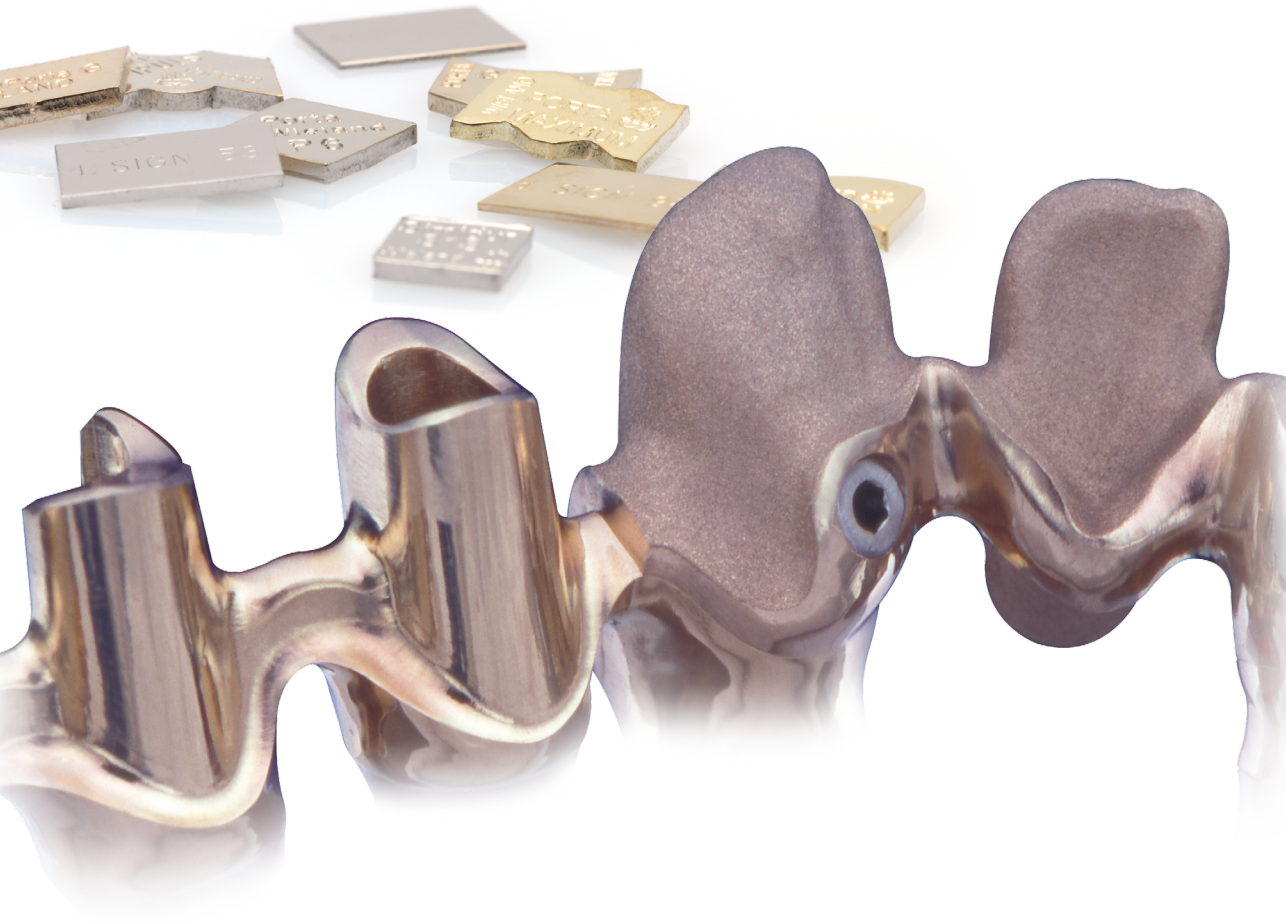
Dental Alloys



Composition and physical properties

Global markets 2020–01

ivoclar vivadent®
passion vision innovation

Compositions and physical properties

Mass content | Teneur en | Titolo complessivo | Contenido | Teor de massa | Gehalt an (%)

			Au	Pt	Pd	Ag	Cu	Ga	In	Ir	Re	Ru	Sn	Zn	Other | Divers | Altre | Otra | Outros | Sonstige
Crown and bridge alloys	**High gold content**	Academy Gold	77.2	<1.0	–	12.7	8.5	–	<1.0	<1.0	–	–	–	<1.0	Ta <1.0
		Harmony® Hard	74.0	–	3.8	12.0	9.0	–	<1.0	<1.0	–	–	–	<1.0	–
		Harmony® PF	72.0	3.6	–	13.7	9.8	–	–	<1.0	–	–	–	<1.0	–
	Reduced gold content	XL–X®	62.8	–	3.9	16.1	15.7	–	<1.0	<1.0	–	–	–	1.0	–
		X–L®	61.7	–	3.0	25.2	9.6	–	<1.0	<1.0	–	–	–	–	–
		Maxigold®	59.5	–	2.7	26.3	8.5	–	<1.0	<1.0	–	–	–	2.7	–
		Harmony® C&B 55	55.0	–	5.2	30.0	9.0	–	<1.0	<1.0	–	–	–	–	–
		Midigold 50®	50.0	–	3.5	35.0	9.5	–	2.0	<1.0	–	–	–	–	–
		Minigold®	40.0	–	4.0	47.0	7.5	–	<1.0	<1.0	–	–	–	1.0	–
	Containing Pd/Ag	Solarcast® 20	20.0	–	15.0	40.0	10.0	–	11.0	–	–	–	2.0	2.0	–
		Harmony® 3	3.5	–	25.9	50.8	13.8	–	–	–	<1.0	–	4.5	1.2	Mn <1.0,
		Harmony® 2	2.0	–	32.7	34.3	–	–	28.0	<1.0	–	–	–	2.6	Li <1.0, B <1.0, Cr <1.0
		WLW®	–	–	25.0	71.0	–	–	4.0	–	–	–	–	–	Li <1.0
		Elektra®	–	–	25.0	58.3	14.7	–	2.0	–	<1.0	<1.0	–	–	Li <1.0
Universal alloys	**High gold content**	BioUniversal PKF	75.0	8.6	–	11.9	–	–	<1.0	<1.0	–	–	–	2.0	Rh <1.0, Fe <1.0, Ta <1.0
	Reduced gold content	BioUniversal KFG+	37.7	<1.0	15.9	32.6	–	–	12.2	<1.0	–	–	<1.0	–	Li <1.0, Fe <1.0, Rh <1.0, Nb <1.0
	Containing Pd/Ag	BioUniversal E	–	–	40.0	52.2	–	–	1.4	–	<1.0	<1.0	5.5	<1.0	–
Implant alloys	**Implant**	Callisto® Implant 78	78.6	9.7	7.9	–	–	–	3.4	–	<1.0	<1.0	–	–	Fe <1.0, Rh <1.0
		Callisto® Implant 60	2.0	<1.0	60.0	25.2	–	1.0	2.0	–	<1.0	–	7.5	1.6	–
Ceramic bonded alloys	**High gold content**	Brite Gold®	96.3	2.6	–	–	<1.0	–	<1.0	<1.0	–	–	<1.0	–	Mn <1.0, Fe <1.0, B <1.0
		Brite Gold® XH	88.9	9.0	–	–	–	–	<1.0	<1.0	–	–	<1.0	–	Mn <1.0, Li <1.0, Fe <1.0
		Golden Ceramic®	86.9	8.0	2.5	<1.0	–	–	<1.0	–	<1.0	<1.0	<1.0	–	Li <1.0, Fe <1.0, Ta <1.0
		Aquarius Hard	86.1	8.5	2.6	–	–	–	1.4	–	–	<1.0	–	–	Li <1.0, Fe <1.0, Ta <1.0
		d.SIGN® 98	85.9	12.1	–	–	–	–	<1.0	<1.0	–	–	–	1.5	Mn <1.0, Fe <1.0, Ta <1.0
		Aquarius XH	82.8	9.0	5.0	–	–	–	2.5	<1.0	–	–	<1.0	–	Li <1.0, Fe <1.0, Ta <1.0
		Sagittarius	75.0	2.0	16.8	2.0	<1.0	–	2.0	–	<1.0	–	2.0	–	–
		d.SIGN® 96	73.8	8.5	5.4	9.0	–	–	1.9	–	<1.0	<1.0	–	–	Mn <1.0, Li <1.0, Fe <1.0 Ta <1.0 Nb <1.0
	Reduced gold content	d.SIGN® 91	60.0	–	30.6	–	–	1.0	8.4	–	<1.0	<1.0	–	–	–
		W	54.0	–	26.4	15.5	–	–	1.5	–	<1.0	<1.0	2.5	–	Li <1.0
		W–5	52.2	<1.0	26.0	17.1	–	–	<1.0	<1.0	<1.0	–	2.7	–	Li <1.0
		Lodestar®	51.5	–	38.5	–	–	1.5	8.5	–	<1.0	<1.0	–	–	–
		Leo	45.0	–	41.0	6.0	–	1.8	3.4	–	<1.0	<1.0	2.2	–	Li <1.0
		Evolution Lite	40.3	–	39.3	9.2	–	1.8	9.3	–	–	<1.0	–	–	–
	Containing Pd/Ag	Spartan® Plus	2.0	–	78.8	–	10.0	9.0	–	<1.0	–	–	–	–	Li <1.0, Ge <1.0
		Spartan®	2.0	–	78.7	–	10.0	9.0	–	<1.0	–	–	–	–	B <1.0
		Capricorn	6.0	–	78.1	3.0	–	6.0	6.5	–	<1.0	<1.0	–	–	Li <1.0
		d.SIGN® 84	9.0	–	75.2	3.0	–	6.0	6.5	–	<1.0	<1.0	–	–	Li <1.0
		Protocol	6.0	–	75.2	6.5	–	6.0	6.0	–	–	<1.0	–	–	Li <1.0
		Callisto® 75 Pd	2.5	–	75.2	7.1	–	4.2	1.0	–	<1.0	<1.0	9.3	<1.0	Li <1.0
		Aries	–	–	63.7	26.0	–	1.8	1.5	–	<1.0	<1.0	7.0	–	–
		d.SIGN® 67	4.0	–	62.7	20.0	–	1.7	1.5	–	<1.0	<1.0	10.0	–	Li <1.0
		d.SIGN® 59	–	<1.0	59.2	27.9	–	–	2.7	–	<1.0	<1.0	8.2	1.3	Li <1.0
		d.SIGN® 53	–	<1.0	53.8	34.9	–	–	1.7	–	<1.0	<1.0	7.7	1.2	Li <1.0
		W–1	–	–	53.3	37.7	–	–	<1.0	–	–	<1.0	8.5	–	Li <1.0
		Capricorn 15	15.0	–	51.9	23.0	–	2.0	8.0	–	<1.0	<1.0	–	–	–
		Callisto® CPG	<1.0	–	24.6	–	–	–	–	–	–	–	–	–	Co 39.9, Cr 21.3, Mo 11.6, W 1.2, B <1.0, Fe <1.0, Ta <1.0, Al <1.0

