INSTRUCTIONS FOR USE
Light-curing, tooth-like materials, such as micro-filled composites, have been extremely successful in clinical practice, becoming the standard due to their excellent properties and easy handling.

As a manufacturer of direct and indirect filling crown and bridge composite systems SHOFU set new standards for light-curing materials, because these materials fulfil the clinical demands of dentist, dental technician and patient in physical and aesthetic respect with optimal satisfaction.

The acquired knowledge and many years of experience led to the development of a new material, which combines the advantages of ceramics and composite – CERAMAGE.

CERAMAGE can be used for a wide range of clinical applications, including highly aesthetic anterior and molar restorations that require long-term durability.

Read the “Instructions for Use” carefully to ensure correct use of CERAMAGE. Keep the directions in a convenient place for easy reference.

The health of your patients is important to us.
The health of your patients is important to us. For this reason, we work exclusively with selected materials and manufacture our products according to strict regulations and with great care. All materials and components are certified according to the ISO standards 9001/2 and bear the CE symbol. They are subject to constant quality controls for your safety. “The Best for Your Patients” has always been our motto and duty. We heavily invest every year in the improvement of our manufacturing techniques in order keep abreast of technological progress. We offer you a comprehensive selection of innovative and high-quality dental products – for the health of your patients.

We are committed to keep high quality standards and to do everything necessary to meet this goal within the company.
At the same time, our company philosophy is:
“Research is our best Product”.

Our company slogan:
“SHOFU Quality with every turn!”
means permanent conformity and improvement of our customer related activities.

SHOFU Inc., Japan
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1. System components

1-1. Indications
- Crown restorations, e.g. anterior and posterior jacket crowns, anterior and posterior faced crowns, inlays, onlays, laminate veneers, implant superstructures
- Indirect and direct repairs of crown restorations and defects in prosthetic restorations

1-2. Characteristics
- CERAMAGE is an easy-to-apply paste
- Accurate reproduction of the natural tooth shade
- Its abrasion resistance ensures molars are protected from the opposing dentition
- Flowable Composite Resin suitable for adjustments to the build-up and repairing small areas
- In combination with M.L. Primer produces a strong bond to any type of metal, including precious alloys

1-3. Components and shades

<table>
<thead>
<tr>
<th>Components</th>
<th>Shades</th>
</tr>
</thead>
<tbody>
<tr>
<td>CERAMAGE Pre-Opaque (1 shade, 2 mL)</td>
<td>A10, A20, A30, A3.50, A40, B10, B20, B30, B40, C10, C20, C30, C40, D20, D30, D40, root A0, R20, R30, R3.50, MO, BO, GO, W0, GUM-0</td>
</tr>
<tr>
<td>CERAMAGE Opaque (25 shades, 2 mL)</td>
<td></td>
</tr>
<tr>
<td>CERAMAGE Composite Resin for Crowns and Bridges (74 shades, 2.6 mL)</td>
<td></td>
</tr>
<tr>
<td>Cervical 8 shades</td>
<td>AC1, AC2, BC1, BC2, CC1, CC2, DC1, DC2</td>
</tr>
<tr>
<td>Opaque Dentine 20 shades</td>
<td>ODA1, ODA2, ODA3, ODA3.5, ODA4, ODB1, ODB2, ODB3, ODB4, ODC1, ODC2, ODC3, ODC4, ODD2, ODD3, ODD4, OD root A, ODR2, ODR3, ODR3.5</td>
</tr>
<tr>
<td>Incisal 6 shades</td>
<td>56, 57, 58, 59, 60, 61</td>
</tr>
<tr>
<td>Translucent 10 shades</td>
<td>T, HVT, LVT, T-Glass, BG, GT, CT-A, CT-B, CT-R, GUM-T</td>
</tr>
<tr>
<td>Concentrate 10 shades</td>
<td>MI, WE, OC, AM-Y, AM-R, AM-V, MY, MP, GUM-L, GUM-D</td>
</tr>
<tr>
<td>CERAMAGE Flowable Composite Resin (6 shades, 2 mL)</td>
<td></td>
</tr>
<tr>
<td>Opaque Dentine 1 shade</td>
<td>F-ODA3</td>
</tr>
<tr>
<td>Body 2 shades</td>
<td>F-A3B, F-root AB</td>
</tr>
<tr>
<td>Incisal 1 shade</td>
<td>F-59</td>
</tr>
<tr>
<td>Translucent 1 shade</td>
<td>F-T-Glass</td>
</tr>
</tbody>
</table>
1-4. Components

M.L. Primer
- Metal primer for a stronger bond between the metal work and CERAMAGE Opaque
- Improved bond when applied to the surface of precious alloys, semi precious and non-precious alloys

CERAMAGE PRE-OPAQUE
- Opaque for the first layer when fabricating a crown
- Highly flowable, flows easily even into small areas of retainers. Its increased depth of cure ensures full light-curing, producing a strong CERAMAGE Pre-Opaque bond.

