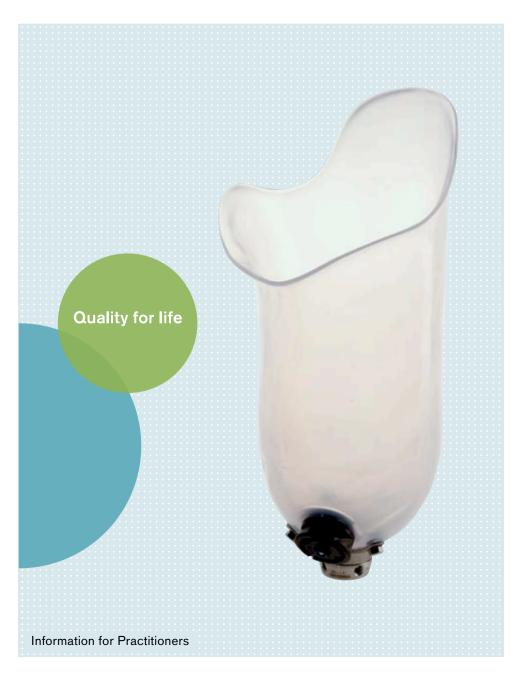
ottobock.

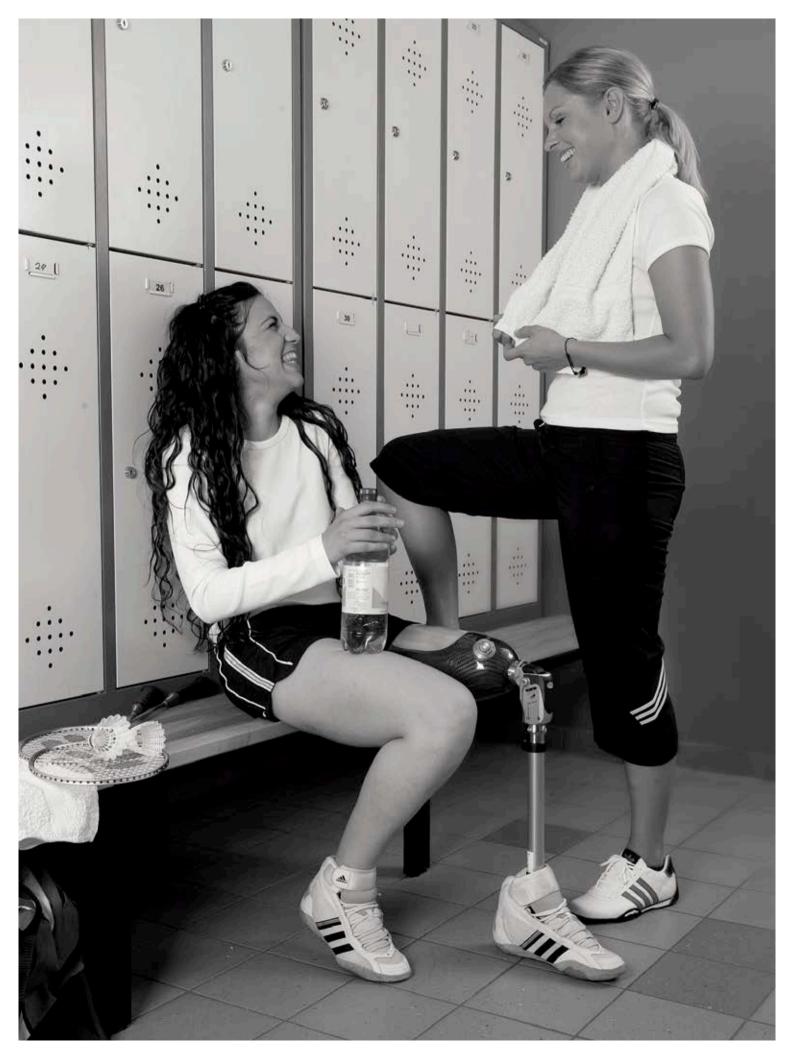
Skinguard Thermoplastics and Lamination Resins