			Ni	Co	Cr	Mo	Al	Si	Mn	Fe	B	Ga	Nb	W	
Predominantly base alloys	**Cobalt base**	d.SIGN® 30	–	60.2	30.1	<1.0	<1.0	<1.0	–	<1.0	<1.0	3.9	3.2	–	Li <1.0
		++ Colado® CC	–	59.0	25.5	5.5	–	<1.0	–	<1.0	<1.0	3.2	<1.0	5.0	–
	Nickel base	++ 4all	61.4	–	25.7	11.0	<1.0	1.5	<1.0	–	–	–	–	–	C <1.0

see instructions

The range of alloys may vary from country to country.
For further information please see Instructions for Use or visit our website: www.ivoclarvivadent.com

Au
Pt
Pd
Ag

Compositions and physical properties

		Color / Couleur / Colore / Color / Cor / Farbe		ISO	Certification / Certification / Certificazione / Certificado / Certificação / Zertifizierung	Type / Type / Tipo / Tipo / Tipo / Typ	Indications / Indications / Indications / Indications / Indications / Indicações / Indikationen
Crown and bridge alloys	**High gold content**	Academy Gold	Rich Yellow	22674	CE 0123	2	1, 2
		Harmony® Hard	Yellow	22674	CE 0123	2	1, 2
		Harmony® PF	Yellow	22674	CE 0123	4	1, 2, 3, 4, 5, 6, 7, 8
	Reduced gold content	XL–X®	Yellow	22674	CE 0123	4	2, 3, 4, 5, 6, 7, 8
		X–L®	Yellow	22674	CE 0123	4	1, 2, 3, 4, 5, 6
		Maxigold®	Yellow	22674	CE 0123	4	1, 2, 3, 4, 5, 6, 7, 8
		Harmony® C&B 55	Yellow	22674	CE 0123	4	1, 2, 3, 4, 5, 6
		Midigold 50®	Yellow	22674	CE 0123	4	2, 3, 4, 5, 6, 7, 8
		Minigold®	Yellow	22674	CE 0123	4	2, 3, 4, 5, 6
	Containing Pd/Ag	Solarcast® 20	Yellow	22674	CE 0123	4	3, 4, 5, 6, 8
		Harmony® 3	White	22674	CE 0123	4	2, 3, 4, 5, 6
		Harmony® 2	Yellow	22674	CE 0123	3	3, 4
		WLW®	White	22674	CE 0123	3	2, 3, 4
		Elektra®	White	22674	CE 0123	4	1, 2, 3, 4, 5, 6, 7, 8
Universal alloys	**High gold content**	BioUniversal PKF	Yellow	22674	CE 0123	4	2, 3, 4, 5, 6
	Reduced gold content	BioUniversal KFG+	Yellow	22674	CE 0123	4	3, 4, 5, 6, 7, 8
	Containing Pd/Ag	BioUniversal E	White	22674	CE 0123	4	2, 3, 4, 5, 6
Implant alloys	**Implant**	Callisto® Implant 78	White	22674	CE 0123	4	2, 3, 4, 5, 6, 7, 8
		Callisto® Implant 60	White	22674	CE 0123	4	1, 2, 3, 4, 5, 6, 7, 8
Ceramic bonded alloys	**High gold content**	Brite Gold®	Rich Yellow	22674	CE 0123	2	1, 2
		Brite Gold® XH	Rich Yellow	22674	CE 0123	4	2, 3, 4, 5, 6
		Golden Ceramic®	Rich Yellow	22674	CE 0123	3	2, 3, 4
		Aquarius Hard	Yellow	22674	CE 0123	4	2, 3, 4, 5, 6
		d.SIGN® 98	Rich Yellow	22674	CE 0123	4	3, 4, 5, 6, 7, 8
		Aquarius XH	Yellow	22674	CE 0123	4	2, 3, 4, 5, 6, 7, 8
		Sagittarius	White	22674	CE 0123	4	2, 3, 4, 5, 6, 7, 8
		d.SIGN® 96	Yellow	22674	CE 0123	4	2, 3, 4, 5, 6, 8
	Reduced gold content	d.SIGN® 91	White	22674	CE 0123	5	2, 3, 4, 5, 6, 7, 8
		W	White	22674	CE 0123	4	1, 2, 3, 4, 5, 6, 8
		W–5	White	22674	CE 0123	4	2, 3, 4, 5, 6, 7, 8
		Lodestar®	White	22674	CE 0123	4	1, 2, 3, 4, 5, 6, 7, 8
		Leo	White	22674	CE 0123	4	1, 2, 3, 4, 5, 6, 8
		Evolution Lite	White	22674	CE 0123	4	2, 3, 4, 5, 6, 7, 8
	Containing Pd/Ag	Spartan® Plus	White	22674	CE 0123	4	1, 2, 3, 4, 5, 6, 7, 8
		Spartan®	White	22674	CE 0123	5	1, 2, 3, 4, 5, 6, 7, 8
		Capricorn	White	22674	CE 0123	4	1, 2, 3, 4, 5, 6, 7, 8
		d.SIGN® 84	White	22674	CE 0123	4	1, 2, 3, 4, 5, 6, 7, 8
		Protocol	White	22674	CE 0123	4	1, 2, 3, 4, 5, 6, 7, 8
		Callisto® 75 Pd	White	22674	CE 0123	4	1, 2, 3, 4, 5, 6, 7, 8
		Aries	White	22674	CE 0123	4	1, 2, 3, 4, 5, 6
		d.SIGN® 67	White	22674	CE 0123	4	2, 3, 4, 5, 6, 7, 8
		d.SIGN® 59	White	22674	CE 0123	4	2, 3, 4, 5, 6, 7, 8
		d.SIGN® 53	White	22674	CE 0123	4	2, 3, 4, 5, 6, 7, 8
		W–1	White	22674	CE 0123	4	2, 3, 4, 5, 6, 8
		Capricorn 15	White	22674	CE 0123	4	1, 2, 3, 4, 5, 6, 7, 8
		Callisto® CPG	White	22674	CE 0123	5	2, 3, 4, 5, 6, 7, 8
Predominantly base alloys	**Cobalt base**	d.SIGN® 30	White	22674	CE 0123	5	3, 4, 5, 6, 7, 8
		++ Colado® CC	White	22674	CE 0123	5	3, 4, 5, 6, 7, 8
	Nickel base	++ 4all	White	22674	CE 0123	4	3, 4, 5, 6

see instructions

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Classifications

CE 0123

Ivoclar Vivadent alloys comply with the requirements of the Medical Device Directive of the European Economic Community (93/42/EEC).