CERAMAGE OPAQUE
Opaque material for masking the metal and abutment teeth of jacket crowns. In addition to basic shades, we supply the following special shades:
- MO (Margin Opaque)
  Applied after Pre-Opaque in widths of 1 mm around the cervical margins for masking unwanted alloy
- BGO (Blue-Gray Opaque; Incisal Opaque)
  For transparent areas
- GO (Gray Opaque)
  For transparent areas and for adjusting the brightness of the Opaque
- WO (White Opaque)
  For adjusting the brightness of the Opaque
- GUM-O (Gum Opaque)
  For coloring and preparing the framework for GUM color

CERAMAGE COMPOSITE

- CERVICAL
  For reproducing cervical shades
- OPAQUE DENTINE
  - Highly opacious dentine shade
  - For reproducing cervical shades and for thinly layered dentine areas
- BODY
  For reproducing dentine shades
- INCISAL
  For reproducing enamel shades

- TRANSLUCENT
  - T (Translucent)
    For reproducing translucent shades
  - HVT (High-Value Translucent)
    Translucent material with high brightness
  - LVT (Low-Value Translucent)
    Translucent material with low brightness

The translucency sequence is LVT > T > HVT

- T-GLASS
  Translucent material for reproducing maximum translucency
- BG (Blue Glass)
  Light blue T-Glass
- GT (Gray Trans)
  Gray translucent material
- CT (Cervical Trans)
  Translucent material for cervical areas
  - CT-A
    For A shade range (orange tone)
  - CT-B
    For B shade range (yellowish tone)
  - CT-R
    For R shade range (reddish tone)
- GUM-T (Gingiva Translucent)
  For translucent gingiva areas
1. System components

- **CONCENTRATE SHADES**
  - **MI (Milky)**
    Opaque white paste
    For reproducing the milky characterisation in enamel
  - **WE (White Enamel)**
    Slightly opaque white paste
    For the marginal ridges of molars and proximal areas of the anterior teeth
  - **OC (Occlusal)**
    Slightly opaque white paste
    For the occlusal surfaces of molars, etc.

  The opacity sequence is MI > WE > OC

- **AM (Amber)**
  For reproduction of translucent amber enamel effects
  - **AM-Y**
    Amber Yellow (yellowish)
  - **AM-R**
    Amber Red (reddish)
  - **AM-V**
    Amber Violet (violet range)

- **MY (Mamelon Yellow)**
  Opaque paste for reproducing mamelons (yellowish)

- **MP (Mamelon Pink)**
  Opaque paste for reproducing mamelons (pinkish)

- **GUM**
  For reproduction of gingival shades
  - **GUM-L**
    Gum Light (light color)
  - **GUM-D**
    Gum Dark (dark color)

- **CERAMAGE FLOWABLE COMPOSITE RESIN**
  Flowable paste, flows into small areas. For restoring void caused by air bubbles, filling pontics and fine adjustments to the shade and contour

- **CERAMAGE MODELLING LIQUID**
  Special modelling liquid for use when applying composite resin to crowns and bridges. For adjustments to the composite surface after light-curing and remodelling after contouring with abrasives.

**Accessories**

- **CERAMAGE OXY-BARRIER**
  Oxygen barrier material applied to the paste surface before final light-curing to prevent an inhibition layer

- **CERAMAGE SEP**
  Separator liquid for use between plaster and CERAMAGE. Used in fabricating jacket crowns, inlays, onlays, and veneers

- **CERAMAGE SPACER**
  Spacer to allow space for cement. Used in fabricating jacket crowns, inlays, and onlays

- **CERAMAGE CLEANER**
  Liquid to wash the brush
1-5. Shade Charts

1. Basic Shade Composition

<table>
<thead>
<tr>
<th>Shade</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A3.5</th>
<th>A4</th>
<th>B1</th>
<th>B2</th>
<th>B3</th>
<th>B4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opaque</td>
<td>A10</td>
<td>A20</td>
<td>A30</td>
<td>A3.50</td>
<td>A40</td>
<td>B10</td>
<td>B20</td>
<td>B30</td>
<td>B40</td>
</tr>
<tr>
<td>Cervical</td>
<td></td>
<td></td>
<td></td>
<td>AC1</td>
<td>AC2</td>
<td></td>
<td></td>
<td>BC1</td>
<td>BC2</td>
</tr>
<tr>
<td>Opaque Dentine</td>
<td>ODA1</td>
<td>ODA2</td>
<td>ODA3</td>
<td>ODA3.5</td>
<td>ODA4</td>
<td>ODB1</td>
<td>ODB2</td>
<td>ODB3</td>
<td>ODB4</td>
</tr>
<tr>
<td>Incisal</td>
<td>58</td>
<td>59</td>
<td>60</td>
<td>57</td>
<td>58</td>
<td>59</td>
<td>60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shade</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opaque</td>
<td>C10</td>
<td>C20</td>
<td>C30</td>
<td>C40</td>
<td>D20</td>
<td>D30</td>
<td>D40</td>
</tr>
<tr>
<td>Cervical</td>
<td></td>
<td></td>
<td></td>
<td>CC1</td>
<td>CC2</td>
<td>DC1</td>
<td>DC2</td>
</tr>
<tr>
<td>Opaque Dentine</td>
<td>ODC1</td>
<td>ODC2</td>
<td>ODC3</td>
<td>ODC4</td>
<td>ODD2</td>
<td>ODD3</td>
<td>ODD4</td>
</tr>
<tr>
<td>Body</td>
<td>C1B</td>
<td>C2B</td>
<td>C3B</td>
<td>C4B</td>
<td>D2B</td>
<td>D3B</td>
<td>D4B</td>
</tr>
<tr>
<td>Incisal</td>
<td>58</td>
<td>59</td>
<td>60</td>
<td>59</td>
<td>60</td>
<td>59</td>
<td>60</td>
</tr>
</tbody>
</table>

