

Q&A 357.2

## What are the excipients in toothpastes?

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### Summary

- ◆ Toothpastes contain excipients which can cause adverse reactions affecting the mouth and lips, and systemic hypersensitivity.
- ◆ The excipients most commonly implicated are flavourings such as spearmint, peppermint, fennel, cinnamon and cassia oil, but preservatives, foaming agents, antibacterials, pyrophosphates and essential oils can also cause adverse reactions.
- ◆ This Medicines Q&A lists the toothpastes widely available in the UK and the excipients they contain which have been associated with adverse reactions or may be undesirable.

### Background

Toothpastes contain a large number of excipients including fluoride, abrasives, detergents, binding agents, humectants, preservatives, colouring agents, antiseptics and flavourings [1]. There are reports that some of these excipients cause adverse oral reactions such as cheilitis (due to allergic or irritant contact dermatitis – ACD and ICD), peri-oral eczema, stomatitis, lichenoid reactions, burning mouth syndrome, loss of taste and systemic reactions such as anaphylaxis and rhinitis [1-23]. In a retrospective study of 202 patients referred to a tertiary dermatology centre with eczematous cheilitis, 25.9% of cases were caused by toothpastes, the second most common cause after lip cosmetics [2].

The excipients most commonly implicated are flavourings (and their active compounds) – spearmint (carvone), peppermint (menthol), fennel (anethole) and cinnamon or cassia oil (cinnamic aldehyde) [1,3,4]. Others that have been reported to cause contact allergic reactions include the antibacterial, triclosan [5], foaming agents such as cocamidopropyl betaine [6] and sodium lauryl sulphate [7,8], and preservatives such as parabens [2], polyethylene glycol [9] and sodium benzoate [10]. Pyrophosphates in tartar-control toothpastes have caused ICD with ulceration, sloughing, erythema, fissuring and a burning sensation [11,12]. Tartar-control toothpastes containing pyrophosphates can be a particular problem as they contain higher concentrations of flavourings and detergents to mask the bitter taste of these compounds and increase their solubility [11,12]. Essential oils (tea tree oil and propolis) [3,24] and fragrances (limonene and linalool) [25] have also been reported to cause allergy.

For patients who experience adverse effects that are thought to be due to their toothpaste, changing to another product that does not contain the suspected excipient results in complete resolution of symptoms within a few weeks or months [3,6,11,12,15,16,18,19,26]. If ACD is suspected, patch testing can be helpful in identifying the likely allergen [27,28].

### Answer

The following table is a list of toothpastes widely available in the UK and the excipients they contain which are associated with irritant or allergic reactions affecting the mouth and lips, or systemic adverse effects. It can be used to choose a suitable product that does not contain excipients suspected to be the cause of adverse reactions. The table also includes fluoride content, and sweeteners and other excipients which may be undesirable.

<b>Key:</b>	CAPB	cocamidopropyl betaine	NS	detail not specified
	PEG	polyethylene glycol	PPM	parts per million
	PP	pyrophosphate	SLS	sodium lauryl sulphate

Toothpaste name and manufacturer	Fluoride (ppm)	Excipients associated with adverse reactions (see Limitations)							Other excipients	
		Anti-bacterial	Flavouring	Foaming agent	Fragrance	Preservative/Solvent	Pyrophosphate	Other	Sweetener	Alcohol
<b>Aloe Dent by Optima Consumer Health (Telephone 01274 526360)</b>										
Children's Aloe & Green Tea (tube)	None	Tea tree	Aroma NS					Sorbitol Xylitol		
Children's Aloe Vera (tube)	None	Tea tree	Aroma NS					Sorbitol Xylitol		
Sensitive Aloe Vera (tube)	None	Tea tree	Menthol Peppermint					Sorbitol Xylitol		
Sensitive Aloe Vera with Fluoride (tube)	1500	Tea tree	Menthol Peppermint					Sorbitol Xylitol		
Triple Action Aloe Vera (tube)	None	Tea tree	Menthol Peppermint					Sorbitol Xylitol		
Triple Action Aloe Vera with Fluoride (tube)	1500	Tea tree	Menthol Peppermint					Sorbitol Xylitol		
Whitening Aloe Vera (tube)	None	Tea tree	Menthol Peppermint					Sorbitol Xylitol		
Whitening Aloe Vera with Fluoride (tube)	1500	Tea tree	Menthol Peppermint					Sorbitol Xylitol		
<b>Aquafresh by GlaxoSmithKline Consumer (Telephone 020 8047 2500)</b>										
Big Teeth 6+ years (tube)	1400		Aroma NS	SLS	Limonene	PEG-6		Sorbitol	Saccharin	
Extreme Clean Pure Breath (tube)	1400		Aroma NS	SLS		PEG-6		Sorbitol	Saccharin	
Extreme Clean Pure Breath Whitening (tube)	1400		Aroma NS Citral	CAPB SLS	Limonene	PEG-6		Sorbitol	Saccharin	
Extreme Clean Whitening (tube)	1400		Aroma NS Citral	CAPB SLS		PEG-6		Sorbitol	Saccharin	

