

G-CAM

For Definitive Prostheses

PMMA Discs Reinforced with Graphine

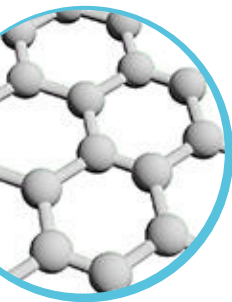
 [More Information about G-CAM](#)



**G-CAM Discs in PMMA
graphene-reinforced**
Specially designed for definitive prostheses

The Graphene

The graphene is a single layer of graphite, consisting of a stable two-dimensional allotrope of carbon, hexagonally arranged and linked by sp² bonds, enabling the material to achieve unique properties (Geim et Novoselov, 2004).



Thanks to its properties, graphene has become an excellent material with great potential for improving industrial applications.

Its main properties include high thermal and electrical conductivity, high tensile strength, low density and low coefficient of thermal expansion.

The graph is therefore an ideal candidate to improve the performance of acrylic resins with thermal polymerization for dental use, not only to create polymeres with high mechanical resistance, but also polymers with low water absorption capacity, with a minimum of residual and biocompatible monomeres.

What is The G-CAM ?

G-CAM is a thermoplastic acrylic disc with a graphene-doped polymethyl methacrylate resin base (PMMA), suitable for the creation of dental prostheses using CAD/CAM technology.

G-Cam discs are intended for use in the fabrication of full and partial removable prostheses, implant-supported prostheses and permanent and temporary restorations such as anterior and posterior crowns, bridges, inlays, onlays, veneers, copings and substructures.



28 dental pieces on average per disc

	G-CAM	Zirconium
Pieces per disc	28/32	20/22
Working time per arch	3,5 hours	11 hours

The perfect smile, a reality thanks to the nanotechnology of graphene!

Comparative table of dental solutions

Types of prostheses/ materials	PMMA	Metal	Zirconium	Disilicate de lithium	Resin + Graphène
individual crowns					
Bridges up to 3 pieces	—	—	—	—	
Bridges more than 2 implants	—		—	—	
Parameters		—	—		
Facets	—	—			
Complete prostheses		—	—	—	
Prostheses on implants		—	—	—	

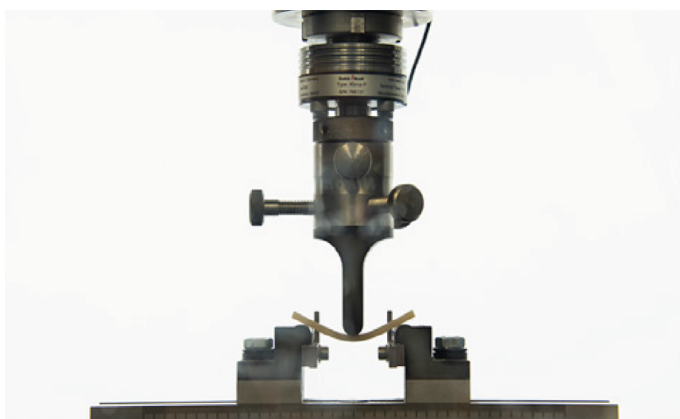
Technical characteristics

- **G-CAM** has a high modulus of elasticity and strength to ensure that the stresses generated when chewing do not cause permanent deformations.
- The **G-CAM** presents high resistance to deformation, thus sustaining the formation of cracks and fractures.
- **G-CAM** is of low density, which makes the prostheses light.
- Increased hardness of the material compared to acrylic resins used in dentistry.
- Aspect similaire au tissu buccal, idéal pour les zones plus visibles.
- **G-CAM** has a stable color. Wide chromatic range, even within the same piece, which gives it an extremely natural appearance.
- The **G-CAM disc** is chemically inert.
- The water absorption of **G-CAM** is $4 \mu\text{g}/\text{mm}^3$ and its solubility is $0.5 \mu\text{g}/\text{mm}^2$. The release of residual monomer is minimal, with a percentage of 0.004% residual monomer. Thanks to these physical properties, the G-CAM offers a durable and safe treatment.

