DESS Chrome Cobalt
Instructions For Use

DESS
DENTAL SMART SOLUTIONS

Materials

The following metals can be used for casting on this chrome cobalt base:

- Argeloy NP Supreme (from Argen)
- Argeloy NP Special (from Argen)
- Ivoclar Metal - Ivoclar recommends using Colado NC

Henry Schein recommends the following alloys:

- PenCast P25
- PenCast P22

www.dess-usa.com

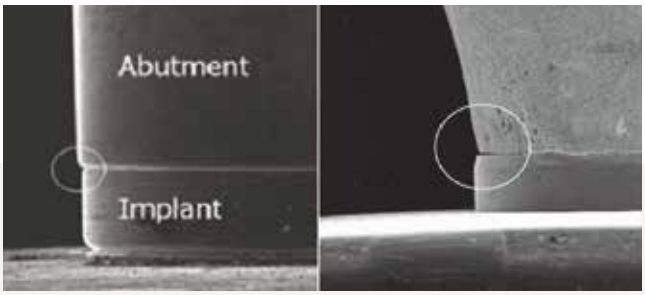
White Crown & Bridge Alloys

ALLOY NAME	IDEM CODE	ADA CLASS	Au %	Pt %	Pd %	Au %	Balance %	Type	Melting Range ° F	Melting Range ° C	Vickers Hardness (3)	Yield Strength psi (4)	Yield Strength MPa	Ultimate Tensile psi	Ultimate Tensile MPa	Mod. of Elasticity x10⁶ psi	Mod. of Elasticity GPa	Elongation % (5)	Specific Gravity gm/cm³	Solder	Laser Wire
PenCast™ P25 (Rx SP-2™)	726-1886	N	2		25	56	Cu: 15.5, In, Ru	III	1598-1796	870-980	Q 155 H 190	39,000 45,000	269 310	70,000 80,000	483 552	9.50	65.5	12 8	10.50	WLF	LWCT33
PenCast™ P25-CF (Rx PMW™)	726-1885	N			25	71.5	In: 2.5, Zn, Ru	III	1975-2050	1080-1121	Q 145 H 155	36,000 45,000	248 310	60,000 65,000	414 448	7.92	54.6	10 8	10.50	WLF	LWCT33
PenCast™ P22 (Rx Unique White™)	726-1887	N			25	66	Cu: 10, In, Ru	III-IV	1750-1850	954-1010	Q 175 H 225	48,000 54,000	331 372	74,000 79,000	510 545	9.67 10.19	66.7 70.2	15 7	10.45	WLF	LWCT33

CoCr Interface

Source: Norbert R. Sarnowicz, BDSc, Product Specialist, DESS

Thank you for choosing our product. In this short instruction I would like to present the working technique with our CoCr UCLA Abutment with prefabricated base.A prefabricated CoCr base with plastic burnout sleeve is the best alternative for precious alloys. Thanks to serial machine milling the implant interface creates a perfect surface which is important for suwccessful implant restoration. It is crucial for implant screw durability and for any bacterial leakage along the implant-abutment connection. The photo in Scanning Electron Microscopy (SEM) shows the difference between adaptation of two connections: prefabricated (left) and after laboratory casting (right).
[C. Domingues da Silveira]



Modelling Technique

1. After choosing the correct interface the piece is placed on the laboratory analog and fixed with prosthetic screw by hand.
2. The plastic burn out sleeve is trimmed according to the anatomical and occlusal requirements.
3. Wax-up for ceramic is made following the conventional crown and bridge requirements.
4. The wax-up is removed and before placing casting sprues the metal base should be cleaned with a cotton swab and alcohol.
5. Casting sprues should be placed possibly in the long axis of the crown to avoid the bubble concentration inside the construction. The investment should freely pass through the screw channel. The elements need to be placed away from casting ring heating center. The use of speed investment is not recommended.
6. The investment expansion should be adjusted to zero expansion. Heat parameters need to be tuned as for conventional CoCr casting to avoid any imperfections in the construction.
7. It is better to deflask the casting mould using an acid bath in ultra sound cleaner. Sandblasting can damage the settlement.
8. During neck polishing the connection surface needs to be covered with analog. It prevents any damage of the settlement part.

Depending on implant brand and connection type you can choose from a range of our products:

Can be used in bone level restorations or from abutment level (Multiunit),

Engaging connection for custom abutments, telescopic crowns or single restorations fixed with occlusal screw,

Non-engaging version for bridges fixed with occlusal screws or mesostructure in combined restorations.