Manufacturer:
Ivoclar Vivadent Inc, Amherst, NY, USA

++ **Manufacturer:**
Ivoclar Vivadent AG, Schaan, FL

EC REP **EC–Representative for Ivoclar Vivadent Inc. alloys:**
Ivoclar Vivadent AG, Schaan, FL

IDENTALLOY

Ivoclar Vivadent participates in the IDENTALLOY® program; an independent organization created to help raise the standards of health care by providing documentation of certified alloys.
The alloy categories are identified through the following symbols:

HIGH NOBLE HN CM — Noble Metal Content:
(Au + Pt + Pd) ≥ 60% and gold (Au) ≥ 40%

NOBLE N CM — Noble Metal Content:
(Au + Pt + Pd) ≥ 25%

BASE BASE — Noble Metal Content:
(Au + Pt + Pd) < 25%

IDENTALLOY is a registered trademark of IDENTALLOY Council, Inc.

Dental Alloy Classification

ISO

ISO 22674	Dentistry – Metallic materials for fixed and removable restorations and appliances
ISO 9333	Dentistry – Brazing materials
ISO 28319	Dentistry – Laser welding and filler materials

Alloy classification due to physical properties*

Type	0.2% proof strength (MPa)	Elongation in %	Modulus of elasticity (GPa)
0	–	–	–
1	≥ 80	≥ 18	–
2	≥ 180	≥ 10	–
3	≥ 270	≥ 5	–
4	≥ 360	≥ 2	–
5	≥ 500	≥ 2	≥ 150

***Dental alloys are classified into different Types based on their physical properties. These properties can be changed by selective heat treatment, which can result in a different Type classification of the alloy and thus different indications.**

ISO
CE

Indications

1	EN Inlays DE Inlays FR Inlays IT Inlays ES Inlays	PT Inlays SV Inlay DA Inlay FI Inlayt NO Inlays	NL Inlays EL Ένθετα TR İnleyler RU Инлеи PL Inlay
2	EN Onlays, 3/4 Crowns, Crowns DE Onlay, 3/4 Kronen, Kronen FR Onlays, Couronnes 3/4, Couronnes IT Onlays, Corone a 3/4, Corone ES Onlays, Corona 3/4, Corona	PT Onlays, Coroas 3/4, Coroas SV Onlay, 3/4 kronor, Kronor DA Onlay, 3/4 kroner, Kroner FI Onlayt, 3/4 kruunut, Kruunut NO Onlays, 3/4–kroner, Kroner	NL Onlays, 3/4–Kronen, Kronen EL Επένθετα , Στεφάνες 3/4 , Στεφάνες TR Onleyler, 3/4 Kuronlar, Kuronlar RU Онлеи, 3/4 коронки, Коронки PL Onlay, Korony częściowe, Korony
3	EN Telescope Crowns, Conus Crowns DE Teleskopkronen, Konuskronen FR Couronnes télescopiques, Couronnes coniques IT Corone telescopiche, Corone coniche ES Corona Telescópica, Corona cónica	PT Coroas Telescópicas, Coroas Cônicas SV Teleskopkronor, Konuskronor DA Teleskopkroner, Konuskroner FI Teleskooppikruunut, Kartiokruunut NO Teleskopkroner, Konuskroner	NL Telescoopkronen, Conische kronen EL Τηλεσκοπικές στεφάνες , Κωνικές στεφάνες TR Teleskop Kuronlar, Konus Kuronlar RU Телескопические коронки, Конические коронки PL Korony teleskopowe, Korony konusowe
4	EN Bridges DE Brücken FR Bridges IT Ponti ES Puentes	PT Pontes SV Broar DA Broer FI Sillat NO Broer	NL Bruggen EL Γέφυρες TR Köprüler RU Мостовидные протезы PL Mosty
5	EN Wide Bridges DE weitspannige Brücken FR Bridges larges IT Ponti estesi ES Puentes largos	PT Pontes Extensas SV Flerledsbroar DA Broer med flere mellemled FI Leveät sillat NO Broer med lange spenn	NL Brede bruggen EL Γέφυρες μεγάλου εύρους TR Geniş Köprüler RU Мостовидные протезы большой протяженности PL Rozległe mosty
6	EN Cast Posts /–Cores, Bars, Attachments DE Wurzelstifte /–aufbau, Stege, Konstruktionselemente FR Tenons / Moignons en pâtre, Barres, Attaches IT Perni radicolari/ricostruzioni radicolari, Barre, Attacchi ES Postes colados / núcleos, Barras, Aditamentos	PT Pinos Fundidos / Núcleos, Barras, Retentores SV Gjutna pelare / pelaruppbyggnader, Barer, Attachments DA Støbte stifter/–opbygninger, Forbindelsesbarer, Attachments FI Valunastat /–ytimet, Kiskot, Rakenneosat NO Rotstifter /–oppbygginger, Forbindelsesstykker, Konstruksjonselementer	NL Gegoten wortelstiften /–kernen, Staven, Opzetstukken EL Χυτοί άξονες/κολοβώματα , Δοκοί , Σύνδεσμοι TR Döküm Postlar /–Korlar, Barlar, Ataçmanlar RU Корневые штифты /–надстройки, Перемычки, Конструктивные элементы PL Wkłady koronowo–korzeniowe, Belki, Attachments
7	EN Implant Retained Superstructures DE Implantat–Suprastrukturen FR Suprastructures vissées sur implant IT Sovrastrutture implantari ES Superestructuras implantosoportadas	PT Superestruturas de Implantes SV Suprastrukturer till implantat DA Implantatsuprastrukturer FI Implanttiin kiinnitetyt päällirakenteet NO Implantatfestede suprastrukturer	NL Implantaatsuprastructuren EL Υπερκατασκευές εμφυτευμάτων TR İmplant Tutuculu Üst Yapılar RU Супраструктуры имплантов PL Podbudowy wsparte na implantach
8	EN Partial Dentures DE Teilprothesen FR Prothèses partielles IT Protesi parziali ES Dentaduras parciales	PT Próteses Parciais SV Delproteser DA Delproteser FI Osaproteesit NO Partiell protese	NL Gedeeltelijke protheses EL Μερικές οδοντοστοιχίες TR Bölümlü Protezler RU Частичные протезы PL Protezy szkieletowe