Toothpaste name and manufacturer	Fluoride (ppm)	Excipients associated with adverse reactions (see Limitations)							Other excipients	
		Anti-bacterial	Flavouring	Foaming agent	Fragrance	Preservative/Solvent	Pyrophosphate	Other	Sweetener	Alcohol
Fresh and Minty (pump/tube)	1450		Aroma NS	SLS	Limonene	PEG-6		Sorbitol	Saccharin	
Iso-Active Fresh Mint Foaming gel (pump)	1450		Aroma NS	CAPB SLS	Limonene	PEG-6		Sorbitol	Saccharin	
Iso-Active Triple Protection Whitening Cool Mint (pump)	1450		Aroma NS	CAPB SLS	Limonene	PEG-6		Sorbitol	Saccharin	
<b>Aquafresh by GlaxoSmithKline Consumer (Telephone 020 8047 2500)</b>										
Little Teeth 4-6 years (tube)	1400		Aroma NS			Parabens PEG-6		Xylitol	Saccharin	
Mild and Minty (pump/tube)	1450		Aroma NS	SLS	Limonene	PEG-6		Sorbitol	Saccharin	
Milk Teeth 0-3 years (tube)	1000		Aroma NS	SLS	Limonene			Sorbitol	Saccharin	
Multi-Action+Whitening (pump/tube)	1450		Aroma NS	SLS	Limonene	PEG-6		Sorbitol	Saccharin	
<b>Arm and Hammer by Church and Dwight UK (Telephone 01303 858735)</b>										
Advance White (tube)		<i>No details available from the manufacturer or their website</i>								
Advance White Sensitive (tube)		<i>No details available from the manufacturer or their website</i>								
Brilliant Sparkle gel (tube)		<i>No details available from the manufacturer or their website</i>								
Enamel Care (tube)		<i>No details available from the manufacturer or their website</i>								
Enamel Care Sensitive (tube)		<i>No details available from the manufacturer or their website</i>								
Max Booster (tube)		<i>No details available from the manufacturer or their website</i>								
Original Coolmint (tube)		<i>No details available from the manufacturer or their website</i>								
<b>Beverly Hills Formula by Purity Laboratories (Telephone 00 353 1842 6611 - ROI)</b>										
Dentist's Choice Gum & Whitening Expert (tube)	1000		Doublemint	SLS	Limonene			Sorbitol Xylitol	Saccharin	
Natural White (tube)	1000	Triclosan	Doublemint	SLS	Limonene	PEG-32		Sorbitol Xylitol	Saccharin	
Natural White Gentle Sensitive (tube)	1000		Doublemint	SLS	Limonene			Sorbitol Xylitol	Saccharin	
Natural Whitening Expert (tube)	None		Herbalmint	SLS		PEG-1500		Sorbitol	Saccharin	

Toothpaste name and manufacturer	Fluoride (ppm)	Excipients associated with adverse reactions (see Limitations)							Other excipients	
		Anti-bacterial	Flavouring	Foaming agent	Fragrance	Preservative/Solvent	Pyrophosphate	Other	Sweetener	Alcohol
								Xylitol		
Perfect White (tube)	1400		Peppermint	CAPB SLS	Limonene	PEG-32	Tetrasodium PP	Sorbitol	Saccharin	
Perfect White Sensitive (tube)	1400		Peppermint	CAPB SLS	Limonene	PEG-32	Tetrasodium PP	Sorbitol	Saccharin	
<b>Beverly Hills Formula by Purity Laboratories (Telephone 00 353 1842 6611 - ROI)</b>										
Sensitive Whitening Expert (tube)	1000		Doublemint	SLS	Limonene			Sorbitol Xylitol	Saccharin	
Total Breath Whitening (tube)	1300	Triclosan	Peppermint	SLS	Limonene	PEG-32		Sorbitol Xylitol	Saccharin	
Total Enamel Sensitive (tube)	1300		Peppermint	SLS	Limonene			Sorbitol Xylitol	Saccharin	
Total Protection Whitening (tube)	1000	Triclosan	Doublemint	SLS	Limonene	PEG-32		Sorbitol Xylitol	Saccharin	
<b>Biosis by Biosis (Telephone 0845 004 4844)</b>										
Alba Pura Neutral toothpowder (tub)	None									
<b>Biotene by GlaxoSmithKline Consumer (Telephone 020 8047 2500)</b>										
Fluoride for People with a Dry Mouth (tube)	1000		Aroma NS Menthol			Sodium benzoate	Calcium PP	Sorbitol Xylitol		
<b>BioXtra by Life Stream Pharma (Telephone 07711 088164)</b>										
Moisturising (tube)	1500		Menthol Anethole		Limonene Linalool	Sodium benzoate		Sorbitol Xylitol		
<b>BlanX by Acdoco (Telephone 0845 0178 000)</b>										
Active Enamel Protection (pump)	890		Aroma NS	SLS	Eugenol Limonene	Benzylalcohol PEG-32		Sorbitol Xylitol	Saccharin	

