

GLUMA®

FAQs



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GLUMA Desensitizer & GLUMA Desensitizer PowerGel

Giving a hand to oral health.



KULZER
MITSUI CHEMICALS GROUP

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Application

For which indications can GLUMA Desensitizer and GLUMA Desensitizer PowerGel be used?

GLUMA Desensitizer and GLUMA Desensitizer PowerGel are indicated for the treatment of hypersensitive dentine. They eliminate pain in exposed cervical areas which do not require restoration, and alleviate or prevent dentinal sensitivity after preparing the teeth to receive direct or indirect restorations.

When does GLUMA Desensitizer or GLUMA Desensitizer PowerGel need to be applied in combination with a dental adhesive?

GLUMA Desensitizer and GLUMA Desensitizer PowerGel are suitable prior to the placement of direct and indirect restorations. Both desensitizers function solely within the dentinal tubuli. Thus, they do not interfere with dental adhesives nor adhesive resin-based luting materials.

In combination with adhesives used in total etch or selective enamel etching technique, GLUMA Desensitizer or GLUMA Desensitizer PowerGel should be applied after phosphoric acid etching.

In case of self-etch adhesives, GLUMA Desensitizer or GLUMA Desensitizer PowerGel are to be applied prior to the adhesive.

How long is the application time of GLUMA Desensitizer and GLUMA Desensitizer PowerGel?

GLUMA Desensitizer and GLUMA Desensitizer PowerGel should be left on the dentine for 30-60s. Afterwards, they need to be rinsed off with plenty of water.

GLUMA Desensitizer PowerGel contains pigments. Will it stain the tooth?

GLUMA Desensitizer PowerGel contains pigments to ease its application. It does not stain the tooth if it dwells on the tooth for a maximum of 60s. Moreover, it needs to be rinsed off with plenty of water.

Is GLUMA Desensitizer/GLUMA Desensitizer PowerGel compatible with dental adhesives and resin-based luting cements?

Various studies have confirmed that GLUMA Desensitizer and GLUMA Desensitizer PowerGel are fully compatible with dental adhesives and luting cements. The bond strength of these materials to the tooth remains on the same level irrespective of whether GLUMA Desensitizer/GLUMA Desensitizer PowerGel is previously applied on the dentine or not. Some other desensitizing products act only at the tooth surface. This may decrease bond strength to adhesives or cements applied afterwards.¹ GLUMA Desensitizer and GLUMA Desensitizer PowerGel do not interfere with these adhesive materials because they work within the dentinal tubuli.

Why do GLUMA Desensitizer and GLUMA Desensitizer PowerGel need to be rinsed off?

GLUMA Desensitizer and GLUMA Desensitizer PowerGel contain glutardialdehyde. This substance is responsible for the effective reduction of dentine hypersensitivity. It is a highly reactive agent able to coagulate proteins. This effect is desired within the dentine tubuli but not on the gingiva and mucosa. We therefore strongly recommend the use of rubber dam. To avoid irritation of oral soft tissues, GLUMA Desensitizer and GLUMA Desensitizer PowerGel must never touch soft tissue and must be rinsed off with plenty of water by the dentist/dental assistant.

Why does GLUMA Desensitizer/GLUMA Desensitizer PowerGel need to be air-dried prior to rinsing off?

After application on the hypersensitive tooth area, GLUMA Desensitizer/GLUMA Desensitizer PowerGel needs to be air-dried. This step increases the desensitizing effect.

Afterwards, the desensitizer needs to be rinsed off using plenty of water by the dentist/ dental assistant.

Why is rubber dam recommended for the application of GLUMA Desensitizer and GLUMA Desensitizer PowerGel?

GLUMA Desensitizer and GLUMA Desensitizer PowerGel contain glutardialdehyde. This agent is very effective in the coagulation of proteins, providing the desired result within the dentine tubuli. However, it also reacts with oral soft tissue when it comes in contact with gingiva or mucosa. This may cause temporary local irritations or necrosis of the soft tissue. To avoid any contact with oral soft tissue, rubber dam needs to be applied.

What happens if GLUMA Desensitizer or GLUMA Desensitizer PowerGel are accidentally light-cured?

Light-curing does not affect GLUMA Desensitizer and GLUMA Desensitizer PowerGel. Both desensitizers do not contain photocuring ingredients.

What should I use to apply the GLUMA Desensitizer PowerGel?

The flocked syringe nozzle is ideally suited for applying and distributing the gel on the tooth surface. A more precise application can be achieved by applying the gel with a dental probe.

Watch our video to see how GLUMA Desensitizer works:



Explainer video: GLUMA Desensitizer
on the Kulzer North America YouTube channel



¹ Aranha AC *et al.*: Microtensile bond strengths of composite to dentine treated with desensitizer products. J Adhes Dent. 2006, 2:85-90.

02

Efficacy

Have GLUMA Desensitizer and GLUMA Desensitizer PowerGel been clinically tested?

GLUMA Desensitizer is one of the most evaluated desensitizers worldwide: at least 34 clinical patient studies were done on the performance of GLUMA Desensitizer and numerous in-vitro investigations. (You will find a list of these studies at the end of this document.)

Do GLUMA Desensitizer and GLUMA Desensitizer PowerGel reduce dentine hypersensitivity immediately after application?

Several clinical studies demonstrated a minimisation of the dentine hypersensitivity directly after its application². Its full effect will occur after some minutes to hours once the reaction of GLUMA Desensitizer and GLUMA Desensitizer PowerGel with the proteins of the dentine liquor is completed. In some cases, a repeated application of GLUMA Desensitizer or GLUMA Desensitizer PowerGel may be necessary.

How do GLUMA Desensitizer and GLUMA Desensitizer PowerGel reduce dentine hypersensitivity?

GLUMA Desensitizer and GLUMA Desensitizer PowerGel contain glutardialdehyde and HEMA ((2-Hydroxyethyl)methacrylate). HEMA enables glutardialdehyde to penetrate up to 200µm into the dentine tubuli³. Inside the tubuli, glutardialdehyde reacts with the proteins present in the dentine liquor. The proteins precipitate and form protein plugs which close the dentine tubuli. This protein coagulation leads to the polymerisation of HEMA⁴. Because of these coagulated proteins (protein septa), the permeability of the dentine is significantly reduced⁵ and movements of dentine liquor inside the tubuli or other stimulating effects are lessened. GLUMA Desensitizer and GLUMA Desensitizer PowerGel function within the dentine tubuli and therefore do not interfere with adhesive treatments. They do not create a layer on the dentine surface.

Other studies have shown further benefits from glutardialdehyde. It inhibits enzymes (MMPs) within the dentine that degrade the hybrid layer of adhesives over time⁶. Apart from this, glutardialdehyde has also demonstrated its potential for cavity disinfection⁷. Last but not least, it increases the strength of the dentine and may lead to more durable bonding⁸.

How long does the desensitizing effect of GLUMA Desensitizer/GLUMA Desensitizer PowerGel last?

A recently published clinical study revealed a reduction of dentine hypersensitivity by GLUMA Desensitizer for at least 18 months⁹. GLUMA Desensitizer was the only tested desensitizing treatment that did not show an increase in pain during the 18 months study observation period.

How efficient are GLUMA Desensitizer/GLUMA Desensitizer PowerGel compared to other desensitizing methods?

GLUMA Desensitizer and GLUMA Desensitizer PowerGel have demonstrated their long-term effectiveness of up to 18 months in various clinical studies¹⁰.

Both GLUMA Desensitizers are fast and non-invasive. They should only be applied by dentists, though, as they are not intended for use by the patients. They do not interfere with other treatments (e. g. following adhesive treatments) compared to other desensitizing treatments (e.g. desensitizers based on oxalates^{11,12}).

GLUMA Desensitizer and GLUMA Desensitizer PowerGel are more effective than desensitizers based on an oxalate or calcium phosphate chemistry^{13,14,15}.

² Mehta D, *et al.*: Efficacy of Dentin Desensitizing Agents: A Randomized Controlled Clinical Trial. J Dent Res 93 (Spec Iss B), 1115, 2014.

³ Schüpbach P *et al.*: Closing of dentinal tubules by Gluma desensitizer. Eur J Oral Sci 1997; 105: 414-421.

⁴ Qin C *et al.*: Spectroscopic investigation of the function of aqueous 2-hydroxyethylmethacrylate/glutaraldehyde solution as a dentin desensitizer. Eur J Oral Sci 114, 2006:354-9.