Compositions and physical properties

			Vickers hardness Dureté vickers Durezza vickers Dureza vickers Dureza vickers Vickershärte		Modulus of elasticity Module d'élasticité Modulo di elasticità Modulo de elasticidad Módulo de elasticidade Elastizitätsmodul		Ultimate Tensile strength Résistance à la traction Carico di rottura Prueba de tension Resistência à tração Zugfestigkeit				Proof stress (0.2%) Limite d'allongement (0.2%) Limite d'elasticità (0.2%) Límite elasticidad (0.2%) Limite de elasticidade (0.2%) Dehngrenze (0.2%)				Elongation Allongement à la rupture Allungamento Elongacion Alongamento Bruchdehnung
			1* / 1	2	GPa	psi (000,000)	1 MPa/Nmm²	2	1 psi	2	1 MPa/Nmm²	2	1 psi	2	%
Crown and bridge alloys	**High gold content**	Academy Gold	125	185	88	12.8	405	500	58,740	72,520	240	335	34,810	48,590	45.0
		Harmony® Hard	130	180	86	12.5	430	475	62,370	68,890	260	330	37,710	47,860	40.0
		Harmony® PF	230	230	135	19.6	650	580	94,270	84,120	525	485	76,140	70,340	18.0
	Reduced gold content	XL–X®	270	300	105	15.2	790	840	114,580	121,830	690	740	100,080	107,330	13.0
		X–L®	150	240	105	15.2	500	660	72,520	95,720	390	515	56,560	74,690	26.0
		Maxigold®	225	225	130	18.9	620	600	89,920	87,020	525	530	76,140	76,870	18.0
		Harmony® C&B 55	185	220	120	17.4	575	660	83,400	95,720	425	540	61,640	78,320	19.0
		Midigold 50®	190	220	95	13.8	610	660	88,470	95,720	490	585	71,070	84,850	10.0
		Minigold®	190	215	88	12.8	600	680	87,020	98,630	430	540	62,370	78,320	15.0
	Containing Pd/Ag	Solarcast® 20	195	240	90	13.1	570	700	82,670	101,530	450	570	65,270	82,670	5.0
		Harmony® 3	230	245	106	15.4	610	645	88,470	93,550	430	525	62,370	76,140	10.0
		Harmony® 2	175	180	80	11.6	540	520	78,320	75,420	300	270	43,510	39,160	5.0
		WLW®	150	170	90	13.1	500	450	72,520	65,270	320	325	46,410	47,140	10.0
		Elektra®	190	240	105	15.3	560	740	81'220	107,330	475	620	68,890	89,920	18.0
Universal alloys	**High gold content**	BioUniversal PKF	165/125	200	100	14.5	390	500	56,560	72,520	200	375	29,010	54,390	18.0
	Reduced gold content	BioUniversal KFG+	230/200	225	95	13.8	560	610	81,220	88,470	430	495	62,370	71,790	5.0
	Containing Pd/Ag	BioUniversal E	200/190	220	127	18.4	550	645	79,770	93,550	360	425	52,210	61,640	10.0
Implant alloys	**Implant**	Callisto® Implant 78	240	260	120	17.4	670	715	97,180	103,700	600	640	87,020	92,820	10.0
		Callisto® Implant 60	275	285	140	20.3	820	860	118,930	124,730	590	620	85,570	89,920	18.0
Ceramic bonded alloys	**High gold content**	Brite Gold®	100	115	79	11.5	315	325	45,690	47,140	230	270	33,360	39,160	18.0
		Brite Gold® XH	175	195	105	15.2	500	590	72,520	85,570	380	500	55,110	72,520	10.0
		Golden Ceramic®	165	–	108	15.7	470	–	68,170	–	340	–	49,310	–	12.0
		Aquarius Hard	160	220	110	16.0	470	590	68,170	85,570	370	450	53,660	65,270	10.0
		d.SIGN® 98	220	235	110	16.0	585	675	84,910	97,900	510	570	73,970	82,670	6.0
		Aquarius XH	220	245	115	16.7	560	660	81,220	95,720	500	625	72,520	90,650	10.0
		Sagittarius	245	280	135	19.6	690	705	100,080	102,250	580	630	84,120	91,370	10.0
		d.SIGN® 96	215	225	125	18.1	600	625	87,020	90,650	450	485	65,270	70,340	12.0
	Reduced gold content	d.SIGN® 91	250	280	152	22.0	720	770	104,430	111,680	530	575	76,870	83,400	14.0
		W	220	225	118	17.1	660	715	95,720	103,700	455	530	65,990	76,870	20.0
		W–5	215	255	130	18.9	715	745	103,700	108,050	475	520	68,890	75,420	15.0
		Lodestar®	240	270	125	18.1	705	–	102,250	–	495	–	71,790	–	20.0
		Leo	190	280	140	20.3	670	740	97,180	107,330	450	540	65,270	78,320	20.0
		Evolution Lite	280	295	130	18.9	790	795	114,580	115,300	565	650	81,950	94,270	12.0
	Containing Pd/Ag	Spartan® Plus	310	–	140	20.3	900	–	130,530	–	740	–	107,330	–	20.0
		Spartan®	310	430	155	22.5	1165	1245	168,970	180,570	945	1050	137,060	152,290	18.0
		Capricorn	255	–	125	18.1	820	–	118,930	–	525	–	76,140	–	25.0
		d.SIGN® 84	270	285	145	21.0	825	835	119,660	121,110	495	500	71,790	72,520	25.0
		Protocol	235	–	134	19.4	745	–	108,050	–	500	–	72,520	–	30.0
		Callisto® 75 Pd	230	285	136	19.7	810	950	117,480	137,790	500	600	72,520	87,020	35.0
		Aries	180	215	130	18.9	680	710	98,630	102,980	400	415	58,020	60,190	35.0
		d.SIGN® 67	245	290	135	19.6	785	840	113,850	121,830	545	595	79,050	86,300	12.0
		d.SIGN® 59	230	265	134	19.4	740	780	107,330	113,130	490	640	71,070	92,820	10.0
		d.SIGN® 53	250	295	132	19.1	730	770	105,880	111,680	545	600	79,050	87,020	10.0
		W–1	225	285	120	17.4	650	760	94,270	110,230	450	605	65,270	87,750	11.0
		Capricorn 15	250	320	120	17.4	745	880	108,050	127,630	490	655	71,070	95,000	18.0
		Callisto® CPG	350	–	230	33.4	835	–	121,110	–	665	–	96,450	–	10.0
Predominantly base alloys	**Cobalt base**	d.SIGN® 30	385	–	234	33.9	660	–	95,720	–	510	–	73,970	–	5.0
		++ Colado® CC	360	–	198	28.7	620	–	89,900	–	500	–	72,500	–	9.0
	Nickel base	++ 4all	235	–	200	29.0	720	–	104,400	–	375	–	54,000	–	10.0

see instructions

The range of alloys may vary from country to country.
For further information please see Instructions for Use or visit our website: www.ivoclarvivadent.com

Data

Vickers Hardness • Modulus of elasticity • Ultimate Tensile strength • Proof Stress • Elongation

Crown and bridge alloys

	1	2
EN	As Cast	Hardened
DE	Gegossen	Gehärtet
FR	Coulée	Durci
IT	Dopo colata	Temprato
ES	Colado	Endurecido
PT	Após a fundição	Endurecida
SV	Göt	Härdat
DA	Som støbning	Hærdet
FI	Valettuna	Kovetettu
NO	Støpt	Herdet
NL	Als gietobject	Gehard in oven
EL	Μετά τη χύτευση	Σκληρυμένο
TR	Döküldüğü gibi	Sertleştirilmiş
RU	Литье	Закалка
PL	Po odlaniu	Utwardzony

Universal alloys **Implant alloys** **Ceramic bonded alloys** **Predominatly base alloys**

	1*	1	2
EN	As Cast	Procelain Fired	Hardened
DE	Gegossen	Nach dem Keramikbrand	Gehärtet
FR	Coulée	Porcelaine cuite	Durci
IT	Dopo colata	Dopo la cottura ceramica	Temprato
ES	Colado	Cocción cerámica	Endurecido
PT	Após a fundição	Após queima da porcelana	Endurecida
SV	Göt	Efter den keramiska bränningen	Härdat
DA	Som støbning	Porcelæn, brændt	Hærdet
FI	Valettuna	Keramiikan polton jälkeen	Kovetettu
NO	Støpt	Etter porselenbrenning	Herdet
NL	Als gietobject	Porselein gebakken	Gehard in oven
EL	Μετά τη χύτευση	Πορσελάνη όπτησης	Σκληρυμένο
TR	Döküldüğü gibi	Porselen Pişirilmiş Sertleştirilmiş	Sertleştirilmiş
RU	Литье	После обжига керамики	Закалка
PL	Po odlaniu	Wypalona ceramika	Utwardzony