for Prosthetics and Orthotics









Skinguard

Skin-friendly · antibacterial · odour neutral

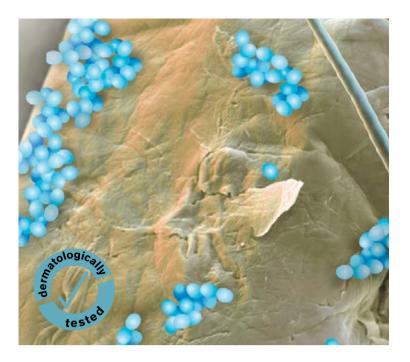
As you know from practical experience, every fitting is unique. You have to meet the needs of the user with solutions that are as customised as possible. The right measures at the right time can often prevent subsequent complications and limitations. This makes the timely care of residual limbs extremely significant for rehabilitation success. In addition to consistent medical monitoring of the wound healing process after the operation, care of the residual limb is especially important. The use of antibacterial thermoplastics for pros-

thetic and check sockets is intended to protect the skin and prosthetic socket against a wide range of different microorganisms right from the outset.

For the user, the benefit of Skinguard Technology is that discolouration and odour caused by microbes are considerably reduced and that the lifespan of the product is extended. The additives assure more pleasant wearing characteristics and enhanced skin comfort.











Skinguard Technology is an umbrella brand representing technologies with various antibacterial substances based on different active principles. For example, technologies such as Sanitized® and SilverShield® are included under this umbrella brand.

In the area of lamination resins, Ottobock offers the innovative C-Orthocryl Skinguard. The Sanitized® additive has been integrated into this lamination resin. Sanitized® protects the product against a broad spectrum of different microorganisms by use of an antibacterial additive. Thanks to the ability to attack the membrane of microorganisms, the antibacterial additive reduces their uptake of nutrients which impairs growth. Membrane damage caused by the antibacterial additive also results in the leakage of cellular fluid, causing the bacteria to die.

SilverShield® Technology is the first product line of antibacterial thermoplastics available for orthopaedics technology. SilverShield® thermoplastics contain an antibacterial substance: silver (argentum). Upon contact with water molecules, the thermoplastics release silver ions at extremely low speed; these silver ions exert various antibacterial and growth-retarding effects on bacteria. In addition to Silver-Shield® Technology, Ottobock is now also offering antibacterial ThermoLyn rigid and the antibacterial ThermoLyn clear for test sockets in lower limb prosthetics, ThermoLyn soft

(clear) for inner prosthetic sockets and ThermoLyn soft (skin colour) for upper limb prosthetics. Antibacterial ThermoLyn PETG is used for the Harmony fitting. For fabricating orthoses, the company offers ThermoLyn PP-H as well as ThermoLyn PE 200.

The biological compatibility of the antibacterial thermoplastics for prosthetic and check sockets has been proven by biological compatibility tests according to EN ISO 10993. These thermoplastics from Ottobock have successfully passed the following tests in an independent laboratory in accordance with the above standard:

- Cytotoxicity test (EN ISO 10993 Part 5)
- Irritation and sensitisation (EN ISO 10993 Part 10)

In accordance with the specifications of the JIS Z 2801 standard and the AATCC 147:2004 standard, an independent laboratory proved that the antibacterial additives caused a reduction in bacteria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative). Mould resistance for the additive in C-Orthocryl Skinguard was confirmed under EN ISO 846 Method A.

Antibacterial thermoplastics are especially skin-friendly without any change in physical characteristics and forming properties. It must be explicitly noted that the antibacterial thermoplastics for prosthetic and check sockets are not intended for infection prevention.

- 646F265=GB
- 646D695=EN

Sanitized® is a registered trademark of Sanitized AG. SilverShield® is a registered trademark of North Sea Plastics.

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	TLSO:	
	Antibostorial Thermalum DE 200	00



Notes* on the areas of application and temperature recommendations** for thermoplastics

- This table shows the ideal heating temperature for each type of plastic.

 * This information applies only to thermoplastic from Otto Bock HealthCare GmbH in Duderstadt, Germany.

 ** The temperatures specified here are only recommendations of Otto Bock Health-Care GmbH and must be adjusted for your individual heating devices.

