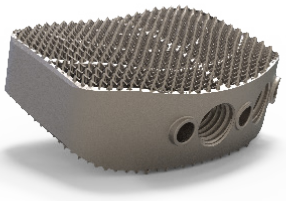
The Evolution of Fusion

Avenue®- T Ti

Avenue®- P Ti

Avenue® Ti

3D Printed Fusion Solutions



Avenue®- A Ti

Avenue®- C Ti

Avenue®- L Ti

ZimVie

Introducing

Avenue® Ti

Porous Ti Interbody System

Advancing patient care with our newest 3D printed titanium interbody platform. Avenue Ti's interbody spinal cages are created with a distinctive internal porous lattice ("net") structure. This scaffold design, structured from uniformly interconnected pores ranging from 500-700µm, along with the 6-10µm micron roughened surface topography helps to foster a cellular relevant environment for adhesion and bone ingrowth.

This range of devices have been engineered for both improved on-growth and ingrowth[1], compared to PEEK and solid titanium cages, and to comprise of a modulus of elasticity close to that of bone.

Studies have shown that the lattice structure of 3D printed titanium cages, which provide a bone comparable modulus of elasticity, is designed to withstand loading and promote fusion through providing a porous framework for bony in-growth[2], can sustain intra-disc height, can help to reduce the occurrence of subsidence compared to solid titanium cages[3] and PEEK cages[2,4] and are designed to provide a more evenly distributed endplate pressure under static load, compared to solid titanium and PEEK spinal cages[4].

The Evolution of Fusion

The Avenue Ti is designed to have the following surface, structural, and anatomic features:

Porosity

- 3D printed titanium interbody spinal cages
- Balance of porosity and strength
- Engineered with an internal porous lattice structure of uniformly interconnected pores ranging in size from 500-700µm

Texture

- Microporous surface roughness of 6-10µm for potential cellular adhesion

Structure

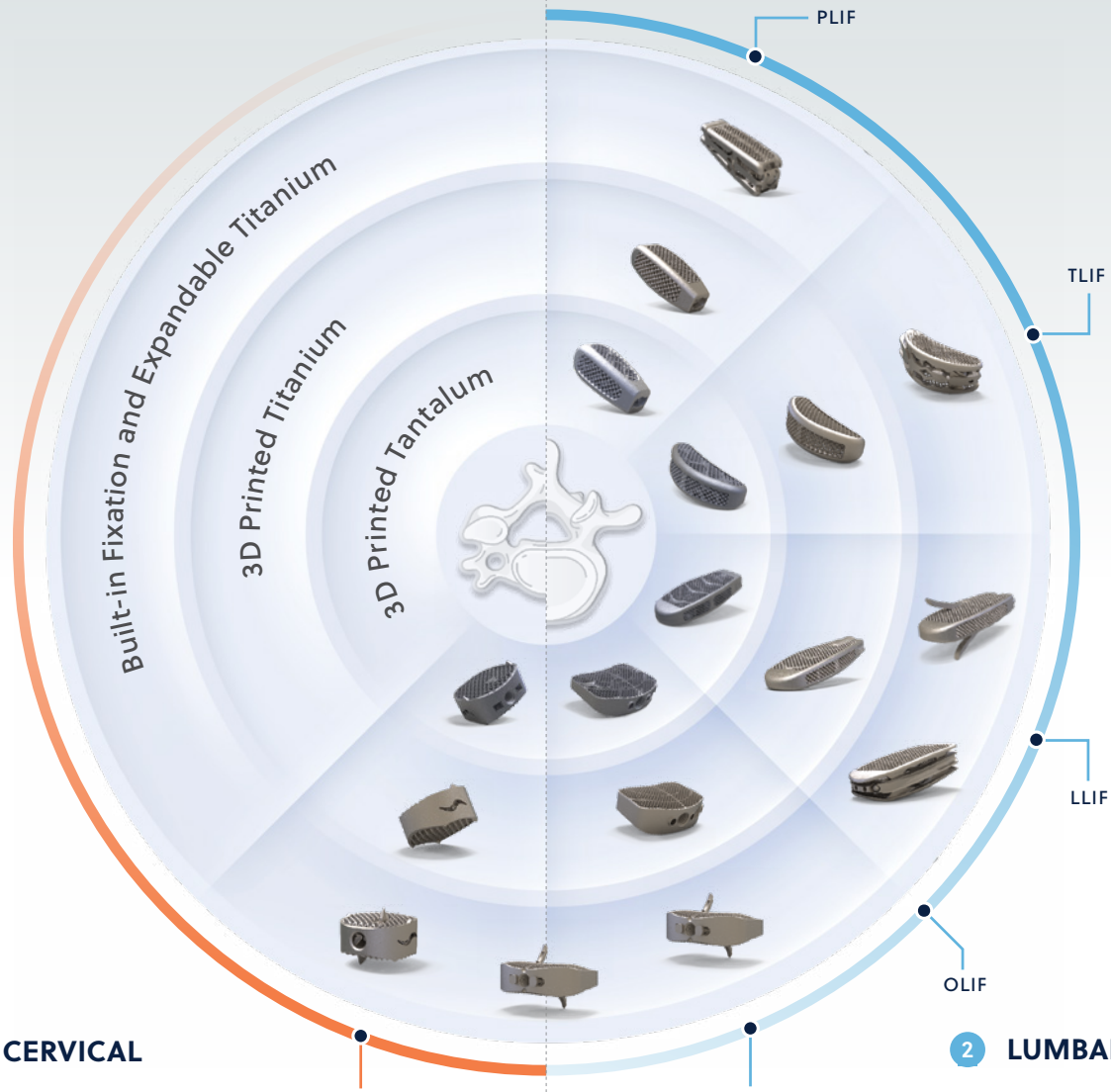
- Able to withstand loading and promote Fusion
- Internal lattice structure which is intended to provide additional surface area for better colonisation and bone formation