Compositions and physical properties

			Burnout temperature Température de cuisson à bloc Temp. di preriscaldo Temp. de precalentamiento Temperatura d'aquecimento Ausbrenntemperatur °C	°F	Melting range Intervalle de fusion Intervallo di fusione Intervalo de fusion Intervalo de fusão Schmelzintervall °C	°F	Casting temperature * Température de coulée Temp. di colata Temp. de colado Termperatura de fundição Giesstemperatur °C	°F	Carbon crucible Creuset en graphite Crogiuolo in graffite Crisol de grafito Cadinho de grafite Graffitiegel	Ceramic crucible Creuset en céramique Crogiuolo in ceramica Crisol de cerámica Cadinho de cerâmica Keramiktiegel
Crown and bridge alloys	**High gold content**	Academy Gold	650–760	1200–1400	900–940	1650–1725	1000–1050	1830–1920	✓	✓
		Harmony® Hard	650–760	1200–1400	895–970	1640–1780	1025–1090	1875–1995	✓	✓
		Harmony® PF	650–760	1200–1400	900–940	1650–1725	1000–1050	1830–1920	✓	✓
	Reduced gold content	XL–X®	650–760	1200–1400	870–910	1600–1670	965–1025	1770–1875	✓	✓
		X–L®	650–760	1200–1400	890–950	1635–1740	1010–1070	1850–1960	✓	✓
		Maxigold®	650–760	1200–1400	840–890	1545–1635	940–1000	1725–1830	✓	✓
		Harmony® C&B 55	650–760	1200–1400	905–975	1660–1785	1030–1090	1885–1995	✓	✓
		Midigold 50®	650–760	1200–1400	835–915	1535–1680	970–1030	1780–1885	✓	✓
		Minigold®	650–760	1200–1400	865–945	1590–1735	1000–1050	1830–1920	✓	✓
	Containing Pd/Ag	Solarcast® 20	650–760	1200–1400	750–840	1380–1545	930–990	1705–1815	✓	✓
		Harmony® 3	650–705	1200–1300	880–960	1615–1760	1020–1050	1870–1920	✓	✓
		Harmony® 2	650–705	1200–1300	875–1120	1605–2050	1170–1230	2140–2245	✓	✓
		WLW®	650–760	1200–1400	1075–1130	1965–2070	1180–1240	2155–2265	✓	✓
		Elektra®	650–760	1200–1400	900–990	1650–1815	1050–1105	1920–2020	✓	✓
Universal alloys	**High gold content**	BioUniversal PKF	650–760	1200–1400	930–1010	1705–1850	1070–1150	1960–2100	✓	✓
	Reduced gold content	BioUniversal KFG+	625–710	1155–1310	920–995	1690–1825	1060–1120	1940–2050	–	✓
	Containing Pd/Ag	BioUniversal E	650–760	1200–1400	1100–1180	1870–2155	1240–1290	2265–2355	–	✓
Implant alloys	**Implant**	Callisto® Implant 78	750–820	1380–1510	1130–1250	2065–2280	1310–1370	2390–2500	–	✓
		Callisto® Implant 60	750–820	1380–1510	1150–1260	2100–2300	1320–1360	2410–2480	–	✓
Ceramic bonded alloys	**High gold content**	Brite Gold®	705–730	1300–1345	1025–1070	1875–1960	1125–1185	2055–2165	✓	✓
		Brite Gold® XH	705–760	1300–1400	1050–1150	1920–2100	1205–1265	2200–2310	✓	✓
		Golden Ceramic®	750–820	1380–1510	1060–1140	1940–2085	1190–1250	2175–2280	✓	✓
		Aquarius Hard	750–820	1380–1510	1045–1145	1915–2095	1200–1260	2195–2300	✓	✓
		d.SIGN® 98	750–800	1380–1470	1055–1150	1930–2100	1210–1270	2210–2320	✓	✓
		Aquarius XH	750–820	1380–1510	1050–1185	1920–2165	1240–1300	2265–2370	✓	✓
		Sagittarius	750–820	1380–1510	1130–1255	2065–2290	1310–1370	2390–2500	✓	✓
		d.SIGN® 96	750–820	1380–1510	1050–1160	1920–2120	1225–1260	2235–2300	✓	✓
	Reduced gold content	d.SIGN® 91	750–820	1380–1510	1125–1265	2055–2310	1330–1380	2425–2515	–	✓
		W	750–820	1380–1510	1200–1280	2190–2335	1330–1390	2425–2535	–	✓
		W–5	750–820	1380–1510	1185–1285	2165–2345	1345–1385	2455–2525	–	✓
		Lodestar®	750–820	1380–1510	1175–1300	2145–2370	1360–1410	2480–2570	–	✓
		Leo	750–820	1380–1510	1225–1315	2235–2400	1370–1430	2500–2605	–	✓
		Evolution Lite	750–820	1380–1510	1100–1260	2010–2300	1315–1375	2400–2510	–	✓
	Containing Pd/Ag	Spartan® Plus	750–820	1380–1510	1130–1210	2065–2210	1260–1320	2300–2410	–	✓
		Spartan®	750–820	1380–1510	1050–1190	1920–2175	1250–1290	2280–2355	–	✓
		Capricorn	750–820	1380–1510	1155–1335	2110–2435	1390–1450	2535–2640	–	✓
		d.SIGN® 84	750–820	1380–1510	1140–1335	2085–2435	1390–1450	2535–2640	–	✓
		Protocol	750–820	1380–1510	1270–1310	2320–2390	1365–1425	2490–2595	–	✓
		Callisto® 75 Pd	750–820	1380–1510	1110–1295	2030–2365	1360–1420	2480–2590	–	✓
		Aries	750–820	1380–1510	1165–1290	2130–2355	1350–1410	2460–2570	–	✓
		d.SIGN® 67	750–820	1380–1510	1150–1270	2100–2320	1325–1385	2415–2525	–	✓
		d.SIGN® 59	750–820	1380–1510	1190–1290	2175–2355	1350–1400	2460–2550	–	✓
		d.SIGN® 53	750–820	1380–1510	1180–1270	2155–2320	1325–1390	2415–2535	–	✓
		W–1	750–820	1380–1510	1185–1270	2165–2320	1320–1380	2410–2515	–	✓
		Capricorn 15	750–820	1380–1510	1140–1290	2085–2355	1350–1410	2460–2570	–	✓
		Callisto® CPG	750–820	1380–1510	1185–1275	2165–2325	1335–1395	2435–2545	–	✓
Predominantly base alloys	**Cobalt base**	d.SIGN® 30	800–850	1470–1560	1145–1180	2095–2195	1240–1300	2265–2370	–	✓
		++ Colado® CC	800–850	1470–1560	1175–1385	2145–2525	1450–1500	2640–2730	–	✓
	Nickel base	++ 4all	800–850	1470–1560	1260–1350	2300–2460	1405–1465	2560–2670	–	✓

*** Casting Temperature depends on type of casting machine.**

see instructions

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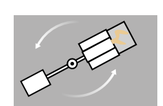