2. Shade Composition of NCC shades

<table>
<thead>
<tr>
<th>Shade</th>
<th>root A</th>
<th>R2</th>
<th>R3</th>
<th>R3.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opaque</td>
<td>root A0</td>
<td>R20</td>
<td>R30</td>
<td>R3.50</td>
</tr>
<tr>
<td>Opaque Dentine</td>
<td>0D root A</td>
<td>ODR2</td>
<td>ODR3</td>
<td>ODR3.5</td>
</tr>
<tr>
<td>Body</td>
<td>root AB</td>
<td>R2B</td>
<td>R3B</td>
<td>R3.5B</td>
</tr>
<tr>
<td>Incisal</td>
<td>60</td>
<td>58</td>
<td>59</td>
<td></td>
</tr>
</tbody>
</table>

These supplementing colors form a meaningful extension of the "classical" color variants. Root A (intensive A) is more chromate intensive than the color A4. The red shift colors R2, R3, and R3.5 refer to the A-group and exhibit somewhat more reddish colors. Like that the color R3 is a light shift more reddish with same intensity.

1-6. Stains

For individual characterisation of CERAMAGE restorations the ready to use SOLIDEX paste stains are recommended. Apart from the 8 base stains for reproducing dentine anomalies, cracked enamel, fillings or demineralised zones, the STAIN SET contains one cervical stain for each of the A, B, C, and D shade groups. In these areas, excellent adaptation in thin layers is possible.
1. System components

1-7. Presentation

**CERAMAGE AB Set**
- Pre-Opaque (1 shade/2 mL)
- Opaque (13 shades/2 mL): A10, A20, A30, A3.50, A40, B10, B20, B30, B40, M0, B60, G0, W0
- Cervical (4 shades/2,6 mL): AC1, AC2, BC1, BC2
- Opaque Dentine (9 shades/2,6 mL): ODA1, ODA2, ODA3, ODA3.5, ODA4, ODB1, ODB2, ODB3, ODB4
- Incisal (4 shades/2,6 mL): 57, 58, 59, 60
- Translucent (9 shades/2,6 mL): T, HVT, LVT, T-Glass, BG, GT, CT-A, CT-B, CT-R
- Concentrate (6 shades/2,6 mL): MI, WE, OC, AM-Y, AM-R, AM-V
- Flowable Composite Resin (5 shades/2 mL): FODA3, F-A3B, F-root AB, F-59, F-T-Glass
- CERAMAGE Modelling Liquid (1 bottle/6 mL)
- M.L. Primer (1 bottle/5 mL)

**Accessories**
- CERAMAGE Oxy-Barrier (1 bottle/10 mL)
- CERAMAGE Sep (1 bottle/7 mL)
- CERAMAGE Spacer (1 bottle/7 mL)
- CERAMAGE Cleaner (1 bottle/100 mL)
- Uni Brush No.4 (1 handle/10 brush tips)
- DispoDish (10 dishes)
- Mixing Pad (50 sheets)
- Light Shield Cover (1 cover)
- Directions for use
- Color Table
- CERAMAGE Finishing & Polishing Kit
- DURA-POLISH (Pre polishing paste)
- DURA-POLISH DIA (High gloss polishing paste)

**CERAMAGE CD Set**
- Opaque (7 shades/2 mL): C10, C20, C30, C40, D20, D30, D40
- Cervical (4 shades/2,6 mL): CC1, CC2, DC1, DC2
- Opaque Dentine (7 shades/2,6 mL): ODC1, ODC2, ODC3, ODC4, ODD2, ODD3, ODD4
- Body (7 shades/2,6 mL): C1B, C2B, C3B, C4B, D2B, D3B, D4B
- Directions for use

**CERAMAGE Gum Color Set**
- Opaque (1 shade/2 mL): GUM-0
- Gum (3 shades/2,6 mL): GUM-T, GUM-L, GUM-D
- Directions for use

**Individual products**
- Pre-Opaque (1 shade/2 mL)
- Opaque (25 shades/2 mL)
- Cervical (8 shades/2,6 mL)
- Opaque Dentine (20 shades/2,6 mL)
- Body (20 shades/2,6 mL)
- Incisal (6 shades/2,6 mL)
- Translucent (10 shades/2,6 mL)
- Concentrate (10 shades/2,6 mL)
- Flowable Composite Resin (5 shades/2 mL)
- CERAMAGE Modelling Liquid (1 bottle/6 mL)
- M.L. Primer (1 bottle/5 mL)
- CERAMAGE Oxy-Barrier (1 bottle/10 mL)
- CERAMAGE Sep (1 bottle/7 mL)
- CERAMAGE Spacer (1 bottle/7 mL)
- CERAMAGE Cleaner (1 bottle/100 mL)
2-1. Layering diagram

Guidelines for the minimum thickness of the abutment tooth

**Anterior**

<table>
<thead>
<tr>
<th></th>
<th>Jacket Crown</th>
<th>Faced Crown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical</td>
<td>&gt;0.8 mm</td>
<td>&gt;0.8 mm</td>
</tr>
<tr>
<td>Labial Surface</td>
<td>&gt;1.2 mm</td>
<td>&gt;1.2 mm</td>
</tr>
<tr>
<td>Lingual Surface</td>
<td>&gt;1.2 mm</td>
<td>–</td>
</tr>
<tr>
<td>Incisal Edge Height</td>
<td>1.5 – 2.5 mm</td>
<td>1.5 – 2.5 mm</td>
</tr>
<tr>
<td>Others</td>
<td>Labio-Lingual area: round shoulder</td>
<td>The metal thickness should be &gt;0.3 mm.</td>
</tr>
<tr>
<td></td>
<td>Proximal area: deep chamfer</td>
<td>The labial margin should be contoured with a shoulder or rounded shoulder.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The proximal and lingual area should be contoured with a deep chamfer.</td>
</tr>
</tbody>
</table>

