

GYPSUM PRODUCTS

GYPSUM: It is a mineral mined in various parts of the world. Various gypsum products are widely used in dentistry.

Chemical Formula:

Gypsum:

Gypsum Products*:

CLASSIFICATION:

As per A.D.A. Specification No. 25

APPICATIONS	
Type I :	
Type II :	
Type III :	
Type IV :	
Type V :	

MANIPULATION:

EXPERIMENT:

1. **AIM to study the manipulation of dental plaster and preparation of a block.**

INSTRUMENTS AND MATERIALS:

- | | |
|-------------------------------|-------------------|
| 1. Flexible Large Rubber Bowl | 6. Porcelain Tile |
| 2. Stiff Bladed SS Spatula | 7. Sand Paper |
| 3. Plaster Knife | 8. Dental Plaster |
| 4. Stop Watch | 9. Water |
| 5. Scale | 10. Pencil |

PROCEDURE:

MANIPULATION OF DENTAL PLASTER

	S. No.	DATE	WORK DONE	GRADE	SIGN.
P L A S T E R C U B E S					
P L A S T E R C U B O I D S					

MANIPULATION OF DENTAL PLASTER

	S. No.	DATE	WORK DONE	GRADE	SIGN.
P L A S T E R P Y R A M I D S					
P L A S T E R C O N E S					

MANIPULATION OF DENTAL STONE

	S. No.	DATE	WORK DONE	GRADE	SIGN.
S T O N E C U B E S					
S T O N E C U B O I D S					

MANIPULATION OF DENTAL STONE

	S. No.	DATE	WORK DONE	GRADE	SIGN.
S T O N E P Y R A M I D S					
S T O N E C O N E S					

IMPRESSION MATERIALS

DEFINITION OF IMPRESSION:

CLASSIFICATION:

	RIGID	ELASTIC
Set by Chemical Reaction (Irreversible)		
Set by Temperature Change (Reversible)		

IDEAL REQUIREMENTS:

IMPRESSION COMPOUND

CLASSIFICATION:

As per A.D.A. Specification No. 3

Type I –

Type II –

As an impression material, it is classified as:

- **Rigid**
- **Sets by physical change (reversible)**
- **Used for edentulous impression**

MODE OF SUPPLY:

COMPOSITION:

Ingredients

Function

FUSION TEMPERATURE:

It indicates a definite reduction in plasticity during cooling. Above this temperature, fatty acids are liquid and form a smooth plastic mass while the impression is being obtained. Thus every detail of the mouth tissues is more likely to be reproduced. The tray is seated and held firmly until the fusion temperature is reached. Below this temperature an accurate and detailed impression cannot be expected.

MANIPULATION OF IMPRESSION COMPOUND

	S. No.	DATE	WORK DONE	GRADE	SIGN.
T H U M B I M P R E S S I O N					

PROCEDURE:

GRADE:

Signature of Instructor

ZINC OXIDE EUGENOL IMPRESSION PASTE

CLASSIFICATION:

As per A.D.A. Specification No. 16

Type I – Hard

Type II – Soft

As an impression material, it is classified as:

- Rigid
- Set by Chemical change (irreversible)
- Used for edentulous impression

APPLICATIONS:

MODE OF SUPPLY:

COMPOSITION:

Ingredients

Function

Base Paste.....

Catalyst paste.....

SETTING REACTION:

SETTING TIME:

Initial

Final

Type I

Type II

FACTORS AFFECTING SETTING TIME:

MANIPULATION:

EXPERIMENT:

AIM: To study the manipulation and properties of impression paste.

INSTRUMENTS AND MATERIALS:

- 1) Glass slab or oil-impervious paper pad
- 2) S.S Broad Bladed, Stiff Spatula
- 3) Vaseline
- 4) Special Tray (Custom Tray)
- 5) Zinc oxide-Eugenol Paste

MANIPULATION OF ZINC OXIDE EUGENOL PASTE

	S. No.	DATE	WORK DONE	GRADE	SIGN
T H U M B I M P R E S S I O N					

HYDROCOLLOIDS

These are elastic, gel-like substances extensively used as impression materials.