Wax to alloy conversion formula

		Density g/cm³	Wax weight in grams 0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
High gold content	Academy Gold	15.9	1.6	3.2	4.8	6.4	8.0	9.5	11.1	12.7	14.3	15.9
	Harmony® Hard	14.9	1.5	3.0	4.5	6.0	7.5	8.9	10.4	11.9	13.4	14.9
	Harmony® PF	15.6	1.6	3.1	4.7	6.2	7.8	9.4	10.9	12.5	14.0	15.6
Reduced gold content	XL–X®	13.9	1.4	2.8	4.8	5.6	7.0	8.3	9.7	11.1	12.5	13.9
	X–L®	14.0	1.4	2.8	4.2	5.6	7.0	8.4	9.8	11.2	12.6	14.0
	Maxigold®	13.9	1.4	2.8	4.2	5.6	7.0	8.3	9.7	11.1	12.5	13.9
	Harmony® C&B 55	13.6	1.4	2.7	4.1	5.4	6.8	8.2	9.5	10.9	12.2	13.6
	Midigold 50®	13.2	1.3	2.6	4.0	5.3	6.6	7.9	9.2	10.6	11.9	13.2
	Minigold®	12.4	1.2	2.5	3.7	5.0	6.2	7.4	8.7	9.9	11.2	12.4
Containing Pd/Ag	Solarcast® 20	10.8	1.1	2.2	3.2	4.3	5.4	6.5	7.6	8.6	9.7	10.8
	Harmony® 3	10.6	1.1	2.1	3.2	4.2	5.3	6.4	7.4	8.5	9.5	10.6
	Harmony® 2	9.8	1.0	2.0	2.9	3.9	4.9	5.9	6.9	7.8	8.8	9.8
	WLW®	10.6	1.1	2.1	3.2	4.2	5.3	6.4	7.4	8.5	9.5	10.6
	Elektra®	10.4	1.0	2.1	3.1	4.2	5.2	6.2	7.3	8.3	9.4	10.4
High gold content	BioUniversal PKF	16.8	1.7	3.4	5.0	6.7	8.4	10.1	11.8	13.4	15.1	16.8
Reduced gold content	BioUniversal KFG+	12.2	1.2	2.4	3.7	4.9	6.1	7.3	8.5	9.8	11.0	12.2
Containing Pd/Ag	BioUniversal E	10.9	1.1	2.2	3.3	4.4	5.5	6.5	7.6	8.7	9.8	10.9
Implant	Callisto® Implant 78	17.6	1.8	3.5	5.3	7	8.8	10.6	12.3	14.1	15.8	17.6
	Callisto® Implant 60	10.8	1.1	2.2	3.2	4.3	5.4	6.5	7.7	8.6	9.7	10.8
High gold content	Brite Gold®	19.0	1.9	3.8	5.7	7.6	9.5	11.4	13.3	15.2	17.1	19.0
	Brite Gold® XH	18.8	1.9	3.8	5.6	7.5	9.4	11.3	13.2	15.0	16.9	18.8
	Golden Ceramic®	18.4	1.8	3.7	5.5	7.4	9.2	11.0	12.9	14.7	16.6	18.4
	Aquarius Hard	18.5	1.9	3.7	5.6	7.4	9.4	11.1	13.0	14.8	16.7	18.5
	d.SIGN® 98	18.9	1.9	3.8	5.7	7.6	9.5	11.3	13.2	15.1	17.0	18.9
	Aquarius XH	17.9	1.8	3.6	5.4	7.2	9.0	10.7	12.5	14.3	16.1	17.9
	Sagittarius	16.4	1.6	3.3	4.9	6.6	8.2	9.8	11.5	13.1	14.8	16.4
	d.SIGN® 96	16.7	1.7	3.4	5.0	6.7	8.4	10.1	11.7	13.4	15.0	16.7
Reduced gold content	d.SIGN® 91	14.3	1.4	2.9	4.3	5.7	7.2	8.6	10.0	11.4	12.9	14.3
	W	13.8	1.4	2.8	4.1	5.5	6.9	8.3	9.7	11.0	12.4	13.8
	W–5	13.8	1.4	2.8	4.1	5.5	6.9	8.3	9.7	11.0	12.4	13.8
	Lodestar®	13.7	1.4	2.7	4.1	5.5	6.9	8.2	9.6	11.0	12.3	13.7
	Leo	13.5	1.4	2.7	4.1	5.4	6.8	8.1	9.5	10.8	12.2	13.5
	Evolution Lite	12.8	1.3	2.6	3.8	5.1	6.4	7.7	9.0	10.2	11.5	12.8
Containing Pd/Ag	Spartan® Plus	11.0	1.1	2.2	3.3	4.4	5.5	6.6	7.7	8.8	9.9	11.0
	Spartan®	10.9	1.1	2.2	3.3	4.4	5.5	6.5	7.6	8.7	9.8	10.9
	Capricorn	11.2	1.1	2.2	3.4	4.5	5.6	6.7	7.8	9.0	10.1	11.2
	d.SIGN® 84	11.3	1.1	2.3	3.4	4.5	5.7	6.8	7.9	9.0	10.2	11.3
	Protocol	11.3	1.1	2.3	3.4	4.5	5.7	6.8	7.9	9.0	10.2	11.3
	Callisto® 75 Pd	10.8	1.1	2.2	3.2	4.3	5.4	6.5	7.6	8.6	9.7	10.8
	Aries	10.8	1.1	2.2	3.2	4.3	5.4	6.5	7.6	8.6	9.7	10.8
	d.SIGN® 67	10.8	1.1	2.2	3.2	4.3	5.4	6.5	7.6	8.6	9.7	10.8
	d.SIGN® 59	10.9	1.1	2.2	3.3	4.4	5.5	6.5	7.6	8.7	9.8	10.9
	d.SIGN® 53	10.8	1.1	2.2	3.2	4.3	5.4	6.5	7.6	8.6	9.7	10.8
	W–1	11.1	1.1	2.2	3.3	4.4	5.6	6.7	7.8	8.9	10.0	11.1
	Capricorn 15	11.5	1.2	2.3	3.5	4.6	5.8	6.9	8.1	9.2	10.4	11.5
	Callisto® CPG	9.3	0.9	1.9	2.8	3.7	4.7	5.6	6.5	7.4	8.4	9.3
Cobalt base	d.SIGN® 30	7.8	0.8	1.6	2.3	3.1	3.9	4.7	5.5	6.2	7.0	7.8
	++ Colado® CC	8.5	0.9	1.7	2.6	3.4	4.3	5.1	6.0	6.8	7.7	8.5
Nickel base	++ 4all	8.4	0.8	1.7	2.5	3.4	4.2	5.0	5.9	6.7	7.6	8.4

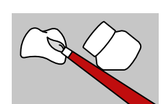
Compositions and physical properties

			CTE | CTE CDT | CET CET | WAK		Oxidation | Oxydation Ossidazione | Oxidacion Oxidação | Oxidation		Hold | Temps de maintien | Mantenere Maintener Tempo de manutenção Haltezeit	Vacuum | Vide Vuoto | Vacío Vácuo | Vakuum	Softening | Ramolissement Stempera | Ablandamiento Amaciador | Weichglühen			Hardening | Durcissement Tempera | Endurecimiento Endurecedor | Härten		
			25–500 °C	20–600 °C	°C	°F	min		°C	°F	min	°C	°F	min
Crown and bridge alloys	**High gold content**	Academy Gold	–	–	–		–	–	705	1300	30*	260	500	30
		Harmony® Hard	–	–	–		–	–	705	1300	15*	205	400	30
		Harmony® PF	–	–	–		–	–	760	1400	15*	230	445	15
	Reduced gold content	XL–X®	–	–	–		–	–	620	1150	10*	330	625	30
		X–L®	–	–	–		–	–	620	1150	15*	315	600	20
		Maxigold®	–	–	–		–	–	620	1150	10*	345	655	10
		Harmony® C&B 55	–	–	–		–	–	540	1005	10*	425	795	15
		Midigold 50®	–	–	–		–	–	675	1245	15*	400	750	15
		Minigold®	–	–	–		–	–	760	1400	10*	400	750	15
	Containing Pd/Ag	Solarcast® 20	–	–	–		–	–	705	1300	10*	370	700	30
		Harmony® 3	–	–	–		–	–	705	1300	15*	400	750	30
		Harmony® 2	–	–	–		–	–	705	1300	15*	350	660	30
		WLW®	–	–	–		–	–	705	1300	30*	510	950	30
		Elektra®	–	–	–		–	–	705	1300	30*	425	795	30
Universal alloys	**High gold content**	BioUniversal PKF	15.9	16.1	800	1470	3	Yes	–	–	–	450	840	30
	Reduced gold content	BioUniversal KFG+	17.0	17.4	700	1290	1	Yes	705	1300	30*	450	840	30
	Containing Pd/Ag	BioUniversal E	16.1	16.4	800	1470	5	No	–	–	–	500	930	30
Implant alloys	**Implant**	Callisto® Implant 78	13.9	14.0	950	1740	5	Yes	–	–	–	510	950	20
		Callisto® Implant 60	14.5	14.8	950	1740	1	No	–	–	–	500	930	30
Ceramic bonded alloys	**High gold content**	Brite Gold®	14.8	15.0	925	1695	5	No	–	–	–	600	1110	10
		Brite Gold® XH	14.5	14.7	980	1795	5	Yes	–	–	–	500	930	30
		Golden Ceramic®	14.5	14.7	925	1695	5	No	–	–	–	–	–	–
		Aquarius Hard	14.5	14.8	950	1740	5	No	–	–	–	540	1005	15
		d.SIGN® 98	14.3	14.5	925	1695	5	No	–	–	–	480	895	15
		Aquarius XH	14.1	14.4	925	1695	5	No	–	–	–	540	1005	30
		Sagittarius	14.0	14.3	950	1740	1	No	–	–	–	510	950	15
		d.SIGN® 96	14.2	14.3	950	1740	1	Yes	–	–	–	600	1110	30
	Reduced gold content	d.SIGN® 91	14.1	14.3	950	1740	1	No	–	–	–	510	950	15
		W	14.2	14.5	950	1740	1	No	–	–	–	600	1110	20
		W–5	14.0	14.3	950	1740	5	No	–	–	–	600	1110	30
		Lodestar®	14.1	14.3	950	1740	1	No	–	–	–	595	1105	15
		Leo	13.9	14.2	950	1740	1	No	–	–	–	540	1005	15
		Evolution Lite	14.2	14.5	950	1740	5	No	–	–	–	595	1105	20
	Containing Pd/Ag	Spartan® Plus	14.1	14.4	1010	1850	5	Yes	–	–	–	–	–	–
		Spartan®	14.2	14.5	1010	1850	5	Yes	–	–	–	550	1020	15
		Capricorn	13.9	14.2	950	1740	1	No	–	–	–	–	–	–
		d.SIGN® 84	13.8	14.0	950	1740	1	No	–	–	–	705	1300	30
		Protocol	13.8	14.0	950	1740	1	No	–	–	–	–	–	–
		Callisto® 75 Pd	13.9	14.2	900	1650	1	No	–	–	–	600	1110	15
		Aries	14.4	14.7	950	1740	1	No	–	–	–	540	1005	15
		d.SIGN® 67	13.9	14.2	950	1740	1	No	–	–	–	540	1005	15
		d.SIGN® 59	14.5	14.8	1010	1850	10	No	–	–	–	540	1005	15
		d.SIGN® 53	14.8	15.0	1010	1850	10	No	–	–	–	540	1005	15
		W–1	15.0	15.2	1010	1850	5	Yes	–	–	–	650	1200	30
		Capricorn 15	14.3	14.5	950	1740	1	No	–	–	–	620	1150	30
		Callisto® CPG	14.2	14.6	900	1650	1	No	–	–	–	–	–	–
Predominantly base alloys	**Cobalt base**	d.SIGN® 30	14.5	14.7	925	1695	5	Yes	–	–	–	–	–	–
		++ Colado® CC	14.2	14.5	950	1740	1	Yes	–	–	–	–	–	–
	Nickel base	++ 4all	13.9	14.1	950	1740	1	No	–	–	–	–	–	–