⁵ Ishihata H *et al.*: In vitro dentin permeability after application of Gluma® desensitizer as aqueous solution or aqueous fumed silica dispersion. J Appl Oral Sci 19(2), 2011:147-53.

⁶ Sabatini C *et al.*: Inhibition of endogenous human dentin MMPs by Gluma. Dental Mat 30, 2014: 752-8.

⁷ Felton D *et al.*: Inhibition of bacterial growth under composite restorations following GLUMA pretreatment. JDR, 68 (3), 1989: 491-5.

⁸ Bedran-Russo AK *et al.*: Changes in stiffness of demineralized dentin following application of collagen cross-linkers. J of Biomedical Materials Research Part B: Applied Biomaterials, 86 (B), 2008: 330-4.

⁹ Lopes AO *et al.*: Evaluation of different treatment protocols for dentine hypersensitivity: an 18-month randomized clinical trial. Lasers Med Sci, 32, 2017:1023-30.

¹⁰ Lopes AO *et al.*: Evaluation of different treatment protocols for dentine hypersensitivity: an 18-month randomized clinical trial. Lasers Med Sci, 32, 2017:1023-30.

¹¹ Silva SMA *et al.*: Effect of Oxalate Desensitizer on the Durability of Resin-Bonded Interfaces. Operative Dentistry 35-6, 2010: 610-617.

¹² Acar O *et al.*: The effect of dentin desensitizers and Nd:YAG laser pre-treatment on microtensile bond strength of self-adhesive resin cement to dentin. J Adv Prosthodont 6, 2014: 88-95.

¹³ Dondi Dall' Orologio *et al.*: In vitro and in vivo evaluation of the effectiveness of three dentin desensitizing treatment regimens. American Journal of Dentistry 27 (3), 2014: 139-144.

¹⁴ Mehta D *et al.*: Randomized controlled clinical trial on the efficacy of dentin desensitizing agents. Acta Odontologica Scandinavica. 2014; Early Online, 1–6.

¹⁵ Vora J *et al.*: Effects of two topic desensitizing agents and placebo on dentin hypersensitivity. AJD 25,5, 2012:293-8.

03

Differentiation

What is the difference between GLUMA Desensitizer and GLUMA Desensitizer PowerGel?

The desensitizing ingredients of GLUMA Desensitizer and GLUMA Desensitizer PowerGel are the same. The differences between both desensitizers lie in the consistency and the colour. GLUMA Desensitizer is a clear liquid whereas GLUMA Desensitizer PowerGel is a greenish gel. The gel product might be easier to control because of its colour and consistency. The long-term efficacy of both products is similar.

In what packaging are GLUMA Desensitizer and GLUMA Desensitizer PowerGel available?

GLUMA Desensitizer is available in 5ml bottle and single dose for one application. GLUMA Desensitizer PowerGel is available in 1g syringe.

04

General

How long have GLUMA Desensitizer and GLUMA Desensitizer PowerGel been on the market?

GLUMA Desensitizer has been launched in 1992. GLUMA Desensitizer PowerGel followed in 2011. We estimate that GLUMA Desensitizer has been applied on teeth about 45 million times and that 34 studies have been carried out on GLUMA Desensitizer. (You will find a list of these studies at the end of this document.)

What are the pH values of GLUMA Desensitizer and GLUMA Desensitizer PowerGel?

GLUMA Desensitizer and GLUMA Desensitizer PowerGel both have a pH value of 3-4.