Toothpaste name and manufacturer	Fluoride (ppm)	Excipients associated with adverse reactions (see Limitations)							Other excipients	
		Anti-bacterial	Flavouring	Foaming agent	Fragrance	Preservative/Solvent	Pyrophosphate	Other	Sweetener	Alcohol
						Sodium benzoate				
Advanced Whitening (pump)	890		Anethole Menthol Peppermint	SLS	Eugenol Limonene	Parabens PEG-32		Sorbitol Xylitol	Saccharin	

<b>BlanX by Acdoco (Telephone 0845 0178 000)</b>										
Classic White (tube)	890		Anethole Menthol Peppermint	SLS	Eugenol	Parabens PEG-32		Sorbitol Xylitol	Saccharin	
Extrawhite Intensive Whitening Treatment (pump)	792		Anethole Menthol Peppermint	SLS	Eugenol	Parabens PEG-32	Tetrapotassium PP	Sorbitol	Saccharin	
Intensive Stain Removal (pump)	890		Anethole Aroma NS Menthol Peppermint	SLS	Eugenol	Parabens PEG-32		Sorbitol Xylitol	Saccharin	
Sensitive Teeth (pump)	890		Aroma NS	SLS		Benzylalcohol Parabens PEG-32		Sorbitol Xylitol	Saccharin	
<b>Brilliant by Lornamead (Telephone 01276 674000)</b>										
Daily Advanced Whitening (tube)	1100		Peppermint	SLS	Eugenol	Sodium benzoate		Sorbitol	Saccharin	
Gentle Whitening (tube)	1450		Aroma NS	SLS	Limonene	Parabens PEG-8		Sorbitol	Saccharin	

Toothpaste name and manufacturer	Fluoride (ppm)	Excipients associated with adverse reactions (see Limitations)							Other excipients	
		Anti-bacterial	Flavouring	Foaming agent	Fragrance	Preservative/Solvent	Pyrophosphate	Other	Sweetener	Alcohol
						Propylene glycol				
Sparkling Whitening (tube)	1450		Aroma NS	SLS		Parabens PEG-8		Sorbitol	Saccharin	
Whitening Booster gel (tube)	None			CAPB SLS		Sodium benzoate		Sorbitol	Saccharin	
<b>Clinomyn by EC DeWitt / Lornamead (Telephone 01276 674000)</b>										
Smokers (tube)	1000		Aroma NS	SLS		Parabens		Sorbitol	Saccharin	

<b>Colgate by Colgate-Palmolive (Telephone 01483 302222)</b>										
Advanced White with micro-cleansing crystals (pump/tube)	1450		Aroma NS	SLS	Limonene	PEG-12 Polyethylene		Sorbitol	Saccharin	
Advanced White Go Pure (tube)	1450		Aroma NS	SLS	Limonene	PEG-12 Polyethylene		Sorbitol	Saccharin	
Anti Tartar Plus Whitening (tube)	1450		Aroma NS	SLS	Limonene	PEG-12	Tetrasodium PP	Sorbitol	Saccharin	
Blue Minty Gel (tube)	1450		Aroma NS	SLS	Limonene	PEG-12		Sorbitol	Saccharin	
Cavity Protection (pump/tube)	1450		Aroma NS	SLS	Limonene		Tetrasodium PP		Saccharin	
Cool Stripe (pump/tube)	1450		Aroma NS	SLS	Limonene	PEG-12			Saccharin	
Deep Clean Whitening (pump/tube)	1100		Aroma NS	SLS	Limonene				Saccharin	
Duraphat 2800ppm (tube)	2800		Mint flavour NS	SLS		Macrogol 600		Sorbitol	Saccharin	
Duraphat 5000ppm (tube)	5000		Anethole Carvone Menthol	SLS		Macrogol 600 Sodium benzoate	Tetrapotassium PP	Sorbitol	Saccharin	