Mechanical Properties

Modulus of elasticity ⁽¹⁾ $3200 \pm 7\% \text{ MPa}$	Flexural strength ⁽¹⁾ $140 \pm 7\% \text{ MPa}$	Surface Hardness ⁽²⁾ 88 Shore D 19,5 KHN⁽³⁾
Resistance to compression ⁽⁴⁾ $155 \pm 5\% \text{ MPa}$	Solubility ⁽¹⁾ $0,5 \mu\text{g}/\text{mm}^3$	Water Absorption ⁽¹⁾ $4 \mu\text{g}/\text{mm}^3$
Residual Monomers ⁽¹⁾ < 0,004 %		

⁽¹⁾ UNE-EN ISO 20795-1:2013 ⁽²⁾ ISO 48-4:2018 ⁽³⁾ ASTM E384 ⁽⁴⁾ ISO 5833:2002



Properties

✓ **Extremely natural aesthetic appearance**

G-CAM discs are therefore ideal for all teeth and perfect for visible areas.

✓ G-CAM DISC

The discs show an increase in flexibility and surface hardness. They allow a uniform distribution of the masticatory load and the absorption of external occlusal loads.

✓ Graphene improves dimensional stability

This allows the denture to retain its shape over time.

G-CAM format

The G-CAM Disc is available in 2 different formats: :
G-CAM MONOCHROMA & G-CAM MULTICHROMA.

Monochrome and Multichroma discs can be used for full anatomical monolithic restorations.

When manufactured, G-CAM Monochroma and CAM Multichroma has a different visual effect:

- **G-CAM Monochroma** : is composed of a pure color based on the guide..
- **G-CAM Multichroma** : has a color spectrum based on natural color mimicking the optical effects of natural parts.



Biological Properties

The **G-CAM Disc** is a biocompatible device according to the test indicated inside:

- **ISO 7405:2018** «evaluation of biocompatibility of medical devices used in dentistry»
- **ISO 10993-1:2018** «biological evaluation of medicinal devices».

The **G-CAM** passed successfully the tests for cytotoxicity, hypersensitivity, irritation, acute systemic toxicity, subchronic systemic toxicity, genotoxicity and implantation carried out at the Universite d'Alcala and by the Valencian Institute of Microbiology (IVAMI).

The results did not reveal adverse biological effects for any of the products tested and demonstrated adequate biological performance in all cases.



Chemical Properties

- The disc **G-CAM** is chemically inert.
- The water absorption of **G-CAM** is $4 \mu\text{g}/\text{mm}^3$ and its solubility is $0.5 \mu\text{g}/\text{mm}^2$. The release of residual monomer is minimal, with a percentage of 0.004% residual monomer.

*Thanks to these physical properties, the **G-CAM** offers a sustainable and safe treatment.*



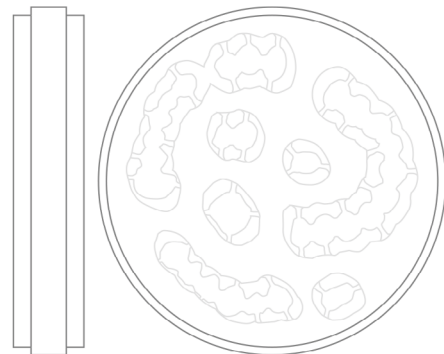
G-CAM Models

G-CAM presents itself in the form of a compact resin disc offers in two different dimensions. There are two disk variants depending on the type of machines used:

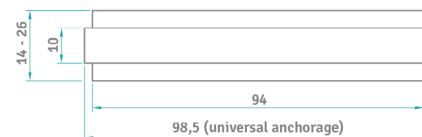
The two variants are presented in different thicknesses : 14, 16, 18, 20, 22, 24, 26 et 30.

9 disc colors are available according to the Vita classification :

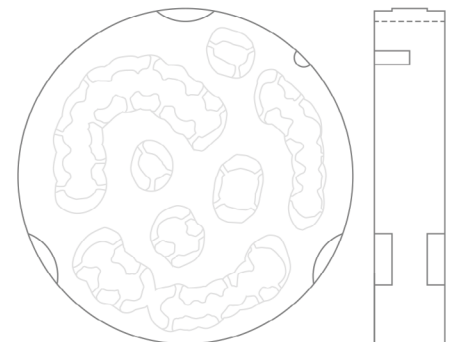
Transparent, BL2, A1, A2, A3, A3'5, B1, B2, C2