COLLOIDS:

HYDROCOLLOIDS:

Type: I

II

GEL:

SOL:

GELATION:

SYNERESIS:

IMBIBITION:

HYSTERESIS:

REVERSIBLE HYDROCOLLOIDS: AGAR

A.D.A Specification No. 11

CLASSIFICATION:

Elastic

Sets by physical change (Reversible)

Used for edentulous impressions

APPLICATIONS:

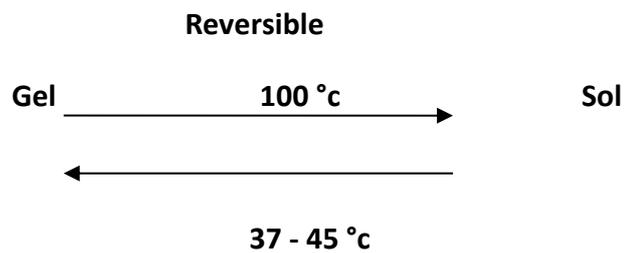
MODE OF SUPPLY:

COMPOSITION:

Ingredients

Function

SETTING REACTION:



GELATION TIME:

GELATION TEMPERATURE:

GEL STRENGTH:

Factors affecting gel strength:

MANIPULATION:

INSTRUMENTS AND EQUIPMENT:

i) Hydrocolloid Conditioner:

Description:

Diagram:

ii) Tray :

Description

Diagram

PROPERTIES:

Mechanical:

- i) Compressive :
- ii) Tear strength :

Dimensional Stability:

CARE OF IMPRESSION:

COMPATIBILITY WITH GYPSUM CAST & DIE MATERIALS:

HARDENING SOLUTION:

STORAGE OF MATERIAL:

DUPLICATING MATERIAL:

IMPRESSION DISINFECTION:

WET FIELD TECHNIQUE:

Grade

Signature of Instructor

IRREVERSIBLE HYDROCOLLOIDS: ALGINATE

CLASSIFICATION:

As per A.D.A. Specification No. 16

Type I -

Type II -

As an impression material it is

Elastic

Sets by chemical change (irreversible)

Used for dentulous and edentulous impression

APPLICATIONS:

MODE OF SUPPLY:

COMPOSITION:

Ingredients

Function

SETTING REACTION:

GELATION TIME:

FACTORS AFFECTING GELATION TIME:

GEL STRENGTH:

Factors Affecting Strength:

MANIPULATION:

EXPERIMENT:

AIM: To Study the manipulation and properties of Alginate Impression Material.

INTRUMENTS AND MATERIALS:

- 1) Alginate Impression Material
- 2) Flexible Rubber bowl
- 3) Stainless Steel Spatula [Curved and Flexible]
- 4) Perforated Impression Tray
- 5) Water and powder Measures
- 6) Water

MANIPULATION OF ALGINATE

	S. No.	DATE	WORK DONE	GRADE	SIGN.
I M P R S S I O N					

PROPERTIES:

Mechanical:

- i) Compressive Strength ---
- ii) Tear Strength ---

Dimensional Stability:

Shelf Life:

REMOVAL OF IMPRESSION:

The strength of the material (gel) increases after set. The elastic properties improve with increase in strength. The impression is removed 2 to 3 minutes after set.

CARE OF IMPRESSION:

COMPATIBILITY WITH GYPSUM CAST AND DIE MATERIALS:

IMPRESSION DISINFECTION:

LAMINATE TECHNIQUE:

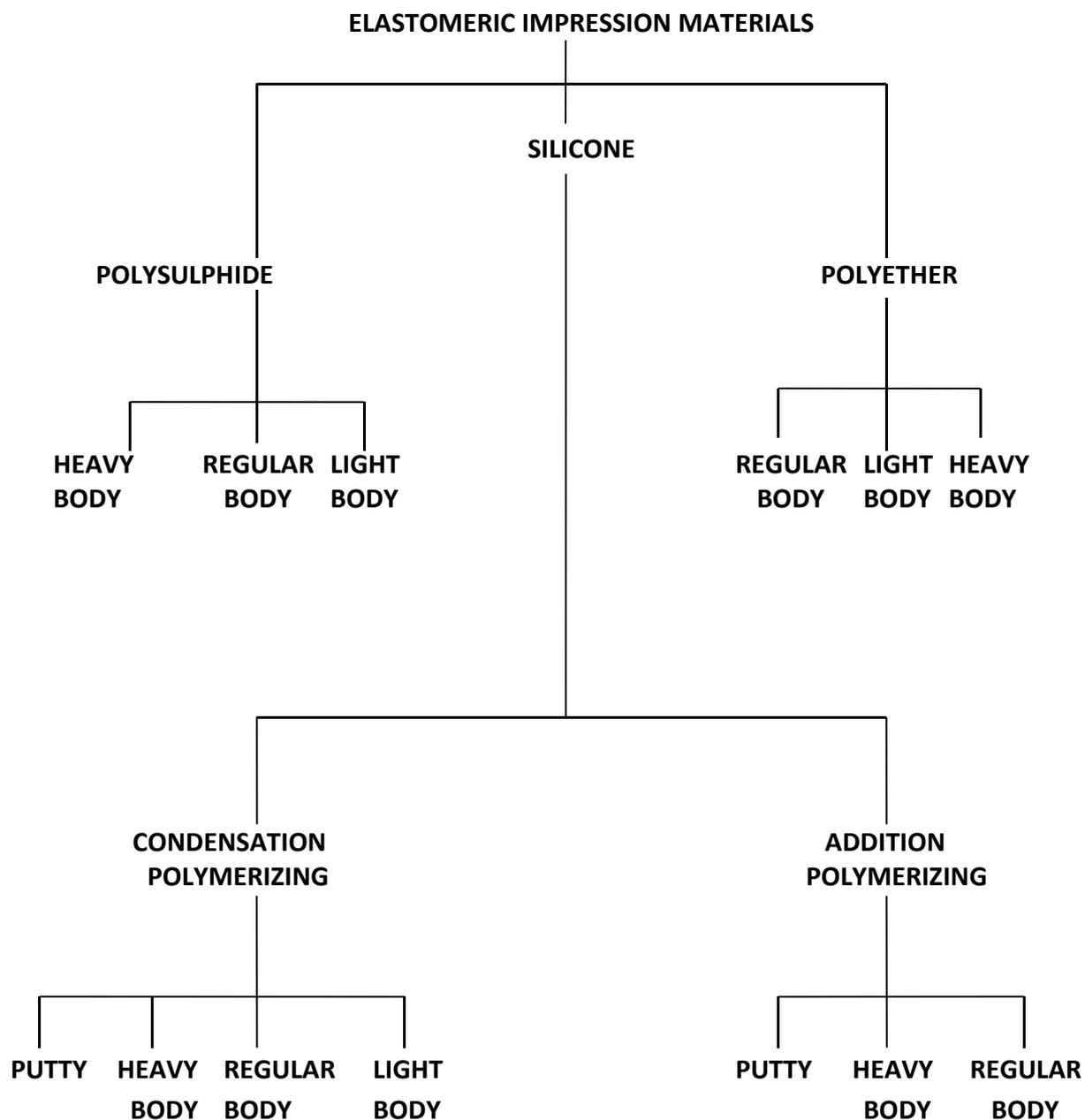
TYPES OF FAILURES:

TYPE

Cause

Grade

Signature of instructor



ELASTOMERIC IMPRESSION MATERIALS

These are elastic impression materials which are rubber like in nature and are referred to as **Non aqueous Elastomeric Dental Impression Materials**.

Chemically these are four kinds: **Polysulphide, Condensation Polymerizing Silicone, Addition Polymerizing Silicon and Polyether**, recently a fifth class of elastomeric impression materials was added, known as **visible light-curable polyether urethane dimethacrylate**.

As impression material they are

Elastic

Sets by chemical change

Used for dentulous and edentulous impressions.

GENERAL CHARACTERISTICS:

- 1. Excellent reproduction of tissue detail because of its free flowing nature.**
- 2. Generally acceptable odour and colour (except polysulphide-dark brown & unpleasant)**
- 3. No special equipment required and easy to handle (except polysulfide messy to handle)**
- 4. Generally hydrophobic in nature (except polyether)**
- 5. Does not adhere to the trays, so adhesives are required.**
- 6. Excellent elastic properties.**
- 7. Good dimensional stability (except polysulphide and condensation silicone)**
- 8. It can be electroplated.**
- 9. It can be disinfected by immersion in chemicals (except polyether-disinfected by spraying).**

POLYSULPHIDE

APPLICATIONS:

MODE OF SUPPLY:

COMPOSITION:

Ingredients

Functions

Base Paste:

Catalyst Past:

SETTING REACTION:

There is cross linking and continued polymerization, the material should be held in the mouth for a longer time for better properties.

