

# Cement cements

## General characteristics

### Mechanical

- Compressive and bending strength (mechanical resistance),
- nerozpustnost,
- binding to dental tissues and prosthetic materials (alloy, plastic, ceramics),
- hermetic closure,
- minimum film thickness,
- low thermal and electrical conductivity,
- radioopacita.

### Biological

- Neutral pH,
- netoxicity,
- anticariogenic effects,
- nesenzibilizace.

### Aesthetic

- Color tuning of the overall aesthetics (especially for all-resin and all-ceramic prostheses),
- colour stability.

## Individual types

- Cement cements can be divided into two groups, depending on the method of cementing they are used for.
  - Conventional cements:
    - zinkoxidfosfátové cementy;
    - polykarboxylátové;
    - zinkoxideugenolové;
    - GIC;
    - RM GIC.
  - Cements for adhesive sealing:
    - pryskyřičné cementy;
    - kompomerní cementy.

### Zinc oxide phosphate cement

**Powder:** ZnO (90%), MgO (10%), pigments.

**Liquid:**  $[\text{H}_3\text{PO}_4]$ ,  $\text{Al}_2\text{O}_3$ , ZnO.

**Application:** permanent fixation of crown and bridge restorations with metal construction, plastic or aluminium ceramic jacket crowns or as a long-term temporary filling.

After mixing, it should have the consistency of thinner cream. Of all the types of retention, it is only mechanical, it does not adhere to hard tooth tissues. PH is acidic until solidified. It dissolves in the oral cavity so that the marginal closure of the replacement may be disturbed over time. After solidification, which occurs in 15-20 minutes, the excess can be removed without any problems. All other permanent cements must be cleaned at least roughly before complete solidification, which poses a risk of dislocation of work.

### Polycarboxylate cement

**Powder:** like zinc oxide phosphate cement.

**Fluid:** polycarboxylic acid.

**Use:** crown and bridge dentures with metal construction, young or sensitive teeth or as a long-term temporary filling.

It has a lower compressive strength than the previous cement. The main signs are thixotropia and hydrophilicity. It is less acidic than the previous cement, making it more gentle on tooth pulp.

### Zinc oxideugenol cement

**Powder:** ZnO, synthetic resin, accelerators, rosin.

**Liquid:** eugenol, olive oil.

**Application:** as a sealer in endodontics, for temporary sealing of final fixed structures, EBA cements can also be used for final sealing.

Properties: does not have dentinoplastic effects, disrupts polymerization of composites, is not mechanically resistant, allergizes and discolors tooth tissues.

## Sklopolyalkenoate cement

**Powder:** fluorosilicate glass.

**Liquid:** itaconic acid, maleic acid, tricarboxylic acid.

**Application:** as with the two previous cements.

It has a higher compressive strength than the two previous cements. Holds by chemical retention. The initial pH is very low, which causes irritation of the tooth pulp. In saliva, it dissolves. Therefore, it is necessary to maintain a dry working field. Its advantage is the gradual release of fluoride ions into the oral cavity.

## Resin-modified glasspolyalkenoate cements

Glass ionomer cement in this case is modified with a fluid containing methacrylate groups.

**Field of application:** fixed restorations with metal construction.

It has a higher compressive strength than previous cements, but lower than resinous. Holds by chemical retention. It does not dissolve much in saliva. Therefore, it is not necessary to maintain a dry working field. It is a hydrophilic cement.

## Resin cements

They are composites.

**Field of application:** fixation of all-ceramic and all-resin prostheses.

It has high compressive strength. Holds by chemical retention. In saliva, it does not dissolve at all. It is polymerized by light or dual (i.e. light and chemically). Contraction occurs during polymerization. They perfectly adhere to the color we want.

## Kompomery

Kompomers

## Links

### Related articles

- Cementation of prosthetic works

### Bibliography

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