*** quench immediately**

see instructions

The range of alloys may vary from country to country.
For further information please see Instructions for Use or visit our website: www.ivoclarvivadent.com



Veneering Solution

		Ceramic Compatibility					Composite Compatibility
		IPS Style®	IPS InLine® One IPS InLine®	IPS InLine® PoM	IPS Classic®	IPS d.SIGN®	SR Nexco® / SR® Link
High gold content	Academy Gold	–	–	–	–	–	✓
	Harmony® Hard	–	–	–	–	–	–
	Harmony® PF	–	–	–	–	–	✓
Reduced gold content	XL–X®	–	–	–	–	–	✓
	X–L®	–	–	–	–	–	–
	Maxigold®	–	–	–	–	–	✓
	Harmony® C&B 55	–	–	–	–	–	–
	Midigold 50®	–	–	–	–	–	✓
	Minigold®	–	–	–	–	–	✓
Containing Pd/Ag	Solarcast® 20	–	–	–	–	–	–
	Harmony® 3	–	–	–	–	–	✓
	Harmony® 2	–	–	–	–	–	✓
	WLW®	–	–	–	–	–	–
	Elektra®	–	–	–	–	–	–
High gold content	BioUniversal PKF	–	–	–	–	–	–
Reduced gold content	BioUniversal KFG+	–	–	–	–	–	✓
Containing Pd/Ag	BioUniversal E	–	–	–	–	–	–
Implant	Callisto® Implant 78	✓	✓	✓	✓	✓	–
	Callisto® Implant 60	✓	✓	–	✓	✓	–
High gold content	Brite Gold®	✓	✓	–	✓	✓	–
	Brite Gold® XH	✓	✓	–	✓	✓	–
	Golden Ceramic®	✓	✓	–	–	✓	–
	Aquarius Hard	✓	✓	✓	✓	✓	–
	d.SIGN® 98	✓	✓	✓	✓	✓	–
	Aquarius XH	✓	✓	✓	✓	✓	–
	Sagittarius	✓	✓	✓	✓	✓	–
	d.SIGN® 96	✓	✓	✓	✓	✓	–
Reduced gold content	d.SIGN® 91	✓	✓	✓	✓	✓	–
	W	✓	✓	–	✓	✓	–
	W–5	✓	✓	–	✓	✓	–
	Lodestar®	✓	✓	✓	✓	✓	–
	Leo	✓	✓	✓	✓	✓	–
	Evolution Lite	✓	✓	–	✓	✓	–
Containing Pd/Ag	Spartan® Plus	✓	✓	–	✓	✓	–
	Spartan®	✓	✓	–	✓	✓	–
	Capricorn	✓	✓	✓	✓	✓	–
	d.SIGN® 84	✓	✓	✓	✓	✓	–
	Protocol	✓	✓	✓	✓	✓	–
	Callisto® 75 Pd	✓	✓	✓	✓	✓	–
	Aries	✓	✓	–	✓	✓	–
	d.SIGN® 67	✓	✓	–	✓	✓	–
	d.SIGN® 59	✓	✓	–	✓	✓	–
	d.SIGN® 53	✓	✓	–	✓	✓	–
	W–1	✓	✓	–	✓	–	–
	Capricorn 15	✓	✓	–	✓	✓	–
	Callisto® CPG	✓	✓	✓	✓	✓	✓
Cobalt base	d.SIGN® 30	✓	✓	✓	✓	✓	✓
	++ Colado® CC	✓	✓	✓	✓	✓	✓
Nickel base	++ 4all	✓	✓	✓	✓	✓	✓

