NEXXT MATRIXX™
3D PRINTED POROUS TITANIUM

Technical Features Summary

The NEXXT MATRIXX™ System of 3D printed porous titanium leverages Nexxt generation technology to create interbody and VBR devices with optimized **open architectural porosity**, **residue-free surface technology**, and **robust radiographic imaging performance**.

Timeline of Material Evolution:

The materials used in designing interbody implants have evolved to maximize clinical efficacy. Although the current material landscape of polymers, coatings, and metals have had clinical success, each have long standing clinical concerns and limitations:

- PEEK is a popular option due to its radiolucency. However, bone does not grow onto it and in some instances, may promote fibrous tissue formation instead of bone[2,3].
- To address this limitation, some companies have applied a titanium coating to the surface of PEEK, however these non-cohesive coatings may delaminate during impaction and are susceptible to wear debris[7].
- In an effort to utilize the proven osteogenic potential of roughened titanium, some companies have reverted to rigid titanium cages that are textured or partially porous. Although bone *does* grow onto titanium, the rigidity and material density may lead to subsidence and poor radiographic performance[2,3].

Varied Pore Array:

- The NEXXT MATRIXX™ porous titanium material exhibits a varied 300, 500, and 700µm pore architecture engineered to encourage integration. Pores greater than 300µm in size have been shown to advance and support vascularization, leading to direct osteogenesis.[1,4,5]

Residue-free Surface Technology (On-growth):

- Several studies have shown that textured titanium alloy surfaces elicit a positive bone response including an increase in osteoblast differentiation and surface osteointegration as compared to classically smooth surfaces.[2,3] With these studies at the foundation, Nexxt Spine has developed a proprietary, residue free, micro-roughening process that creates a highly cohesive 7µm roughened topography.
- Due to the roughened porous structure of the NEXXT MATRIXX™ material, NEXXT MATRIXX™ implants exhibit up to 4X more surface area for bone apposition and potential boney integration than conventional spinal implants[2,3,6].

Open Porous Architecture (In-growth):

- A fully interconnected 75% porous, open titanium architecture, results in up to 2X more open volume available for potential boney incorporation.[4,5,6]

Radiographic Performance:

- Large 700µm lateral pores within the 75% open porous architecture minimize titanium material for an overall reduced density thereby facilitating robust radiographic imaging and post-operative fusion evaluations[6].

References:

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