 *** ThermoLyn Pedilon must be heated in a water bath at 60°C/140°F.













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Application examples /	Chemical	FO	Dynamic AFO	AFO	Nighttime	Test KAFO	KAFO	Orthosis strap	Wrist
Product names	composition				splint				orthosi
ThermoLyn Pedilon 616T73	LTT polyester								
 ThermoLyn Trolene 616T3	PE-LD						•	•	
 ThermoLyn PP-C 616T120	PP-C		•	•	•		•		
 ThermoLyn PP-H 616T20, 616T56	РР-Н	•	•	•			•		•
ThermoLyn PE 200 616T19, 616T58, 616T95	PE-HD 200				•		•		
ThermoLyn RCH 500 616T22, 616T43, 616T44	PE-HD 500				•		•		
ThermoLyn RCH 1000 616T16	PE-HD 1000	•							
ThermoLyn soft, black 616T690	PE-C								
ThermoLyn Europlex 616T70	Polyamide	•							•
ThermoLyn PETG clear 616T183	Copolyester								
ThermoLyn clear 616T83	Copolyester					•			
ThermoLyn rigid 616T52	Styrene- butadiene								
ThermoLyn soft, clear 616T53	EVA								
ThermoLyn soft, skin colour 616T69	EVA								

Corset with pads (TLSO)	Prosthetic test socket	Soft	Harmony	Definitive inner socket for lower	Definitive inner socket for upper	pecial characteristics / reas of application	Heating plate	Convection oven	Infrared oven
				limb prosthesis	limb prosthesis	ideal for clinical deployment! mobile, thermoformable at low temperatures, ready for use on the body, eliminates the time-consuming tasks of fabricating casts and models,	***	ō	
						high achesive strength, high restoring capacity when reheated good transparency, good formability and flexibility, low molecular weight, especially suitable for orthosis components that require filte stiffness, but high flexibility, suitable for fabrication of straps for sockets	125 °C / 257 °F	125 °C/ 257 °F	125 °C/ 257 °F
•						good stiffness, low weight, increased impact strength at low temperatures, low tendency to white crack, good shaping to orthotic joints, good welding characteristics, minor shrinkage, easy to dye with Ottobock thermopapers	215°C/ 419°F	185°C/ 365°F	185°C/ 365°F
						high strength and stiffness, high thermoplastic dimensional stability, reduced impact strength, easy to dye with Ottobock thermopapers, especially suitable for highly stressed orthotic components, e.g. paralysis orthoses	215°C/ 419°F	185°C/ 365°F	185°C/ 365°F
•						hard polyethylene, good vacuum-forming capability, good welding characteristics, good sanding characteristics, easy to dye with Ottobock thermopapers, minor shrinkage, can be combined with, e.g., Plastazote	180°C/ 356°F	165°C/ 329°F	165°C/ 329°F
						homogeneous thermoplastic material, high stiffness, sufficient wedding characteristics, good heating characteristics, good natifriction properties, minor shrinkage, can be used with 501A33 Joint Screws and 505L1 Joint Bolts as an overlapped Joint with orthosis bushings	195°C/ 383°F	185°C/ 365°F	185°C/ 365°F
						high-strength material, high abrasion resistance, requires high forces for deformation in a thermoplastic state, can also be reshaped when cold, shaping is facilitated through use of vacuum-forming devices with rubber membranes, frequently used as stiffening insoles for inner shoes	215°C/ 419°F	195°C/ 383°F	195°C/ 383°F
				•		high flexibility, low density for especially low weight, high tensile strength, odour- neutral, high surface quality, can be subsequently thermoformed comfortable to wear, washable	-	130°C/ 266°F	130°C/ 266°F
•						good transparency, smooth surface, low hardness a increased toughness, for fabrication of dimensionally stable components, inserts and pads for torso orthoses	-	135°C/ 275°F	135°C/ 275°F
			•			very high impact strength, excellent vacuum-forming characteristics, outstanding socket adhesion, protects the liner, used as the first layer in a definitive socket, easy to put on with liner/soft socket, for example as part of the Harmony fitting	-	170°C/ 338°F	160°C/ 320°F
	•				;	good transparency, high impact strength, excellent vacuum-forming characteristics, reshaping possible upon heating, e.g. using a hot air gun, can be over-laminated to secure adapters, minor shrinkage, for fabrication of self-supporting test sockets and trial orthoses (for temporary use)	165°C/ 329°F	165°C/ 329°F	165°C/ 329°F
	•					high stiffness, high thermoplastic dimensional stability, high resistance to the formation of stress cracks, extremely high impact strength, good vacuum-forming characteristics, can be over-laminated to secure adapters, for fabrication of self-supporting test sockets (for temporary use)	-	170°C/ 338°F	170°C/ 338°F
				•		high surface quality, can be subsequently thermoformed, comfortable to wear, readily washable, high shrinkage if cooling rate is too high, for fabrication of flexible inner sockets for lower limb prosthetics	-	160°C/ 320°F	160°C/ 320°F
					•	translucent, high surface quality, can be subsequently thermoformed, comfortable to wear, readily washable, high shrinkage if cooling rate is too high, for fabrication of flexible sockets for upper limb prosthetics	-	160°C/ 320°F	160°C/ 320°F

