



ceramatec[®]

Absolutamente Bella y Avanzada



CERAGROUP[®]

INDUSTRIES INC.

CERATEC'S PORCELAIN SYSTEM

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CHARACTERISTICS

Our ceramic is designed keeping one objective in mind: to easily replicate the beauty and vitality of natural teeth.

- Fine grain natural feldspathic porcelain
- Great modeling ease, especially suitable for laboratories in which speed and accuracy are top priority.
- Easy to use for the ceramist with little experience but with all of the properties and products necessary for the expert ceramist.
- Immediate and accurate shade matching with the mere application of opaque/dentine/incisal layering; color stability even with varied thickness.
- Extremely stable linear expansion coefficients during subsequent firing processes; safely withstands up to six firing cycles.
- Minimum shrinkage.
- Great translucency and color depth.
- Opaque, Dentine, Chroma Dentine and Opacious Dentine available in all shades A0 – D4.
- Wide color range of shoulder shades, opaque modifiers, dentine modifiers, incisals, enamels and stains.
- “Live” and natural fluorescence in all light conditions.

INDICATIONS

CERATEC porcelain is the product to use for:

- Porcelain fused to metal (PFM) crowns and bridges
- Porcelain jacket crowns
- Veneers
- Inlays and Onlays

The linear coefficient of thermal expansion of CERATEC is included in the interval $12,60-12,95 \times 10^{-6} / ^\circ\text{C}$ for all types of porcelain (opaque, dentines and incisals) measured in the range of $25-500^\circ\text{C}$ the lower value corresponds to the first firing and the higher value measured after the fourth cooking.

The glass transition temperature is between 480 and 500°C for all of the porcelains.

METALLIC FRAMEWORK

During model and die preparation, keep in mind that porcelain fused to metal restorations require a minimum thickness of 1.5 to 1.8 mm of which 0.3 to 0.5 mm is the metal portion. The model can be prepared using the desired technique. Remember that the use of shoulder porcelain requires a proper shoulder preparation.

The modeling of the metallic framework can be performed with the desired technique. The space reserved for the ceramic covering should not be less than 0.8 mm. The ceramic layer should not exceed 2 mm in thickness on the incisal borders to avoid the risk of fractures.

Avoid creating sharp corners, indentations, angles or curved edges on the metal surface that is to be covered. Every sharp corner is a potential point of origin for fractures, while every indentation could cause defects in the ceramic fusing process or fractures due to the contraction that occurs during firing.

