

LifeNet Health provides particulate grafts in a variety of configurations to match clinical need, surgeon preference and experience, allowing the correct graft to be chosen for each patient's needs. One graft type simply will not do. LifeNet Health produces numerous graft types, all based on surgeon feedback over our 25 years as a dental bio-implants processor.

Particulate (ground) allografts are produced from cortical or cancellous bone and go by a variety of names depending on the tissue processor providing the final graft. The resulting bone particles are either provided as mineralized grafts or demineralized to remove the majority of the mineral content of each graft. This results in grafts that are osteoinductive. LifeNet Health revolutionized osteoinductive allografts with research, patents and subsequent supporting literature. LifeNet Health is an accredited American Association of Tissue Banks (AATB) member, and using grafts from AATB accredited institution is a recommendation of both the American Academy of Periodontology¹ (AAP) and the American Association of Orthopaedic Surgeons (AAOS).

▶ **MINERALIZED PARTICULATE GRAFTS**

These are the most commonly used allografts in dental surgery because they provide the most utility. Since grafts have not had mineral content removed, some inherent structural capabilities exist. Because they are particulates, an excellent scaffold for osteoconduction (creeping substitution) is provided, due to the normal spacing that will occur between each particle when used as a void filler. Generically, all grafts in this category are called Freeze-Dried Bone Allograft (FDBA), but a number of synonyms exist (ground cortical, ground cancellous, freeze dried bone, etc.). Changes in particle size affects mainly handling characteristics, and many clinicians choose grafting materials on this basis. Regardless of whether cortical or cancellous, large volume or small, all mineralized grafts function in the same fashion. Because allografts are inert, they can be mixed with other grafting materials such as bone growth proteins based on surgeon preference.



▶ **DEMINERALIZED PARTICULATE GRAFTS**

Demineralized grafts have the longest history of use in dental alveolar and periodontal regeneration^{2,3}. They are also the most confusing because of the differences that can occur between processors in regard to the demineralization process.

LifeNet Health pioneered the modern demineralization process with Pulsatile Acid Demineralization[®] (PAD). Nomenclature varies as it does for mineralized grafts (synonyms = demineralized ground cortical, demineralized freeze dried bone allograft, demineralized bone matrix, demineralized bone, etc.). Since the majority of the mineral content has been removed, these grafts have no structural capability. LifeNet Health targets level of demineralization (from 1.0 to 4.0% residual calcium) and particle sizing of demineralized cortical (commonly 250 to 710 microns) based on scientific study, proven to maximize osteoinductivity⁴⁻⁸. This results in allograft offerings that vary little lot-to-lot, provide predictable results, and, as with the mineralized grafts, provide many treatment options for the clinician.



▶ CANCELLOUS PARTICULATE GRAFTS

LifeNet Health knows that many clinicians prefer the handling characteristics of morselized cancellous allograft. In an effort to serve those clinicians, we created a line of allografts in two particle configurations that meets this demand. Cancellous bone, when ground to a very small size is indistinguishable microscopically from cortical bone. Thus the cancellous allograft is offered in larger particle ranges providing clinicians with a “coarse” feeling product. Both the 250 to 1000 micron and 1000 to 2000 micron particle ranges provide a different feel and packing geometry than do traditional particulate grafts. Figure 1 shows a micrograph of a cancellous particle in the 1000 micron range displaying the trabecular architecture and interconnecting pores that promote vascular penetration and provide a scaffold for new bone growth. In contrast, cortical particles (Figure 2) are irregular in size and shape and rely on inter-particle spacing for channeling vascular in-growth.

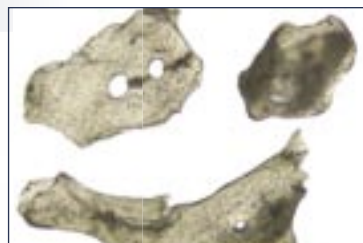


Figure 1



Figure 2

PARTICULATE GRAFT FEATURES

OSTEOINDUCTIVE

Provide rapid regeneration of soft and hard structures allowing the implanting surgeon to hasten treatment.

OSTEOCONDUCTIVE

An excellent bone void filler material providing a scaffold for vascular in-growth, proliferation and differentiation of cells to allow for the natural regeneration and remodeling of a surgical site.

READILY AVAILABLE

Many times alleviates the need for a second surgery to secure limited amounts of autograft material – this allows for shortened rehabilitation times for the patient with a reduction in pain and morbidity.

ROOM TEMPERATURE STORAGE

Easily kept at your surgical facility without need for special storage, ready for use at any time.

LONG SHELF LIFE

Most configurations have a five year expiration date thus providing buying convenience.

IMPLANTABLE DEVICE LEVEL STERILITY

You can be assured of safety since LifeNet Health's proprietary Allowash XG® provides a Sterility Assurance Level of 10⁻⁶ without the use of harsh chemicals, ethylene oxide or high levels of irradiation.

¹Tissue banking of bone allografts used in periodontal regeneration. Journal of Periodontology (Position Paper) 2001; 72:834-838. ²Periodontal regeneration. Journal of Periodontology (Position Paper) 2005; 76:1601-1622. ³McAllister BS, Haghghat K. Bone augmentation techniques. Journal of Periodontology 2007; 78(3):377-396. ⁴Zhang M, Powers RM, Wolfinger L. Effect(s) of the demineralization process on the osteoinductivity of demineralized bone matrix. Journal of Periodontology 1997; 68:1085-1092. ⁵Zhang M, Powers RM, Wolfinger L. A quantitative assessment of osteoinductivity of human demineralized bone. Journal of Periodontology 1997; 68:1076-1084. ⁶Herold RW, Pashley DH, Cuenin MF, Niagro F, Hokett SD, Peacock ME, Mailhot J, Borke J. The effects of varying degrees of allograft decalcification on cultured porcine osteoclast cells. Journal of Periodontology 2002; 73(2):213-219. ⁷Honsawek S, Powers RM, Wolfinger L. Extractable bone morphogenetic protein and correlation with induced new bone formation in an in vivo assay in the athymic mouse model. Cell and Tissue Banking 2005; 6(1):13-23. ⁸Turonis JW, McPherson JC, Cuenin MF, Hokett SD, Peacock ME, Sharawy M. The effect of residual calcium in decalcified freeze-dried bone allografts in a critical-sized defect in the Rattus norvegicus calvarium. Journal of Oral Implantology 2006; 32(2):55-62.