

# Spartan®Plus

Pd-based dental metal-ceramic alloy, Type 4



EN Instructions for use  
Pd-based dental metal-ceramic alloy, Type 4

DE Gebrauchsinformation  
Pd-haltige Dentalkeramik-Legierung, Typ 4

FR Mode d'emploi  
Alliage céramo-métallique dentaire, à base de Pd, Typ 4

IT Istruzioni d'uso  
Lega dentaria per metallo-ceramica a base di Pd, Tip 4

ES Instrucciones de uso  
Aluminio dental para metal cerámica basada en Pd, Tip 4

PT Instruções de uso  
Liga dentária para metacómerica à base de Pd, Tip 4

SV Bruksanvisning  
Pd-baserad dental metalkeramik legering, Typ 4

DA Brugsanvisning  
Pd-baseret dental metal-keramik legering, Typ 4

FI Käyttöohjeet  
Pd-pohjainen metallikeramiikan hammaslääkinteen Typpi 4

NO Bruksanvisning  
Pd-holdig dentalkeramik legering, Typ 4

NL Gebruksaanwijzing  
Pd-begeerde dentale metalkeramische legering, Typ 4

EL Εντομήσεις  
Οδοντική προσαρθρωτική κράνη από Pd, Τύπος 4

TR Kullanma Talimatı  
Pd esaslı dental seramik alajrı, Tip 4

R Инструкция по применению  
Пd-содержащий дентальный сплав, тип 4

PL Instrukcja stosowania  
Pd-stop niezlepkowy przez porcelanę, Typ 4

Composition (mass %)												
Au	Pt	Pd	Ag	Cu	Ga	In	Ir	Re	Ru	Sn	Zn	Other
2.0	-	78.8	-	10.0	9.0	-	<1.0	-	-	-	-	Li, Ge, <0.5%

CE 0123



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see Instructions

## Indications for Use

Condition / Treatment	Type	Indications
Porcelain Fired	4	Inlays, Onlays, 3/4 Crowns, Crowns, Telescope Crowns, Conus Crowns, Bridges, Wide Bridges, Cast Posts / Cores, Bars, Attachments, Implant Retained Superstructures, Partial Dentures

## Density

11.0 (g/cm³)



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## Instructions for Use

## EN

### ■ PRODUCT DESCRIPTION

Pd-based dental metal-ceramic alloy, Type 4

### ■ INDICATIONS\*

Inlays, Onlays, 3/4 Crowns, Crowns, Bridges, Wide Bridges, Cast Posts / Cores, Bars, Attachments, Implant Retained Superstructures, Partial Dentures

### ■ WAXING/MODELLATION

Design the framework in a reduced anatomical shape taking the planned veneer into consideration. Small crowns require a minimum thickness of 0.3 mm. Abutment crowns require a minimum thickness of 0.5 mm. Ensure the framework design provides adequate support for the veneering material. Avoid sharp angles. Connectors must have the required dimensions to provide resistance to deformation. Create large surface areas for planned soldering, with a gap of 0.5–0.2 mm.

### ■ SPRUING

Preheat the sprue to a height of single tooth reduction or bridge framework with a sprue of a suitable size. In general the reservoir, sprue leads, and connector sprues, whether pear shaped or traditional, must be sized according to the specific technique used. When using the direct or indirect technique be sure the reservoir is positioned in the heat center. The connector sprues between the reservoir and the casting should be a maximum of 2.5–3.0 mm in length and width. The wax pattern including the sprues must be weighed in grams in order to determine the needed amount of alloy. Wax conversion formula: wax weight (gram) x alloy density = grams of alloy required.

### ■ INVESTING

Use a phosphorus-bonded investment material. Follow the manufacturer's instructions.

### ■ PREHEATING / BURN-OUT

Recommended burn-out temperature: 750–820 °C / 1380–1510 °F

### ■ MELTING AND CASTING

Temperature: 1010 °C / 1850 °F; Oxygen: 0.7 bar / 10 psi

Oxygen specific may be required by the type of casting machine. It is recommended to use a separate and clean ceramic crucible for each alloy. Preheat the ceramic crucible in the burnout furnace. The recommended ratio of used material to new material is 1:1. Do not use flux.

### ■ CASTING TEMPERATURE

1260–1320 °C / 2300–2410 °F

### ■ FRAMEWORK FINISHING

After brief cooling, carefully clean and cast the casting with aluminum oxide (AlO). Do not use a hammer for finishing. First finish the casting with carbide burs and/or with ceramic-bonded grinding instruments. Blast the surface with 50–100 micron aluminum oxide (AlO) at 0.2 bar / 5 psi pressure. Subsequently, steam clean or ultrasonic clean with distilled water or ethanol and dry the framework.

### ■ OXIDATION

Place the framework on the fire tray providing adequate support. To achieve a uniform result follow the oxidation cycle:

Temperature: 1010 °C / 1850 °F; Holding time: 5 min; Vacuum: Yes

If the oxide layer is stained, grind and blast the surface again. Repeat the oxide firing. Use the appropriate ceramic veneering material following the manufacturer's instructions.