Anterior jacket crown

Anterior faced crown
## Posterior

<table>
<thead>
<tr>
<th></th>
<th>Jacket Crown</th>
<th>Faced Crown</th>
<th>Inlay / Onlay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical</td>
<td>&gt;0.8 mm</td>
<td>&gt;0.8 mm</td>
<td>&gt;0.8 mm</td>
</tr>
<tr>
<td>Pits &amp; Fissures</td>
<td>&gt;1.2 mm</td>
<td>&gt;1.2 mm</td>
<td>&gt;1.0 mm</td>
</tr>
<tr>
<td>Tooth Cusp</td>
<td>Premolar &gt;1.2 mm Molar &gt;1.5 mm</td>
<td>Premolar &gt;1.2 mm Molar &gt;1.5 mm</td>
<td>Premolar &gt;1.2 mm Molar &gt;1.5 mm</td>
</tr>
<tr>
<td>Width of occlusal surface</td>
<td>–</td>
<td>–</td>
<td>&gt;2 mm</td>
</tr>
<tr>
<td>Bevel</td>
<td>–</td>
<td>–</td>
<td>not required</td>
</tr>
<tr>
<td>Others</td>
<td>The margins should be contoured with a round or deep chamfer.</td>
<td>The margins should be contoured with a shoulder or round shoulder. The metal thickness should be &gt; 0.3 mm.</td>
<td>The margins should be contoured with a deep chamfer. The cavity margin should not be bevelled. A box preparation should be used for the cavity. The edges of the cavity should be rounded. The cavity margins should be prepared away from the contact areas of the opposing dentition.</td>
</tr>
</tbody>
</table>

![Diagram of posterior jacket crown](image1)

*Posterior jacket crown*

![Diagram of faced crown](image2)

*Faced crown*

![Diagram of inlay/onlay](image3)

*Inlay / Onlay*
2-2. Layering technique for jacket crowns

1. Application of CERAMAGE Spacer and CERAMAGE Sep

Apply CERAMAGE Spacer to the working model. Do not apply to the margins. (CERAMAGE Spacer becomes transparent after drying.) Then apply CERAMAGE Sep to the margins etc. and dry.

Note: Shake the bottle well until the sediment disappears before applying CERAMAGE Sep. Since the Spacer and Sep contain solvents, replace the cap immediately after use. The contents may solidify if the cap is not replaced.
2. Application

2. Applying and light-curing Opaque
Apply Opaque with a brush, e.g. Uni Brush No.4, and light-cure. Apply a thin layer of Opaque and repeat the procedure (apply Opaque and light-cure) 2 to 3 times to get the correct shade.

Note: After applying the Opaque, clean the Uni Brush No.4 with CERAMAGE Cleaner. The brush should not be cleaned with self-curing resin liquid.
Opaque should not be pre-cured. Light-cure for the prescribed time in a light-curing unit.

3. Applying and light-curing Cervical
Apply Cervical paste from the cervical area to the centre of the crown and light-cure.

4. Applying Body and Incisal
Apply Body, adjust the contours and light-cure. Then apply Incisal to the enamel, adjust the contour and light-cure. If necessary, apply CERAMAGE Oxy-Barrier to the surface of the paste before the final light-curing (refer to 3-4. Application of Oxy-Barrier).
2-3. Layering technique for faced crowns

1. Pre-Treatments
- After fabricating the working model in the usual manner and waxing up, cut back the crown to be faced. Then add the retention using retention beads 150 μm.
- Adjust the metal framework after casting.
- After sandblasting the surface to be faced with aluminium oxide, clean with a steam cleaner or ultrasonic cleaner.

2. Applying M.L. Primer
Apply M.L. Primer to the surface of the metal framework where CERAMAGE is going to be applied with a small brush and dry for 10 seconds.

Note: Since M.L. Primer contains solvents, replace the cap tightly immediately after use. Dispensed liquid should be used immediately.

After applying M.L. Primer, clean the brush with CERAMAGE Cleaner. The brush should not be cleaned with self-curing resin liquid.
3. Applying and light-curing Pre-Opaque
Apply Pre-Opaque to the undercuts of the retention beads with a Uni Brush No. 4 and light-cure. Ensure it flows completely into these areas.

4. Applying and light-curing Opaque
Apply Opaque with a brush, e.g. Uni Brush No.4, and light-cure. Apply a thin layer of Opaque and repeat the procedure (apply Opaque and light-cure) 2 to 3 times to cover the framework.
5. Applying and light-curing Cervical

Apply Cervical paste gradually from the cervical area to the centre of the crown and light-cure

![Build-up and polymerisation of Cervical](image)

6. Applying Body and Incisal

Apply Body and adjust the contour. Then light-cure. For the enamel, contour and adjust the Incisal and light-cure. Apply CERAMAGE Oxy-Barrier to the surface of the paste before final light-cure if required.

![Applying Body](image)  ![After applying Body](image)  ![After applying Incisal](image)
2. Application

2-4. Layering technique for inlays and onlays

1. Pre-Treatments
   - Fabricate the working model in the usual manner and block out or relieve the cavity if required.

2. Applying CERAMAGe Spacer and CERAMAGe Sep
   Apply CERAMAGe Spacer as required to the working model, e.g. cavity floor corners. Do not apply to the margins. Then apply CERAMAGe Sep to the inner surfaces and around the cavity and dry.