Toothpaste name and manufacturer	Fluoride (ppm)	Excipients associated with adverse reactions (see Limitations)							Other excipients	
		Anti-bacterial	Flavouring	Foaming agent	Fragrance	Preservative/Solvent	Pyrophosphate	Other	Sweetener	Alcohol
			Peppermint Spearmint							
Max Fresh with cooling crystals (clean mint) (pump/tube)	1450		Aroma NS Menthol	CAPB SLS	Limonene	PEG-12		Sorbitol	Saccharin	
Max Fresh with cooling crystals (cool mint) (bottle)	1000		Aroma NS Menthol	CAPB SLS	Limonene	PEG-12	Tetrasodium PP	Sorbitol	Saccharin	
Max Fresh with cooling crystals (cool mint) (pump/tube)	1450		Aroma NS Menthol	CAPB SLS	Limonene	PEG-12		Sorbitol	Saccharin	
Max Fresh with mouth-wash beads (tingling mint) (pump/tube)	1450		Aroma NS Menthol	CAPB SLS	Limonene	PEG-12	Tetrasodium PP	Lactose Sorbitol	Saccharin	
Max Fresh Night (tube)	1450		Aroma NS Menthol	CAPB SLS	Limonene	PEG-12		Sorbitol	Saccharin	
<b>Colgate by Colgate-Palmolive (Telephone 01483 302222)</b>										
Max White with white micro-crystals (pump/tube)	1450		Aroma NS	CAPB SLS	Limonene	PEG-12	Tetrasodium PP	Sorbitol	Saccharin	
Max White One (tube)	1450		Aroma NS	CAPB SLS	Limonene	PEG-12 Polyethylene	Tetrapotassium PP	Sorbitol	Saccharin	
Max White One Active (tube)	1450		Aroma NS	CAPB SLS	Limonene	PEG-12 Polyethylene	Tetrapotassium PP	Sorbitol	Saccharin	
Max White One Fresh (tube)	1450		Aroma NS	CAPB SLS		PEG-12 Polyethylene	Tetrapotassium PP	Sorbitol	Saccharin	
Oxygen (tube)	1000		Aroma NS	SLS	Limonene	Polyethylene Propylene glycol			Saccharin	
Sensitive Enamel Protect (pump/tube)	1450		Aroma NS	SLS	Eugenol Limonene	PEG-12	Tetrasodium PP		Saccharin	
Sensitive Multi Protection (pump/tube)	1450		Aroma NS	SLS	Eugenol Limonene	PEG-12	Tetrapotassium PP		Saccharin	
Sensitive Plus Whitening (pump/tube)	1450		Aroma NS	SLS	Eugenol Limonene	PEG-12	Tetrasodium PP	Sorbitol	Saccharin	

Toothpaste name and manufacturer	Fluoride (ppm)	Excipients associated with adverse reactions (see Limitations)							Other excipients	
		Anti-bacterial	Flavouring	Foaming agent	Fragrance	Preservative/Solvent	Pyrophosphate	Other	Sweetener	Alcohol
Sensitive Pro-Relief (tube)	1450		Aroma NS	SLS				Sorbitol	Potassium acesulfame Sucralose	
Sensitive Pro-Relief Enamel Repair (tube)	1450		Aroma NS	SLS				Sorbitol	Saccharin	
Sensitive Pro-Relief Multi Protection (tube)	1450		Aroma NS	SLS				Sorbitol	Potassium acesulfame Sucralose	
Sensitive Pro-Relief Whitening (tube)	1450		Aroma NS	SLS				Sorbitol	Potassium acesulfame Sucralose	

