

Dental Products that May Contain Fluoride

Dental product: toothpaste ¹	Fluoride added to toothpaste can be in the form of sodium fluoride (NaF), sodium monofluorophosphate (Na ₂ FPO ₃), stannous fluoride (tin fluoride, SnF ₂) or a variety of amines. ² Concerns have been raised about children's use of fluoridated toothpaste. ^{3 4}
Dental product: mouthwash/rinse ⁵	Mouthwashes (mouth rinses) can contain sodium fluoride (NaF) or acidulated phosphate fluoride (APF). ⁶
Dental product: dental floss ^{7 8}	Researchers have demonstrated that fluoride releases from dental floss are higher than those from fluoridated mouth rinses. ⁹ Fluoridated dental floss is often associated with stannous fluoride (tin fluoride, SnF ₂), ¹⁰ but flosses can also contain perfluorinated compounds. ¹¹
Dental product: fluoridated toothpicks and interdental brushes ¹²	The amount of fluoride released from these products can be influenced by the saliva of the individual using the product. ¹³
Dental product: topical fluoride gel and foam ¹⁴	Used in a dental office or at home, these dental products are applied directly on the teeth and can contain acidulated phosphate fluoride (APF), sodium fluoride (NaF), or stannous fluoride (tin fluoride, SnF ₂). ¹⁵
Dental product: prophy paste ¹⁶	This paste, used during teeth cleanings (prophylaxis) at the dental office, can contain over 20 times more fluoride than toothpaste sold directly to consumers. ¹⁷
Dental product: fluoride varnish ¹⁸	High-concentration fluoride varnish that is applied directly on the teeth by dental or healthcare professionals contains sodium fluoride (NaF) or difluorsilane. ¹⁹
Dental material for fillings: glass ionomer cements ²⁰	These materials, used for dental fillings, are made of fluoride-containing silicate glass and polyalkenoic acids that release an initial burst of fluoride and then a long-term lower release. ²¹

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Dental material for fillings: resin-modified glass ionomer cements ²²	These materials, used for dental fillings, are created with methacrylate components and release an initial burst of fluoride and then a long-term lower release. ²³
Dental material for fillings: giomers ²⁴	These newer hybrid materials, used for dental fillings, include pre-reacted glass ionomers and usually have lower amounts of fluoride released than glass ionomers but higher amounts than compomers and composites. ²⁵
Dental material for fillings: polyacid-modified composites (compomers) ²⁶	The fluoride in these materials, used for dental fillings, is in the filler particles, and while there is no initial burst of fluoride, fluoride is released continually over time. ²⁷
Dental material for fillings: composites ²⁸	Not all, but some of these materials, used for dental fillings, can contain different types of fluoride such as inorganic salts, leachable glasses, or organic fluoride. ²⁹ The fluoride released is generally considered to be lower than that from glass ionomers and compomers, although releases vary depending on the commercial brand of the composites. ³⁰
Dental material for fillings: dental mercury amalgams ³¹	Low levels of fluoride have been recorded in the types of dental mercury amalgam fillings that are lined with glass ionomer cement and other materials. ^{32 33 34}
Dental material for orthodontics: glass ionomer cement, resin-modified glass ionomer cement, and polyacid-modified composite resin (compomer) cement ³⁵	These materials, used for orthodontic band cements, can all release fluoride at varying levels. ³⁶
Dental material for pit and fissure sealants: resin-based, glass-ionomer, and giomers ³⁷	Commercially available fluoride-releasing sealants can contain sodium fluoride (NaF), fluoride-releasing glass material, or both. ³⁸
Dental material for tooth sensitivity/caries treatment: silver diamine fluoride ³⁹	This material, recently introduced to the U.S. market, contains silver and fluoride and is being used as an alternative to conventional cavity treatment with dental fillings. ⁴⁰

