Cleaner Whiter Brighter!

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What is tooth whitening?

- OED definition is “to make a surface reflect sunlight without absorbing any visible rays” or “to make the colour of milk or snow”
- Bleaching is “a process of whitening by sunlight or chemicals”
- Changing reflectance, extrinsic or intrinsic
- Whiter, Brighter or Lighter?

Why tooth whitening?

- Youthful appearance
- Changing jobs
- Getting married
- Improving self-esteem

Factors affecting tooth shade

- Degree of polish
- Thickness of enamel
- Enamel morphology
- Fluorescence and translucency
- Dehydration
- Recession and dentinal exposure
- Intrinsic, extrinsic or internalised stain

Causes of Tooth Discolouration

- Intrinsic Discolouration
- Extrinsic Discolouration
- Internalised Discolouration

Intrinsic tooth staining causes

- METABOLIC
- Alkaptonuria
- Congenital erythropoietic porphyria
- Congenital hyperbilirubinaemia
- Rickets, Ehlers- Danlos syndrome
- etc.

Intrinsic tooth staining causes

- INHERITED

- Amelogenesis imperfecta
- Dentinogenesis imperfecta
- Dentinal dysplasias

Intrinsic tooth staining causes

- IATROGENIC
- Tetracycline stains
- Fluorosis
- Chlorhexidine and cationic mouthrinses

Intrinsic tooth staining causes

- TRAUMATIC
- Enamel hypoplasia
- Pulpal haemorrhage products
- Root resorption

- AGEING

Extrinsic tooth staining-direct

- Tobacco products
- Tea, coffee and red wine
- Spices
- Vegetables
- Medicines
- Plaque

Extrinsic tooth staining-indirect

- POLYVALENT METAL SALTS
- Iron supplements
- Foundry/chemical workers
- Copper and tin salts in mouth rinses and pastilles

Extrinsic tooth staining-indirect

- CATIONIC ANTISEPTICS
- Chlorhexidine
- CPC
- Hexetidine
- OTHERS eg. Listerine

Internalised stains

- TRAUMA
- cracks
- loss of enamel
- recession

- CARIES
- RESTORATIONS

Bleaching Options

- Vital
- Home
  - CP / HP -trays
- In-surgery
  - 15-50% HP heat / light activation
  - 35% CP waiting room
- OTC
  - Strips / Paint-on
- Other
  - Toothpaste Mouthrinse Chewing gum

- Non-Vital
  - Walking
    - HP,Perborate/HP, CP
  - Inside / Outside
    - CP
  - In-surgery
    - 35% HP

Bleaching Indications

- Generalised staining
- Ageing
- Smoking and dietary stains
- Fluorosis
- Tetracycline staining
- Traumatic pulpal changes
- Aesthetics pre or post restorative

Bleaching Contraindications

- Patients high expectations
- Decay and periapical lesions
- Pregnancy
- Sensitivity

  cracks and exposed dentine

Power Bleaching

- Advantages
- Patient acceptance , time , tray tolerance/gagging, taste.
- Immediate results
- May motivate patient to continue top up at home
- Disadvantages
- Increased surgery time
- Reported dehydration/ regression
- Caustic nature of 35% H_2O_2

Home Bleaching

- Advantages
- Simple
- Patients bleach at their own pace
- Lower cost to patient

Disadvantages

- Patient participation required
- Patient compliance poor high drop out rate
- Colour change dependent on wear
- Excessive use / sensitivity
- Retching

Bleaching single dark teeth

- Bleach from outside if:
  - ➢ No need for RCT
  - ➢ RCT and restoration good
- Bleach internally:
  - ➢ Following RCT
  - ➢ Unsure of RCT and chamber content
    - consider walking bleach using 10% CP
- Inside / outside

  difficult stain with good patient compliance

Initial Consultation

- MH
- DH
- Discolouration
- Crowns / restorations
- Soft tissues
- Periodontal health
- Tooth/Gum sensitivity
- Habits
  - Bruxing
  - Smoking
  - Dietary chromogens
- Patient expectations
- Shade evaluation
- Vitality checks
  Radiographs