Compositions and physical properties

			Pre solder | Présoudure Saldatura primaria | Presoldadura Pré–soldagem | Vorlot	Post solder | Postsoudure Saldatura Secondaria | Postsoldadura Pós–soldagem | Nachlot	Laser compatibility | Compatibilité des baguettes d'apport laser | Compatibilità delle saldature al laser | Compatibilidad de los alambres para soldar con láser | Compatibilidade com laser | Kompatibilität der Laserschweissdrähte
Crown and bridge alloys	**High gold content**	Academy Gold	–	.650 Fine Solder, .615 Fine Solder, .585 Fine Solder	Laser C&B Yellow
		Harmony® Hard	–	.650 Fine Solder, .615 Fine Solder, .585 Fine Solder	Laser C&B Yellow
		Harmony® PF	–	.650 Fine Solder, .615 Fine Solder, .585 Fine Solder	Laser C&B Yellow
	Reduced gold content	XL–X®	–	.615 Fine Solder, .585 Fine Solder	Laser C&B Yellow
		X–L®	–	.650 Fine Solder, .615 Fine Solder, .585 Fine Solder	Laser C&B Yellow
		Maxigold®	–	.615 Fine Solder, .585 Fine Solder	Laser C&B Yellow
		Harmony® C&B 55	–	.650 Fine Solder, .615 Fine Solder, .585 Fine Solder	Laser C&B Yellow
		Midigold 50®	–	.650 Fine Solder, .615 Fine Solder, .585 Fine Solder	Laser C&B Yellow
		Minigold®	–	.615 Fine Solder, .585 Fine Solder	Laser C&B Yellow
	Containing Pd/Ag	Solarcast® 20	–	LFWG, .585 Fine Solder	Laser C&B Yellow
		Harmony® 3	–	LFWG, .585 Fine Solder	Laser C&B White
		Harmony® 2	–	.585 Fine Solder, Porta OP Solder 710	Laser C&B Yellow
		WLW®	–	LFWG, .585 Fine Solder, Porta OP Solder 710	Laser C&B White
		Elektra®	–	LFWG, .585 Fine Solder	Laser C&B White
Universal alloys	**High gold content**	BioUniversal PKF	Universal Solder PKF	.585 Fine Solder, Porta OP Solder 710	Laser C&B Yellow
	Reduced gold content	BioUniversal KFG+	Universal Solder PKF	.615 Fine Solder, .585 Fine Solder, Porta OP Solder 710	Laser C&B Yellow
	Containing Pd/Ag	BioUniversal E	Universal Solder 1015 W	LFWG, Porta OP Solder 710	Laser C&B White
Implant alloys	**Implant**	Callisto® Implant 78	HGPKF 1030Y, SHFWC	LFWG, .585 Fine Solder, HFWG	Laser Ceramic Yellow PdF
		Callisto® Implant 60	HGPKF 1030Y, SHFWC	LFWG, .585 Fine Solder	Laser Ceramic Yellow PdF
Ceramic bonded alloys	**High gold content**	Brite Gold®	HGPKF 1015Y, HGPKF 1030Y	.650 Fine Solder, .615 Fine Solder,	Laser Ceramic Yellow PdF
		Brite Gold® XH	HGPKF 1015Y, HGPKF 1030Y	.650 Fine Solder, .615 Fine Solder, .585 Fine Solder	Laser Ceramic Yellow PdF
		Golden Ceramic®	HGPKF 1015Y, HGPKF 1030Y	LFWG, .615 Fine Solder, .585 Fine Solder	Laser Ceramic Yellow
		Aquarius Hard	HGPKF 1015Y, HGPKF 1030Y	.650 Fine Solder, .615 Fine Solder, .585 Fine Solder	Laser Ceramic Yellow
		d.SIGN® 98	HGPKF 1015Y	.650 Fine Solder, .615 Fine Solder, .585 Fine Solder	Laser Ceramic Yellow PdF
		Aquarius XH	HGPKF 1015Y, HGPKF 1030Y	LFWG, .650 Fine Solder, .615 Fine Solder,	Laser Ceramic Yellow
		Sagittarius	SHFWC	LFWG, .615 Fine Solder, .585 Fine Solder,	Laser Ceramic White
		d.SIGN® 96	HGPKF 1015Y	.615 Fine Solder, .585 Fine Solder	Laser Ceramic Yellow PdF
	Reduced gold content	d.SIGN® 91	SHFWC	LFWG, .615 Fine Solder, .585 Fine Solder	Laser Ceramic White
		W	HFWC	LFWG, .615 Fine Solder, .585 Fine Solder	Laser Ceramic White
		W–5	SHFWC	LFWG, .585 Fine Solder	Laser Ceramic White
		Lodestar®	HFWC	LFWG, .615 Fine Solder, .585 Fine Solder	Laser Ceramic White
		Leo	HFWC	LFWG, .615 Fine Solder, .585 Fine Solder	Laser Ceramic White
		Evolution Lite	HGPK1015Y, HGPKF 1030Y	LFWG, .585 Fine Solder	Laser Ceramic White
	Containing Pd/Ag	Spartan® Plus	SHFWC, Spartan Solder	LFWG, .615 Fine Solder, .585 Fine Solder	Laser Ceramic White
		Spartan®	Spartan Solder	LFWG, .615 Fine Solder, .585 Fine Solder	Laser Ceramic Yellow
		Capricorn	SHFWC, Spartan Solder	LFWG, .615 Fine Solder, .585 Fine Solder	Laser Ceramic White
		d.SIGN® 84	SHFWC	LFWG, .585 Fine Solder	Laser Ceramic White
		Protocol	SHFWC, HFWC, Spartan Solder	LFWG, .615 Fine Solder, .585 Fine Solder	Laser Ceramic White
		Callisto® 75 Pd	HGPKF 1030Y	LFWG, .585 Fine Solder	Laser Ceramic White
		Aries	SHFWC	LFWG, .585 Fine Solder	Laser Ceramic Yellow
		d.SIGN® 67	SHFWC	LFWG, .585 Fine Solder	Laser Ceramic White
		d.SIGN® 59	SHFWC	LFWG, .585 Fine Solder	Laser Ceramic Yellow
		d.SIGN® 53	SHFWC	LFWG, .585 Fine Solder	Laser Ceramic Yellow
		W–1	HFWC	LFWG, .615 Fine Solder, .585 Fine Solder	Laser Ceramic Yellow
		Capricorn 15	SHFWC	LFWG	Laser Ceramic White
		Callisto® CPG	SHFWC	LFWG	Laser Ceramic White
Predominantly base alloys	**Cobalt base**	d.SIGN® 30	SHFWC, HFWC	LFWG	Laser Ceramic White
		++ Colado® CC	SHFWC	LFWG	Laser Ceramic White
	Nickel base	++ 4all	Super Solder	LFWG	Laser Ceramic White

see instructions

The range of alloys may vary from country to country.
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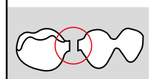

Laser weld / Solders

Laser Welding Wires	Composition								Melting Range	
	Au	Pt	Pd	Ag	Cu	In	Zn	Others	°C	°F
Laser Ceramic Yellow PdF	85.9	12.09	–	–	–	<1.0	1.5	Fe, Mn, Ir, Ta<1.0	1055–1170	1930–2140
Laser Ceramic Yellow	85.0	7.5	3.0	3.0	–	1.5	–	Ir<1.0	1085–1215	1985–2220
Laser C&B Yellow	75.0	3.0	–	13.5	7.0	1.5	–	Ir <1.0	900–960	1650–1760
Laser Ceramic White	50.0	–	24.4	21.5	–	4.0	–	Ru<1.0	1200–1290	2190–2355
Laser C&B White	18.5	–	6.0	72.5	–	3.0	–	Ir<1.0	985–1025	1805–1875

Pre–Solder	Composition											Melting Range		Flow Point	
	Au	Pt	Pd	Ag	Cu	In	Li	Mn	Ni	Ru	Zn	others	°C	°F	°C	°F
High Fusing Yellow Ceramic Solder (HFYC)	80.0	–	4.2	15.4	–	<1.0	<1.0	–	–	<1.0	–	Fe<1.0	1085–1115	1985–2040	1100	2010
HGPKF 1030 Y (High Gold Palladium Copper free)	63.2	<1.0	–	35.0	–	–	–	<1.0	–	–	<1.0	Ir <1.0	1015–1040	1860–1900	1030	1885
HGPKF 1015 Y (High Gold Palladium Copper free)	60.0	2.1	–	36.5	–	<1.0	–	–	–	–	<1.0	Ir<1.0, Sn<1.0	975–1035	1785–1895	1015	1860
Spartan Ceramic Solder	50.0	–	24.0	–	25.0	–	–	–	–	–	<1.0	Ir <1.0	1080–1105	1975–2020	1065	1950
Special High Fusing White Ceramic Solder (SHFWC)	47.0	–	10.3	41.0	–	1.4	–	–	–	<1.0	–	B<1.0, Ca<1.0, Ti<1.0	1045–1105	1915–2020	1105	2020
High Fusing White Ceramic Solder (HFWC)	45.0	–	12.4	41.5	–	1.0	<1.0	–	–	<1.0	–	–	1100–1165	2010–2130	1135	2075
Super Solder Ceramic Solder	–	–	53.5	7.0	–	–	<1.0	–	35.6	–	–	Sn 3.8	1085–1180	1985–2155	1135	2075

FLUX: High Fusing Bondal Flux – Implant Alloys, Ceramic bonded alloys, Predominantly base alloys

Universal Solder	Composition							Melting Range		Flow Point	
	Au	Pt	Pd	Ag	Zn	In	others	°C	°F	°C	°F
Universal Solder PKF	48.8	2.8	–	40.5	7.3	<1.0	Ir <1.0	800–900	1470–1650	850	1560
Universal Solder 1015 W	18.5	–	6.0	72.5	–	3.0	Ir <1.0	985–1025	1805–1875	1015	1860

FLUX: Bondal Flux – Universal Solder PKF
High Fusing Bondal Flux – Universal Solder 1015 W

Post Solder	Composition											Melting Range		Flow Point	
	Au	Pt	Ag	Cu	Ga	In	Ni	Mn	Sn	Zn	others	°C	°F	°C	°F
.650 Fine Gold Solder	65.0	–	13.0	19.6	2.0	–	–	–	–	<1.0	–	785–835	1445–1535	830	1525
.615 Fine Gold Solder	61.5	–	13.1	17.4	–	7.6	–	–	–	<1.0	–	690–775	1275–1430	775	1425
.585 Fine Gold Solder	58.5	–	16.0	18.0	7.2	–	–	–	–	<1.0	–	610–725	1130–1335	725	1335
Low Fusing White Gold Solder (LFWG)	56.1	–	27.4	–	–	<1.0	–	–	<1.0	15.8	–	665–710	1230–1310	730	1350

FLUX: Bondal Flux – Crown and bridge alloys, Universal alloys, Implant alloys, Ceramic bonded alloys, Predominantly base alloys

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