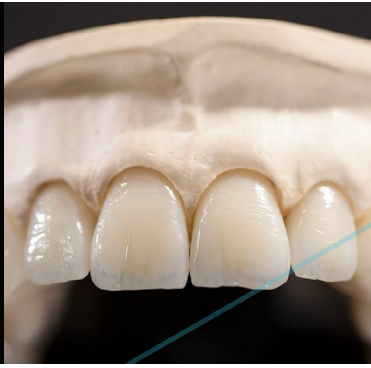
Universal Dimension :
98.5 mm diameter disc



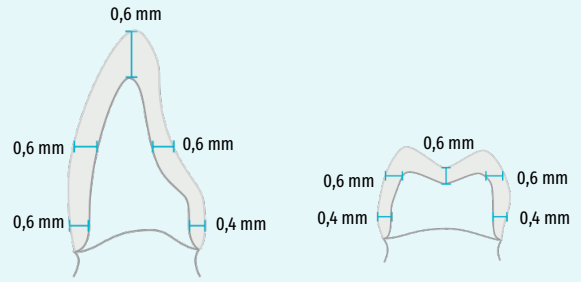
ZIRKONZAHN DIMENSION :
95 mm diameter disc



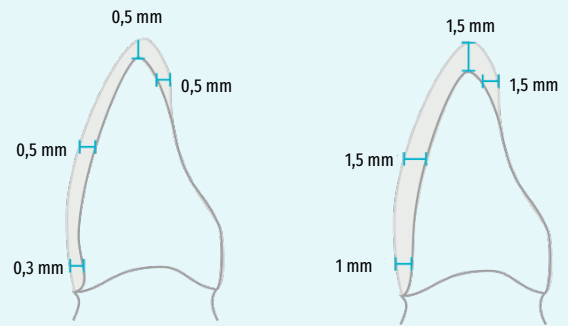
Revolutionary CFAO prostheses offering unparalleled aesthetics, comfort & durability.



G-CAM Design Parameters

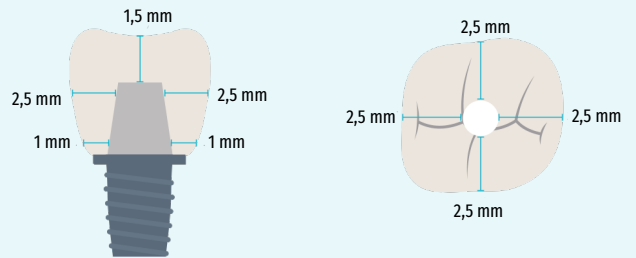


Minimum thickness for veneers

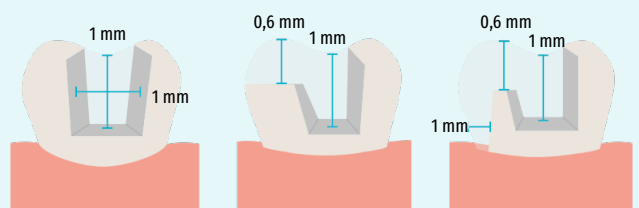


Review all G-CAM design parameters established for all different dental treatments

Thicknesses around the fastening



inlays



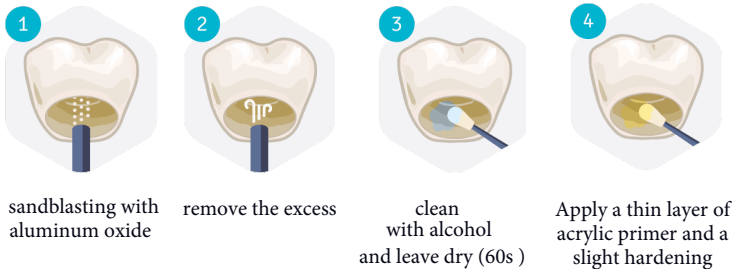
Parallel sculptures and defined edges

Processes in laboratories

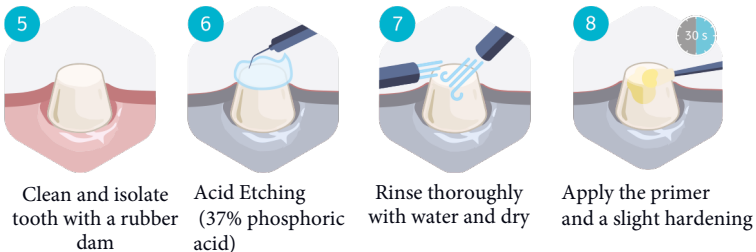
Clean the graphene crown



Preparation of the G-CAM structure



Crown preparation



Cementing of the crown



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