This table shows the ideal heating temperature for each type of plastic.

* This information applies only to thermoplastic from Otto Bock HealthCare GmbH in Duderstadt, Germany.

** The temperatures specified here are only recommendations of Otto Bock HealthCare GmbH and must be adjusted for your individual heating devices.

*** Thermotyn Pedilon must be heated in a water bath at 60°C/140°, Pedilon must be heated in a water bath at 60°C/140° (F46K1=GB) and the Ottobock Technical Product Information – Skinguard Thermoplastics and Lamination Resins for Prosthetics and Orthotics (646D119=GB). Application examples / Product names Chemical FO Dynamic AFO AFO Nighttime Test KAFO KAFO Wrist composition splint EVA ThermoLyn supra soft 616T59 EVA with ThermoLyn supra soft plus Silicone Silicone ThermoLyn flexible 616T39, 5Z3 lonomer EVA ThermoLyn supra flexible 616T112, 616T113 ***Thermoplastics with antibacterial effectiveness I Skinguard technology Antibacterial ThermoLyn PP-H 616T420 2010 E Antibacterial ThermoLyn PE 200 616T495 PE-HD 200 Antibacterial ThermoLyn PETG clear 616T483 Copolyester Antibacterial ThermoLyn clear 616T283 Copolyester Antibacterial ThermoLyn rigid 616T252 Styrene butadiene 1 EVA 616T253 2 \$1500 mm EVA Antibacterial ThermoLyn soft, skin colour 616T269 1 ThermoLyn SilverShield® EVA/LDPE 111 00 East on 1 Pedilin SilverShield® 617S203 closed-cell EVA **Antibacterial Nora® Lunairmed** copolymer, closed-cell

Please note that the actual colours of the individual thermoplastics may differ from the colours shown in the table.

