# **\*PHONARES** Modern Masterpieces

TECHNICAL DOCUMENTATION



### Defining the art of denture esthetics

Precision crafted with Nano Hybrid Composite, Phonares represents the next generation of denture teeth offering a unique blend of unrivaled beauty and unparalleled performance.



This documentation offers guidelines for the application of SR PHONARES, assisting users to achieve an optimum level of esthetics and function.

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### Composition

<sup>SR</sup>PHONARES<sup>®</sup> teeth are precision crafted with revolutionary Nano Hybrid Composite. This unique ISO filler technology builds on Ivoclar Vivadent's proven success with direct restoratives. The NHC material incorporates inorganic Nano fillers that deliver exceptional wear resistance, esthetics and shade stability.

- Natural Esthetics
- Increased Resistance to Wear
- Excellent Longevity



### **Macro Fillers**

The NHC material is a composite which consists of a urethane dimethacrylate matrix with inorganic fillers, iso-fillers (prepolymer) and PMMA clusters embedded in the structure. The combination promotes optical, strength and bonding characteristics.

NHC component	Function	Main advantage		
UDMA (urethane dimethacrylate)	Matrix	The UDMA matrix features a high degree of cross- linking. The material structure offers high stability and high resistance to chemical attacks.		
High-density silanized SiO <sub>2</sub>	Filler 1	Inorganic fillers stiffen the matrix and increase the material's hardness and resistance to abrasion. They also optimize the material's refractive index and therefore enhance the natural shade effect and opalescence.		
Silanized SiO <sub>2</sub> nano-particles	Filler 2	Nanoscale surface-modified inorganic particles reinforce the composite structure. The nanoscale properties arising from these particles are responsible for the formation of homogeneous contact surfaces. As a consequence, the material is very kind to opposing tooth structure.		
Inorganically filled UDMA polymer	Filler 3 (Iso-filler)	Matrix-based pre-polymer particles help reduce polymerization shrinkage.		
PMMA clusters	Inclusions	The inclusion of PMMA clusters in the composite structure reduces the affinity for plaque and discoloration.		

# **PHONARES**

### **Anterior Mould Artistry**

SR PHONARES anterior teeth embody the essence of natural dentition. Each mould has been sculpted to deliver the ultimate lifelike result. The texture of the labial surfaces reproduces the mild ripple effect (perikymata) seen on natural enamel surfaces. The unique Nano-Hybrid Composite resin chemistry creates anunparalleled true-to-nature vitality.



#### SET & FIT

The wide design of the tooth necks of the SR PHONARES NHC permit minimal wax papillae.



The Set & Fit design provides tight interproximal contacts for all anterior setup options. This ensures the natural closure of interdental spaces and reduces the black triangles from occurring at the cervical portion of the teeth.



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#### ANTERIOR MOULD DESIGN

The tooth morphology for the anterior teeth was based on modifications of the labial convexities, horizontal convexities, and incisal edge anatomy.



#### ANTERIOR MOULD SELECTION

There are basically six maxillary anterior moulds. Three are designed with "soft" characteristics and three are designed with "bold" characteristics. Each soft and bold category is further subdivided into three age groups (youthful, universal, mature).

The six moulds are in three sizes.

(small, medium, large) delivering a total of 18 maxillary anterior moulds.



#### DESCRIPTION OF TOOTH MOULD

- The first character in the mould name stands for Soft (S) or Bold (B)
- The second character represents age;
  (6 = youthful, 7 = universal, 8 = mature)
- The third character represents size
  - (1 = small, 2 = medium, 3 = large)



#### CENTRIC ANTERIOR TOOTH SETUP

In the Centric position most conventional denture occlusal schemes suggest simultaneous posterior occlusal contacts with the elimination of anterior tooth contacts.

- The rationale for the elimination of the anterior tooth contacts is based on the premise that anterior contacts would destabilize the dentures.
- In general it is suggested that anterior tooth have 1.5 mm of vertical overlap (overbite) and 1.5mm of horizontal overlap (over jet)
- However, the degree of vertical overlap and horizontal overlap is controlled by the degree of cusp angles of the posterior teeth selected and the steepness of the antero-posterior compensation curve (curve of Spee). These two factors determine how much vertical overlap can be created and how much horizontal overlap is necessary to prevent the anterior teeth from contacting in protrusive and lateral excursive movements.





#### ECCENTRIC ANTERIOR TOOTH CONTACTS

In eccentric positions most conventional denture occlusal schemes suggest simultaneous bilateral posterior occlusal contacts with the elimination of anterior tooth contacts. Eccentric anterior tooth contacts can destabilize the prostheses during function. Therefore anterior guidance is not recommended for denture occlusion.