Before Bleaching

- Assess teeth for;
  - Gingival recession / cervical abrasion
  - Enamel thickness
  - Existing sensitivity
  - White spots
  - Tetracycline stains
  - Gingival health
  - Translucency

Before Bleaching

- Patient's Expectations
- ➢ Pure white teeth wanted – avoid as patient may never be satisfied
- ➢ May not work – normally 2 shade shift
- ➢ Old patients teeth root surface don't respond well
- ➢ Darker teeth take longer
- ➢ Restorative work may be needed

In Office

- Tray system
- Power bleaching

➢ Visible Light Curing Unit

➢ Plasma Arc Light

➢ Xenon Halogen Light

➢ Diode Laser

➢ Ultrasonic technology

❑ Combination

Home Bleaching

- CP 10%-30% Night / Day wear
- HP up to 10% Day wear
- Soft trays
  - Reservoirs
  - Scalloped
  - Hybrid
- Regimen: overnight or 2-4hrs per day 2-6 weeks or months (tetracycline)

Bleaching side effects

- Gingival irritation
- Soft tissue irritation
- Altered taste
- Thermal sensitivity
- Chemical burns
- External root resorption
- Damage to restorations

Sensitivity

- Tooth sensitivity
  - Chemical-reversible pulpitis
  - Mechanical-tray pressure
- Gingival irritation
  - Mechanical – tray
  - Chemical- excess material

Tx of Sensitivity

- Tooth
  - ➢ Passive Tx
    - Reduce wearing time or frequency
    - Temporary halt to Tx
    - Tx cessation
  - ➢ Active Tx
    - Neutral fluoride
    - 3%-5% potassium nitrate in tray
- Gingival
  - ➢ Trim tray back
  - ➢ Consider different tray design
  - ➢ Reduce tray loading

Bleaching Tips

- Mandibular teeth bleach quicker in power bleaching but take longer in home bleaching
- 50-75% white spots are superficial and are therefore amenable to micro abrasion
- Bleaching makes white spots worse initially - reassure patient it gets better
- Bleaching before veneers often satisfies patients aesthetic needs
- Existing veneers that have darkened with time but are basically good can be bleached from the palatal aspect using trays at night

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Shade Taking

Colour

- an attribute of objects that results from the light they reflect or emit in so far as this causes a visual sensation that depends on its wavelengths

Colour Perception

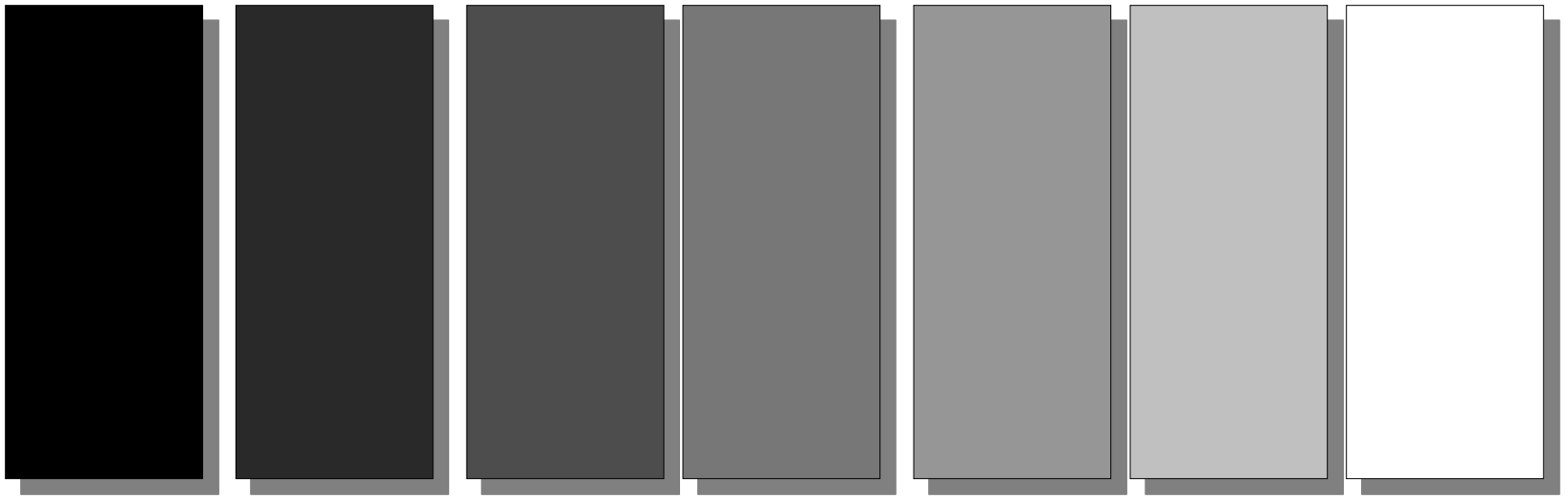
- Light is emitted from a light source: light may reach eye directly or it may either strike or pass through an object.
- Some Light can be absorbed by an object while some can be reflected, transmitted or emitted directly to the eye where it is perceived by the rods and cones and interpreted as a colour by the brain

Colour Perception

- Lighting
- Background effects
- Colour blindness
- Binocular differences
- Eye fatigue
- Age
- Other physiological factors
- Even in absence of above factors; interpretation of colour based on past experiences and resulting colour references

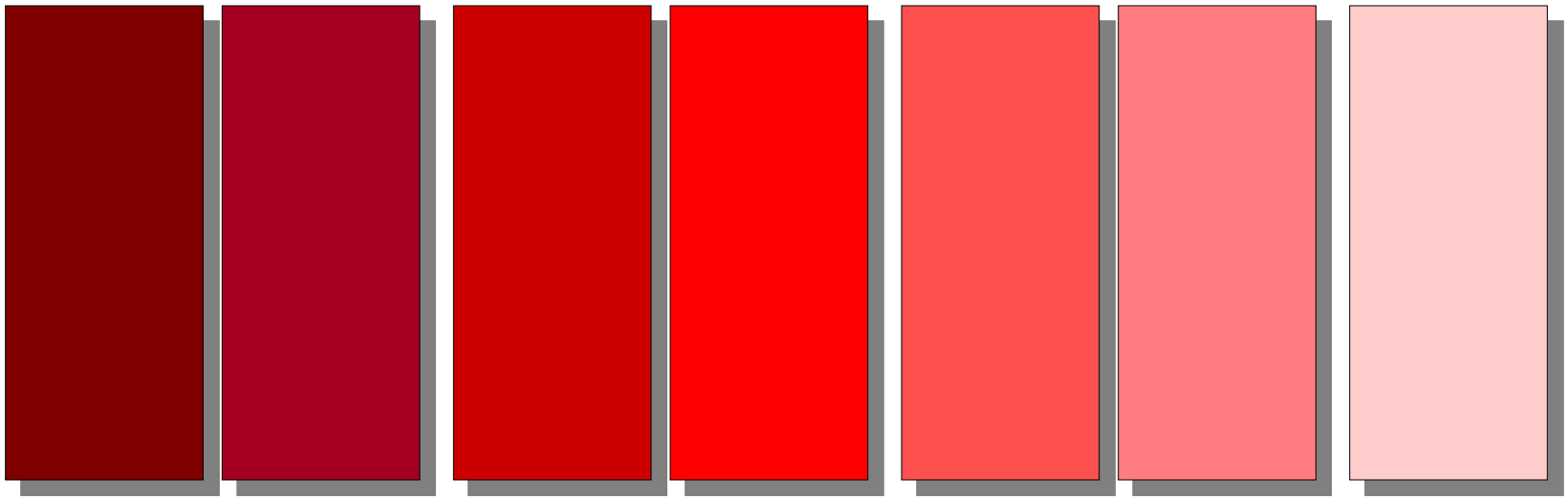
Value , the amount of WHITE

- Lightness or darkness
- A restoration with too high a value (too bright) is obvious & is a common fault



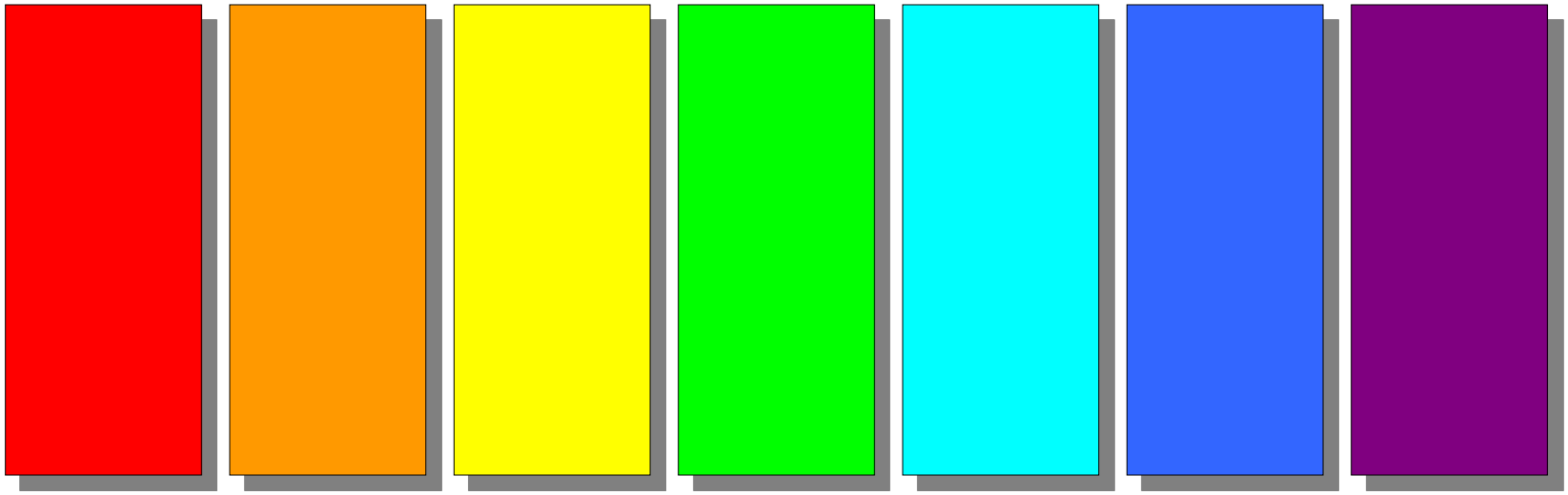
Chroma - the amount of Colour Intensity

- Saturation
- Intensity of the hue



Hue , the color itself

- Natural teeth have a yellow-red hue



Natural Tooth Colour

- Made up of many colours with a natural gradation from the darker gingival to the lighter incisal third of the tooth.
- Affected by thickness and translucency of enamel and dentine as well as the reflectance of different colours.
- Canines naturally darker than central and lateral incisors

Natural Tooth Colour

- Tooth colour is primarily determined by dentine but influenced by;
- Enamel colour
- Enamel translucency
- Thickness and degree of calcification of enamel (greatest at incisal edge or occlusal surface)

VITAPAN CLASSIC

- Conventional: tabs divided into ABCD hues; which are divided into A1, 2, 3.5 & 4 chroma

- Modified: tabs arranged in value order, high value (bright) to left, low (grey) to right