In-vitro studies

- 1 **Sivaramakrishnan G, Sridharan K:** Fluoride varnish versus glutaraldehyde for hypersensitive teeth: a randomized controlled trial, meta-analysis and trial sequential analysis. *Clin Oral Investig.* 2018 Apr 2. doi: 10.1007/s00784-018-2428-8. [Epub ahead of print]
- 2 **Diniz A, Lima S, Tavarez R, Borges AH, Pinto S, Tonetto MR, Loguercio AD, Bandéca MC:** Preventive Use of a Resin-based Desensitizer Containing Glutaraldehyde on Tooth Sensitivity Caused by In-office Bleaching: A Randomized, Single-blind Clinical Trial. *Oper Dent.* 2018 Mar 23. doi: 10.2341/17-020-C. [Epub ahead of print]
- 3 **Hajizadeh H, Nemati-Karimooy A, Majidinia S, Moeintaghavi A, Ghavamnasiri M:** Comparing the effect of a desensitizing material and a self-etch adhesive on dentin sensitivity after periodontal surgery: a randomized clinical trial. *Restor Dent Endod.* 2017 Aug;42(3):168-175. doi: 10.5395/rde.2017.42.3.168. Epub 2017 Jul 21.
- 4 **Idon PI, Esan TA, Bamise CT:** Efficacy of Three In-Office Dentin Hypersensitivity Treatments. *Oral Health Prev Dent.* 2017;15(3):207-214. doi: 10.3290/j.ohpd.a38523.
- 5 **Lopes AO, de Paula Eduardo C, Aranha ACC:** Evaluation of different treatment protocols for dentin hypersensitivity: an 18-month randomized clinical trial. *Lasers Med Sci.* 2017 Jul;32(5):1023-1030.
- 6 **Kara HB, Cakan U, Yilmaz B, Inan Kurugol P:** Efficacy of Diode Laser and Gluma on Post-Preparation Sensitivity: A Randomized Split-Mouth Clinical Study. *J Esthet Restor Dent.* 2016 Nov 12;28(6):405-411.
- 7 **Samuel SR, Khatri SG, Acharya S, Patil ST:** Evaluation of instant desensitization after a single topical application over 30 days: a randomized trial. *Aust Dent J.* 2015 Sep;60(3):336-42. doi: 10.1111/adj.12341. Epub 2015 Jul 24.
- 8 **Patil SA, Naik BD, Suma R:** Evaluation of three different agents for in-office treatment of dentinal hypersensitivity: a controlled clinical study. *Indian J Dent Res.* 2015 Jan-Feb;26(1):38-42.
- 9 **Samuel SR, Khatri SG, Acharya S:** Clinical Evaluation of self and professionally applied desensitizing agents in relieving dentin hypersensitivity after a single topical application: A Randomized Controlled Trial. *J Clin Exp Dent.* 2014 Oct 1;6(4):e339-43.
- 10 **Dall'Orologio GD, Ishihata H, Finger WJ, Sasaki K:** In vitro and in vivo evaluation of the effectiveness of three dentin desensitizing treatment regimens. *Am J Dent.* 2014 Jun;27(3):139-44.
- 11 **Ding YJ, Yao H, Wang GH, Song H:** A randomized double-blind placebo-controlled study of the efficacy of Clinpro XT varnish and Gluma dentin desensitizer on dentin hypersensitivity. *Am J Dent.* 2014 Apr;27(2):79-83.

- 12 **Mehta D, Gowda VS, Santosh A, Finger WJ, Sasaki K:** Randomized controlled clinical trial on the efficacy of dentin desensitizing agents. *Acta Odontol Scand.* 2014 Nov;72(8):936-41.
- 13 **Femiano F, Femiano R, Lanza A, Festa MV, Rullo R, Perillo L:** Efficacy of diode laser in association to sodium fluoride vs Gluma desensitizer on treatment of cervical dentin hypersensitivity. A double blind controlled trial. *Am J Dent.* 2013 Aug;26(4):214-8.
- 14 **Lopes AO, Eduardo Cde P, Aranha AC:** Clinical evaluation of low-power laser and a desensitizing agent on dentin hypersensitivity. *Lasers Med Sci.* 2015 Feb;30(2):823-9.
- 15 **Mehta D, Venkata S, Naganath M, LingaReddy U, Ishihata H, Finger WJ:** Clinical trial of tooth desensitization prior to in-office bleaching. *Eur J Oral Sci.* 2013 Oct;121(5):477-81.
- 16 **Lopes AO, Aranha AC:** Comparative evaluation of the effects of Nd:YAG laser and a desensitizer agent on the treatment of dentin hypersensitivity: a clinical study. *Photomed Laser Surg.* 2013 Mar;31(3):132-8.
- 17 **Vora J, Mehta D, Meena N, Sushma G, Finger WJ, Kanehira M:** Effects of two topical desensitizing agents and placebo on dentin hypersensitivity. *Am J Dent.* 2012 Oct;25(5):293-8.
- 18 **Ehlers V, Ernst CP, Reich M, Kämmerer P, Willershausen B:** Clinical comparison of gluma and Er:YAG laser treatment of cervically exposed hypersensitive dentin. *Am J Dent.* 2012 Jun;25(3):131-5.
- 19 **Guentsch A, Seidler K, Nietzsche S, Hefti AF, Preshaw PM, Watts DC, Jandt KD, Sigusch BW:** Biomimetic mineralization: long-term observations in patients with dentin sensitivity. *Dent Mater.* 2012 Apr;28(4):457-64.
- 20 **Brahmbhatt N, Bhavsar N, Sahayata V, Acharya A, Kshatriya P:** A double blind controlled trial comparing three treatment modalities for dentin hypersensitivity. *Med Oral Patol Oral Cir Bucal.* 2012 May 1;17(3):e483-90.
- 21 **Sethna GD, Prabhuji ML, Karthikeyan BV:** Comparison of two different forms of varnishes in the treatment of dentine hypersensitivity: a subject-blind randomised clinical study. *Oral Health Prev Dent.* 2011;9(2):143-50.
- 22 **Yu X, Liang B, Jin X, Fu B, Hannig M:** Comparative in vivo study on the desensitizing efficacy of dentin desensitizers and one-bottle self-etching adhesives. *Oper Dent.* 2010 May-Jun;35(3):279-86.
- 23 **Aranha AC, Pimenta LA, Marchi GM:** Clinical evaluation of desensitizing treatments for cervical dentin hypersensitivity. *Braz Oral Res.* 2009 Jul-Sep;23(3):333-9.