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- ¹ National Research Council. Fluoride in Drinking Water: A Scientific Review of EPA's Standards. The National Academies Press: Washington, D.C. 2006.
- ² Bralić M, Buljac M, Prkić A, Buzuk M, Brinić S. Determination Fluoride in Products for Oral Hygiene Using Flow-Injection (FIA) and Continuous Analysis (CA) with Home-Made FISE. Int. J. Electrochem. Sci. 2015 Jan 1;10:2253-64. Online at <http://electrochemsci.org/papers/vol10/100302253.pdf>. Accessed November 1, 2016.
- ³ National Research Council. Fluoride in Drinking Water: A Scientific Review of EPA's Standards. The National Academies Press: Washington, D.C. 2006. Pages 42-43.
- ⁴ Basch CH, Kernan WD. Ingredients in Children's Fluoridated Toothpaste: A Literature Review. Global Journal of Health Science. 2016 Jul 12;9(3):1. Online at <http://www.ccsenet.org/journal/index.php/gjhs/article/viewFile/59488/32873>. Accessed November 1, 2016.
- ⁵ National Research Council. Fluoride in Drinking Water: A Scientific Review of EPA's Standards. The National Academies Press: Washington, D.C. 2006.
- ⁶ Parashar A. Mouthwashes and Their Use in Different Oral Conditions. Scholars Journal of Dental Sciences (SJDS). 2015;2:186-91. Online at <http://saspjournals.com/wp-content/uploads/2015/03/SJDS-22B186-191.pdf>. Accessed November 1, 2016.
- ⁷ 510(k) Premarket Notification Fluoride Dental Floss for Johnson & Johnson Consumer Products, Inc. February 3, 1994. United States Food and Drug Administration. Online at http://www.accessdata.fda.gov/cdrh_docs/pdf/K935440.pdf. Accessed November 1, 2016.
- ⁸ Flatt CC, Warren-Morris D, Turner SD, Chan JT. Effects of a stannous fluoride-impregnated dental floss on in vivo salivary fluoride levels. American Dental Hygienists Association. 2008 Apr 1;82(2):19. Online at <http://jdh.adha.org/content/82/2/19.full.pdf>. Accessed November 1, 2016.
- ⁹ Jorgensen J, Shariati M, Shields CP, Durr DP, Proskin HM. Fluoride uptake into demineralized primary enamel from fluoride-impregnated dental floss in vitro. Pediatr Dent. 1989 Mar;11(1):17-20. Online at <http://www.aapd.org/assets/1/25/Jorgensen-11-01.pdf>. Accessed November 1, 2016.
- ¹⁰ Flatt CC, Warren-Morris D, Turner SD, Chan JT. Effects of a stannous fluoride-impregnated dental floss on in vivo salivary fluoride levels. American Dental Hygienists Association. 2008 Apr 1;82(2):19. Online at <http://jdh.adha.org/content/82/2/19.full.pdf>. Accessed November 1, 2016.
- ¹¹ See Table 4 and Table 5 in Knepper TP, Lange FT, editors. Polyfluorinated chemicals and transformation products. The Handbook of Environmental Chemistry. Springer Science & Business Media: New York. 2012.
- ¹² Särner B. On Approximal Caries Prevention Using Fluoridated Toothpicks, Dental Floss and Interdental Brushes. Institute of Odontology, Department of Cariology, University of Gothenberg: Sweden. 2008 Sep 10. Pages 44-48. Online at http://www.odont.umu.se/digitalAssets/123/123195_m1-srner-et-al.-2010.pdf. Accessed November 1, 2016.
- ¹³ Särner B. On Approximal Caries Prevention Using Fluoridated Toothpicks, Dental Floss and Interdental Brushes. Institute of Odontology, Department of Cariology, University of Gothenberg: Sweden. 2008 Sep 10. Pages 44-48. Online at http://www.odont.umu.se/digitalAssets/123/123195_m1-srner-et-al.-2010.pdf. Accessed November 1, 2016.
- ¹⁴ Centers for Disease Control and Prevention. Other fluoride products [Internet]. Centers for Disease Control and Prevention. Page last reviewed and updated on July 10, 2013. Online at http://www.cdc.gov/fluoridation/fluoride_products/. Accessed November 1, 2016.
- ¹⁵ Centers for Disease Control and Prevention. Other fluoride products [Internet]. Centers for Disease Control and Prevention. Page last reviewed and updated on July 10, 2013. Online at http://www.cdc.gov/fluoridation/fluoride_products/. Accessed November 1, 2016.
- ¹⁶ Kohn WG, Maas WR, Malvitz DM, Presson SM, Shaddik KK. Recommendations for using fluoride to prevent and control dental caries in the United States. Morbidity and Mortality Weekly Report: Recommendations and Reports. 2001 Aug 17:i-42. Online at <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>. Accessed November 1, 2016.
- ¹⁷ Kohn WG, Maas WR, Malvitz DM, Presson SM, Shaddik KK. Recommendations for using fluoride to prevent and control dental caries in the United States. Morbidity and Mortality Weekly Report: Recommendations and Reports. 2001 Aug 17:i-42. Online at <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>. Accessed November 1, 2016.

