



The Resurgence of Triturated Materials, Supplemental Information

Triturated Material Brands

Important research questions that arose during CR's recent evaluation of triturators were:

1. What materials are available in capsule form?
2. Can any triturator be used with any material?

In an attempt to answer these questions, CR researchers compiled information on encapsulated materials from manufacturer websites, distributor websites, dental catalogs, instructions for use, and other postings in the public space. The accuracy of the following information is dependent on the accuracy of the information provided by others.

The following tables do not claim to be complete. CR made no attempt to identify every material brand on the global market or review the product offerings of every dental company. However, sufficient materials were reviewed to provide an accurate assessment of the state of triturated materials.

Glass Ionomers and Other Chemistries							
Brand	Company	Chemistry	Primary Indications	Cure	Recommended Triturator	Time	Speed
Durelon	3M	Carboxylate	Luting cement, liner	Self-cure	RotoMix, Capmix	8, 10 sec	4300 rpm
Ketac Bond	3M	Glass ionomer	Liner	Self-cure	RotoMix, Capmix	8, 10 sec	4300 rpm
Ketac Cem	3M	Glass ionomer	Luting cement	Self-cure	Not specified	10 sec	Not specified
Ketac Fil Plus	3M	Glass ionomer	Restorative, build-up, liner	Self-cure	RotoMix, Capmix	8, 10 sec	4300 rpm
Ketac Molar / Ketac Molar Quick	3M	Glass ionomer	Restorative, build-up, liner	Self-cure	RotoMix, Capmix	8, 10 sec	Not specified
Ketac Silver	3M	Metal hybrid glass ionomer	Restorative, build-up	Self-cure	RotoMix, Capmix	7–15 sec	Not specified
Ketac Universal	3M	Glass ionomer	Restorative, build-up, liner, sealant	Self-cure	RotoMix, Capmix	8, 10 sec	Not specified
Photac Fil Quick	3M	Resin hybrid glass ionomer	Restorative	Dual-cure	RotoMix, Capmix	7–15 sec	Not specified
Relyx Unicem	3M	Resin hybrid glass ionomer	Luting cement	Dual-cure	RotoMix, Capmix	10, 15 sec	High speed
Calibra Bio	Dentsply Sirona	Resin hybrid glass ionomer	Luting cement	Self-cure	Not specified	8 sec	4000–5000 RPM
ChemFil Rock	Dentsply Sirona	Zinc reinforced glass ionomer	Restorative, build-up	Self-cure	Not specified	15 sec	4000–4500 RPM
IRM	Dentsply Sirona	Polymer hybrid zinc oxide	Intermediate restorative, base, liner	Self-cure	Various	8–12 sec	High speed
Surefil one	Dentsply Sirona	Resin hybrid glass ionomer	Restorative	Dual-cure	Not specified	10 sec	4200–5000 RPM
EQUIA Forte Fil / Forte HT Fil	GC America	Resin hybrid glass ionomer	Restorative	Self-cure	Not specified	10 sec	4000 RPM
GC Fuji I Capsule	GC America	Glass ionomer	Luting cement	Self-cure	Not specified	10 sec	4000 RPM
GC Fuji II Capsule	GC America	Glass ionomer	Restorative	Self-cure	Not specified	10 sec	+/- 4000 RPM
GC Fuji II LC Capsule	GC America	Resin hybrid glass ionomer	Restorative	Dual-cure	Not specified	10 Sec	4000 RPM
GC Fuji IX GP	GC America	Glass ionomer	Build-up, intermediate restorative	Self-cure	Not specified	10 sec	4000 RPM
GC Fuji IX GP EXTRA	GC America	Glass ionomer	Build-up, intermediate restorative	Self-cure	Not specified	10 sec	4000 RPM
GC Fuji IX GP FAST	GC America	Glass ionomer	Build-up, intermediate restorative	Self-cure	Not specified	10 sec	4000 RPM
GC Fuji ORTHO LC Capsule	GC America	Resin hybrid glass ionomer	Ortho band luting cement	Light-cure	Not specified	10 sec	+/- 4000 RPM
GC Fuji PLUS Capsule	GC America	Resin hybrid glass ionomer	Luting cement	Self-cure	Not specified	10 sec	4000 RPM
GC Fuji TRIAGE Capsule	GC America	Glass ionomer	Sealant, intermediate restorative	Self-cure	Not specified	10 sec	+/- 4000 RPM
G-CEM Capsule	GC America	Resin hybrid glass ionomer	Luting cement	Self-cure	Various	10 sec	4000, 4500+
Miracle Mix	GC America	Metal reinforced glass ionomer	Build-up, intermediate restorative	Self-cure	Not specified	10 sec	4000 RPM
Maxima Resin Modified Glass Ionomer Cement	Henry Schein	Resin hybrid glass ionomer	Luting cement	Self-cure	Capsule Mixer	10 sec	≈4000 RPM
Maxima RGI Glass Ionomer	Henry Schein	Glass ionomer	Restorative, build-up, liner	Self-cure			
riva luting	SDI	Glass ionomer	Luting cement	Self-cure	Ultramat 2, or high speed	8–15 sec	High speed
riva luting plus	SDI	Resin hybrid glass ionomer	Luting cement	Self-cure	Ultramat 2, or high speed	10 sec	4000–4800 RPM
riva self cure / self cure HV	SDI	Resin hybrid glass ionomer	Restorative, build-up, liner	Self-cure	Ultramat 2, or high speed	10 sec	4000–4800 RPM
seT	SDI	Resin hybrid glass ionomer	Luting cement	Dual-cure	Ultramat 2, or high speed	10 sec	4000–4800 RPM
GlasIonomer Cement CX-Plus CAPSULE	Shofu	Glass ionomer	Luting cement	Self-cure	High speed	10 sec	4000+ RPM
GlasIonomer FX-II CAPSULE	Shofu	Glass ionomer	Restorative, build-up, liner	Self-cure	High speed	10 sec	4000+ RPM
Ionolux	Voco	Resin hybrid glass ionomer	Restorative, build-up, liner	Light-cure	High speed	10 sec	≈4000 RPM
IonoStar Molar	Voco	Glass ionomer	Restorative, build-up, liner	Self-cure	High speed	10–15 sec	≈4000 RPM
IonoStar Plus	Voco	Glass ionomer	Restorative, build-up, liner	Self-cure	High speed	10 sec	≈4000 RPM
Meron AC	Voco	Glass ionomer	Luting cement	Self-cure	High speed	10 sec	≈4000 RPM
Meron Plus AC	Voco	Resin hybrid glass ionomer	Luting cement	Self-cure	High speed	10 sec	≈4000 RPM