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	T	y					Special characteristics / Areas of application	plate	on oven	oven
Corset with pads (TLSO)	Prosthetic test socket	Soft sockets	Harmony socket	Definitive inner socket for lower limb prosthesis	Definitive inner socket for upper limb prosthesis		Special of Areas of	Heating	Convection oven	Infrared oven
				•			xible transfemoral soft-walled inner sockets	-	155°C/ 311°F	155°C/ 311°F
				•		very high flexibility, facilitates more comfortabl high surface quality, comfortable to wear, good sanding characteristi washable		-	150°C/ 302°F	150°C/ 302°F
				•		proven classic material for insensitive to cold and damp high surface quality, high dimensional stability, comfortable to wear, readily washable, minor shrinkage, for fabrication of flexible in		-	165°C/ 329°F	165°C/ 329°F
				•	•	high friction, permanently elastic, available in many different co dimensionally stable, easy, convenient processing		100-130°C/ 212-266°F	100-120°C/ 212-248°F	80–100°C/ 175–212°F
							,			
							high strength and stiffness, high thermoplastic dimensional stability, reduced impact strength, easy to dye with Ottobock thermopapers, especially suitable for highly stressed orthotic components, e.g. paralysis orthoses	215°C/ 419°F	185°C/ 365°F	185°C/ 365°F
•							hard polyethylene, good vacuum-forming capability, good welding characteristics, good sanding characteristics, easy to dye with Ottobock thermopapers, minor shrinkage, can be combined with, e.g., Plastazote	180°C/ 356°F	165°C/ 329°F	165°C/ 329°F
			•				very high impact strength, excellent vacuum-forming characteristics, outstanding socket adhesion, protects the liner, used as the first layer in a definitive socket, easy to don with liner/soft socket, for example as part of a Harmony fitting	-	170°C/ 338°F	160°C/ 320°F
	•					SkiinGUARD ROMEZOOF Skinguard technology – Advantages at a glance:	good transparency, high impact strength, excellent vacuum-forming characteristics, reshaping possible upon heating, e.g. using a hot air gun, can be over-laminated to secure adapters, minor shrinkage, for fabrication of self-supporting test sockets and trial orthoses (for temporary use)	165°C/ 329°F	165°C/ 329°F	165°C/ 329°F
	•					high and long-lasting effectiveness of the antibacterial substances effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-	high stiffness, high thermoplastic dimensional stability, high resistance to the formation of stress cracks, extremely high impact strength, good vacuum/cormig characteristics, can be over-laminated to secure adapters, for fabrication of self-supporting test sockets (for temporary use)	-	170°C/ 338°F	170°C/ 338°F
				•		negative) as specified by the JIS Z 2801 standard + effective reduction of odour generation + outstanding skin compati- bility (dermatologically	high surface quality, can be subsequently thermoformed, comfortable to wear, readily washable, high shrinkage if cooling rate is too high, for fabrication of flexible inner sockets for lower limb prosthetics	-	150°C/ 302°F	150°C/ 302°F
					•	tested, SGS Institut Fresenius GmbH Deutschland) + no impairment of the phys- ical characteristics or processing properties by the addition of the anti- bacterial substances	translucent, high surface quality, can be subsequently thermoformed, comfortable to wear, readily washable, high shrinkage if cooling rate is too high, for fabrication of flexible sockets for upper limb prosthetics.	-	150°C/ 302°F	150°C/ 302°F
				•			Hexible material, pleasant wearing characteristics and good compatibility with skin, low shrinkage due to pressed plastic, for fabrication of flexible inner prosthetic sockets	-	150°C/ 302°F	150°C/ 302°F
		•					non-perforated, density of 140 kg/m³, hardness approx. shore A 35 for fabrication of soft-walled inner sockets and redression helmets	-	130°C/ 266°F	130°C/ 266°F
	•			•			density of 80 kg/m³, hardness approx. shore A 18, good padding characteristics, highly elastic, good adhesion, good sanding characteristics, washable, for padding FOs, individual padding when indicated for heel spur, for fitting diabetics	120–130°C/ 248–266°F	120–130°C/ 248–266°F	-

SilverShield® is a registered trademark of North Sea Plastics, Nora® is a registered trademark of Freudenberg.

Lower Limb Prosthetics

Check Socket

Antibacterial ThermoLyn rigid (Styrene-butadiene)

The antibacterial interim material ThermoLyn rigid is used as a temporary measure in the fabrication of self-supporting check sockets in order to provide an expedient interim solution for the time between the preliminary and definitive fitting. Implementing the right measures at the right time can frequently prevent subsequent complications and limitations. In addition to consistent medical monitoring of the wound healing process after the operation, care of the residual limb is especially important. The use of the antibacterial interim material ThermoLyn rigid is intended to protect the skin and prosthetic socket against a wide range of different microorganisms right from the outset.

Advantages at a glance

- Suitable for the fabrication of self-supporting TT, TF and HD test sockets (for temporary use)
- The proven, classic material for fabricating test sockets!
- Antibacterial effect
- Transparency of the check socket facilitates precise verification of the fit and skin discolouration on the residual
- · High stiffness
- · Good fracture resistance
- · High thermoplastic dimensional stability
- · High resistance to the formation of stress cracks
- · Extremely high impact strength
- Low shrinkage: approx. 1 %
- · Can be over-laminated to secure adapters
- Minor shrinkage
- Temperature recommendation: 170 °C/338 °F (convection oven), 170 °C/338 °F (infrared oven)
- 646F265=GB
- 646D695=EN
- 646D300=GB





2010

Order example:

Reference number	Ξ	Thickness
616T252	=	8

Reference number	616T252
Sheet size (length x width)	400 x 400 mm
Thickness	8 mm, 10 mm, 12 mm, 15 mm
Colour	clear

Order example:

Reference number	=	Sheet size x thickness
616T252	=	600 x 600 x 12

Reference number	616T252
Sheet size (length x width)	600 x 600 mm
Thickness	12 mm, 15 mm
Colour	clear



- Effective long-term antibacterial characteristics of the thermoplastics
- Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the JIS Z 2801 standard
- Efficient reduction of odour formation
- Extremely skin-friendly (dermatologically tested, SGS Institut Fresenius GmbH Deutschland)
- No impairment of physical characteristics and forming properties of thermoplastic materials by the addition of the antibacterial substance





In accordance with the specifications of the JIS Z 2801 standard, an independent laboratory proved that antibacterial ThermoLyn rigid caused a

reduction of 99.9 % in bacteria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative).

Effectiveness of antibacterial ThermoLyn rigid according to the JIS Z 2801 standard Number of viable bacteria 100,000,000 10,000,000 1,000,000 100,000 10,000 1,000 100 10 1 Antibacterial Initial dose ThermoLyn rigid ThermoLyn rigid after 24 hours after 24 hours Escherichia coli Staphylococcus aureus

¹JIS (Japanese Industrial Standard), Z 2801, March 2008.

Lower Limb Prosthetics

Check Socket

Antibacterial ThermoLyn clear (Copolyester)

Antibacterial ThermoLyn clear is used in the fabrication of self-supporting check sockets (for temporary use). In addition, the material is used for the fabrication of scar compression masks and trial orthoses. The transparency of the material facilitates precise verification of the fit and skin discolouration. Good fracture resistance, extremely high impact strength and high dimensional stability are further advantages of this thermoplastic. The antibacterial additive protects the end product from a wide spectrum of different microorganisms and ensures pleasant wearing characteristics and skin comfort.

Advantages at a glance

- For fabricating scar compression masks, trial orthoses and self-supporting check sockets (for temporary use)
- · Antibacterial effect
- Transparent
- · Good fracture resistance
- · Very high impact strength
- · High dimensional stability
- Low shrinkage: approx. 1 %
- Can be over-laminated to secure adapters
- · Minor shrinkage
- Temperature recommendation: 165 °C/329 °F (hotplate), 165 °C/329 °F (convection oven), 165 °C/329 °F (infrared
- · Practical recommendation: For working edges we recommend hot air or 634A80 SuperSkin Cleaning Agent
- 646F265=GB
- 646D695=EN
- 646D300=GB

Order example:

Reference number	= Thickness
616T283	= 8

Reference number	616T283	616T283
For the fabrication of	Trial orthoses	Self-supporting check sockets (for temporary use)
Sheet size (length x width)	400 x 400 mm	400 x 400 mm
Thickness	8 mm	10 mm, 12 mm, 15 mm, 20 mm
Colour	clear	clear



- Effective long-term antibacterial characteristics of the thermoplastics
- Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the JIS Z 2801 standard
- Efficient reduction of odour formation
- Extremely skin-friendly (dermatologically tested, SGS Institut Fresenius GmbH Deutschland)
- No impairment of physical characteristics and forming properties of thermoplastic materials by the addition of the antibacterial substance



In accordance with the specifications of the JIS Z 2801 standard, an independent laboratory proved that antibacterial ThermoLyn clear caused a

reduction of 99.9% in bacteria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative).

Effectiveness of the antibacterial ThermoLyn clear according to the JIS Z 2801 standard² Number of viable bacteria 100,000,000 10,000,000 1,000,000 100,000 10,000 1,000 100 10 1 Initial dose ThermoLyn clear after 24 hours Antibacterial ThermoLyn clear after 24 hours Escherichia coli Staphylococcus aureus

² JIS (Japanese Industrial Standard), Z 2801, May 2011.

Lower Limb Prosthetics

Inner Prosthetic Socket

Antibacterial ThermoLyn soft (Ethyl vinyl acetate)

Antibacterial ThermoLyn soft is used for the fabrication of flexible prosthetic sockets in lower limb prosthetics. It protects the prosthetic socket against a wide range of different microorganisms. This material is characterised by high flexibility and good rupture resistance. Other features of this thermoplastic include good vacuum-forming characteristics and transparency.