### Highest recommended firing temperature: 1030 °C / 1885 °F

### ■ SOLDERING AND LASER WELDING

The solder gap should not be wider than the thickness of the soldering material. Allow the soldered casting to cool slowly. Never use flux.

### Pre Solder:

SHFWC, Spartan Solder

Flux: High Fusing Bondal Flux

Post Solder:

615, 585, LFWG

Bondal Flux

Laser Welding Wire:

Laser Ceramic White

### POЛИШІНГ

Carefully remove any oxide and flux residue. Smooth the metal surfaces with rubber polishers. Polish to a high gloss finish using polishing paste. Subsequently, clean using ultrasonic cleaning equipment or careful hand cleaning.

## ADDITIONAL SAFETY CONCERN AND INSTRUCTIONS

### ■ CONTRAINDICATIONS

For patients with known allergy/sensitivity to any major or minor elements of this alloy, consultation with a physician is recommended. Alloy is not to be used for any application not included within the indications.

### ■ SIDE EFFECTS

In individual cases sensitivity or allergies to elements of this alloy may occur. Ivoclar Vivadent makes no claims regarding the MRI-compatibility of its dental alloys. It is recommended that the patient be made aware of the possibility for dental alloys to affect MRI results and to disclose the presence of dental alloys to the MRI technician prior to undergoing a test.

### ■ INTERACTIONS

Galvanic effects may occur between different or dissimilar alloys in the same oral environment.

### ■ CAUTION

Metal vapors and metal dust are harmful if inhaled. Therefore, the use of extraction equipment and/or suitable protective masks is advised!

### ■ STORAGE CONDITION

Store in a dry environment at room temperature.

### ■ DISCLAIMER

This material should be used safely for use in dentistry. Processing should be carried out strictly according to instructions. For use, liability is accepted for damage resulting from failure to observe the instructions or the intended area of application. The user is responsible for testing the products for their suitability and use for any purpose not explicitly stated in the Instructions. These regulations also apply if the materials are used in conjunction with products of other manufacturers.

### ■ PROCESSING DATA

Investment Material:

Phosphate-bonded

Preheating/Burn-out Temperature:

750–820 °C / 1380–1510 °F

Crucible:

Ceramic

Casting Temperature:

1260–1320 °C / 2300–2410 °F

Oxidation:

Temperature: 1010 °C / 1850 °F; Holding time: 5 min; Vacuum: Yes

CIE:

(25–500 °C) 14.1 x 10<sup>4</sup> K

(20–600 °C) 14.4 x 10<sup>4</sup> K

Recommended Ceramic Material:

IPS Style®, IPS InLine®, One, IPS InLine®, IPS Classic®, IPS d.SIGN®

Pre Solder / Flux:

SHFWC, Spartan Solder

Flux: High Fusing Bondal Flux

Post Solder / Flux:

615, 585, LFWG

Bondal Flux

Laser Welding Wire:

Laser Ceramic White

### TECHNICAL DATA (ISO 22674:2016 & ISO 9693:1-2012)

Type / Color:

4 White

Density (g/cm³):

11.0

Melting Range (Solidus/Liquidus):

1130–1210 °C / 2065–2210 °F

Elastic Modulus (GPa):

140

Procelain Fired:

310

Vickers Hardness:

900 / 130.530

0.2% Proof Stress (MPa):

740 / 107.330

Elongation (%):

20

\*See TYPE CLASSIFICATION DUE TO PHYSICAL PROPERTIES

## INSTRUCCIONES DE USO

## ES

### ■ DESCRICIÓN DE PRODUCTO

Aleación dental para metal cerámica basada en Pd, Tipo 4

### ■ INDICACIONES\*

Inlays, Onlays, 3/4 Crowns, Coronas, Coronas Telescopicas, Coronas Cónicas, Puentes, Pontes, Pontes Extensas, Pinos, Baras, Attademas, Superestructuras implantes/parciales, Dentaduras parciales

### ■ ENCARTELADO / MODELAGEM

Modelar o padrão de cera em forma anatômica reduzida, levando em consideração o recobrimento estético planejado. Coroas unidas exigem espessura mínima de 0.3 mm. Coroas de pílulas exigem espessura mínima de 0.5 mm. Assegure-se de que a estrutura desenhada proporciona um suporte adequado para o material de recobrimento. Evitar ângulos agudos. Os conectores devem ter as dimensões necessárias para proporcionar resistência à deformação. Crear grandes superfícies para as soldaduras planificadas, com uma espessura de 0,5–0,2 mm.

### ■ COLOCACIÓN DOS SPRUES

Preparar as estruturas modeladas de restos de coroas ou infraestruturas de pontes com sprues com espessuras de tamanhos adequados. Em geral, a clínica de compensação, sprues e conectores devem ser dimensionados de acordo com a técnica específica utilizada. Quando o resultado da imprecisão direta é menor, assegurar a estrutura suporta adequadamente para o material de recobrimento. A