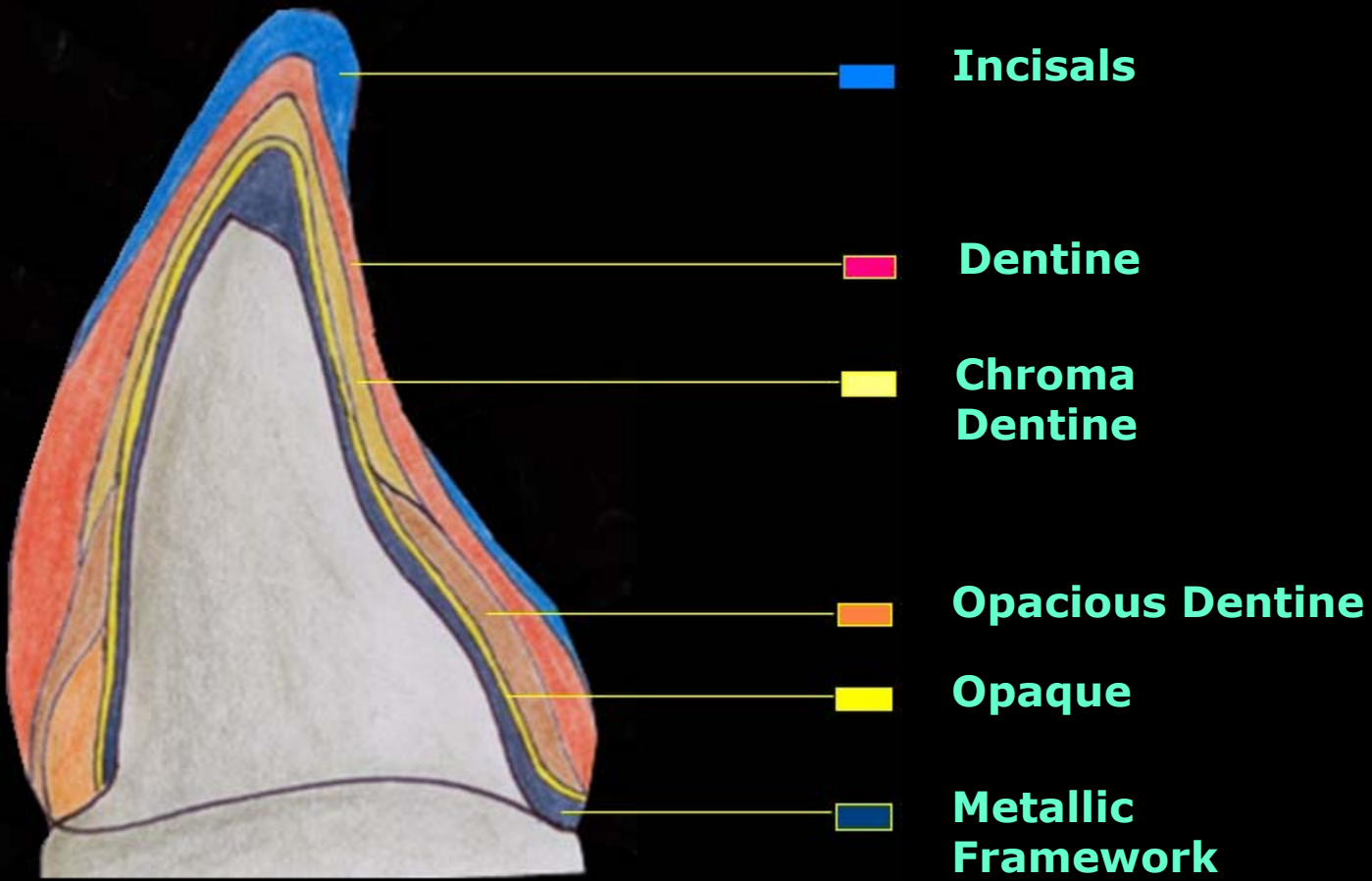


The Alloy

In general, most of the alloys used for ceramic fused to metal restorations are compatible with CERATEC porcelains. However, since every alloy reacts differently with respect to the coefficient of expansion and can sometimes be unpredictable beyond the officially published data, we suggest that you utilize the alloys recommended for the product with a CTE in the range of $13.8 - 14.8 \times 10^{-6}/^{\circ}\text{C}$, measured in the range of $25 - 500^{\circ}\text{C}$.

