

Hydrocolloidal impression materials

They contain a dispersed and dispersion phase. The dispersed phase contains particles of 1–200 nm. There are two phases of the dispersed phase: sol and gel. The Sol phase has a liquid consistency, and the gel phase has a firm consistency. During gelling, fibrils are formed, arranged in chains or fibers. Chains are otherwise referred to as **micelia**. The dispersion phase is formed by capillary adhesion. Agar masses are held together by secondary bonds (they are reversibly canceled by increasing the temperature, so lowering the temperature restores them again). Alginate masses are connected by an irreversible chemical reaction between individual fibrils. The higher the concentration of hydrocolloid, the more solid it is. For reversibly bonded agar masses, the strength is increased by lowering the temperature. On the contrary, by increasing the temperature, the mass is eventually converted from gel to sol. For irreversibly bound alginate masses, the strength does not change with normal temperature changes. Hydrocolloidal impressions evaporate water in air (evaporation occurs) or water is released to the surface (syneresis occurs). In contact with water, the opposite phenomena occur, i.e. water sucking in (imbibition).

Agar hydrocolloids

Conversion of gel to sol at 70–100 °C. Sol conversion into gel at 37–50 °C. The main chemical component is agar (polysaccharide) with a weight concentration of 8-15%. Water accounts for about 85%. They also contain borax (0.2–0.5%) and potassium or sodium sulphate (1-2%). Borax increases the strength of the mass, and sulfates are its antagonists. Other ingredients are: diatomaceous earth, silica, wax, rubber (total 0.5–1%).

- **Application:** fixed prosthetics (crown restorations, bridges with three to four members), removable dentures.
- **Decontamination:** vapors of 2% glutaraldehyde, spray solutions of iodophores or synthetic phenols.
- **Advantages:** natural hydrophilia, partial hemostatic effect, stable composition, accurate reproduction, biocompatibility (natural seaweed product).
- **Disadvantages:** problems with maintaining the correct temperature, problems with removal from undercut areas (risk of tearing the imprint), time to process the imprint after making only a maximum of 1 hour, the need to purchase special impression buckets and water baths.

Alginate impression materials

The main component is alginate sodium, potassium or triethanolamine. Additional components: gypsum, disodium phosphate (Na_2HPO_4), magnesium oxide (MgO), diatomaceous earth. It is a two-component type of matter (powder, liquid). The liquid (water) used in the preparation of the mass should have a temperature of 20-23 °C.

Negative made of alginate impression material.

- **Application:** auxiliary imprints (antagonal, preliminary,...), imprints in orthodontics.
- **Advantages:** easy preparation and method of application, good length of workability and solidification, accuracy, price.
- **Disadvantages:** drying, swelling, time to process the imprint after making only between thirty to sixty minutes, lower strength than elastomers, negative influence on the plaster model.

Links

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- Gypsum

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