3. Applying and light-curing Body and Incisal
   Apply Body and Incisal, adjust the contours and light-cure. After adjusting the contours, apply Oxy-Barrier — especially to the occlusal surface — and light-cure.
3. Special applications

3-1. Application of Flowable Composite Resin

Flowable Composite Resin is more flowable than conventional crown and bridge composite resin. Use in areas where it is difficult to apply composite resin to crowns and bridges, e.g. the inner surfaces of bridge pontics, inlay cavities and mamelon areas. Flowable Composite Resin ensures contouring without air bubbles and also restores void caused by air bubbles.

Note: Flowable Composite Resin is used for contouring and adjusting small areas. Do not apply to large areas.

3-2. Application of Opaque Dentine

Opaque Dentine has the same shade as the Body paste, but is slightly more opaque. Use it to mask the reflection of Opaque when there is not enough space to apply Body paste to the lingual surface and around the cervical area.
3. Special applications

3-3. Application of Modelling Liquid

Modelling Liquid is used when applying composite. In addition it can be applied to the surface of the paste after light-curing or after contouring as a wetting agent to facilitate adding further material.

Additions after contouring

Where the surfaces to be bonded have been prepolished or after final polishing, roughen the surfaces, e.g. with a Dura-Green stone. Then apply a coat of Modelling Liquid to the surfaces to be bonded, add CERAMAGE and light-cure.

3-4. Application of Oxy-Barrier

CERAMAGE Oxy-Barrier is applied to avoid air contact before the final light-curing of CERAMAGE. Applying it to the surface of CERAMAGE composite prevents inhibiting layer forming on the surface during light-curing.

1. Applying to the occlusal surface of the molar

Applying a layer of Oxy-Barrier to the occlusal fissures of molars ensures light-curing of composite surface, assisting subsequent contouring and polishing.

2. Applying to the margins

Applying Oxy-Barrier to thin margins facilitates contouring.

Note: If light-curing with CERAMAGE Oxy-Barrier, rinse it off with water before contouring.
4. Contouring, finishing and polishing

4-1. Contouring

Due to its high ceramic filler content, CERAMAGE composite is extremely abrasion-resistant and exhibits outstanding physical properties. Therefore, polymerized composite surfaces must be trimmed with matched rotary instruments. It is not advisable to use cutters or coarse diamond burs! The surface can be trimmed to achieve the desired texture and shine using the items in the CERAMAGE Finishing & Polishing Kit.

After light-curing, use a Robot Carbide Fissure Bur (SHOFU) for finishing the interproximal and occlusal contours and fissures. Then use Dura-Green stones for trimming and contouring the composite surface.

Contour with a Robot Carbide Fissure Bur  Contour with a Dura-Green stone

4-2. Finishing and polishing

After contouring, use CompoMaster Coarse for finishing, then DURA-POLISH for polishing the anterior and labial surface detail and the occlusal surface of the molars.

Finish with a CompoMaster Coarse diamond impregnated silicone point  Polish with DURA-POLISH ALG polishing paste

Note: Overheating must be avoided during finishing and polishing! Caffeine and nicotine can cause discolorations on unpolished surfaces.
4. Contouring, finishing and polishing

4-3. High-lustre polishing

After polishing, use CompoMaster for high-lustre polishing and DURA-POLISH DIA for increased surface gloss.

Note: For a high-lustre polish apply DURA-POLISH DIA with a brush and then polish with a felt wheel.

4-4. Finishing

4-5. Treating the bonding surface of the metal free restoration

When cementing a CERAMAGE restoration to an abutment tooth, sandblast the bonding surface of the restoration using approx. 0.1 – 0.2 MPa (approx. 1 – 2 bar) air pressure before fitting the restoration in the mouth. When sandblasting, take care not to chip the margins.
4-6. Adjusting the contours and shade of finished restorations – Modelling Liquid

Final cured and polished surfaces must be roughened mechanically (e.g. sandblast with aluminium oxide) before further pastes are applied. Moisten the dry, clean surface with Modelling Liquid. Depending on the required correction, composite is now applied and light-cured according to the curing chart.

---

5. Technical data

5-1. Curing time

<table>
<thead>
<tr>
<th>Light-Cure</th>
<th>Solidiite EX</th>
<th>UNI-XS Dentalcolor XS – Kulzer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Opaque</td>
<td>1 min</td>
<td>1.5 min</td>
</tr>
<tr>
<td>Opaque</td>
<td>3 min</td>
<td>3 min</td>
</tr>
<tr>
<td>Composite (pre-light-cure)</td>
<td>1 min</td>
<td>1.5 min</td>
</tr>
<tr>
<td>Flowable composite (pre-light-cure)</td>
<td>1 min</td>
<td>1.5 min</td>
</tr>
<tr>
<td>Pontic</td>
<td>3 min</td>
<td>3 min</td>
</tr>
<tr>
<td>Final</td>
<td>5 min</td>
<td>3 min</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Light-Cure</th>
<th>Liculite / de Trey Polylux HDS 400 / Dreve</th>
<th>Labolight LV II + LV III GC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Opaque</td>
<td>3 min</td>
<td>2 min</td>
</tr>
<tr>
<td>Opaque</td>
<td>5 min</td>
<td>3 min</td>
</tr>
<tr>
<td>Composite (pre-light-cure)</td>
<td>3 min</td>
<td>2 min</td>
</tr>
<tr>
<td>Flowable composite (pre-light-cure)</td>
<td>3 min</td>
<td>2 min</td>
</tr>
<tr>
<td>Pontic</td>
<td>5 min</td>
<td>3 min</td>
</tr>
<tr>
<td>Final</td>
<td>10 min</td>
<td>5 min</td>
</tr>
</tbody>
</table>