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- ¹⁸ Centers for Disease Control and Prevention. Other fluoride products [Internet]. Centers for Disease Control and Prevention. Page last reviewed and updated on July 10, 2013. Online at http://www.cdc.gov/fluoridation/fluoride_products/. Accessed November 1, 2016.
- ¹⁹ Centers for Disease Control and Prevention. Other fluoride products [Internet]. Centers for Disease Control and Prevention. Page last reviewed and updated on July 10, 2013. Online at http://www.cdc.gov/fluoridation/fluoride_products/. Accessed November 1, 2016.
- ²⁰ Wiegand A, Buchalla W, Attin T. Review on fluoride-releasing restorative materials—fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. *Dental Materials*. 2007 Mar 31;23(3):343-62.
- ²¹ Wiegand A, Buchalla W, Attin T. Review on fluoride-releasing restorative materials—fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. *Dental Materials*. 2007 Mar 31;23(3):343-62.
- ²² Wiegand A, Buchalla W, Attin T. Review on fluoride-releasing restorative materials—fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. *Dental Materials*. 2007 Mar 31;23(3):343-62.
- ²³ Wiegand A, Buchalla W, Attin T. Review on fluoride-releasing restorative materials—fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. *Dental Materials*. 2007 Mar 31;23(3):343-62.
- ²⁴ Wiegand A, Buchalla W, Attin T. Review on fluoride-releasing restorative materials—fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. *Dental Materials*. 2007 Mar 31;23(3):343-62.
- ²⁵ Wiegand A, Buchalla W, Attin T. Review on fluoride-releasing restorative materials—fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. *Dental Materials*. 2007 Mar 31;23(3):343-62.
- ²⁶ Wiegand A, Buchalla W, Attin T. Review on fluoride-releasing restorative materials—fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. *Dental Materials*. 2007 Mar 31;23(3):343-62.
- ²⁷ Wiegand A, Buchalla W, Attin T. Review on fluoride-releasing restorative materials—fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. *Dental Materials*. 2007 Mar 31;23(3):343-62.
- ²⁸ Wiegand A, Buchalla W, Attin T. Review on fluoride-releasing restorative materials—fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. *Dental Materials*. 2007 Mar 31;23(3):343-62.
- ²⁹ Wiegand A, Buchalla W, Attin T. Review on fluoride-releasing restorative materials—fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. *Dental Materials*. 2007 Mar 31;23(3):343-62.
- ³⁰ Wiegand A, Buchalla W, Attin T. Review on fluoride-releasing restorative materials—fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. *Dental Materials*. 2007 Mar 31;23(3):343-62.
- ³¹ Wiegand A, Buchalla W, Attin T. Review on fluoride-releasing restorative materials—fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. *Dental Materials*. 2007 Mar 31;23(3):343-62.
- ³² Garcia-Godoy F, Chan DC. Long-term fluoride release from glass ionomer—lined amalgam restorations. *American Journal of Dentistry*. 1991 Oct;4(5):223-5.
- ³³ Garcia-Godoy F, Olsen BT, Marshall TD, Barnwell GM. Fluoride release from amalgam restorations lined with a silver-reinforced glass ionomer. *American Journal of Dentistry*. 1990 Jun;3(3):94-6.
- ³⁴ Tveit AB, Gjerdet NR. Fluoride release from a fluoride-containing amalgam, a glass ionomer cement and a silicate cement in artificial saliva. *Journal of Oral Rehabilitation*. 1981 May 1;8(3):237-41.
- ³⁵ Shimazu K, Ogata K, Karibe H. Evaluation of the caries-preventive effect of three orthodontic band cements in terms of fluoride release, retentiveness, and microleakage. *Dental Materials Journal*. 2013;32(3):376-80.
- ³⁶ Shimazu K, Ogata K, Karibe H. Evaluation of the caries-preventive effect of three orthodontic band cements in terms of fluoride release, retentiveness, and microleakage. *Dental Materials Journal*. 2013;32(3):376-80.
- ³⁷ Salmerón-Valdés EN, Scougall-Vilchis RJ, Alanis-Tavira J, Morales-Luckie RA. Comparative study of fluoride released and recharged from conventional pit and fissure sealants versus surface prereacted glass ionomer technology. *Journal of Conservative Dentistry: JCD*. 2016 Jan;19(1):41. Online at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4760011/>. Accessed November 2, 2016.
- ³⁸ Poggio C, Andenna G, Ceci M, Beltrami R, Colombo M, Cucca L. Fluoride release and uptake abilities of different fissure sealants. *Journal of Clinical and Experimental Dentistry*. 2016 Jul;8(3):e284. Online at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4930638/>. Accessed November 2, 2016.
- ³⁹ American Dental Association. Silver diamine fluoride in caries management [Internet]. *Science in the News*. July 12, 2016. Online at <http://www.ada.org/en/science-research/science-in-the-news/silver-diamine-fluoride-in-caries-management>. Accessed November 2, 2016.
- ⁴⁰ American Dental Association. Silver diamine fluoride in caries management [Internet]. *Science in the News*. July 12, 2016. Online at <http://www.ada.org/en/science-research/science-in-the-news/silver-diamine-fluoride-in-caries-management>. Accessed November 2, 2016.

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