SETTING TIME:

PROPERTIES:

i) **Color and Odor :**

ii) **Working Characteristics :**

iii) **Dimensional Change :**

iv) **Elastic Recovery :**

v) **Tear Strength:**

CONDENSATION SILICONE

APPLICATIONS:

MODE OF SUPPLY:

COMPOSITION:

Ingredients

Functions

Base Paste:

Catalyst Paste:

SETTING REACTION:

SETTING TIME:

PROPERTIES:

i) Dimensional Stability :

ii) Hydrophobic Nature :

iii) Electroplating :

iv) Shelf Life :

ADVANTAGES

DISADVANTAGES

ADDITION SILICONE

APPLICATIONS:

MODE OF SUPPLY:

COMPOSITION:

Ingredients

Functions

Base Paste:

Catalyst Paste:

Release of hydrogen causes dimensional problems thus palladium is added as a hydrogen absorber.

SETTING TIME:

PROPERTIES:

i) **Working Time:**

ii) **Dimensional Stability :**

iii) **Flexibility :**

iv) **Hydrophobic Nature :**

v) **Electroplating :**

ADVANTAGES

DISADVANTAGES

POLYETHER

APPLICATIONS:

MODE OF SUPPLY:

COMPOSITION:

Ingredients

Functions

Base Paste:

Catalyst Paste:

SETTING TIME:

PROPERTIES:

i) **Working Setting Time :**

ii) **Dimensional Stability**

iii) **Flexibility :**

iv) **Hydrophilic Nature :**

v) **Water Absorption :**

vi) **Hypersensitivity :**

ADVANTAGES

DISADVANTAGES

MANIPULATION OF ELASTOMERIC IMPRESSION MATERIALS

DEMONSTRATION:

AIM: To study the manipulation and properties of the various elastomeric impression materials.

I) MULTIPLE MIX (DOUBLE MIX) TECHNIQUE :

MATERIALS AND INSTRUMENTS:

- 1. Mixing Pad 2 nos.**
- 2. Stiff bladed SS Spatula – 2 nos.**
- 3. Syringe**
- 4. Custom tray**
- 5. Gauge Pieces**
- 6. Tray Adhesive**
- 7. Heavy Bodied Impression Material**
- 8. Light Bodied impression Material**

PROCEDURE:

a) Preparation of the tray :

b) Tray Adhesive – application:

The adhesive furnished with the various types of rubber impression materials are not interchangeable.

Polysulphide: Butyl rubber or styrene / acrylonitrile dissolved in chloroform or a ketone.

Silicone: Polydimethyl siloxane or a similar reactive silicone and ethyl silicate.

c) Proportioning. mixing and loading the tray :

d) Making of impression

PROPERTIES:

	Polysulphide	Condensation Silicone	Addition Silicone	Polyether
Working Time				
Setting Time				
Tray Adhesive				
Dimensional Stability & Curing Shrinkage				
Permanent Deformation				
Flow				
Accuracy				
Flexibility & Thickness of Spacer				
Elastic Recovery				
Compatibility with Cast & Die				
Gypsum				
Electroplating				
Tear Strength				
Shelf Life				

DISINFECTION OF IMPRESSION:

DENTAL RESINS

CLASSIFICATION:

IDEAL REQUIREMENTS:

POLYMETHYLMETHACRYLATE RESINS

As per A.D.A. Specification No. 12

TYPES:

HEAT CURED ACRYLIC RESINS

APPLICATIONS:

MODE OF SUPPLY:

COMPOSITION:

Ingredients

Functions

Powder:

Liquid:

MANIPULATION:

EXPERIMENT:

AIM: To study the various steps of processing of a wax block.

MATERIALS AND INSTRUMENTS:

PROCEDURE:

1. Preparation of a Wax Block :

2. Preparation of a Split mould :

3. I) Wax elimination & Application of Separation Medium :

iii) Tin Foil Substitutes

4. Packing of Mould Cavity :

a. Proportioning and Mixing :

Physical stages of Reaction:

Stage 1:

Stage 2:

Stage 3:

Stage 4:

Stage 5:

b) Packing:

Trial Closure:

Final Closure:

5. Processing :

Prior to processing the flask is kept aside for 15 to 30 minutes. This allows better penetration of the monomer into the polymer. [Sometimes referred to as bench curing]

Curing Cycles:

Bench Cooling:

6) Deflasking:

7) Finishing and Polishing:

Grade

Signature of Instructor

INJECTION MOULDING:

PROPERTIES:

a) Liquid Monomer:

- 1. Colorless and volatile Liquid, Organic Solvent, Phenol Smell.**
- 2. Effect of U.V. Light**
- 3. Melting Point**
- 4. Boiling Point**
- 5. Volumetric Shrinkage**

b) Heat Cured Acrylic Resin:

- 1. Density**
- 2. Compressive Strength**
- 3. Tensile Strength**
- 4. Modulus of Elasticity**
- 5. Proportional Limit**
- 6. Co-efficient of thermal expansion**
- 7. Thermal Conductivity**
- 8. Residual Monomer Content**
- 9. Solubility**
- 10. Creep**
- 11. Biocompatibility**

CHEMICALLY CURED ACRYLIC RESINS

APPLICATIONS:

MODE OF SUPPLY:

COMPOSITION:

Ingredients

Functions

Powder:

Liquid:

MANIPULATION:

1. Sprinkle on Technique:

2. Dough Method:

MISCELLANEOUS RESINS:

REPAIR RESINS:

DENTURE RELINERS:

DENTURE ADHESIVES:

TISSUE CONDITIONERS:

MATERIAL IN MAXILLOFACIAL PROSTHESIS:

COMPOSITE RESINS

As per A.D.A. Specification No. 27

CLASSIFICATION:

Type

Particle Size

APPLICATIONS:

MODE OF SUPPLY:

CONPOSITION:

Ingredients

POLYMERIZATION MECHANISM:

TYPE	ACTIVATOR	INITIATOR
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1. Chemically Activated

2. Visible Light Activated

SETTING TIME:

WORKING TIME:

ACID ETCHING:

1. Acid used in percentage -

2. Function and mode of action-

BONDING AGENTS:

**a) Enamel Bond Agents :
Composition**

Function and Mode of Action -

**b) Dentin Bond Agents :
i) Primers: Types**

Function

ii) Bond Agent:

Agents used	Mode of Action
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PROPERTIES:

	HYBRID	CONVENTIONAL	MICROFILLED	PARTICLE SIZE
Filler Loading (Vol. %)				
Compressive Strength (MPa)				
Modulus of Elasticity				
Coefficient of				
Thermal Expansion ($10^{-6}/^{\circ}\text{C}$)				
Water Sorption (mg/cm^2)				
KHN				

Surface Smoothness:

Biocompatibility:

a) **Effect of Monomer:**

Pulp protection

b) **Effect of Micro leakage**

SILVER AMALGAM

DEFINITION OF AMALGAM:

CLASSIFICATION:

1.

2.

3.

4.

APPLICATION:

MODE OF SUPPLY:

COMPOSITION:

INGREDIENTS FUNCTIONS	CONVENTIONAL	PERCENTAGE ADMIXED	SINGLE COMPOSITION

MANIPULATION:

EXPERIMENT:

AIM: TO STUDY THE MANIPULATION AND PROPERTIES OF SILVER AMALGAM.

INSTRUMENTS AND MATERIALS:

1. Amalgam Dispenser
2. Mortar and Pestle
3. Amalgam Carrier
4. Amalgam Condenser
5. Amalgam Carvers
6. Ball Burnishers
7. Dental napkin

PROCEDURE:

1. PROPORTIONING :

Mercury – alloy ratio:

a. Hand Mixing – 6.5

b. Eames Tech. – 1:1

2. TRITURATION :

Objectives:

Hand Mixing:

Mechanical Mixing:

3. CONDENSATION :

Objectives:

Hand Condensation:

Mechanical Condensation:

4. CARVING & FINISHING :

5. BURNISHING :

6. POLISHING :

GRADE

Signature of Instructor

GLASS IONOMER CEMENT

CLASSIFICATION

As per A.D.A. Specification No. 66

Type I

Type II

Type III

APPLICATIONS

MODE OF SUPPLY

COMPOSITION

Ingredients

Functions

Powder

Liquid

SETTING REACTION:

SETTING TIME:

FACTORS AFFECTING SETTING TIME:

MANIPULATION:

EXPERIMENT:

AIM: To study the manipulation of Glass Ionomer Cement.

MATERIALS AND INSTRUMENTS:

1. Glass Slab or Mixing Pad
2. Agate Spatula
3. S.S Plastic Filling Instrument
4. Tweezer
5. Cotton roll
6. Glass Ionomer Cement
7. Cavity Varnish
8. Cellulose Acetate Matrix

PROCEDURE:

ZINC OXIDE EUGENOL CEMENT

CLASSIFICATION

As per A.D.A. Specification No. 30

Type I -

Type II -

Type III -

Type IV -

APPLICATIONS:

MODE OF SUPPLY:

COMPOSITON:

Ingredients

Function

POWDER:

LIQUID:

SETTING REACTION:

SETTING TIME:

FACTORS AFFECTION SETTING TIME:

EBA CEMENT:

MANIPULATION:

EXPERIMENT:

AIM: To study the properties and manipulation of zinc oxide eugenol cement.

