TABLE 2. Summary of Restorative Materials, Microstructures, and Generic Composites

Restorative Material (Categories)	D = Dispersed Phase, C = Continuous Phase (Volume fractions vary)
COMPOSITE[1]	
• MicroFil	• D = Alumino silicate glass; C = Polymerized difunctional monomers
• Flowable	• Same as above
• Packable	• Same as above
• Bi-Hybrid	• Same as above
• Tri-Hybrid	• Same as above
GLASS IONOMER	
• Glass ionomer cement (GIC)	• D = Alumino silicate glass; C = Crosslinked polyacrylic acid
• Metal-Modified	• GIC + amalgam alloy particles
• Resin-Modified	• GIC modified with polymerizable monomers
• Compomer	• Composite modified with fluoride releasing glass
• Giomer	• Same as above admixed with larger pre-cured glass ionomer islands
TEMPORARY	
• Polymethyl methacrylate (PMMA)	• D = PMMA beads; C = PMMA matrix
• Bis-Acrylates	• D = Alumino silicate glass; C= Polymerized difunctional monomers
AMALGAM	
• Lathe-Cut	• D = Unreacted Ag_3Sn; C = Ag_2Hg_3, $Sn_{6-7}Hg$, $Cu_{5-6}Sn$, Cu_3Sn
• Spherical[2]	• Same as above
INFILTRANT†	
• Composite	• C= Polymerized acrylate monomers
CERAMIC	
• Feldspathic Porcelains	• D = Ceramic phases; C = Ceramic glass
• Aluminous Porcelains	• Same as above
• Glass ceramics	• Same as above
• Infiltrated ceramics	• C= Two interpenetrating continuous phases
• Alumina, zirconica†	• Grains (crystals); one or two phases
CEMENT	
• Acid-base[3]	• D = Ceramic filler; C = Acid-base products
• Composite	• D = Alumino silicate glass; C = Polymerized difunctional monomers
DENTURE BASE	
• PMMA Acrylic	• D = PMMA beads; C = PMMA matrix
CAST METALS†	
• Gold and alloys	• Grains (crystals) of one or two different phases
• Porcelain-fused-to-metal alloys	• Same as above
• Titanium	• Same as above
BONDING AGENTS	
• Direct etching	• D= Minor amounts of silica; C = Polymerized monomers
• Self-etching system[4]	• Same as above

*A composite (continuous and dispersed phases) type of structure.

†Not composite structure.

1. Dental composites may be classified by the typical particle size (eg, macrofill, midifill, minifill, microfill, or nanofill) or viscosity, such as flowable or packable. Most composites are mixtures of particle sizes and classified as bi-hybrids or tri-hybrids.
2. Most amalgams have spherical particles.
3. Most recent dental cements are composites but earlier versions included zinc phosphate, reinforced zinc oxide eugenol, and polycarboxylate.
4. Bonding systems for enamel and dentin rely on direct etching with phosphoric acid or self-etching with acids associated with the bonding agent.