Advantages at a glance

- Suitable for fabricating flexible inner prosthetic sockets in lower limb prosthetics
- · Antibacterial effect
- Clear
- · High flexibility
- · High surface quality
- · Low shrinkage: approx. 3 %
- · Can be subsequently thermoformed
- · Comfortable to wear
- · Readily washable
- Temperature recommendation: 160 °C/320 °F (convection oven), 160 °C /320 °F (infrared oven)
- 646F265=GB
- 646D695=EN
- 646D300=GB





2010

Order example:

Reference number	= Thickness	
616T253	= 8	
Reference number	616T253	

8 mm, 10 mm, 12 mm, 15 mm



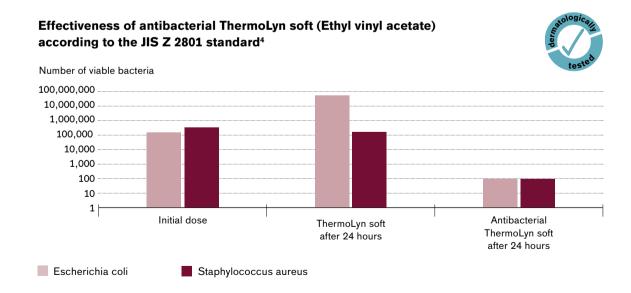
Thickness

Colour

- Effective long-term antibacterial characteristics of the thermoplastics
- Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the JIS Z 2801 standard
- Efficient reduction of odour formation
- Extremely skin-friendly (dermatologically tested, SGS Institut Fresenius GmbH Deutschland)
- No impairment of physical characteristics and forming properties of thermoplastic materials by the addition of the antibacterial substance



In accordance with the specifications of the JIS Z 2801 standard, an independent laboratory proved that antibacterial ThermoLyn soft (Ethyl vinyl acetate) causes a reduction of 99.9 % in bacteria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative).3



³ Laboratory in Japan, A.C. Barclay, August 2005.

⁴ JIS (Japanese Industrial Standard), Z 2801, March 2008.

Lower Limb Prosthetics

Inner Prosthetic Socket

ThermoLyn SilverShield® (Ethyl vinyl acetate)

ThermoLyn SilverShield® (Ethyl vinyl acetate) protects the prosthetic socket against a wide range of different microorganisms. The benefit for the user is that discolouration and odour caused by microbes are considerably reduced and that the lifespan of the socket is extended. These additives thus provide for more pleasant wearing characteristics and improved skin comfort.

Advantages at a glance

- · Suitable for fabricating flexible inner prosthetic sockets in lower limb prosthetics
- · Antibacterial effect
- Very high flexibility
- Very low shrinkage (approx. 1 %), due to due to pressed thermoplastic material
- · Pleasant wearing characteristics and skin comfort
- Temperature recommendation: 150 °C/302 °F (convection oven), 150 °C/302 °F (infrared oven)
- · Practical recommendation: Place wet plaster cast in the oven. Prior to vacuum forming, coat the model with 633F50 Silicone Grease.
- 646F265=GB
- 646D695=EN
- 646D300=GB





2010

Order example:

Reference number	= Thickness
616T200	= 9
Reference number	616T200
Sheet size (length x width)	400 x 400 mm
Thickness	9 mm, 12 mm, 16 mm
Colour	natural colour



- Effective long-term antibacterial characteristics thanks to the continuous release of silver ions
- Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the JIS Z 2801 standard
- Efficient reduction of odour formation
- Extremely skin-friendly (dermatologically tested, SGS Institut Fresenius GmbH Deutschland)
- No impairment of physical characteristics and forming properties of thermoplastic materials by the addition of antibacterial silver

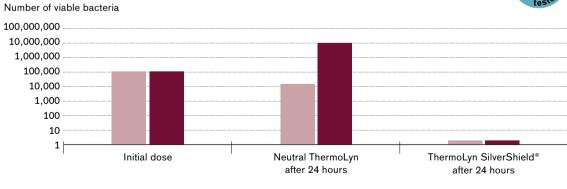


In accordance with the specifications of the JIS Z 2801 standard, an independent laboratory proved that antibacterial ThermoLyn SilverShield (Ethyl

vinyl acetate) causes a reduction of 99.9% in bacteria colonies of Staphylococcus aureus (grampositive) and Escherichia coli (gram-negative).5

Effectiveness of ThermoLyn SilverShield® (Ethyl vinyl acetate) according to the JIS Z 2801 standard6





Escherichia coli

SilverShield® is a registered trademark of North Sea Plastics.

