

Material and Chemical Characterization

The material and chemical characterization charts show the types of materials used in WCT's orthodontic metal brackets. The charts identify the main alloy components and trace elements.

1 Materials

1.1 Bracket Body & Ligating Member

Table 1

Stainless Steel 17-4PH per ASTM B883 – 24		
Chemical Name	Min. (weight %)	Max. (weight %)
Iron (Fe)	Balance	Balance
Nickel (Ni)	3	5
Chromium (Cr)	15.5	17.5
Carbon (C)	-	0.07
Copper (Cu)	3	5
Silicon (Si)	-	1.0
Manganese (Mn)	-	1.0
Niobium; Tantalum (Nb+Ta)	0.15	0.45
Other	-	1.0

1.2 Spring Member

Table 2

Nitinol per ASTM F2063-18		
Chemical Name	Min. (weight %)	Max. (weight %)
Titanium	Balance	Balance
Nickel	54.5	57
Carbon	-	0.04
Cobalt	-	0.05
Copper	-	0.01
Chromium	-	0.01
Hydrogen	-	0.005
Iron	-	0.05
Niobium	-	0.025
Nitrogen	-	0.005
Oxygen	-	0.04

Table 3

Coating "DLC (Diamond-Like Carbon)"

1.3 Static Immersion Test Ion Release Values

Table 4

Ion Release	
Element	µg / 20 brackets / 7 days
Ag	-
As	-
Ba	-
Be	-
Bi	-
Cd	-
Co	-
Cr	≤ 50
Cs	-
Cu	≤ 100
Fe	≤ 200
Ga	-
Ge	-
Hf	-
In	-
La	-
Li	-
Mg	-
Mn	-
Mo	-
Nb	≤ 50
Ni	≤ 50
Pb	-
Re	-
Sb	-
Se	-
Sn	-
Sr	-
Ta	-
Te	-
Ti	-
Tl	-
V	-
W	-
Zn	-
Zr	-
Sum	≤ 450

Approved By:
[\(CO-806\) IFU Supplementary Documents](#)

Description

Initial release.

Justification

Response to TUV TF Review Questions.

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