Colgate by Colgate-Palmolive (Telephone 01483 302222)										
Smiles 0-3 years (tube)	1000		Aroma NS	SLS	Limonene	PEG-12 Polyethylene		Sorbitol	Saccharin	
Smiles 4-6 years (tube)	1450		Aroma NS Cinnamal Menthol	SLS	Eugenol Limonene	PEG-12		Sorbitol	Saccharin	
Smiles 6+ years (tube)	1450		Aroma NS	SLS	Limonene	PEG-12		Sorbitol	Saccharin	
Total Advanced (pump/tube)	1450	Triclosan	Mint flavour (89854)	SLS	Limonene				Saccharin	
Total Advanced Clean (pump/tube)	1450	Triclosan	Aroma NS	SLS	Limonene				Saccharin	
Total Advanced Freshening (pump/tube)	1450	Triclosan	Aroma NS Cinnamal	SLS	Eugenol Limonene				Saccharin	
Total Advanced Enamel Protect (tube)	1450	Triclosan	Aroma NS Menthol	SLS	Limonene				Saccharin	
Total Advanced Whitening (pump/tube)	1450	Triclosan	Aroma NS	SLS	Limonene			Sorbitol	Saccharin	



Toothpaste name and manufacturer	Fluoride (ppm)	Excipients associated with adverse reactions (see Limitations)							Other excipients	
		Anti-bacterial	Flavouring	Foaming agent	Fragrance	Preservative/Solvent	Pyrophosphate	Other	Sweetener	Alcohol
Total Pro Gum Health (tube)	1450	Triclosan	Mint flavour	SLS		Propylene glycol		Sorbitol	Saccharin	
Total Pro Gum Health Tartar Control (tube)	1450	Triclosan	Peppermint	SLS		Propylene glycol		Sorbitol	Saccharin	
Total Sensitive (tube)	1450	Triclosan	Aroma NS	SLS	Limonene				Saccharin	
Triple Action (tube)	1450		Aroma NS	SLS	Limonene	PEG-12			Saccharin	
White and Fresh Breath (tube)	1450		Aroma NS	SLS	Limonene	PEG-12			Saccharin	
Whitening 2 in 1 liquid toothpaste (bottle)	1100		Aroma NS	CAPB SLS	Limonene		Tetrasodium PP	Sorbitol	Saccharin	
<b>Corsodyl by GlaxoSmithKline Consumer (Telephone 020 8047 2500)</b>										
Daily Gum & Toothpaste (tube)	1400		Peppermint	CAPB	Limonene	Sodium benzoate			Saccharin	
<b>Crest by Procter and Gamble (Telephone 08000 850367)</b>										
Complete 5 Extra Fresh/ Mild Fresh (tube)	<i>No details available from the manufacturer or their website</i>									
Complete Extra Whitening (tube)	<i>No details available from the manufacturer or their website</i>									
Decay Prevention Fresh Mint/Mild Mint (tube)	<i>No details available from the manufacturer or their website</i>									
Extra Whitening (tube)	<i>No details available from the manufacturer or their website</i>									
Fresh Breath & Whitening Fresh Mint (tube)	<i>No details available from the manufacturer or their website</i>									
Kids (tube)	<i>No details available from the manufacturer or their website</i>									
Tartar Control (tube)	<i>No details available from the manufacturer or their website</i>									
<b>Dr Organic by Dr Organic (Telephone 01792 646475)</b>										
Aloe Vera Whitening (tube)	<i>No details available from the manufacturer or their website</i>									
Pomegranate Healthy Gums (tube)	<i>No details available from the manufacturer or their website</i>									
Tea tree Fresh Breath Antibacterial (tube)	<i>No details available from the manufacturer or their website</i>									
<b>Euthymol by Johnson and Johnson (Telephone 01628 822222)</b>										

Toothpaste name and manufacturer	Fluoride (ppm)	Excipients associated with adverse reactions (see Limitations)							Other excipients	
		Anti-bacterial	Flavouring	Foaming agent	Fragrance	Preservative/Solvent	Pyrophosphate	Other	Sweetener	Alcohol
Original (tube)	None		Aroma NS	SLS				Sorbitol	Saccharin	
<b>Janina by Brodie &amp; Stone (Telephone 020 7299 7400)</b>										
Ultrawhite Diamond Formula Extra Strength Whitening (tube)	1500		Peppermint	SLS		Parabens	Tetrasodium PP	Sorbitol Xylitol	Saccharin	
Ultrawhite Sensitive Whitening (tube)	1500		Peppermint	SLS		Parabens	Tetrasodium PP	Sorbitol Xylitol	Saccharin	
<b>Kingfisher by Kingfisher Natural Toothpaste (Telephone 01603 630484)</b>										
Aloe Vera, Tea Tree and Fennel fluoride-free (tube)	None	Tea tree	Fennel	SLS	Limonene					
Aloe Vera, Tea Tree and Mint fluoride-free (tube)	None	Tea tree	Fennel Peppermint	SLS	Limonene					
Baking Soda Mint fluoride-free (tube)	None		Peppermint Spearmint	SLS	Limonene					
<b>Kingfisher by Kingfisher Natural Toothpaste (Telephone 01603 630484)</b>										
Fennel with fluoride (tube)	1050		Anethole Fennel	SLS	Limonene					
Fennel fluoride-free (tube)	None		Anethole Fennel	SLS	Limonene					
Mint with fluoride (tube)	1050		Fennel Peppermint	SLS	Limonene					
Mint fluoride-free (tube)	None		Fennel Peppermint	SLS	Limonene					
<b>MacLeans by GlaxoSmithKline Consumer (Telephone 020 8047 2500)</b>										
Confidence White and Clean (pump)	1450		Aroma NS	CAPB SLS	Limonene	PEG-6		Sorbitol	Saccharin Sucralose	

