Gloss of composites with the use of two polishing systems

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Final report

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Objectives:

1) To compare the gloss produced by 2 different composite polishing systems

Materials:

Brand name	Composition	Manufacturer	RPM
A.S.A.P. Polishers	Diamond	Clinician's Choice	10-12,000
Enhance/PoGo Disc	Alumina	Dentsply	10-15,000

Methods:

To reduce variability, specimen preparation, finishing, and polishing procedures will be carried out by the same operator.

Specimen preparation

Composite resin discs (Evanesce, Clinician's Choice) was prepared using a putty mold 12mm diameter and 4 mm depth. The composite was placed in two increments into the mold using a condenser, covered with a clear strip and gently compressed with glass microscope slide. The specimens were polymerized through the slide with a 3M ESPE Elipar Deep Cure (output will be monitored daily to assure >1000mW/cm^2). Specimens were stored in distilled water in an incubator at 37ºC for 24 hours. Specimens were polished with a rotational polishing device (No: 233-0-1997, Buehler Ltd, Evanston, IL) with 320 grit SiC abrasive paper for 60 seconds each and cleaned in water in an ultrasonic bath to remove debris before measuring gloss and surface roughness.

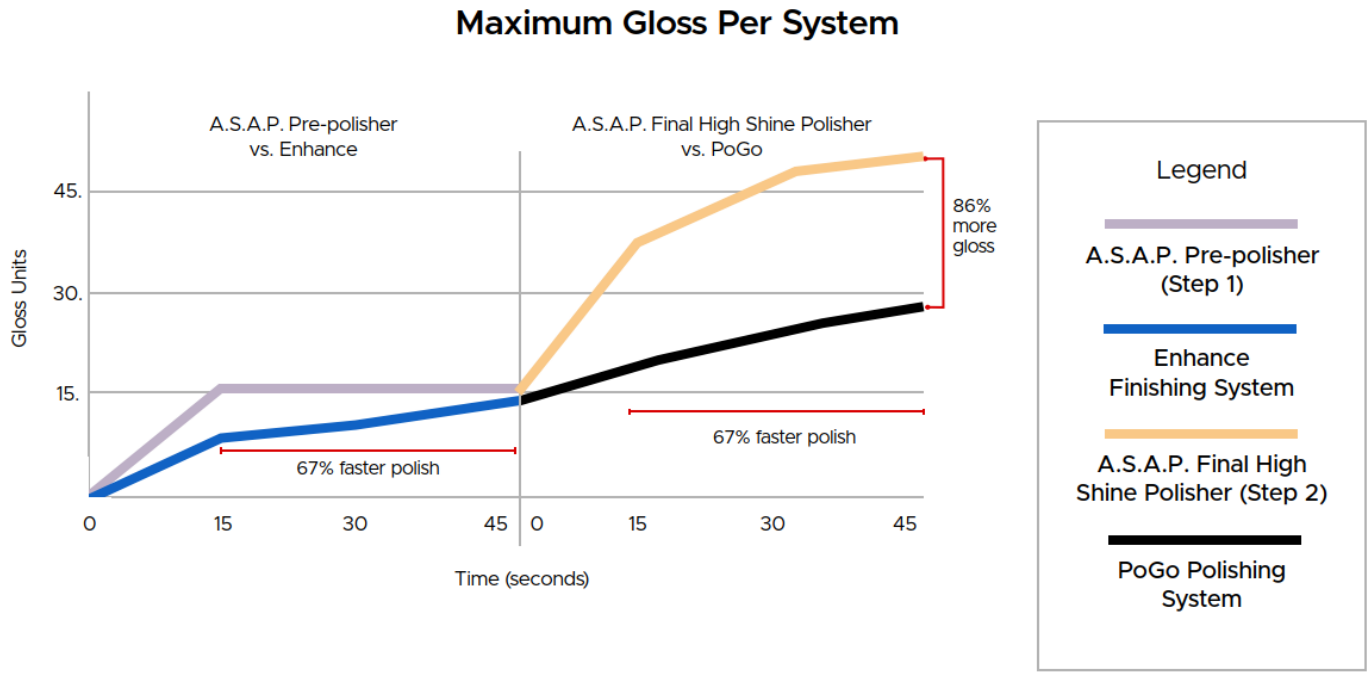
Polishing

Specimens were polished using a slow speed electric handpiece (Brasseler) at 10,000 rotations per minute (or at speed recommended in IFU) with water lubrication. Polishing was performed by one operator with the flat side of the disc to create a consistent polish with light pressure and constant motion and repetitive stroking to prevent heat build-up and the formation of grooves. A new polisher was used for each specimen and discarded each after use. Specimens were polished in 15 second intervals (15, 30 and 45 seconds). Gloss was measured after each interval.

Gloss

Gloss was measured following ISO 2813 with a small area gloss meter on a scale of 1 to 100 with a square measurement area of 2×2mm and 60˚ geometry (Novo-curve, Rhopoint Instrument Ltd, UK). One reading was performed and then the specimen was rotated 90˚ to make another reading. The mean of two readings was recorded as the gloss unit (GU) for each specimen. To eliminate the influence of the overhead light, the aperture of the gloss meter was covered with a dark box during the gloss evaluation.

Results



	Finisher			Polisher		
	15s	30s	45s	15s	30s	45s
A.S.A.P. Polishers	14.7	15.7	15.54	37.2	45.3	50.02
Enhance/POGO	7.88	9.165	12.67	19.2	23.01	26.8

The A.S.A.P. Polishers produced more gloss than the Enhance/PoGo discs.