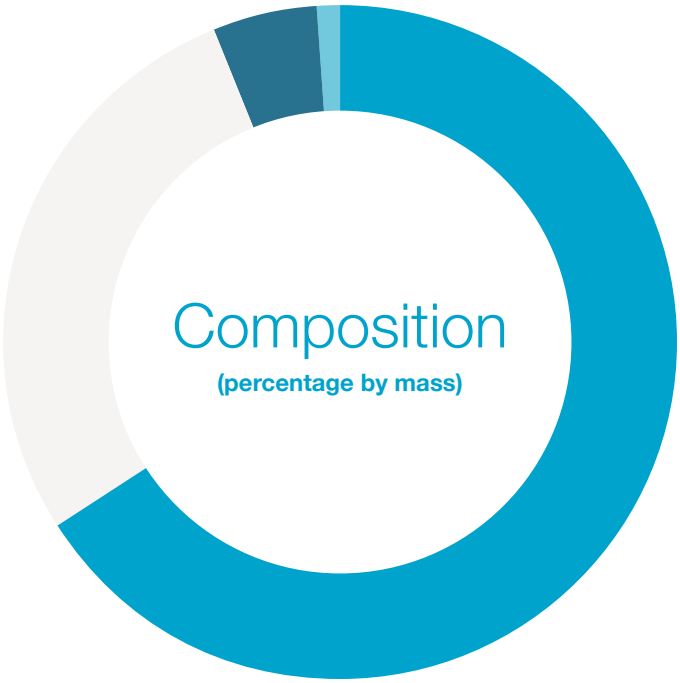
They can be used for over-casting technique as well as for laser welding. The castable plastic sleeve is made of sanitary polyoxymethylene, which burns out without any residues.

Available Compatible Parts

Connection	Material	Platform Size	Non Engaging	Engaging
EXT.HEX.UNIVERSAL	CoCr	NP	30.001	30.001
		RP	30.002	30.002
		WP	30.003	30.003
TRI – LOBE	CoCr	NP	30.004	30.004
		RP	30.005	30.005
		WP	30.006	30.006
ACTIVE HEX	CoCr	NP	30.041	30.041
		RP	30.042	30.042
OCTAGON	CoCr	RP (RN) on implant	30.009	30.009
		RP (RN) on SynOcta	30.010	30.010
CONICAL BONE LEVEL	CoCr	NP (NC)	30.043	30.043
		RP (RC)	30.044	30.044
INTERNAL HEX CONIC	CoCr	RP	30.024	30.024
		WP	30.025	30.025
		20°	30.036	
		45°	30.037	
INTERNAL HEX FD	CoCr	NP	30.038	30.038
		RP	30.039	30.039
		WP	30.040	30.040
INTERNAL HEX USA	CoCr	NP	30.017	30.017
		RP	30.018	30.018
		WP	30.019	30.019
EXTERNAL HEX USA	CoCr	NP	30.011	31.011
		RP	30.012	31.012
		WP	30.013	31.013
INTERNAL HEX CLICK	CoCr	NP	30.014	31.014
		RP	30.015	31.015
		WP	30.016	31.016
MULTIUNIT	CoCr	RP	30.007	

All Abutments include final screw. ***For any additional screw please check our catalogue or consult our specialists.***

DESS Interface Physical and Chemical Properties



Co 65.4 %

Cr 27.75 %

Mo 5.06 %

Additional elements less than 1 % (Fe, Mn, Si, N, Ni, C, Ti, P, S)

Technical Data

Yield strength[1] Rp 0.2 > 827 MPa Tensile strength[1] Rm > 1172 MPa Hardness[1] HV10 459

Fracture elongation[1] A5 21 % Solidus[1] 1369 °C

Liquidus[1] 1415 °C

CTE[1] (25 – 500 °C) 14.1 x 10^{-6} K^{-1}

Color white

[1] Variations are possible depending on the batch.

Argen Alloy Spec Sheet

Source: http://alloysonline.com/ENGLISH/alloy_spec/Npgeneral.ASP?ALLOY_ITEM=200692

ARGELOY N.P. SUPREME

Color	Type	ADA Classif.	PGM
White	4	Predominantly BASE (PB)	0%

Metal Content %

Mn	Fe	Co	Si	Mo	Cr	W
X	X	61	X	6	25	5

'x' denotes a content of less than one percent.