MATERIALS AND INSTRUMENTS:

1. Glass Slab
2. Stainless Steel Spatula
3. S.S Plastic Filling Instrument
4. Zinc Oxide Powder and Eugenol Liquid

PROCEDURE:

PROPERTIES:

1. Mechanical Properties :

Psi

Mpa

Compressive Strength -

Tensile Strength -

2. Solubility and Disintegration :

3. Adhesion :

4. Optical Properties :

5. Biological Properties :

Grade

Signature of Instructor

ZINC PHOSPHATE CEMENT

CLASSIFICATION:

As per A.D.A. Specification No. 8

Type I

Type II

APPLICATIONS:

MODE OF SUPPLY:

COMPOSITION:

	Ingredients	Functions
Powder		
Liquid		

SETTING REACTION:

SETTING TIME:

CONTROL OF SETTING TIME:

PRECAUTIONS:

Care of Powder and Liquid

MANIPULATION:

EXPERIMENT:

AIM: To study the manipulation of Zinc Phosphate Cement.

MATERIALS AND INSTRUMENTS:

1. Glass Slab
2. S.S Plastic Filling Instrument
3. Plastic Filling Instrument
4. Zinc Phosphate cement – Powder
- Liquid

PROCEDURE:

PROPERTIES:

1. Mechanical Properties :

2. Solubility and Disintegration :

3. Adhesion :

4. Biological Properties :

5. Optical Properties :

Grade

Signature of Instructor

ZINC POLYCARBOXYLATE CEMENT

As per A.D.A. Specification No. 61

APPLICATIONS:

MODE OF SUPPLY:

COMPOSITION:

Ingredients

Functions

Powder

Liquid

SETTING REACTION:

SETTING TIME:

FACTORS AFFECTING SETTING TIME:

MANIPULATION:

EXPERIMENT:

AIM: To study the properties and manipulation of Polycarboxylate Cement.

MATERIALS AND INSTRUMENTS:

1. Glass Slab or Mixing Pad
2. Cement Spatula
3. S.S Plastic Filling Instrument
4. Polycarboxylate Cement

PROCEDURE:

PROPERTIES:

1. Mechanical Properties :

Psi

Mpa

Compressive Strength -

Tensile Strength -

2. Solubility and Disintegration:

3. Adhesion :

Precaution: Tooth surface must be cleaned for better adhesive properties. Polyacrylic acid may be used to condition the tooth surface:

Biological Properties:

Grade

Signature of Instructor

CALCIUM HYDROXIDE CEMENTS

APPLICATIONS:

MODE OF SUPPLY:

COMPOSITION:

	Ingredients	Function
Paste 1		
Paste 2		

Setting Reaction:

Setting Time:

FACTORS AFFECTING SETTING TIME:

MANIPULATION:

EXPERIMENT:

AIM: To study the properties and manipulation of Calcium Hydroxide Cement.

MATERIALS AND INSTRUMENTS:

1. Glass Slab
2. Cement Spatula
3. S.S Plastic Filling Instrument
4. Calcium Hydroxide Cement

PROCEDURE:

PROPERTIES:

1. Mechanical Properties :

Psi

Mpa

Compressive Strength -

Tensile Strength -

2. Solubility and Disintegration:

3. Thermal Properties :

4. Biological Properties :

Grade

Signature of Instructor

CAVITY VARNISHES, LINERS AND BASES

Cavity varnishes, liners and insulating bases are designed to be used as adjuncts to the restorative materials in order to protect the pulp against thermal and chemical insults, micro leakage and certain of these agents themselves have beneficial effects upon the tooth.

CAVITY VARNISHES:

APPLICATIONS:

COMPOSITION:

MANIPULATION:

PROPERTIES:

CONTRAINDICATIONS:

CAVITY LINERS:

Types:

1. Calcium Hydroxide
2. Type III Glass Ionomer
3. Type IV Zinc oxide - eugenol

Composition: [Calcium Hydroxide Liner]

Manipulation:

CEMENT BASES:

TYPES:

1) High Strength Bases :

2) Low Strength Bases :

Properties:

1) Thermal Properties :

2) Protection against Chemical Insults :

3) Strength :

4) Therapeutic Effect :

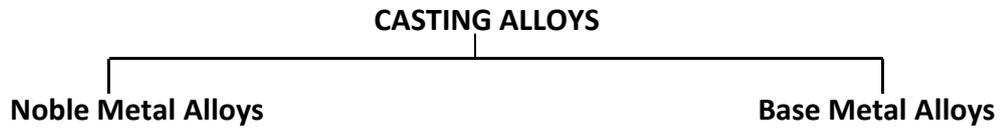
5) Clinical Considerations :

Grade

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DENTAL CASTING ALLOYS

Dental casting alloys are used for the fabrication of cast metal restorations, which are fabricated outside the mouth. There are different types of casting alloys used in dentistry.



