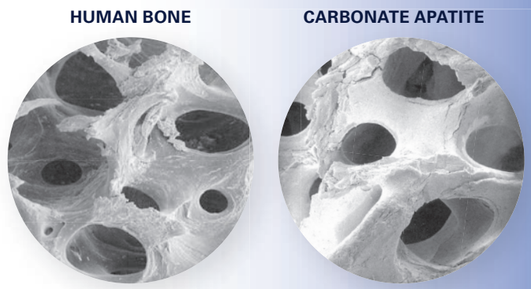
OPTIMAL RESORPTION & REMODELING[5,6]

- Not fast like beta-tricalcium phosphate (β-TCP)
- Not slow like hydroxyapatite (HA)
- Ideally, the rate of the bone graft resorption is balanced to the rate of bone remodeling
- Carbonate apatite resorption and remodeling are similar to human bone[5,6]



NATURAL MINERAL STRUCTURE SIMILAR TO HUMAN BONE MINERAL

- Pores provide pathways for cell migration and attachment to lay down new bone
- Carbonate apatite is a better osteoconductive material than HA[7]



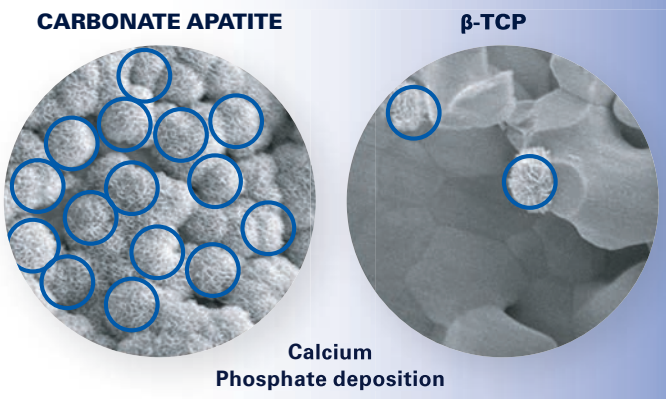
Similar sized macro & micro pores for cell migration

HALF THE CRYSTALLINITY THAN HA, MORE SOLUBLE[8]

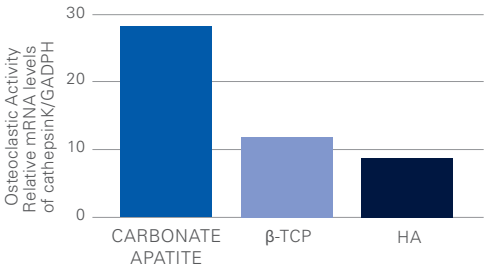
- Carbonate apatite has half the crystallinity than HA, which enables optimal resorption and remodeling because it more easily resorbs[8]

MORE CALCIUM PHOSPHATE DEPOSITION THAN β-TCP[9]

- More calcium phosphate is deposited on the carbonate apatite surface as compared to β-TCP[9]

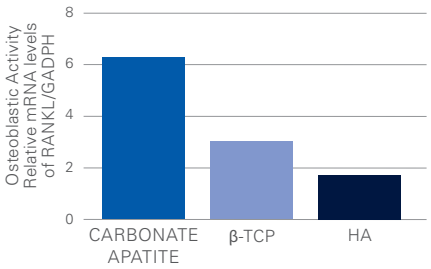


INDEPENDENT STUDIES HAVE SHOWN HIGHER OSTEOCLASTIC & OSTEOBLASTIC ACTIVITY THAN β-TCP & HA[10]



HIGHER OSTEOCLASTIC ACTIVITY

- Osteoclasts break down bone
- Carbonate apatite shows higher levels of osteoclastic activity than β-TCP & HA[10]



HIGHER OSTEOBLASTIC ACTIVITY

- Osteoblasts secrete new bone
- Osteoblast proteins are most upregulated with carbonate apatite than β-TCP & HA[10]

ORDERING INFORMATION

CODE	DESCRIPTION	QUANTITY
VMP0025	VIA Mend™ Putty	1 Jar (2.5cc Putty)
VMP0050	VIA Mend™ Putty	1 Jar (5.0cc Putty)

VIVEX Biologics will use reasonable efforts to provide accurate and complete information herein, but this information should not be construed as providing clinical advice, dictating reimbursement policy, or as a substitute for the judgment of a health care provider. It is the health care provider's responsibility to determine the appropriate treatment, codes, charges for services, and use of modifiers for services rendered and to submit coverage or reimbursement-related documentation.

1. *Data on file at Collagen Matrix, Inc.*
2. *Miller EJ. 1984. Chemistry of the Collagens and Their Distribution. Extracellular Matrix Biochemistry, KA Piez, AH Reddi (eds.). pp 41-82. Elsevier, New York, NY.*
3. *Li ST. 2000. Biologic Biomaterials: Tissue-Derived Biomaterials (Collagen). Biomedical Engineering Handbook, Second Edition. Vol. I, JD Bronzino (ed.), pp 42:1-23, CRC Press, Boca Raton, FL.*
4. *Jaffe R., Deykin DJ. 1974. Evidence for a Structural Requirement for the Aggregation of Platelet by Collagen. Cl in Invest 53:875-883.*
5. *Matsuura A, Jubo T, Doi K, Hayashi K, Morita K, Toyota R, Hayashi H, Hirata I, Okazaki M, and Akagawa Y. 2009. Bone Formation Ability of Carbonate Apatite-Collagen Scaffolds with Different Carbonate Contents. Dental Materials Journal 28(2): 234-242.*
6. *Ellies LG, Carter JM, Natiella JR, Featherstone JDB, Nelson DGA. 1988. Quantitative Analysis of Early In Vivo Tissue Response to Synthetic Apatite Implants. J Biomed Mater Res 22:137-148.*
7. *Spense G., Patel N., Brooks R., Rushton N. 2009. Carbonate Substituted Hydroxyapatite: Resorption by Osteoclasts Modifies the Osteoblastic Response. Journal of Biomedical Materials Research Part A 217-224.*
8. *Li, S.T., Chen, H.C., Yuen, D, inventors; 2011 Sept. 29. Method of Preparing Porous Carbonate Apatite from Natural Bone. United States patent US 8,980,328.*
9. *In vitro data on file at Collagen Matrix, Inc.*
10. *Kanayama, K., Sriarj, W., Shimokawa, H., Ohya, K., Doi, Y., Shibutani, T. 2011. Osteoclast and Osteoblast Activities on Carbonate Apatite Plates in Cell Cultures. J Biomater Appl 2011 26:435-436.*

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