#### IMPLANT SUPPORTED DENTURES

Anterior guidance is also not recommended for implant supported restorations. Patients restored with implant supported restorations are capable of exerting significantly greater forces and lack the necessary proprioceptive feedback (periodeontal membrane) to correctly monitor these forces. Therefore anterior guidance may have the potential for excessive wear and or breakage of the anterior denture teeth.



# SPHONARES Lingual NHC

### **Posterior Mould Artistry**

The SR PHONARES Lingual NHC offers the option for lingualized occlusion. They are suitable for universal application in partial, complete and implant retained and/or supported dentures.





#### CHARACTERISTICS OF LINGUALIZED OCCLUSION

- Single maxillary palatal cusp contact
- Non-functional maxillary buccal cusps
- Uncomplicated mandibular central fossa

#### **Maxillary Palatal Cusp Contacts**

Each maxillary tooth provides one palatal cusp that will function as a Centric holding stop and articulates to the respective mandibular fossae. Note: the distalpalatal cusps of the maxillary 1st and 2nd molars are non functional and therefore are not set in contact.

#### **Non-Functional Maxillary Buccal Cusps**

The maxillary buccal cusps are progressively elevated and remain out of occlusion in Centric and Eccentric lateral jaw excursions. This provides support for the cheek and helps to prevent cheek biting. An exception to this is the maxillary 1st premolar where elevations of the buccal cusp may create an unappealing relationship with the maxillary canine. Therefore, an additional buccal contact is suggested for the maxillary 1st premolar.

#### **Uncomplicated Mandibular Central Fossa**

The uncomplicated mandibular central fossa allows some degree of forgiveness since the teeth are not restricted to being set in one intercuspal position.







# SPHONARES Lingual NHC

#### SET-UP TEMPLATES

A variety of set-up templates that are either articulator mounted or hand held can facilitate the setting of the mandibular PHONARESIngual

#### 2D TEMPLATE



#### 2.5D TEMPLATE



3D TEMPLATE





#### **Template Alignment**

Align the template with the height of the distal third of the retromolar pad and the height of the distal angle of the mandibular canines or the occlusal surface of the 1st premolar.



#### **Cuspal Contacts**

The illustration demonstrated the designated occlusal contacts for the PHONARESlingual when using a set-up template. Note that both the buccal and lingual cusp tips make contact to the template. This ensures an average medio-lateral compensating curve (curve of Wilson) and anterio-posterior compensating cureve (curve of Spee).



#### CENTRIC INTERCUSPATION

#### Maxillary 1<sup>st</sup> premolar:



Maxillary 1st premolar palatal cusp engages the marginal ridges of the mandibular premolars.

Note: It is optional to also establish contact of the maxillary buccal cusp as illustrated in order to achieve a more esthetic transition from the canines

#### Maxillary 2<sup>nd</sup> premolar:



Maxillary 2nd premolar palatal cusp engages the marginal ridges of the mandibular 2nd premolar and 1st molar.

Buccal cusp elevated out of occlusion

#### Maxillary 1<sup>st</sup> molar:



Maxillary 1st molar mesio-palatal cusp engages the central fossa of the mandibular 1st molar.

Note that the distal-palatal cusp of the maxillary 1st molar is not in contact.

Bucca cusp elevated slightly more than 2nd premolar.

#### Maxillary 2<sup>nd</sup> molar:



Maxillary 2nd molar mesio-palatal cusp engages the central fossa of the mandibular 2nd molar.

Note that the distal-palatal cusp of the maxillary 2nd molar is not in contact.

Bucca cusp elevated slightly more than 1st molar.

# SPHONARES Lingual NHC

### **Occlusal Equilibration**

#### 1 - VERIFYING CENTRIC CONTACTS

#### Prior to processing

- Wax can change dimensionally during setup. Ensure all contacts have been maintained after final wax up.
- It is not recommended to perform major occlusal adjustments prior to processing the denture base.

#### **Equilibration after processing**

Final occlusal adjustment should be corrected prior to removing the polymerized dentures from the model. The following guidelines should be observed.

- Do not adjust the working cusps (red)
- Reduce premature contacts in the antagonist fossa or marginal ridge (yellow)
- Reestablish all the original centric working cusp contacts until the original incisal pin relationship is satisfied





#### 2 - ADJUSTING FUNCTIONAL MOVEMENT

Multiple eccentric contacts are desirable to ensure a bilateral balanced occlusion within the functional range. The following adjustment guideline is recommended.