Classical Vitapan

- A: orange hue with 5 increasing chromas A1, A2, A3, A3.5, A4
- B: yellow hue with 4 increasing chromas B1, B2, B3, B4
- C: grey/yellow hue with 4 increasing chromas C1, C2, C3, C4
- D: grey/orange hue with 3 increasing chromas D2, D3, D4

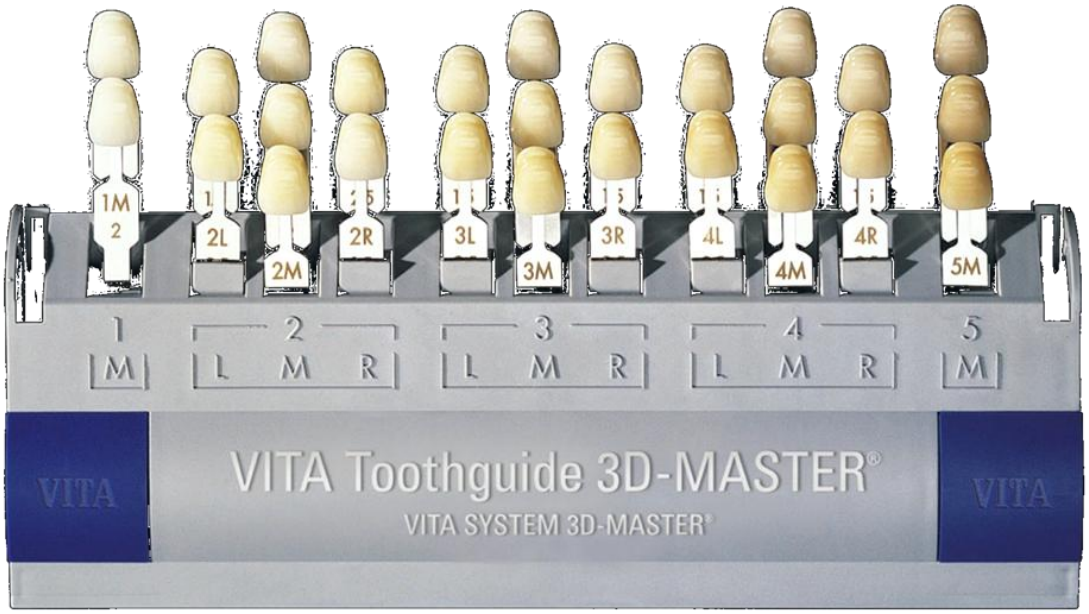
Classical Vitapan

- Two basic hues: A orange and B yellow
- Establish hue A or B: D lower values of A and C lower values of B
- Canines appear more intense and exhibit more chroma
- Premolars are nearer in hue to incisors

3D Master Summary

lighter

darker



paler

richer

yellowish

reddish

3D Master: Let's try it!

First step:

Eliminate too dark and too light groups

1 Lightest – 5 Darkest

Start with darkest!

Second step:

Find the chroma or intensity

use medium sample (M)

Levels 1-3 increasing chroma

Third step:

choose the right hue

more yellow (L) or red (R)

M sample represents medium hue.

Fourth step:

use the communication form

Tips for Shade Taking

- Use your dental technician
- Distance of approx. 50-70 cm (arm's length) between eye & tooth
- Take shade on dry tooth and repeat with moist tooth
- Spectacles with reflecting or tinted glasses distort shade therefore remove

Tips for Shade Taking

- Eyes tire after 5-7 seconds. Rest eyes by looking at light, white or grey surface
- Ideal lighting - daylight at north facing window in morning with slightly overcast weather
- Do not use operating light - too bright & washes colour out of tooth resulting in bright shades

Tips for Shade Taking

- Light should fall sideways onto tooth at approx. 45°
- Colour of surroundings & clothing can distort colour perception e.g. remove lipstick
- Remember disinfect shade guides after use