Toothpaste name and manufacturer	Fluoride (ppm)	Excipients associated with adverse reactions (see Limitations)							Other excipients	
		Anti-bacterial	Flavouring	Foaming agent	Fragrance	Preservative/Solvent	Pyrophosphate	Other	Sweetener	Alcohol
Fresh Mint (pump/tube)	1400		Aroma NS	SLS	Limonene	PEG-6		Sorbitol	Saccharin	
Ice Whitening gel (tube)	1450		Aroma NS	SLS	Limonene	PEG-6		Sorbitol	Saccharin	
Total Health (pump)	1400		Aroma NS	CAPB SLS	Limonene	PEG-6		Sorbitol	Saccharin	
Total Health (tube)	1400		Aroma NS	SLS	Limonene	PEG-6		Sorbitol	Saccharin	
Total Health Whitening (pump/tube)	1400		Aroma NS	CAPB SLS		PEG-6		Sorbitol	Saccharin	
White & Shine (tube)	1450		Aroma NS	SLS	Limonene	PEG-8		Sorbitol	Saccharin	
Whitening (pump/tube)	1450		Aroma NS	SLS CAPB	Limonene	PEG-6		Sorbitol	Saccharin	
<b>Oral-B by Procter and Gamble (Telephone 08000 850367)</b>										
1-2-3 (tube)	<i>No details available from the manufacturer or their website</i>									
Complete Extra Fresh/Extra White (tube)	<i>No details available from the manufacturer or their website</i>									
Complete Mouthwash & Whitening (tube)	<i>No details available from the manufacturer or their website</i>									
Pro-Expert All Around Protection Clean Mint/ Mild Mint (tube)	<i>No details available from the manufacturer or their website</i>									
<b>Oral-B by Procter and Gamble (Telephone 08000 850367)</b>										
Pro-Expert Enamel Shield (tube)	<i>No details available from the manufacturer or their website</i>									
Pro-Expert Sensitive & Gentle Whitening (tube)	<i>No details available from the manufacturer or their website</i>									
Pro-Expert Whitening (tube)	<i>No details available from the manufacturer or their website</i>									
Stages Berry (tube)	<i>No details available from the manufacturer or their website</i>									
<b>Pearl Drops by Church and Dwight UK (Telephone 01303 858735)</b>										
Daily Every Day White (bottle)	1450		Aroma NS	SLS	Limonene	PEG-12	Tetrasodium & tetrapotassium PP	Sorbitol	Saccharin	
Daily Pro-White (bottle)	<i>No details available from the manufacturer or their website</i>									