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The Resurgence of Triturated Materials *(Supplemental Information)*

Triturated Material Brands *(Continued)*

Amalgams				
Brand	Company	Recommended Triturator	Time	Speed
Dispersalloy	Dentsply Sirona	Various	6–17 sec	3700–4700 RPM
Megalloy EZ	Dentsply Sirona	Various	6–16 sec	3800–4700 RPM
Type-T Spherical	DMG	Various	5–12 sec	4200 RPM
Premium Dispersed Phase	DMG	Various	5–12 sec	4200 RPM
Royale	DMG			
Essentials	Essentials Healthcare Products			
Ultra	Goldsmith & Revere			
Stratosphere	Henry Schein			
Troposphere	Henry Schein			
Ionosphere	Henry Schein			
Valiant	Ivoclar Vivadent	Silamat S6, others	6–10 sec	4500 RPM
Valiant Ph.D. / XT / EXT	Ivoclar Vivadent	Silamat S6, others	6–10 sec	4500 RPM
Tytin	Kerr	Various	5–8.5 sec	4000–4600 RPM
Tytin FC	Kerr	Various	5–11 sec	3800–4600 RPM
Contour	Kerr	Various	6–11.5 sec	4000–4600 RPM
Dental Amalgam Alloy	Quala	Various	6–16 sec	Medium–High
gs-80	SDI	Ultramat 2	8 ± 1 sec	4550/4600 RPM
lojic+	SDI	Ultramat 2	6 ± 1 sec	4550/4600 RPM
permite	SDI	Ultramat 2	8 ± 1 sec	4550/4600 RPM
Septalloy NG-50	Septodont			
Spherodon+	Silmet			
Spherodon-M	Silmet			
Nogama	Silmet			
Original D	Wykle			

Answers to the Research Questions

1. What materials are available in capsule form?

- **Amalgam and glass ionomer** are the main types of triturated materials. Identified exceptions include IRM (*Dentsply Sirona*) polymer reinforced zinc oxide and Durelon (*3M*) carboxylate.
- **Amalgam** is still widely used, although not frequently. It was noted that numerous amalgam brands were readily available through distributors, but not in online manufacturer stores or product listings.
- **New glass ionomer formulations** are the driving force behind the resurgence of triturated materials. They include conventional glass ionomers, resin-modified glass ionomers (*hybrids*), and novel components to provide specific benefits (*ion release, antimicrobials, light cure activators, etc.*). They are available in a variety of viscosities to facilitate handling and application as luting cements, direct restoratives, core build-ups, liners, sealants, etc.

2. Can any triturator be used with any material?

- **Yes, within reason.** Any modern high-speed triturator that will safely accommodate the capsule and has an adjustable timer should be compatible with current encapsulated materials.
- **A new triturator** should be considered if your current triturator has excessive noise or vibration, can't be adjusted to the appropriate mixing time, damages the nozzle of the capsule, won't hold the capsule securely, is difficult to use, or won't create a consistent mixture.