DEFINITIONS:

Noble Metals:

Previous Metal:

Base Metals:

Alloys:

KARAT:

FINENESS:

PERCENTAGE:

CLASSIFICATION OF DENTAL CASTING ALLOYS:

1. BY FUNCTION : Hardness increases from Type I to type IV.
Metal Ceramic RPD Alloys

2. BY DESCRIPTION :

	Crown & Bridge	Metal Ceramic	RPD
Noble Metal Alloys	a) Gold Based b) Non Gold Based	a) Gold Based b) Non Gold Based	a) Type IV Gold Alloys
Base Metal Alloys	a) Nickel Based b) Cobalt Based	a) Nickel Based b) Cobalt based	a) Cobalt Chromium c) Cobalt Chromium Nickel

CLASSIFICATION OF GOLD ALLOY BY FUNCTION: As per A. D. A Specification No. 5 Applications
Type I 'A' Soft –

Type II 'B' Medium -

Type III 'C' Hard-

Type IV 'D' Extra Hard-

METAL CERAMIC Hard-

METAL CERAMIC Extra Hard-

REMOVABLE PARTIAL DENTURE:

ALLOYS:

COMPOSITION:

Alloys %	Au %	Cu %	Ag %	Pd %	In %	Sa %	Fe
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Type I

Type II

Type III

Type IV

FUNCTION OF EACH INGREDIENT

Ingredients

Functions

GOLD...

SILVER...

COPPER...

PLATINUM...

PALLADIUM...

ZINC...

ALLOYS	GOLD ALLOYS	METAL CERAMIC
1. Fusion Temperature	Low : 879°C	High : 11490 – 1304°C 3500C above that of porcelain
2. Coefficient of thermal expansion	High	Low: To be compatible dental porcelains
3. Copper Content	Present	Absent

HEAT TREATMENT:

Types:

a) Softening Heat Treatment (Annealing):

- i) Temperature**
- ii) Alteration of Properties**

Increases

Decreases

- iii) Indicated**

b) Hardening Heat Treatment (Age Hardening):

- i) Temperature**
- ii) Alteration of Properties**

Increases

Decreases

- iii) Indicated**

2. Density:

3. Yield Strength:

4. Hardness:

5. Elongation (Ductility):

6. Modulus of Elasticity:

7. Casting Shrinkage:

8. Type of Investment:

DENTAL CASTING BASE METAL ALLOYS

As per A.D.A. Specification No. 14

Types :

COBALT - CHROMIUM

NICKEL - CHROMIUM

COBALT - CHROMIUM - NICKEL

APPLICATIONS :

COMPOSITION:

Ingredient	Function
Cobalt	
Chromium	
Nickel	
Iron & Beryllium	
Iron & Beryllium	
Molybdenum & Silicone	
Boron	

PHYSICAL PROPERTIES:

- 1. Melting Range:**
- 2. Density:**
- 3. Yield Strength:**
- 4. Hardness:**
- 5. Elongation (Ductility):**
- 6. Modulus of Elasticity:**
- 7. Casting Shrinkage:**
- 8. Type of Investment Used:**

COMPARISON OF PROPERTIES OF COBALT – CHROMIUM ALLOYS AND GOLD ALLOYS

PROPERTIES	Cobalt-Chromium	Type IV Gold

WAXES

Waxes are used widely in the intermediate stages of the fabrication of many of the restoration and prosthesis used in dentistry. There are many varieties of waxes and each has particular properties depending on the purpose for which it is used.

CLASSIFICATION :

Pattern Wax	Processing Wax	Impression Wax

1. PATTERN WAX

2. PROCESSING WAX

3. IMPRESSION WAX

INLAY CASTING WAX

CLASSIFICATION :

As per A.D.A Specification No. 4

Type I

Type II

APPLICATIONS:

MODE OF SUPPLY:

COMPOSITION:

Ingredients

Functions

IDEAL REQUIREMENTS:

PROPERTIES:

- 1. flow :
 - Type I
 - Type II
- 2. Wax Distortion :

Causes of Distortion	Precautions

MANIPULATION:

- 1. Direct Technique – Type I Wax (Medium)

- 2. Indirect Technique – Type II Wax (Soft)

CASTING PROCEDURE FOR DENTAL ALLOYS

DEMONSTRATION:

AIM: To study the steps in casting of the Dental Alloy.