Note: CERAMAGE composites can be light cured in all light curing units recommended by SHOFU. The types of unit and light cure times are shown in the curing-chart. In order to guarantee a perfect light-curing of the CERAMAGE materials, take care that the work to be cured is placed at optimal position to the ray of light-curing. Please consider the corresponding manufacturer’s instructions when operating the light curing devices.
## 5. Technical data

### 5-2. Depth of cure

<table>
<thead>
<tr>
<th>System</th>
<th>Shade</th>
<th>Curing Time (Solidlite EX)</th>
<th>Depth of Cure (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Opaque</td>
<td></td>
<td>1 min</td>
<td>1.6</td>
</tr>
<tr>
<td>Opaque</td>
<td></td>
<td>3 min</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>A30</td>
<td>3 min</td>
<td>0.21</td>
</tr>
<tr>
<td></td>
<td>A40</td>
<td>3 min</td>
<td>0.20</td>
</tr>
<tr>
<td>Cervical</td>
<td>AC1</td>
<td>1 – 5 min</td>
<td>1.3 – 1.8</td>
</tr>
<tr>
<td></td>
<td>AC2</td>
<td>1 – 5 min</td>
<td>1.0 – 1.4</td>
</tr>
<tr>
<td>Opaque Dentine</td>
<td>ODA</td>
<td>1 – 5 min</td>
<td>1.8 – 2.5</td>
</tr>
<tr>
<td></td>
<td>ODA3</td>
<td>1 – 5 min</td>
<td>1.5 – 2.1</td>
</tr>
<tr>
<td></td>
<td>ODA4</td>
<td>1 – 5 min</td>
<td>1.2 – 1.6</td>
</tr>
<tr>
<td>Body</td>
<td>A1B</td>
<td>1 – 5 min</td>
<td>2.5 – 3.4</td>
</tr>
<tr>
<td></td>
<td>A3B</td>
<td>1 – 5 min</td>
<td>1.8 – 2.6</td>
</tr>
<tr>
<td></td>
<td>A4B</td>
<td>1 – 5 min</td>
<td>1.8 – 2.5</td>
</tr>
<tr>
<td>Incisal</td>
<td>56</td>
<td>1 – 5 min</td>
<td>4.2 – 6.8</td>
</tr>
<tr>
<td></td>
<td>59</td>
<td>1 – 5 min</td>
<td>4.0 – 5.8</td>
</tr>
<tr>
<td></td>
<td>61</td>
<td>1 – 5 min</td>
<td>3.8 – 5.5</td>
</tr>
<tr>
<td>Translucent</td>
<td>T</td>
<td>1 – 5 min</td>
<td>5.5 – 8.6</td>
</tr>
<tr>
<td></td>
<td>T-Glass</td>
<td>1 – 5 min</td>
<td>6.2 – 9.6</td>
</tr>
<tr>
<td>Concentrate</td>
<td>MI</td>
<td>1 – 5 min</td>
<td>2.4 – 3.4</td>
</tr>
<tr>
<td></td>
<td>OC</td>
<td>1 – 5 min</td>
<td>3.7 – 6.3</td>
</tr>
<tr>
<td></td>
<td>AM-Y</td>
<td>1 – 5 min</td>
<td>3.2 – 4.6</td>
</tr>
<tr>
<td></td>
<td>MY</td>
<td>1 – 5 min</td>
<td>1.6 – 2.4</td>
</tr>
<tr>
<td></td>
<td>GUM-D</td>
<td>1 – 5 min</td>
<td>1.4 – 2.0</td>
</tr>
<tr>
<td>Opaque Dentine</td>
<td>F-ODA3</td>
<td>1 – 5 min</td>
<td>1.6 – 2.2</td>
</tr>
<tr>
<td>Body</td>
<td>F-A3B</td>
<td>1 – 5 min</td>
<td>2.0 – 2.7</td>
</tr>
<tr>
<td>Incisal</td>
<td>F-59</td>
<td>1 – 5 min</td>
<td>4.3 – 6.1</td>
</tr>
<tr>
<td>Translucent</td>
<td>F-T-Glass</td>
<td>1 – 5 min</td>
<td>6.6 – 10.4</td>
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</tbody>
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5-3. Physical properties

<table>
<thead>
<tr>
<th></th>
<th>CERAMAGE Composite for crown + bridge</th>
<th>CERAMAGE Flowable Composite Resin</th>
<th>SOLIDEX Crown and bridge composite</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vickers Hardness (MPa)</td>
<td>726</td>
<td>392</td>
<td>422</td>
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</tr>
<tr>
<td>Flexural Strength (MPa)</td>
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<td>132</td>
<td>75</td>
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<tr>
<td>Flexural Modulus (GPa)</td>
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<td>6.0</td>
<td>5.7</td>
<td></td>
</tr>
<tr>
<td>Compressive Strength (MPa)</td>
<td>354</td>
<td>303</td>
<td>314</td>
<td>Based on SHOFU test method</td>
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<tr>
<td>Indirect Tensile Strength (MPa)</td>
<td>62</td>
<td>58</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Polymerisation Shrinkage (Vol.%)</td>
<td>2.5</td>
<td>3.3</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Toothbrush Abrasion (%)</td>
<td>0.43</td>
<td>0.74</td>
<td>0.39</td>
<td></td>
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<tr>
<td>Enamel Abrasion of the Antagonist (µm)</td>
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<td>2.5</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>Working Time (minutes)</td>
<td>&gt;30</td>
<td>25</td>
<td>&gt;30</td>
<td></td>
</tr>
<tr>
<td>Fluorescent 2000 lx</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5-4. Adhesives strength

