ZIMMER BIOMET
Your progress. Our promise.™

T3® Implant

Preservation by Design®

A Contemporary Hybrid Implant

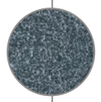
Primary Stability

The specifications of the T3 Implant are held to rigorous tolerances aiming to provide a closely integrated implant-to-osteotomy fit, creating a dental implant system that is designed to help the clinician achieve primary stability. Initial bone to implant contact is a major contributor to the implant's stability.[1]

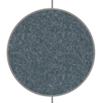
"Excessive micromotion during the endosseous dental implant healing process has been documented to impede or prevent osseointegration.[2]"

Osseointegration

In a preclinical study, the T3 with the DCD® Surface demonstrated increased integration strength throughout the healing phase as compared to blast and acid-etched, acid-etched only and turned only surfaces.*[3]



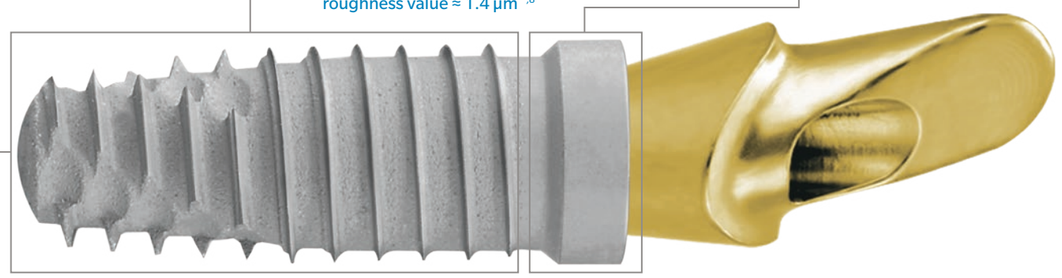
SUB-MICRON TOPOGRAPHY
The DCD Discrete Crystalline Deposition of calcium phosphate nanoparticles establishes a Bone Bonding® surface via the interlocking of the cement line matrix of bone with the implant surface.[4]
0.01 - 0.1 Micron Features



FINE-MICRON TOPOGRAPHY
Dual acid-etched fine-micron topography features have been shown to support osteoconduction mechanisms, including the promotion of fibrin blood clot retention and modulation of platelet activity.[5,6]
1 - 3 Micron Features

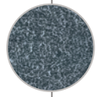
COARSE-MICRON TOPOGRAPHY
Pre-clinical studies on surfaces including moderate surface roughness (1.0 ≤ Sa ≤ 2.0 microns) have shown stronger bone response as compared to smoother (turned) or rougher (plasma spray) surfaces.[7]
10+ Micron Features

Threaded implant body surface roughness value ≈ 1.4 µm**[8]



No Increased Peri-implantitis Risk

The T3 Implant utilizes the proven Osseotite® Surface technology at the coronal aspect of the implant. In a five-year study†, the dual acid-etched surface of the Osseotite Implant presented no increased risk of peri-implantitis or soft-tissue complications versus a machined surface.[9]



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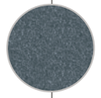
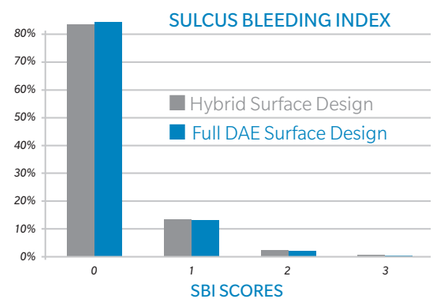
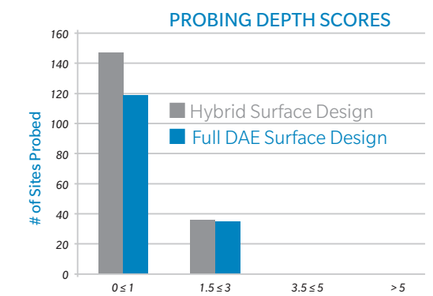


FINE-MICRON TOPOGRAPHY
Dual acid-etched fine-micron topography features have been shown to support osteoconduction mechanisms, including the promotion of fibrin blood clot retention and modulation of platelet activity.[5,6]
1 - 3 Micron Features

Multicenter, Randomized Controlled 5-Year Study Of Hybrid And Fully-Etched Implants For The Incidence Of Peri-implantitis

Zetterqvist L†, Feldman S, Rotter B, Vincenzi G, Wennström JL, Chierico A, Stach RM†† and Kenealy JN††. A Prospective, Multicenter, Randomized Controlled 5-Year Study Of Hybrid And Fully Etched Implants For The Incidence Of Peri-implantitis. *J Periodontol* April 2010.





No implant (test or control) showed changes in probing depths greater than 3.0 mm.

One hundred twelve patients who were enrolled at seven centers received 139 control and 165 test implants (total: 304 implants). This research was funded by Biomet 3i.
† Dr. Zetterqvist has financial relationship with Biomet 3i, LLC resulting from speaking engagements, consulting engagements and other retained services.