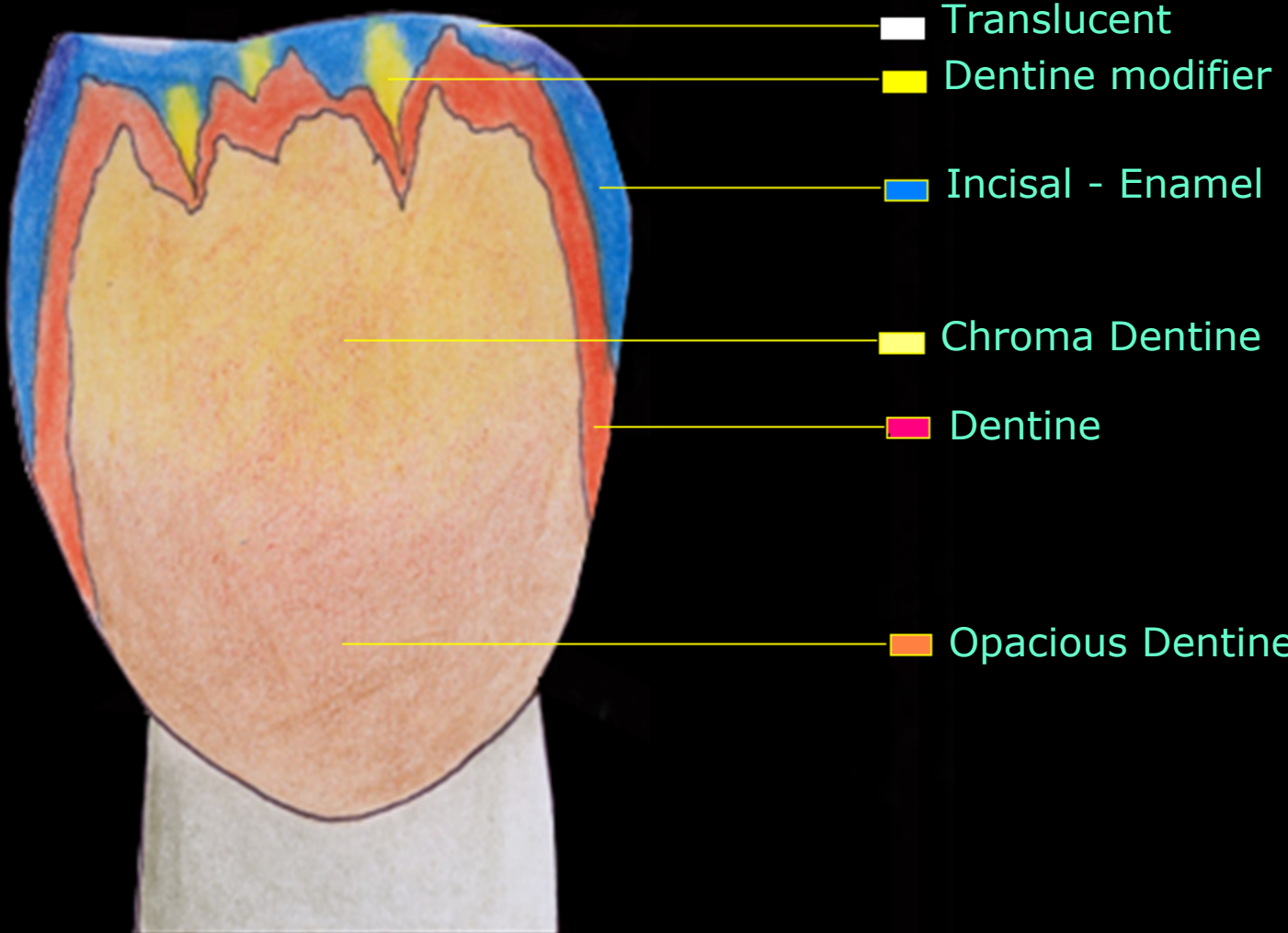


RECOMMENDED LAYERING



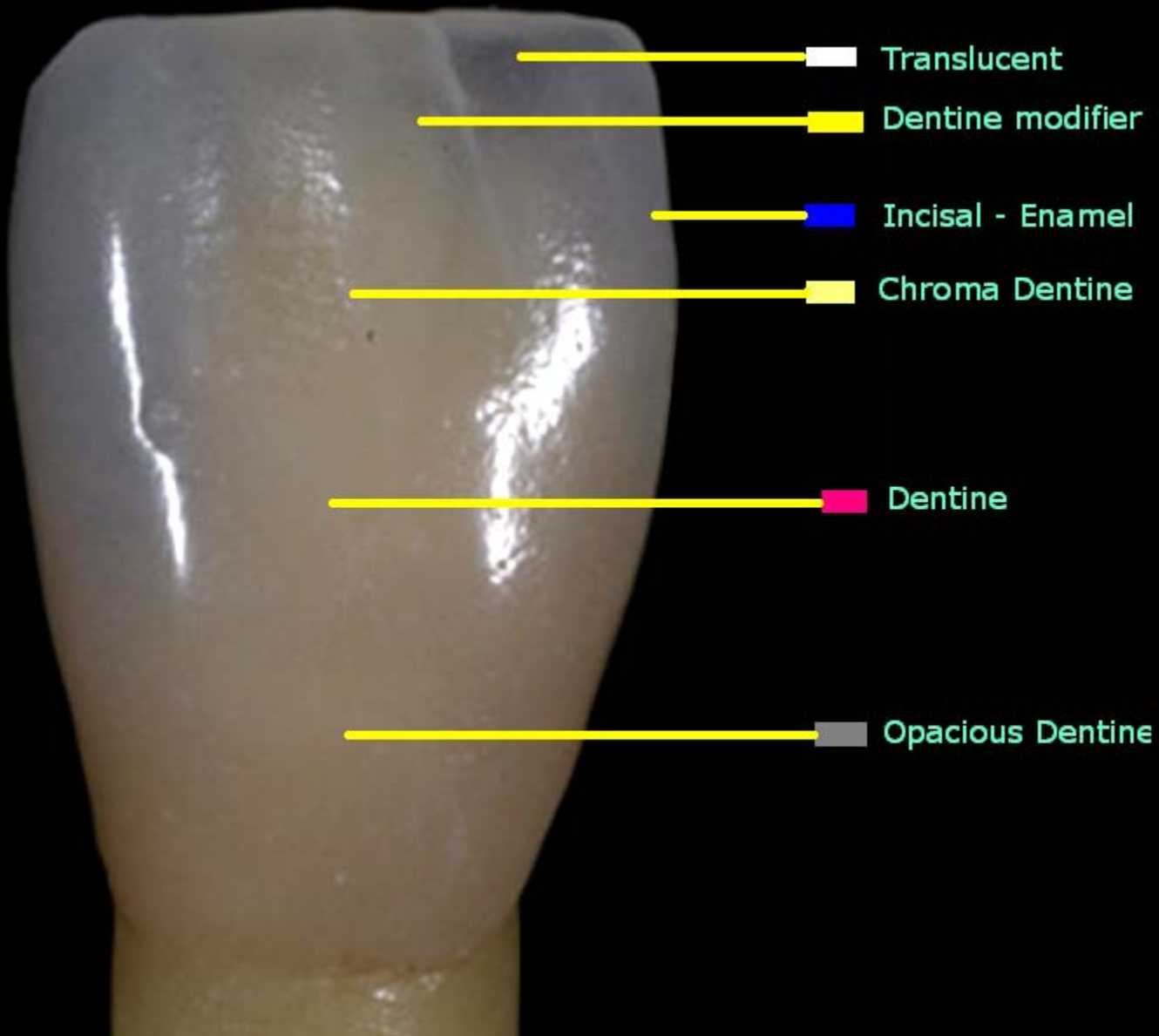
SEE COLOR COMBINATION CHART

RECOMMENDED LAYERING



SEE COLOR COMBINATION CHART

RECOMMENDED LAYERING

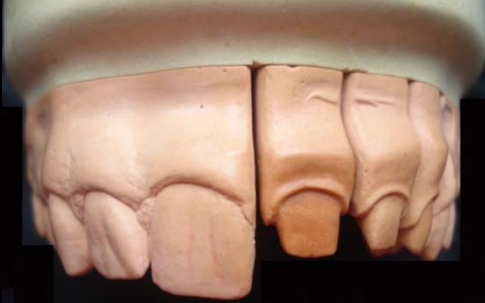


PRESENTATION

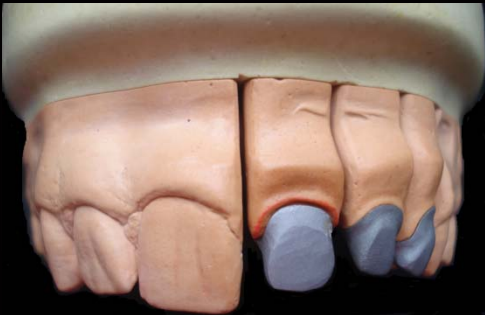


Absolutely Beautiful

CASE PRESENTATION



Working Model



Metallic Framework prepared for ceramic shoulder



Frontal View Complete Case





Metal finishing should be done with a carbide burr or diamond

OPAQUE



First opaque coat layering and firing



Second opaque coat layering and firing



Fired opaque



Preparation of the ceramic shoulder



First firing of the ceramic shoulder



Second firing of the ceramic shoulder

DENTINES



Opacious Dentine



Chroma Dentine



Dentine



Fired Dentines

INCISALS AND ENAMELS



Fired Dentines



Incisal translucent



Incisal modifier yellow



Enamel 1 and 4



Incisal modifier blue



Incisal I-1



Second Firing

POLISHING



Shape with a diamond to create anatomy as desired



Use a diamond disc to create angles as desired



Marked anatomy



Crown ready to be stained as desired and glazed.

STAINING AND GLAZING



Compare the restoration with the shade guide



Characterize the restoration as desired using CERATEC stains

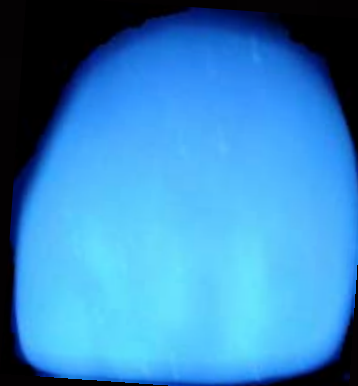
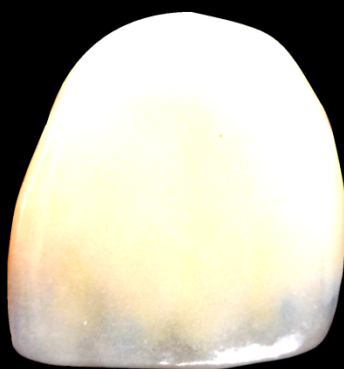


Glaze the crown as the final step

Ready for cementation



CERATEC FINISHED RESTORATION



Absolutely beautiful

TECHNICAL DATA

- **Radioactivity:** There are no radioactive elements in CERATEC porcelains compositions. The total radioactivity is less than 0.2 Bq-g⁻¹ of U238.
- **Toxic or harmful elements:** CERATEC porcelains are completely free of Lead, Uranium, Antimony and Cadmium.
- **Flexural strength:** 125 MPa with a standard deviation of 10 MPa.
- **Chemical solubility:** 55 µg/cm².
- **Adhesion to alloys:** 36.8 MPa as tested with CERAKAST 1 non-precious alloy.
- **Linear thermal expansion coefficient:** Opaque: after two firings: $12.6 \times 10^{-6}/^{\circ}\text{C}$; after four firings: $12.8 \times 10^{-6}/^{\circ}\text{C}$ (25-500°C)
- **Dentine:** after two firings: $12.8 \times 10^{-6}/^{\circ}\text{C}$; after four firings: $12.95 \times 10^{-6}/^{\circ}\text{C}$ (25-500°C)
- **Incisal:** after two firings: $12.6 \times 10^{-6}/^{\circ}\text{C}$; after four firings: $12.9 \times 10^{-6}/^{\circ}\text{C}$ (25-500°C)
- **Glass transition temperature:** Between 480-500°C for all CERATEC porcelains.
- **Specific gravity:** 2.7 g/ml

RELATIVE OPACITY CHART

Opacity %

Opaque	100
Shoulders	92-95
Opacious Dentines	90-95
Chroma Dentines	85-90
Dentines	80-85
Enamel E4	75
Enamel E3	70
Enamel E2	65
Enamel E1	55
Incisals	40-50
Translucent	25



COLOR COMBINATION CHART

Opaque	A0	A1	A2	A3	A3.5	A4	B0	B1	B2
Shoulder	Bleach	Light	Medium	Medium	Medium Dark	Dark	Bleach	Light	Medium Light
OP. Dentine	A0	A1	A2	A3	A3.5	A4	B0	B1	B2
Crom. Dent	A0	A1	A2	A3	A3.5	A4	B0	B1	B2
Dentine	A0	A1	A2	A3	A3.5	A4	B0	B1	B2
Enamel	E1	E1	E1	E1	E1	E1	E1	E1	E1
	E4	E4	E3	E3	E2	E2	E4	E4	E3
Incisal	I-6	I-1	I-2	I-3	I-4	I-5	I-6	I-1	I-2

Opaque	B3	B4	C1	C2	C3	C4	D2	D3	D4
Shoulder	Medium Dark	Medium Dark	Light	Medium	Dark	Dark	Light	Medium Light	Medium
OP. Dentine	B3	B4	C1	C2	C3	C4	D2	D3	D4
Crom. Dent	B3	B4	C1	C2	C3	C4	D2	D3	D4
Dentine	B3	B4	C1	C2	C3	C4	D2	D3	D4
Enamel	E1	E1	E1	E1	E1	E1	E1	E1	E1
	E2	E2	E4	E3	E2	E2	E4	E3	E3
Incisal	I-4	I-4	I-1	I-3	I-4	I-5	I-1	I-2	I-3



FIRING CHART

	Palette MASK	MASK Powder	Palette Paste	Opaque Powder	Shoulder	Dentines/ Incisals	Natural Glaze	Glaze High Stains	Add On	Glaze Low LF Stains
Dry out	7 min	5 min	7 min	3-5 min	3-5 min.	3-5 min.	3-5 min.	3-5 min.	3-5 min.	3-5 min.
Insertion	482°C	593°C	482°C	593°C	593°C	593°C	593°C	593°C	515°C	515°C
	900°F	1100°F	900°F	1100°F	1100°F	1100°F	1100°F	1100°F	960°F	960°F
Heat rate ° / min.	55°C	55°C	50°C	50°C	50°C	50°C	50°C	47°C	55°C	55°C
	100°F	100°F	90°F	90°F	90°F	90°F	90°F	85°F	100°F	100°F
Vacuum start	482°C	593°C	482°C	593°C	593°C	593°C	None	None	Optional	None
	900°F	1100°F	900°F	1100°F	1100°F	1100°F				
Vacuum stop	971°C - 982°C	971°C - 982°C	954°C - 966°C	954°C - 966°C	941°C - 946°C	927°C - 938°C	None	None	Optional	None
	1780°F - 1800°F	1780°F - 1800°F	1750°F - 1770°F	1750°F - 1770°F	1725°F - 1735°F	1700°F - 1720°F				
Firing Temp.	977°C - 988°C	977°C - 988°C	960°C - 971°C	960°C - 971°C	946°C - 952°C	932°C - 943°C	932°C - 943°C	932°C	849°C	849°C
	1790°F - 1810°F	1790°F - 1810°F	1760°F - 1780°F	1760°F - 1780°F	1735°F - 1745°F	1710°F - 1730°F	1710°F - 1730°F	1710°F	1560°F	1560°F
Hold Time	0	0	0	0	0	0	0	15 sec.	15 sec	15 sec
Cool Time	0	0	0	0	0	0	0	0	0	0
Texture	Semi-Gloss	Semi-Gloss	Eggshell-Shiny	Eggshell-Shiny	Eggshell	Grainy-Shiny	Shiny	Glossy	Glossy	-
Thickness (approx.)	Thin/Wash	Thin/Wash	0.1-0.3 mm	0.1-0.3 mm	0.2 mm	0.5-1.0 mm				

Failures	Causes and Solutions
Cracks in the opaque.	Very thick layer of opaque or not enough pre dry time.
Separation of the opaque.	Metallic surface contaminated with grease or any other isolated material
Underfired Ceramic	Oven temperatures are wrong or the oven is not properly calibrated
Bubbles in the ceramic	Generally these appear in the final stages; sometimes they can be produced by contamination of the metal. Isolate the ceramic zone from the other laboratory zones. If the problem is due to soldiering ,use CERATEC low fusing porcelain.
White spots or small air bubbles inside the crown	Inadequately condensed ceramic . Eliminate excess water in the crown by vibrating.
Fracture in the ceramic	Rapid temperature change . The alloy is not compatible in CTE
Black spot	Dust contamination in the environment.
Excessive Contraction	Use recommended special liquids and powder/ liquid ratios