Tensile Bond strength (MPa) to gold- and silver-palladium-alloy – after 2000 thermal cycles

<table>
<thead>
<tr>
<th>CERAMAGE</th>
<th>SOLIDEX</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.9</td>
<td>10.2</td>
<td>Based on SHOFU test method</td>
</tr>
</tbody>
</table>
6. Ceramage gum colors

GUM COLORS
INSTRUCTIONS FOR USE

The natural appearance of gingival parts is very important, especially when producing highquality telescopic- and implant supported supra constructions.
The CERAMAGE GUM COLOR FULL SET was developed to enable gingival reproduction for any patient’s situation. In addition to the well proven GUM composites of the CERAMAGE system this supplementing range of pastes and effect colors offers unlimited possibilities for the reproduction of lifelike gingival reconstructions.
Moreover, different viscosities of the pastes and gels facilitate an efficient operation and an aimed placement of the desired effects.

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6-1. System Components

1-1. Indications
A composite for the creation of gingival shaded areas when producing veneers, anterior and posterior restorations as well as telescopic and implant-supported supra constructions.

1-2. Components and shades

CERAMAGE OPAQUE
Opaque paste for masking the color of the framework.
In addition to the basic shades the following special shades are available in the CERAMAGE GUM COLOR FULL SET:
- **GUM-O (GUM Opaque)**
  Opaque for the foundation of the frame color for the GUM pastes.
- **WO (White Opaque)**
  Opaque for mixing with the basic and GUM-Opaques for adjusting the value.

CERAMAGE COMPOSITE
Composite for the reproduction of the gingival shades:
- **GUM-L (GUM Light)**
  For the reproduction of bright gingival shades.
- **GUM-D (GUM Dark)**
  For the reproduction of dark gingival shades.
- **GUM-Or (GUM Orange)**
  For the reproduction of orange-colored gingival shades.
- **GUM-T (GUM Translucent)**
  For the reproduction of reddish translucent gingival areas.

CERAMAGE FLOWABLE COMPOSITE RESIN
Flowable pastes, for filling even the smallest areas.
Used for the modelling of interdental areas or the forming of protruding alveolar areas and soft tissue parts:
- **F-W (F White)**
  For mixing of brighter shade variants of the following F-GUM pastes.
- **F-GUM–Br (F-GUM Brown)**
  For the reproduction of reddish-brown shaded soft tissue parts.
- **F-GUM-V (F-GUM Violet)**
  For the reproduction of violet shaded soft tissue parts.
- **F-GUM-R (F-GUM Red)**
  For the reproduction of reddish shaded soft tissue parts.
6-2. Application

2-1. Layering technique for gingival reproduction

Basic build up  Individual build up

- Pre-Opaque
- Opaque
- GUM-T
- GUM-L (GUM-D / GUM-Or)
- F-GUM-R (F-GUM-V)
- F-W (F-ODA3)

2-2. Pre-treatments

After contouring of the veneers sandblast the remaining metal frame with aluminium oxide and clean with a steam cleaner. Then dry carefully.

2-3. Application of M. L. Primer

Apply M. L. Primer to the remaining surface of the metal frame with a small brush and dry for 10 seconds.

Note: Since M.L. Primer contains solvents, replace the cap immediately after use. Dispensed liquid should be used immediately. After applying M.L. Primer, clean the Uni Brush No. 4 with CERAMAGE Cleaner. The brush should not be cleaned with self-curing resin liquid.

2-4. Application and light-curing of Pre-Opaque

Apply the Pre-Opaque with a Uni Brush No. 4 to the undercuts of the retention beads and into the cavities of the bridge pontics or the pontic supports and light-cure. Ensure that Pre-Opaque flows completely into the undercuts of the retention beads.
6-2. Application

2-5. Application of translucent paste into the undercuts and cavities of the frames

Before the application of the final opaque layer the different thickness between the bridge elements or undercuts and construction based cavities of the framework should be filled with translucent paste.

![Image of translucent paste application into undercuts and cavities]

2-6. Application of light-curing Opaque

Apply the ready for use paste opaques pure or mixed on the cured Pre-Opaque with the Uni Brush No. 4 and polymerise. Always apply a thin layer of opaque and repeat the procedure 2 to 3 times (apply opaque and light-cure) to cover the framework. Pay absolute attention to a proper completion to composite veneers which are already produced.

![Image of opaque application process]

2-7. Application of light-curing GUM pastes

Apply the GUM pastes aimed in layer thickness of max. 2.0 mm, build up the desired anatomical shapes and light-cure. Extensive restorations require several intermediate polymerisations. Work segmentally when applying the gingival parts and fill the joints of the segments with GUM composite finally.

![Images of GUM paste application in gingival parts]

For the basic build up of the gingival parts it is recommended to use at first dark and medium shaded GUM pastes. The additional individualisation can be done with intensive or Flowable Resin-pastes. The dominant papilla and the transition to the cervical teeth areas should be build up with light GUM pastes.
2-8. Application of Flowable Composite Resin
Flowable Composite Resins are more flowable than conventional CERAMAGE composite pastes and allow a precise placement of smallest amounts of composite. Use these resins pure or mixed for modelling of the interproximal areas and for forming of the protruding alveolar areas.

2-9. Application of Modelling Liquid
This special liquid is used when applying composite. In addition it can be applied to the surface of the paste after light-curing or after contouring as a wetting agent to facilitate adding further material.

Note: Do not use Modelling Liquid as wetting agent when applying Flowable Composite Resin subsequently!

2-10. Application of Oxy-Barrier
CERAMAGE Oxy-Barrier is applied to avoid air contact before the final light-curing of CERAMAGE. Applying it to the surface of CERAMAGE composite prevents an inhibition layer forming on the surface during light-curing.
6-3. Contouring, finishing and polishing

3-1. Contouring
Due to its high ceramic filler content, CERAMAGE composite is extremely abrasion-resistant and exhibits outstanding physical properties. Therefore, polymerised composite surfaces must be trimmed with matched rotary instruments. It is not advisable to use cutters or coarse diamond burs! The surface can be trimmed to achieve the desired texture and shine using the items in the CERAMAGE Finishing & Polishing Kit.

Contour the anatomical details with Dura-Green Stones

The exact anatomical shaping of the interproximal-and-papilla areas can be achieved simply with Robot Carbide Fissur Bur

3-2. Finishing and Pre-polishing
After contouring with Dura-Green stones follows the additional pre-polishing with two working steps:
First with CompoMaster Coarse silicone polishers, secondly with DURA-POLISH (Al₂O₃) polishing paste.

Finish with Dura-Green Stones contoured surface details with CompoMaster Coarse Silicone polishers

For the preparation of the high-lustre polishing use Dura-Polish Al₂O₃ polishing paste with a medium strong brush

Note: Overheating must be avoided during finishing and polishing! Caffeine and nicotine can cause discolorations on unpolished surfaces.
3-3. High-lustre polishing
After pre-polishing with DURA-POLISH use the diamond impregnated polishing paste DURA-POLISH DIA for increased surface gloss.

For the high-lustre polishing use Dura-Polish Dia with a brush or wool mop. The high-lustre polished result shows no difference to the natural example.

Note: For a high-lustre polish apply DURA-POLISH DIA with a brush and polish with light pressure.

6-4. Examples of use

4-1. GUMY 1-3
In addition to our shade guides three different gingival shaded shade guide holders (L, M, D) are available for a patient specific determination of the gingival shade during determination of the tooth shade – the GUMYS.
Placing the shade guides in a GUMY you always achieve an optimal match with the patient's gingiva and at the same time you have an instrument for controlling in the dental laboratory.
7-1. General Information

7-1. Important information

- CERAMAGE is intended solely for use in dental treatment.
- CERAMAGE should only be used by a qualified dental professional.
- Do not use after the expiry date printed on the packaging and labels.
- Keep the material away from an open flame, store at room temperature (1 – 30 °C / 34 – 86 °F).
- Use the material in a well-ventilated room.
- To avoid any adverse effects from the dust when polishing light-cured material, use a bench extractor, anti-dust face mask and protective glasses that comply with approved standards. Do not inhale the dust.

7-2. Precautions

- Operators who develop a rash, eczema, reddening, ulcers, swelling, itchiness, numbness, etc. when using the material should discontinue use and consult a doctor.
- Avoid contact with the skin and eyes. On contact with the eyes, rinse immediately with plenty of water and consult an eye specialist.
- Operators in frequent contact with natural rubber are considered to be at a higher risk of developing an allergy to natural rubber and should, therefore, use CERAMAGE Spacer carefully.

7-3. Hazard warnings

- Pre-Opaques, Opaques contain 2 HEMA
- M.L. Primer, CERAMAGE Cleaner contain acetone
- CERAMAGE Sep, CERAMAGE Cleaner contain ethanol
7-4. User information

- Always replace the cap after use. Ensure the cap is screwed on tightly before storing the product. Use separate brushes for Pre-Opaque and Opaque. After application, clean the brush with brush cleaner (CERAMAGE Cleaner).
- Do not apply the material under direct light, e.g. sunlight or artificial laboratory lamps, as this may accelerate light-curing of the paste.
- To avoid air bubbles when mixing and material degradation, never mix this composite resin with other crown and bridge composite resins. Do not mix this composite resin with other materials.
- Do not apply surface, lustering or glazing agent to the surface of restorations fabricated with this material.
- Cover the material with the Light Shield Cover when it is kept on the DispoDish or mixing pad.
- Flowable Composite Resin is intended for use in small areas, e.g. restoring void caused by air bubbles, fine adjustment of the shape, etc. Do not use it for the full build-up of the restoration or the surface of a crown or bridge.
- Before use, shake the bottle of CERAMAGE Sep and apply after the sediment disperses.
- Replace the cap immediately after applying the CERAMAGE Spacer or the contents may solidify.
- The light-curing times (exposure times) given are for the “SolidiLite EX” light-curing unit. If a different light-curing unit is used, adhere to the manufacturer’s instructions for use to ensure the material is light-cured properly.

7-5. Other information

- The surface of the fitted restoration may become stained or plaque may adhere to it depending on the diet and oral hygiene of the patient. Ensure that patients practice good oral hygiene on a daily basis.

7-6. Contra-Indications

- Bruxism
- Malocclusions
- Occlusion with interferences
- No occlusal contacts at metal composite margins