Toothpaste name and manufacturer	Fluoride (ppm)	Excipients associated with adverse reactions (see Limitations)							Other excipients	
		Anti-bacterial	Flavouring	Foaming agent	Fragrance	Preservative/Solvent	Pyrophosphate	Other	Sweetener	Alcohol
Nourish & Protect Sensitive Smile (bottle)		<i>No details available from the manufacturer or their website</i>								
Nourish & Protect Youthful Smile (bottle)	1000		Aroma NS	SLS	Limonene	PEG-8 PEG/PPG-116/66 copolymer			Saccharin	
Transform Hollywood Smile (bottle)	1300		Aroma NS		Limonene	PEG-12		Sorbitol	Saccharin	
Transform Now Smile (bottle)	1000		Aroma NS	SLS	Limonene	PEG-12		Sorbitol	Saccharin	Alcohol
Transform Now Smile Corrector (bottle)	None		Aroma NS		Limonene Linalool					Alcohol
<b>Rapid White by Lornamead (Telephone 01276 674000)</b>										
Daily Whitening (tube)	1100		Peppermint	CAPB	Limonene	Sodium benzoate Polyethylene		Sorbitol	Potassium acesulfame Saccharin	
Triple Action Whitening Booster Gel (tube)	None		Peppermint	CAPB SLS		Sodium benzoate		Sorbitol	Saccharin	
<b>Rembrandt by Gillette Group UK /Procter and Gamble (Telephone 08000 850367)</b>										
Plus (tube)		<i>No details available from the manufacturer or their website</i>								
<b>Sensodyne by GlaxoSmithKline Consumer (Telephone 020 8047 2500)</b>										
Extra Fresh (tube)	1450		Aroma NS Cinnamal	CAPB	Limonene			Sorbitol	Saccharin	
Gum Protection (tube)	1450		Aroma NS	CAPB	Limonene			Sorbitol	Saccharin	
Multi Action Daily for Sensitive Teeth (pump)	1450		Aroma NS	CAPB	Limonene	PEG-6		Sorbitol	Saccharin Sucralose	
Original (tube)	None		Cassia oil Levo-menthol Spearmint		Limonene	PEG-40		Methyl-salicylate Sorbitol	Saccharin	

Toothpaste name and manufacturer	Fluoride (ppm)	Excipients associated with adverse reactions (see Limitations)							Other excipients	
		Anti-bacterial	Flavouring	Foaming agent	Fragrance	Preservative/Solvent	Pyrophosphate	Other	Sweetener	Alcohol
			Peppermint							
Pronamel Daily (tube)	1450		Aroma NS	CAPB	Limonene	PEG-6		Sorbitol	Saccharin	Anise alcohol
Pronamel Gentle Whitening (tube)	1450		Aroma NS	CAPB	Limonene	PEG-6		Sorbitol	Saccharin	
Pronamel Daily Fluoride for Children 6-12 (tube)	1450		Aroma NS	CAPB	Limonene	PEG-6		Sorbitol	Saccharin Sucralose	
Rapid Relief (pump)	1040		Aroma NS		Limonene	Parabens		Sorbitol	Saccharin	
Rapid Relief (tube)	1040		Anethole Carvone Menthol Peppermint		Limonene	Parabens		Sorbitol	Saccharin	
Total Care Gel (tube)	1450		Aroma NS Cinnamal	CAPB	Limonene			Sorbitol	Saccharin	
Total Care Gentle Whitening (pump/tube)	1400		Aroma NS	CAPB		PEG-6		Sorbitol	Saccharin	
<b>UltraDEX (formerly RetarDEX) by Periproducts (Telephone 0208 868 1500)</b>										
Low Abrasion (tube)	1000		Menthol Peppermint Spearmint		Limonene			Sorbitol	Saccharin	
<b>UltraDEX (formerly RetarDEX) by Periproducts (Telephone 0208 868 1500)</b>										
Recalcifying & Whitening (tube)	1000		Menthol Peppermint Spearmint		Limonene Linalool				Saccharin	
<b>Weleda by Weleda UK (Telephone 0115 944 8222)</b>										

Toothpaste name and manufacturer	Fluoride (ppm)	Excipients associated with adverse reactions (see Limitations)							Other excipients	
		Anti-bacterial	Flavouring	Foaming agent	Fragrance	Preservative/Solvent	Pyrophosphate	Other	Sweetener	Alcohol
Calendula (tube)	None		Aroma NS		Limonene					Alcohol <3%
Childrens Tooth Gel (tube)	None		Fennel Spearmint		Limonene					
Plant Gel (tube)	None		Fennel Peppermint Spearmint		Limonene					Alcohol <0.5%
Salt (tube)	None		Aroma NS Menthol		Limonene Linalool					Alcohol <0.5%
Ratanhia (tube)	None		Fennel Peppermint Spearmint		Limonene					Alcohol <3%

## Limitations

1. This is not an exhaustive list of all toothpastes available in the UK. Supermarkets' or stores' own-branded products are not included. For each toothpaste brand included, every attempt has been made to include the complete range but this has not been possible in every case. The following manufacturers were unwilling to provide details of the excipients in their toothpastes: Church and Dwight UK, Dr Organic, and Procter and Gamble.