The T3 Implant Is Also Available In A Non-DCD Version.

Definition Of SA
The SA value is a three-dimensional amplitude parameter of the average roughness over a surface.[10] The level of roughness should ideally be adapted to the biologic scenario encountered, as regions (gingival and bone) of the oral environment have distinct needs.

1. Meredith N. Assessment of implant stability as a prognostic determinant. Int J Prosthodont. 1998 Sep-Oct;11(5):491-501.
2. Szmukler-Moncler S, Salama H, Reingewirtz Y, Dubruille J. H. Timing of loading and effect of micro-motion on bone-implant interface: A review of experimental literature. J Biomed Mat Res 1998;43:192-203.
3. Mendes V†, Davies JE†. Early Implant healing at implant surfaces of varying topographical complexity. Poster Presentation: Academy of Osseointegration, 26th Annual Meeting; March 2011; Washington, DC. http://biomet3i.com/pdf/Posters/Poster_Early_Periimplant_Healing.pdf
4. Davies, JE†. Bone bonding at natural and biomaterial surfaces. Biomaterials. 2007 Dec;28(34):5058-5067.
5. Davies, JE†. Understanding peri-implant endosseous healing. J Dent Educ. 2003 Aug;67(8):932-949.
6. Park JY, Gemmell CH, Davies JE†. Platelet interactions with titanium: Modulation of platelet activity by surface topography. Biomaterials 2001 Oct;22(19):2671-2682.
7. Albrektsson T, Wennerberg A. Oral implant surfaces: Part 1- review focusing on topographic and chemical properties of different surfaces and in vivo responses to them. Int J Prosthodont 2004 Sep-Oct;17(5):536-543.
8. Gubbi P††, Towse R††, Quantitative and qualitative characterization of various dental implant surfaces. Poster Presentation P421: European Association For Osseointegration, 20th Meeting; October 2012; Copenhagen, Denmark. (http://www.biomet3i.com/Pdf/Posters/Poster_421_EAO_Final.pdf).
9. Zetterqvist L†, Feldman S, Rotter B, Vincenzi G, Wennström JL, Chierico A, Stach RM†† and Kenealy JN††. A prospective, multicenter, randomized-controlled 5-year study of hybrid and fully etched implants for the incidence of peri-implantitis. J Periodontol 2010 April;81:493-501.

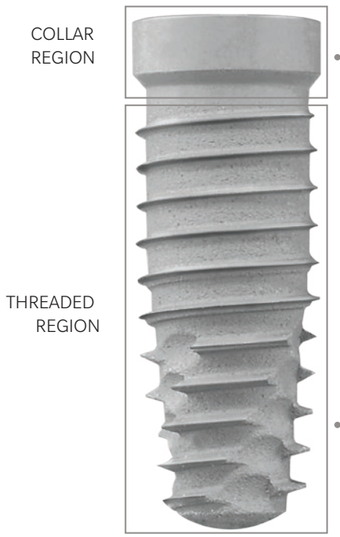
References 1–2 discuss the Biomet 3i Tapered Implant macrodesign, which is incorporated into the T3 Implant.
References 3–9 discuss the Biomet 3i OSSEOTITE® and/or NanoTite™ Implant dual acid-etched or DCD technology, which is incorporated into the 3i T3 Implant.
† These clinicians had financial relationships with Zimmer Biomet Dental resulting from speaking engagements, consulting engagements and other retained services at the time of their involvement.
†† Dr. Gubbi, Dr. Kenealy, Dr. Stach and Mr. Towse contributed to the above research while employed by Biomet 3i.
* Preclinical studies are not necessarily indicative of clinical performance.
** Values may vary depending on test methodology.