- 24 **Ozen T, Orhan K, Avsever H, Tunca YM, Ulker AE, Akyol M:** Dentin hypersensitivity: a randomized clinical comparison of three different agents in a short-term treatment period. *Oper Dent.* 2009 Jul-Aug;34(4):392-8.
- 25 **Jalalian E, Meraji N, Mirzaei M:** A comparison of the efficacy of potassium nitrate and Gluma desensitizer in the reduction of hypersensitivity in teeth with full-crown preparations. *J Contemp Dent Pract.* 2009 Jan 1;10(1):66-73.
- 26 **de Assis Cde A, Antoniazzi RP, Zanatta FB, Rösing CK:** Efficacy of Gluma Desensitizer on dentin hypersensitivity in periodontally treated patients. *Braz Oral Res.* 2006 Jul-Sep;20(3):252-6.
- 27 **Kakaboura A, Rahiotis C, Thomaidis S, Doukoudakis S:** Clinical effectiveness of two agents on the treatment of tooth cervical hypersensitivity. *Am J Dent.* 2005 Aug;18(4):291-5.
- 28 **Sobral MA, Garone-Netto N, Luz MA, Santos AP:** Prevention of postoperative tooth sensitivity: a preliminary clinical trial. *J Oral Rehabil.* 2005 Sep;32(9):661-8.
- 29 **Duran I, Sengun A:** The long-term effectiveness of five current desensitizing products on cervical dentine sensitivity. *J Oral Rehabil.* 2004 Apr;31(4):351-6.
- 30 **Dondi dall'Orologio G, Lorenzi R, Anselmi M, Opisso V:** Dentin desensitizing effects of Gluma Alternate, Health-Dent Desensitizer and Scotchbond Multi-Purpose. *Am J Dent.* 1999 Jun;12(3):103-6.
- 31 **Dondi dall'Orologio G, Malferrari S:** Desensitizing effects of Gluma and Gluma 2000 on hypersensitive dentin. *Am J Dent.* 1993 Dec;6(6):283-6.
- 32 **Schüpbach P, Lutz F, Finger WJ:** Closing of dentinal tubules by Gluma desensitizer. *Eur J Oral Sci.* 1997 Oct;105(5 Pt 1):414-21.
- 33 **Quarnstrom F, Collier N, McDade E, McLean K, Munk A, Nicholls J:** A randomized clinical trial of agents to reduce sensitivity after crown cementation. *Gen Dent.* 1998 Jan-Feb;46(1):68-74
- 34 **Sivaramkrishnan G, Sridharan K:** Fluoride varnish versus glutaraldehyde for hypersensitive teeth: a randomized controlled trial, meta-analysis and trial sequential analysis. *Clin Oral Investig.* 2018 Apr 2. doi: 10.1007/s00784-018-2428-8. [Epub ahead of print]