**Centric holding cusps (red)** - should not be adjusted (maxillary palatal cusps)

**Working side (blue)** – adjust buccal facing inclines of mandibular lingual cusps

**Non-working side (green)** – adjust lingual facing inclines of mandibular buccal cusps



# SPHONARES TYP NHC

### **Classic Posterior Mould**

The SR PHONARES Typ NHC teeth are designed according to the classic semi-anatomic denture occlusion and are suitable for universal application in partial, complete and implant retained and/or supported dentures.





#### CLASSIC OCCLUSION

The SR PHONARES are designed with a specific intercuspal relationship and are set in a classic one-to-two tooth occlusion.



#### **Central Holding Cusps**

The mandibular buccal cusps and the maxillary lingual cusps act as centric holding stops and are designed to articulate according to the illustration.



# \* PHONARES TYP NHC

#### SET-UP TEMPLATES

A variety of set-up templates that are either articulator mounted or hand held can facilitate the setting of the mandibular PHONAREStyp

#### 2D TEMPLATE



#### 2.5D TEMPLATE



3D TEMPLATE





#### **Template Alignment**

Align the template with the height of the distal third of the retromolar pad and the height of the distal angle of the mandibular canines or the occlusal surface of the 1st premolar.

#### **Cuspal Contacts**

The illustration demonstrated the designated occlusal contacts for the PHONAREStyp when using a set-up template. This ensures an average medio-lateral compensating curve (curve of Wilson) and anterio-posterior compensating curve (curve of Spee).



#### INDIVIDUAL INTERCUSPATION



The illustrated mandibular buccal cusps serve as secondary holding cusps

Note that the distal-palatal cusp of the 2nd molar is not in contact.

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# "PHONARES" TYP NHC

### **Occlusal Equilibration**

#### 1 - VERIFYING CENTRIC CONTACTS

#### **Prior to processing**

- Wax can change dimensionally during setup. Ensure all contacts have been maintained after final wax up.
- It is not recommended to perform major occlusal adjustments prior to processing the denture base.

#### **Equilibration after processing**

Final occlusal adjustments should be corrected using the following guidelines.

- Do not adjust the working cusps (red)
- Reduce premature contacts in the antagonist fossa or marginal ridge (yellow)
- Reestablish all the original centric working cusp contacts until the original incisal pin relationship is satisfied





Centric Holding Cusps



#### 2 - ADJUSTING FUNCTIONAL MOVEMENT

Multiple eccentric contacts are desirable to ensure a bilateral balanced occlusion within the functional range. The following adjustment guideline is recommended.

**Centric holding cusps (red)** - should not be adjusted (maxillary lingual and mandibular buccal cusps)

**Working side (blue)** – adjust palatal facing inclines of maxillary buccal cusps and buccal facing inclines of mandibular lingual cusps

**Non-working side (green)** – adjust buccal facing inclines of maxillary palatal cusps and lingual facing inclines of the mandibular buccal cusps



# "PHONARES"

### **Selection Guides**

#### PHONARES FORMSELECTOR



The PHONARES FormSelector allows fast, easy and targeted selection of the appropriate anterior tooth mould. The FormSelector is based on the relationship between the interalar width of the nose and the width of the maxillary anterior teeth.

#### PHONARES SHADE GUIDE

Although the shades follow the Classic Vitapan A-D shade system it is recommended to use the PHONARES shade guide for more accurate results due to the simple fact that the SR PHONARES shade guide is fabricated from the same materials and layering process as the original SR PHONARES teeth. Shade guides made of dissimilar materials may give inaccurate results due to the metamerism effect in different light sources. For best results shade selection should be performed on the patient under defined light conditions (5500K color temperature) or in daylight.

# PHONARES

#### Step 1

Select an appropriately sized tooth mould (small, medium, large) with the aid of the "Facial Meter" found within the FormSelector

#### Step 2

Determine the desired tooth form (soft or bold) that would match the characteristics of the patient

#### Step 3

Select the age group (youthful, universal, mature) that would best suit the goals of the restoration



#### PHONARES LIVING MOULD GUIDE



#### PHONARES PAPER MOULD GUIDE

		SR PHONARES NHC		SR PHONARES	SR PHONARES
		upper	lower	00 NHC	Lingual NHC
	soft	S61	150	NU3/NL3	103/113
Small		581	L50, L51	NU3 / NL3	LU3 / LL3, LU5 / LL5
	bold	B61	L50, L51	NU3 / NL3	LU3 /LL3
		B71	L50, L51	NU3 / NL3, NU5 / NL5	LU3/LL3
		881	L50, L5T	NU3/NL3	1037113
	soft	S62	151	NU3 / NL3, NU5 / NL5	LUS/ILS
		572	L51, L53	NU5 / NL5	LU5/LL5, LU6/LL6
Medium		582	L51, L53	NU5 / NL5	105/115, 106/116
	bold	B62	L51, L53	NU3/NL3, NU5/NL5	LU5 / LL5, LU6 / LL6
		B72	L51	NU3 / NL3, NU5 / NL5	LU5/LL5, LU6/LL6
		882	L51, L53	NU3 / NL3, NU5 / NL5	103/113, 105/115
	soft	S63	L52, L53	NU5 / NL5	LU6/LL6
		\$73	L52	NU5 / NL5, NU6 / NL6	LUG/LLG
Large		S83	L52, L53	NUS / NLS, NUG / NL6	LUG/LLG
	bold	B63	L52, L53	NU6 / NL6	LUG / LLG
		873	1.52, 1.53	NU6 / NL6	LU6/LL6
		B83	L52	NUS / NL5, NU6 / NL6	LUG/LLG