INSTRUMENTS AND EQUIPMENT :

- | | |
|------------------------|--------------------------|
| 1. Die | 10. Vacuum Mixer |
| 2. Die Spacer | 11. Burnout Furnace |
| 3. Wax Pattern | 12. Dental Casting Alloy |
| 4. Sprue Wax | 13. Flux |
| 5. Crucible Former | 14. Graphite Crucible |
| 6. Ring Liner | 15. Casting Machine |
| 7. Casting Ring | 16. Container of Water |
| 8. Wetting Agent | 17. Sandblasting Unit |
| 9. Investment material | 18. 50% Hcl |

MANIPULATION :

I Preparation of Die:

A die of the prepared tooth is made by pouring an elastomeric impression with improved stone.

II Preparation of Wax pattern:

III Selection & Attachment of Sprue:

IV Preparation of Casting Ring:

Type of ring liners:

V Investing: (hand / Vacuum)

VI Wax Elimination : (Burn Out)

Diagram of a Dental Casting Mould:

VII Casting:

Types of casting machines:

VIII Quenching:

IX Recovery of Casting:

X Sandblasting:

XI Pickling:

XII Separation of Sprue:

XIII Finishing and Polishing:

CASTING DEFECTS:

A) Dimensional Errors in Casting:

Problem

Cause

Precaution

B) Rough Surface and Fins:

c) Porosity:

Problem

Cause

Precaution

Grade

Signature of Instructor

DENTAL CERAMICS

Dental ceramics are white, translucent, tooth-like material, used for restoring natural teeth and for making artificial teeth. Traditionally they were referred to as 'Porcelains'.

GENERAL USES OF PORCELAINS:

CLASSIFICATION:

a) According to Fusion Temperature:

b) According to uses:

MODE OF SUPPLY:

In the form of fine ceramic powders in bottles, in different shades of enamel dentin and opaque with special liquid/distilled water.

COMPOSITION:

Ingredients

Function

MANIPULATION:

A) Adaptation of Matrix /Metal Substructure:

B) Selection of Powder:

- a. Core of Opaque
- b. Dentin and Enamel

C) Mixing: The powder is mixed with the liquid to make a paste and built over the matrix. As shrinkage is anticipated, the crown built up is larger.

D) Condensation:

a) Objectives:

b) Methods:

E) FIRING PROCEDURE:

Types of Furnace:

Advantages of Vacuum Firing:

Preheating:

Stages of Firing:

Low Bisque:

Medium Bisque:

High Bisque:

At any stage the crown can be removed from the furnace, the morphology modified i.e. addition or trimming, and fired again till the right size is obtained.

Increased number of firings results in a crown that is overly translucent and lifeless. The fewer firing cycles, the better will be the strength and esthetics.

F) GLAZING:

a. Over glaze:

b. Self glaze:

PROPERTIES:

1) Shrinkage of firing:

2) Porosity:

3) Chemical Properties:

4) Mechanical Properties:

5) Thermal Properties:

6) Aesthetics:

METAL CERAMICS:

Requirements of Alloy for Porcelain to Metal :

i)

ii)

iii)

MODE OF BONDING:

a) Mechanical Bond:

b) Compressive Stresses:

c) Chemical Bond:

RECENT PORCELAINS:

a) Core Porcelains:

b) Castable Ceramics:

DIFFERENCES BETWEEN PORCELAIN AND ACRYLIC TEETH

Porcelain Teeth	Acrylic Teeth

Grade

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SOLDERING, BRAZING AND WELDING

Definitions:

Soldering:

Brazing:

Welding:

Desirable Properties of Dental Solders:

TYPES:

a) Gold Solders:

b) Fusion Range Limit:

c) Applications:

Silver Solders :

a) **Composition:**

b) **Fusion Range:**

c) **Applications:**

FLUX:

Purpose:

Types according to activity:

- 1.
- 2.
- 3.

MODE OF SUPPLY:

PRECAUTIONS:

HEAT SOURCE:

1. Gas-air or Gas Oxygen Torch:

Types of Fuel:

Hydrogen:

Natural Gas:

Acetylene :

Propane :

2. Oven (Furnace) Brazing :

TECHNIQUE:

Grade

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