**Supplemental Handout: The Optical Advantages of Amber Mill**

**Webinar: Contemporary Monolithic Ceramics & the Digital Dental Team**

**Presented by Dr. Ed McLaren**

Amber Mill represents a new generation of lithium disilicate ceramics, uniquely designed to combine high strength, superior optical properties, and digital workflow versatility. This supplemental handout provides a deeper dive into the esthetic and clinical benefits of Amber Mill, with a focus on its optical qualities and performance supported by peer-reviewed research.

**Unique Optical Qualities of Amber Mill**

Amber Mill is distinguished by its adjustable translucency achieved through heat treatment. This allows dental professionals to tailor the esthetic appearance of a single block to meet specific clinical needs, ranging from high translucency (HT) for anterior esthetics to medium opacity (MO) for masking dark substrates. Such versatility reduces the need to stock multiple translucency levels, lowering inventory costs while enhancing clinical flexibility.

Peer-reviewed research confirms Amber Mill’s ability to achieve controllable translucency (27–34% at 550 nm) by adjusting grain size during crystallization, without compromising flexural strength (Journal of Adhesive Dentistry, 2021).

**Delivering Natural Esthetics**

The combination of translucency modulation, fluorescence, and opalescence enables Amber Mill restorations to mimic the natural vitality of enamel. Surface texture and staining can be applied with precision, and studies demonstrate that color stability is predictable even after multiple crystallization cycles (Journal of Advanced Prosthodontics, 2022).

Clinicians benefit from the ability to anticipate and control slight shade shifts post-sintering, allowing for proactive customization. This results in restorations that seamlessly integrate into the natural dentition, even under varying lighting conditions.

**Aesthetic Strength Supported by Science**

Amber Mill combines beauty with durability. Research demonstrates superior mechanical properties, including high Vickers hardness, wear resistance, and fracture toughness compared to other lithium disilicate materials (J Mech Behav Biomed Mater, 2019 & 2020). Even after hydrothermal aging, Amber Mill maintains high biaxial flexural strength, ensuring long-term reliability (Materials, 2021).

Amber Mill veneers and occlusal restorations have demonstrated higher fracture resistance than full-coverage crowns in fatigue testing (Operative Dentistry, 2024), enabling minimally invasive yet durable treatment solutions.

**Digital Workflow Integration**

Amber Mill has been extensively evaluated for CAD/CAM accuracy. Studies confirm excellent machinability, precise marginal fit, and smooth polishability to sub‑10 nm within one minute (Biomaterials Research Report, 2022). This level of accuracy allows for efficient chairside workflows and predictable esthetic outcomes.

Its ability to deliver restorations with superior milling trueness and low wear volume loss during simulated mastication further enhances clinical confidence (Journal of Mechanical Behavior of Biomedical Materials, 2020).

**Key Takeaways for Clinicians & Technicians**

* Adjustable translucency from a single block reduces inventory needs.
* Natural optical effects (translucency, opalescence, fluorescence) create lifelike esthetics.
* Predictable color stability with slight, controllable shade shifts post-crystallization.
* Superior strength, fracture resistance, and wear durability validated by research.
* Seamless integration with digital workflows ensures precision, efficiency, and reduced chairside time.
* Enables minimally invasive, durable restorations that meet both functional and esthetic demands.

The integration of Amber Mill into the clinical and laboratory workflow empowers dental teams to combine digital precision with analog artistry. Its unique optical versatility, proven strength, and reliable performance position Amber Mill as a cornerstone material for the modern digital dental team.

REFERENCES

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*Fracture Resistance of Chairside CAD/CAM Lithium Disilicate-Reinforced Ceramic Occlusal Veneers vs Full Coverage Crowns*
<https://pubmed.ncbi.nlm.nih.gov/38058016/>

**Biomaterials Research Report (2022)**
*Milling Evaluation of Amber Mill*
<https://hassbioamerica.com/news/milling-evaluation-of-amber-mill/>