This combination table is recommended as a guideline. In case of particular anatomical conditions, deviations are possible.

## **Surface Conditioning**

Appropriate treatment of the substrate surface is essential to ensure an effective and durable bond. Select the individual working steps according to the materials to be bonded.

#### 1. ROUGHENING





#### 2. CLEANING





#### 3. WETTING





Roughen the bonding surfaces either with a cross-cut tungsten carbide bur or by abrasive blasting with  $Al_2O_3$  (grit size: 50-100  $\mu$ m) at a pressure of 1–2 bar (15–30 psi).

The tooth necks should also be roughened. Use compressed air to remove residual abrasive dust.

Ensure that surfaces are free of dust, moisture and grease before conditioning them. For this purpose, each individual tooth should be cleaned with a steam

cleaner and all residual wax should be removed. When applying compressed air, make sure that the system is free of oil.

After cleaning and roughening, wet the bonding surfaces with monomer liquid (e.g. ProBase Cold monomer) to allow the resin to swell and consequently to strengthen the chemical bond. Use a brush to apply the monomer selectively. Next, allow the monomer-wetted areas to react for approx. 3 minutes. Avoid contamination after the reaction time has elapsed.

#### Note:

• After wetting with monomer, the teeth may no longer be steam-cleaned.

#### EXCEPTIONS

If the SR Phonares teeth are bonded to a cold-curing denture base material (e.g. ProBase® Cold), it is necessary to apply mechanical retentions by grinding. The retentions are best performed with a round	spherical bur to avoid sharp edges. Undercuts can be created by swivelling the bur head. Avoid excessive heat build-up when grinding.
If SR Phonares is bonded to a suitable C & B composite, the use of SR Composiv <sup>®</sup> bonding agent is required to ensure an optimal bond.	material in a layer thickness of at least 0.2 mm and no thicker than 0.5 mm. The working time is approx. 3 minutes. SR Composiv can be polymerized in a suitable light-curing device.
Apply SR Composiv directly from the syringe onto the "bonding surface" and distribute to an even layer using a spatula or disposable brush. Apply the	Please refer to the Instructions for Use of the individual material/device for more detailed user information.

\* Avoid breathing in grinding dust - use dust evacuation equipment and breathing protection.

#### Adjusting

It is recommended to use a carbide bur when grinding Phonares teeth. Use moderate speed to avoid excessive heat build up.

The structural integrity of the tooth must be preserved. It is suggested that a minimal thickness be maintained.

ANTERIOR TEETH:

• grinding of tooth material  $\rightarrow$  minimum 1.5mm

POSTERIOR TEETH:

- in the central fossa  $\rightarrow$  minimum 2.0mm
- in the cusp  $\rightarrow$  minimum 2.5mm

For implant retained hybrid restorations it is again not recommended to drill holes for retentions in the teeth or access holes for implant retained hybrid constructions.



#### **Finishing / Polishing**



Overheating should be prevented when finishing the dentures. Polishing or cleaning agents containing solvents should not be used for cleaning. They may adversely affect the composite material of the denture base and denture teeth and cause discoloration.

Adjusting-in should be carried out with cross-cut tungsten carbide bur. Final polishing with Universal Polishing Paste and a goat's hair brush is recommended for the surface of the NHC teeth.

# NOTES


#### SHADE SELECTION

SR PHONARES<sup>®</sup> teeth are available in all 16 A-D and bleach shades for easy shade matching.



#### MOULD SELECTION

The anterior tooth moulds are arranged into easy to identify groups. This ensures the teeth that best match the individual characteristics of the patient can be selected.



#### DELIVERY FORMS



**SR** PHONARES<sup>®</sup> NHC 18 upper anterior moulds 4 lower anterior moulds



**SR** PHONARES<sup>®</sup>*Typ* NHC 3 maxillary sets

3 mandibular sets



**SR** PHONARES<sup>®</sup>*Lingual* NHC 3 maxillary sets 3 mandibular sets



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