Thermal Properties

Melting Range	Casting Temperature	Coefficient of Linear Thermal Expansion (um/m-°C)	
2462-2525 °F	2705 °F	25-500	25-600
1350-1385 °C	1485 °C	14.1	14.5

Mechanical Properties

Vickers Hardness (VHN)			Yield Strength (0.2% Offset)		Modulus of Elasticity (GPa)	W Elongation (%)		Density (g/cm^3)
A.F.	Soft	Hard	A.F.	Hard		A.F.	Hard	
365	---	---	68,800 psi	--- ps	223	8	---	8.6
			475 MPa	--- MPa				

DESS
DENTAL SMART SOLUTIONS

Instructions For Use

Process	Instructions for Use
Modeling	Maintain a minimum wax thickness of 0.3 to 0.4 mm. The wax pattern design should have lingual collars and no sharp corners. Lingual eyelet rings help support castings during firing.
Spruing (Single Crowns)	Use direct sprues, 8-10 gauge, (3.3-2.6 mm diameter) and 1/2 in. (12 mm) long with adequate reservoirs. There should be no more than 1/4 in. (6 mm) of investment from the top of the pattern to the top of the investment.
Spruing (Multi-Units & Bridges)	Use a 6 gauge (4.1 mm diameter) runner bar, connecting the units to the bar with 10 gauge (2.6 mm diameter) sprues 1/8 in. (3 mm)long and joining the bar to the sprue base with 8 gauge (3.3 mm diameter) and 1/2in. (12 mm) long sprues coming from a domed central entry point. There should be no more than 1/4 in. (6 mm) of vestment from the top of the pattern to the top of the investment.
Investing	Use debubblizer and blow off any excess before investing. Recommended Investment:Phosphate Bonded (Carbon Free) . Follow the manufacturer's instructions.
Burnout	After adequate set-up time, place the ring(s) in a room temperature oven and raise the temperature to 870°C plus 10 minutes for each additional ring. If you are using a rapid fire investment, follow the manufacturer's instructions.
Crucible Type	Quartz or Zircon
Torch Casting	Wind the casting machine one more turn than you would for precious ceramic alloys. A quartz or zircon crucible is necessary. Use a propane/oxygen torch with a multi-orifice tip. Do not use flux. Place the alloy (at least 50% new metal) in a pre-heated crucible. Keep the torch moving to heat all the metal in the crucible at an even rate. The individual ingots will not pool together to form a single mass. Do not stir or rupture the oxide surface. When the flame appears to move the alloy, cast. After casting bench cool before devesting.
Induction or Electrical Casting	When using induction casting machine, pre-heat the crucible. Set the arm speed to 400-450 rpm & set the power to high and be sure that the alloy is pulsating and slumping. The casting temperature of automatic casting equipment should be set for 2705 °F (1485 °C) with a five seconds heat soak.
Cooling	Allow casting ring to cool to room temperature. DO NOT quench in water.
Divesting and Cleaning	650-980°C, Hold 0 min with Vacuum, Remove oxide.
Presolder	Solder joints should be as large as possible (at least 5 mm^2). Soldering gap approximately 0.05-0.2 mm. The solder joints should be parallel and free of debris. Preheat invested units and pressure blast with 50 micron just before soldering to remove oxide. If flux is used, it should be water soluble. Use: Co/Cr Pre INTERNATIONAL / DOMESTIC
Porcelain Application	Follow the recommendations of the porcelain manufacturer. For a better bond, fire a thin wash 10 - 15 °F (10 °C) above normal temperature, followed by regular opaque coats. We recommend drying paste opaque from the inside out; this is done by utilizing a hot plate. The units are placed on a honeycomb sagger tray with metal pins. This is placed on top of the burner set a low to medium setting (approx. 250°F).it will take approximately 8-10 minutes or until the opaque turns chalky white or flat color. Then place in furnace for entry and maturing.

Instructions For Use Continued

Process	Instructions for Use
Post Soldering After Firing	Solder joints should be as large as possible (at least 5 mm^2). Soldering gap approximately 0.05 - 0.2 mm. Cover ceramically- veneered units with wax before investing. The soldering investment should not come in contact with the ceramic. The soldering surfaces should be parallel, smooth and free of debris. Use: LO, R INTERNATIONAL / DOMESTIC
Laser Wire	LWNPCO
Polishing	Use Tripoli and rouge or other similar products.

DESS

> DENTAL SMART SOLUTIONS

www.dess-usa.com | (855) 337-7872

712 Main Street, STE 200, Oregon City, OR 97045