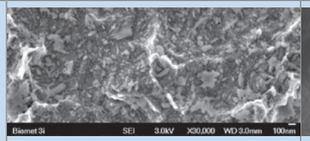
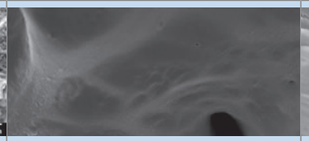
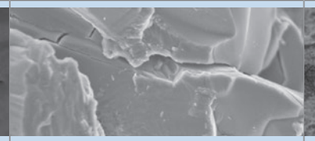
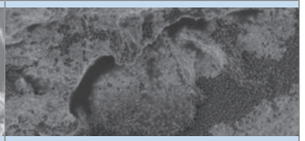
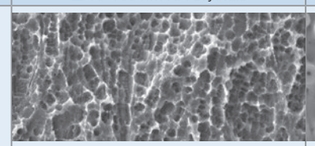
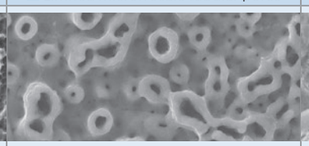
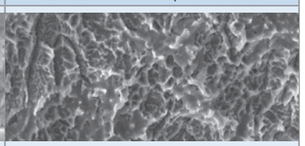
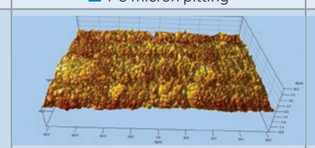
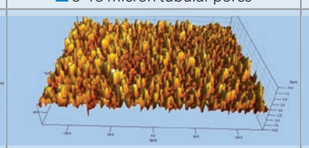
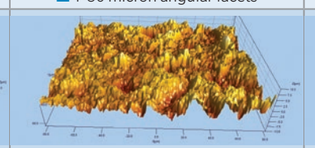
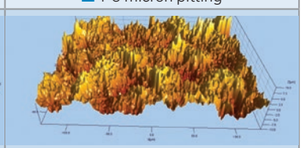
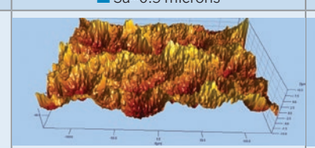
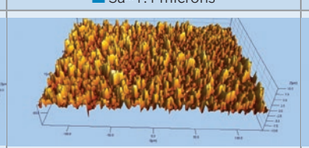
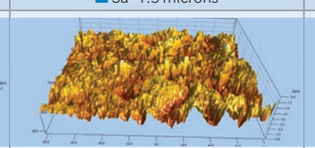
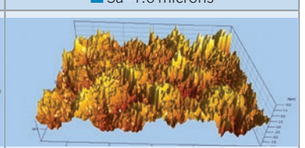
Implant Surface Characterization Comparison*,10

Surface Needs:

Implant surface topographies influence the osseointegration process[11], as well as help to mitigate potential risks associated with peri-implantitis[12].

- Studies have shown that implant topographies play a role in both osteoconduction and the subsequent de novo bone to implant interface strength[11].
- The prevalence of implants experiencing peri-implantitis has been reported in excess of 12%[13,14]. Studies have shown that minimally rough implants[6,15] are less likely to develop peri-implantitis than rough implants[15] once exposed to the oral environment[12].



ATTRIBUTES	Zimmer Biomet T3 With DCD Surface	Competitor 1 Surface	Competitor 2 Surface	Competitor 3 Surface
PROCESS	• Grit blasting with Calcium Phosphate media (threaded area only on T3) • Dual acid-etching • DCD Discrete Crystalline Deposition	• Anodic oxidation	• Grit blasting with TiO2 media • Acid-etching	• Grit blasting with alumina oxide media • Acid-etching in nitrogen atmosphere
SUB-MICRON SURFACE FEATURES (~30,000x) *DCD VERSION ONLY	 ■ 10-100 nm HA Crystals	 ■ Limited micron scale tubular pores	 ■ Limited micron scale angular facets	 ■ 0-20 nm rod shaped features
MICRON SURFACE FEATURES (~2,000x)	 ■ 1-3 micron pitting	 ■ 3-15 micron tubular pores	 ■ 1-50 micron angular facets	 ■ 1-3 micron pitting
MICRON SURFACE FEATURES (~300x) – COLLAR REGION	 ■ Sa≈0.5 microns	 ■ Sa≈1.1 microns	 ■ Sa≈1.5 microns	 ■ Sa≈1.6 microns
COARSE-MICRON SURFACE FEATURES (~300x) – THREADED REGION	 ■ Sa≈1.4 microns	 ■ Sa≈1.1 microns	 ■ Sa≈1.5 microns	 ■ Sa≈1.6 microns

For More Information, Please Contact Your Local Zimmer Biomet Dental Sales Representative.

* Results may vary depending on test methodology. Testing conducted with Osseotite 2 Implants and Biomet 3i blasted and dual acid-etched implants.

10. Gubbi P†, Towse R†, Quantitative and Qualitative Characterization of Various Dental Implant Surfaces, Poster Presentation P421: European Association For Osseointegration, 20th Meeting; October 2012; Copenhagen, Denmark. (http://www.biomet3i.com/Pdf/Posters/Poster_421_EAO_Final.pdf)
11. Davies, JE††. Understanding Peri-Implant Endosseous Healing. J Dent Educ. 2003 Aug;67(8):932-49.
12. Lang NP, Berglundh T Periimplant diseases: where are we now? - Consensus of the Seventh European Workshop on Periodontology; Working Group 4 of Seventh European Workshop on Periodontology. J Clin Periodontol. 2011 Mar;38 Suppl 11:178-81.
13. Fransson C, Lekholm U, Jemt T, Berglundh T. Prevalence Of Subjects With Progressive Bone Loss At Implants. Clinical Oral Implants Research. 2005;16:440–446.
14. Zitzmann NU, Berglundh T. Definition And Prevalence Of Peri-Implant Diseases. Journal of Clinical Periodontology. 2008;35:286–291.
15. Albrektsson T, Wennerberg A. Oral implant surfaces: Part 1- review focusing on topographic and chemical properties of different surfaces and in vivo responses to them. Int J Prosthodont. 2004 Sep-Oct;17(5):536-43.

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