2. Only excipients reported as relatively common allergens [1-3,25], or one of the 26 allergenic substances listed within annex III of the European Commission's (EC) Cosmetics Regulation [29] (formerly the Cosmetics Directive [30]) (shown in italics in the table below), are included in the table plus a few selected excipients which some people may find undesirable. These include:

<b>Alcohol</b>	alcohol
<b>Antibacterials</b>	propolis, tea tree oil, triclosan
<b>Flavourings</b>	anethole, <i>anise alcohol</i> , aroma <i>NS</i> , carvone, cassia oil, <i>cinnamal</i> , cinnamic aldehyde, cinnamon, <i>citral</i> , doublemint, fennel, flavour <i>NS</i> , herbalmint, levomenthol, menthol, mint, peppermint, spearmint, wildmint, wintergreen
<b>Foaming agents</b>	CAPB, SLS
<b>Fragrances</b>	<i>eugenol</i> , <i>limonene</i> , <i>linalool</i>
<b>Others</b>	colophony, lactose, methylsalicylate, sorbitol, vitamin E, xylitol
<b>Preservatives</b>	<i>benzyl alcohol</i> , macrogols, parabens, PEG, polyethylene, propylene glycol, sodium benzoate
<b>Pyrophosphates</b>	bisodium PP, calcium PP, tetrapotassium PP, tetrasodium PP
<b>Sweeteners</b>	beta-D glucose, potassium acesulfame, saccharin, sucralose, sucrose octaacetate
<b>EC allergenic substances</b> (if not listed in the rows above):	<i>alpha-isomethyl ionone</i> , <i>amyl cinnamal</i> , <i>amylcinnamyl alcohol</i> , <i>cinnamyl alcohol</i> , <i>benzyl benzoate</i> , <i>benzyl cinnamate</i> , <i>benzyl salicylate</i> , <i>butylphenyl methylpropional</i> , <i>citronellol</i> , <i>coumarin</i> , <i>evernia furfuracea</i> , <i>evernia prunastri</i> , <i>farnesol</i> , <i>geraniol</i> , <i>hexylcinnamal</i> , <i>hydroxycitronellal</i> , <i>hydroxyisohexyl 3-cyclohexane carboxaldehyde</i> , <i>isoeugenol</i> , <i>methyl 2-octynoate</i> .

**Note:** Aroma *NS* and Flavour *NS*: manufacturers do not have to name ingredients on product labelling if the concentration falls below the threshold stated in the Cosmetic Regulation, even if they are one of the 26 EC allergens. The thresholds are 0.001% for leave-on products and 0.01% for rinse-off products [29,31].

3. The absence of any other excipient from the table in this Medicines Q&A (other than those listed above) does not mean it is not included within a toothpaste. Also, we cannot guarantee that the toothpaste has not been in contact with the excipient during the manufacturing process. If further information is required, check with the manufacturer.

4. Within the table, excipients have been categorised according to their most common use but many have additional uses and may be suitable for inclusion within another category – where this is the case, they have been listed only once. The source of excipients has not been stated.

5. Formulations may be subject to change, but the information contained in this document is accurate at the time of publication. Excipient content has been confirmed with the manufacturer or by checking the manufacturer's own website.

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## Bibliography

The following sources were used to assemble the tables of toothpastes and excipients:

- ◆ Manufacturer's websites. Accessed November 2012.
- ◆ Personal communication with manufacturers by email or telephone. November/December 2012.
- ◆ European Commission CosIng database <http://ec.europa.eu/consumers/cosmetics/cosing/> Accessed November 2012.

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January 2013.

## Search strategy

- ◆ Embase 1974 to date - Toothpaste/ AND (Excipient/ OR exp Hypersensitivity/) - for information added since 2010/01/01.
- ◆ Medline 1950 to date - Toothpaste/ AND (Excipient/ OR exp Hypersensitivity/); exp Dentifrices/ AND (exp Excipient/ OR exp Hypersensitivity/) - for information added since 2010/01/01.
- ◆ [www.nelm.nhs.uk](http://www.nelm.nhs.uk) – toothpaste
- ◆ In-house textbooks and electronic resources
- ◆ [www.bda.org](http://www.bda.org) – toothpaste or allergy
- ◆ [www.google.co.uk](http://www.google.co.uk) – toothpaste allergy
- ◆ Expert opinion (contacted January 2011):
  - Dr Lesley Longman, Senior Lecturer/Honorary Consultant in Special Care and Restorative Dentistry, and Clinical and Teaching Lead for Sedation and Special Care Dentistry, School of Dental Sciences, Liverpool.
  - Dr Anne Field, Clinical Director and Consultant/Honorary Professor in Oral Medicine, Liverpool University Dental Hospital, Liverpool.
  - Dr Clodagh King, Consultant Dermatologist, Broadgreen Hospital, Liverpool.