Anatomic Design

- Matching patients anatomy and surgeons preferences
- Microporosity and surface roughness designed to increase friction and limit micromotion for excellent stability

Portfolio Offerings

- Static, Built-in Fixation, and Expandable options
- Wide variety of Footprints, Heights, and Lordosis Angles
- Also available in 3D Printed Tantalum



1 CERVICAL

Cervical Fusion Portfolio

2 LUMBAR

Lumbar Fusion Portfolio

Avenue® Ti – Porous Ti Interbody Platform | 3D Printed Titanium

	Description		Footprint	Lordosis	Height
	Avenue-C Ti	ACDF	14 x 12 mm, 14 x 14 mm, 16 x 4 mm, 18 x 16 mm	5°	4 - 9 mm (1 mm increments)
	Avenue-C Fix Ti	ACDF with integrated Fixation	14 x 12 mm, 14 x 14 mm, 16 x 4 mm, 18 x 16 mm	5°	4 - 9 mm (1 mm increments)
	Avenue- P Ti	PLIF	24 x 10 mm, 29 x 10 mm	0° [1], 5°, 8°[2], 14°[3]	7 - 15 mm (1 mm increments)
	Avenue- P Exp Ti	expandable PLIF	29 x 9 mm, 32 x 9 mm	from 0° to 20° (continuous adjustability)	from 9 to 14 mm (continuous adjustability)
	Avenue- T Ti	TLIF	26 x 9 mm[4], 29 x 9 mm, 32 x 9 mm, 32 x 10 mm	0°, 5°, 8° 15°[5]	7 - 15 mm (1 mm increments)
	Avenue- T Exp Ti	expandable TLIF	32 x 9 mm, 40 x 9 mm[6]	from 2° to 8° or from 6° to 14° (continuous adjustability)	from 8 to 13 mm or from 9 to 13 mm (continuous adjustability)
	Avenue- L Ti	LLIF	42 x 18 mm, 48 x 18 mm, 52 x 18 mm, 58 x 18 mm	5°, 8°, 14°[8]	7 mm, 9 mm, 11 mm, 13 mm[8]
	Avenue- L Fix Ti	LLIF with integrated Fixation	42 x 22 mm, 48 x 22 mm, 52 x 22 mm, 58 x 22 mm 42 x 18 mm, 48 x 18 mm, 52 x 18 mm, 58 x 18 mm	5°, 8°, 14°	7 mm, 9 mm, 11 mm, 13 mm
	Avenue- L Exp Ti	expandable LLIF	48 x 18 mm, 52 x 18 mm, 48 x 22 mm, 52 x 22 mm	from 0° to 14° (continuous adjustability)	from 8 to 13 mm (continuous adjustability)
	Avenue- A Ti	ALIF	30 x 24 mm[7], 32 x 22 mm, 36 x 24 mm, 38 x 28 mm	8°, 14°[9]	8 - 15 mm (1 mm increments)[9]
	Avenue- A Fix Ti	ALIF with integrated Fixation	32 X 22 mm, 38 X 28 mm	8°, 14°[9]	9 - 15 mm (1 mm increments)

(1) only in 29 mm, (2) optional in 29 mm, (3)(4)(6)(7) optional, (5) 15° are optional and available for 32 x 10mm only. (8)(9)some heights and angles are optional.
NOTE: Variations of sizes may not be available in all markets

References:
1. Rao, P.J., et al., Spine interbody implants: material selection and modification, functionalization and bioactivation of surfaces to improve osseointegration. Orthop Surg, 2014. 6(2): p. 81-9.
2. Chan, J.L., et al., Evolution of Bioactive Implants in Lateral Interbody Fusion. Int J Spine Surg, 2022. 16(S1): p. S61-S68.
3. Zhu, Y., et al., Effect of Elastic Modulus on Biomechanical Properties of Lumbar Interbody Fusion Cage. Journal of Materials Sciences and Technology, 2009. 25(03): p. 325-328.
4. Fogel, G., et al., Choice of Spinal Interbody Fusion Cage Material and Design Influences Subsidence and Osseointegration Performance. World Neurosurg, 2022. 162: p. e626-e634.

For more information, visit ZimVie.com

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