

# Dental impressions essay



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To provide a current and relevant report of impression materials available to clinicians. A sound knowledge is imperative to achieve an accurate replica of intra-oral structures and good quality fixed and removable prosthesis.

Introduction Impression material can be classified as elastic or ridged. The ridged impression materials cannot engage undercuts that may present on teeth or bone. Consequently their use is restricted to edentulous patients.

An example of this is impression compounds which softens at 60°C. Elastic materials are subdivided in to hydrocolloid and elastomeric. Hydrocolloid impression materials include: \* agar, a reversible hydrocolloid (although does give good surface detail, requires a water bath, slow setting times, hence not used commonly these days) \* alginate, which is irreversible and very commonly used. The elastomeric materials are: \* polysulphide, the very first type of material, this is now deemed ' old fashioned and rarely used due to demanding technique, unpleasant smell and possible toxicity of lead dioxide ingredient. \* Polyether Silicone (condensation-cured) \* Silicone (addition-cured) Desirable properties of impression materials: Accurate reproduction of surface detail: requires a low viscosity material allowing it to adapt closely to the hard and soft tissues. Hydrophilic materials will prevent airblows from forming in the presence of moisture and remove the need for a dry field.

Dimensional accuracy and stability: impression materials set by either physical or chemical reaction and may shrink or expand during this process affecting the accuracy of the cast produced. Some materials are also prone to change in dimension due to thermal contraction during cooling from the mouth to room temperature and in the period before casting by the

laboratory (storage stability) To enable the removal of impressions from bulbous undercut areas, materials should ideally be flexible with minimal distortion upon removal. Other desirable features include a neutral taste/odour, short setting time, non toxic, easily removed, easily mixed, short working time and low cost. The first elastomeric materials were introduced in 1955 and were the polysulphides. Both polysulphide and addition cured silicones release water and ethanol respectively during chemical setting and therefore undergo shrinkage.

Polyether, is provided in a two paste system. This includes a base and catalyst paste. It has the advantage that it is naturally hydrophilic, accurate and high dimensional stability, good elastic recovery, low setting contraction, excellent surface detail reproduction. However, when sets quickly and it does become very stiff when set and can be difficult to remove from the mouth. It is also expensive compared to other materials.

They may cause an allergic reaction due to presence of sulphonic acid ester. Impegnum™ from the Pentamix family is the most famous in the UK of the Polyether materials. It is a common material of choice for implant prosthesis as it gives top-of-the-class detail reproduction due to outstanding hydrophilicity. I have only used this product once and it did give excellent results, due to its cost I would keep in the armamentarium until I start doing implant-based restorations more commonly. Condensation cured silicones and addition cure similar in their chemistry. They are sometimes called type 1 (condensation) and type 2 (addition) silicone materials.

Addition silicones are sometimes called vinyl polysiloxanes (VPS) as they use vinyl terminal groups as opposed to hydroxyl terminal groups in condensation cured silicones. They are supplied in 2 pastes or in a gun and cartridge form as light, medium, heavy and very heavy bodied. One paste contains a polydimethylsiloxane polymer in which some methyl groups are replaced by hydrogen. The other paste contains a pre-polymer in which some methyl groups are replaced by vinyl groups, this paste also contains a Chloroplatinic acid catalyst. Upon mixing, in equal proportions, crosslinking occurs to form a silicone rubber.

Setting occurs in about 6-8 minutes. Condensation cured silicone produce by products when they react and therefore experience moe shrinkage. It is the alcohol produced in the chemical reaction that causes the shrinkage. In my practice we use ..... The dimensional stability and hence the accuracy are dependend on the changes that can occueras the materil sets.

The polyethers and the addition silicones give the best dimensional accuracy. Materails should exhibite thrixotrpc behavious, they should flow readily when stressed such that it takes a good impression of the hard and soft dental tissues when the impression tray is seated and ceases to flow thereafter Complete and Partial Dentures When constructing dentures the impression material may depend on whether the patient is edentulous or dentate. A full denture impression is can be performed via Plaster of Paris, zinc oxide-eugenol (ZOE) or a two stage compo and ZOE. In my surgery I use alginate for primary impressions using a stock tray. Secondary impressions are taken using a customized acrylic special tray with 3mm spacing. For

partial dentures, an alginate is also useful as is. Sometimes a flabby or atrophic ridge may be present which can be difficult to manage.

Compression of this flabby tissue by the impression will cause pressure on the tissue with the finished denture and discomfort to the patient. For this we can use the Selective Pressure Technique Reflective Commentary: For my crown and bridge impressions I was using a putty silicone (type 0) with a wash of light bodied in a 1-stage impression. Since starting the FGDP Restorative Diploma and researching this topic I have changed to use a medium bodied (type 2) with a light bodies wash (1- stage). I was using the first technique because of the ease of handling. Even though upon inspection of the impression it looked adequate there was often a problem with seating of the restorations and they needed adjustment at the chair side.

This could be from recoild of the impression material as the viscous utyy pushes the flexible stock tray. The ptuuties were first developed to reduce the amouth of shrinkage, however the addition silcones have very little poymeration contraction and therefore excellent dimensional stability and stability and therefore are not required for modern impressions of crown and bridge work. do us ethem easy to use but have since used References: