Black class I. and II. composite fillings
Dental matrix systems and its use

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Black Class I.

- definition

- extended fissure sealing
Black Class II

- definition

- MO/OD/MOD
Limits of the use of composites

Not indicated:

- problems with isolation
- full contact with opposite tooth
- bruxism
Usual Steps of an Composite Restoration

- Medical history, diagnosis, (X-ray.) Anesthesia
- Shade selection
- Cavity preparation
- Isolation
- Adhesive technique
- Inserting and curing the composite
- Contouring and polishing the composite
Shade selection

- Drying and dehydration of the tooth
- Isolation (before-, color)

- Applying and curing a small amount of the composite
Adhesive technique
Inserting and curing the composite

- Class I.
- Class II.
Disadvantages of the composite

- Polymerization shrinkage
- Higher thermal expansion coefficient
- No adhesion or chemical bond

- Solution - adhesive technique
C-factor (configuration-factor)

- The ratio of bound-to-unbound surface areas

![Diagram showing the ratio of bound to unbound surfaces for different classes of caries](image-url)

Sturdevant's Art & Science of Operative Dentistry 4th ed. Mosby
Methods of reducing the polymerization shrinkage

- Further development of the composite
- Incremental filling technique
- Direction of the curing light
- Method of the curing
Incremental filling technique

- Horizontal – occlusogingival layering when cavity < 1/3 width of the tooth
- Oblique layering
- Faciolingual layering
- Bulk-fill
- Bio-mimetic
- Horizontal-split technique
- Centripetal technique
Increment technic
- occlusogingival layering

- Wide cavity – fracture
Increment technic - oblique layering

Conventional layering procedure:
1. Application of Adhesive
2. Flowable Liner
3. Increment 1: Universal Composite
4. Increment 2: Universal Composite
5. Increment 3: Universal Composite
Increment technic
- use of flow composite

- Better marginal seal
- „Stress-breaker” function
Increment technic - faciolingual layering
Increment technic
- bulk-fill

SDR™ procedure
1. Application of Adhesive
2. SDR™ Placement
3. Capping Layer: Universal composite
Increment technic - bio-mimetic
Direction of the curing light

Diagram:

- **Direction a**
- **Direction b**
- **Direction c**
- **Direction d**
Method of the curing

- „Soft start” polymerization
- As near as possible
- Metal matrix can inhibit
- Diameter of the light guide
- Cleanness of the light guide
Method of the curing

- "Soft start" polymerization
- As near as possible
- Metal matrix can inhibit the effect
- Diameter of the light guide
- Cleanness of the light guide
Black Class II. composite fillings
When are the matrix systems necessary?

- **Preparation**
  - to protect the neighboring tooth
- **Plastic fillings**
  - to shape (proximal contact)
  - for replacement of missing wall(s)
- During the cementation of inlays/onlays
Expectations - use of matrix system

- No gap, good seal
- Proximal contact
- Higher than the tooth
- Well fixed
- Easily removable
- Transparent
- Impermeable
Matrix is usable when...

- There are some place between the teeth
- If not, we make
  - Horico strip
  - Fast-separation (wedge)
We use the matrix strip (fast every time) with a wedge.
Use of the wedge

- To put the matrix strip to the tooth
- To fix the matrix strip
- Separation
- (Bleeding control)
- To protect the interdental papilla
- Light transmitting wedge - polymerization
The use of the wedge

Corrective trimming of wedge
The use of the wedge

![Diagram showing incorrect and correct use of the wedge](image-url)
The use of the wedge
Wedges

- Wooden
Wedges

- Plastic
- Formed
- Curved (Curvy, VoCo)
- V-shaped
- Light transmitting
During preparation

- Common metal matrix
- Special product
  - „Matrix“
  - Wedge
Plastic fillings

- Black Class III. and IV.
- Root surface fillings
- Black Class II.
Front-teeth - Black Class III.

- Transparent matrix – polyester strip
Hawe Stopsrip
Front-teeth Black Class IV.

- Polyester strip
- Silicone key
Use in U-shape (from Tuza E.)
Silicone key (from Tuza E.)
Cervical fillings – cervical matrix

- Composite
- GIC
Cervical fillings

triudent
360°
cervical matrix
Black Class II.

- Dental amalgam – metal matrix
- Composite –metal- or plastic matrix
Matrix + matrix retainer or holder together (wedged)
Amalgam filling

- Dental amalgam is condensable - tight proximal contact
MO or OD cavity

- Ivory matrix retainer + matrix band
MOD cavity

- Conventional matrix retainer – with matrix band
MOD cavity

- Tofflemire matrix retainer with Tofflemire matrix band
MOD cavity

- Tofflemire matrix retainer with Tofflemire matrix band
Conic matrix band – disadvantageous form

- During finishing proximal contact disappeared
- Fracture of filling
Composite filling

- It could be difficult to achieve a tight proximal contact
Tofflemire matrix retainer with plastic matrix band
Lucifix (KerrHawe)
Special matrix systems

- AutoMatrix (Dentsply)
- MaximatPlus (Polydentia)
- SuperCap (KerrHawe)
The use of matrices

![Diagram showing correct and incorrect embrasure](image-url)
Special matrix system – Walser
Special matrix systems – sectional matrix

- Palodent / Palodent Plus (Dentsply)
- Hawe Adapt sectional matrix system (KerrHawe)
- Quickmat (Polydentia)
- V-ring (TrioDent)
Special matrix systems – sectional matrix

- Matrix is formed
- Ring to fix
- Forceps
Special matrix systems – sectional matrix
Special matrix systems
Special matrix systems – rings
Special matrix systems forceps
Special matrix systems – the use
Thank you for your attention!