Staphylococcus aureus

⁵ Laboratory in Japan, A.C. Barclay, August 2005.

⁶ JIS (Japanese Industrial Standard), Z 2801, March 2008.

Lower/Upper Limb Prosthetics

Inner Prosthetic Socket

C-Orthocryl Skinguard

The Sanitized® additive is integrated into the innovative C-Orthocryl Skinguard. Sanitized® protects the product against a broad spectrum of different microorganisms by use of an antibacterial additive. Thanks to the ability to attack the membrane of microorganisms, the antibacterial additive reduces their uptake of nutrients which impairs growth. Membrane damage caused by the antibacterial additive also results in the leakage of cellular fluid, causing the bacteria to die.

Advantages at a glance

- · Lamination resin for all types of casting resin work
- Especially suited to carbon fibre technology
- · Antibacterial effect
- Ready for use
- · Casting carbon on carbon, no filter layers are required
- · Facilitates fabricating components with a low proportion of
- · Optimum ratio of matrix to reinforcing materials
- Practical recommendation: Only use 616F4 PVA sheeting and/or the 99B81 PVA bag for foil casting
- 646D300=GB
- O 646F351=EN
- 646D695=EN







Resin	sin .	Hardener		Resin Colour Paste
100	:	2-3	:	3







Danger



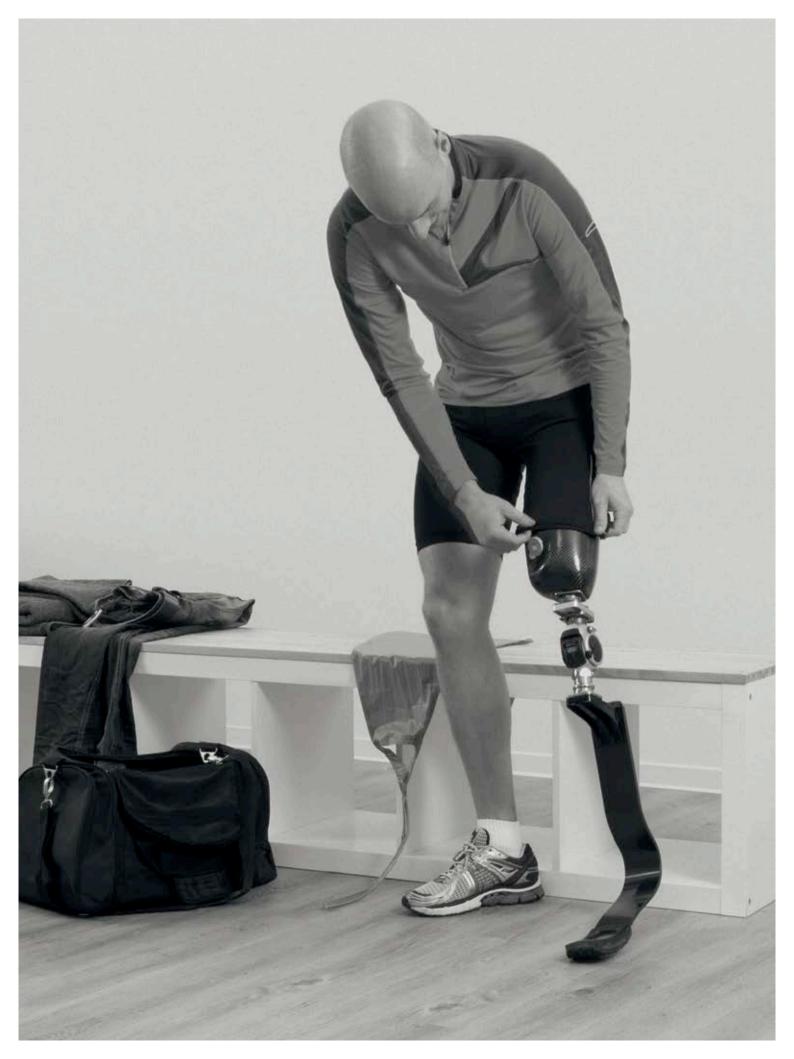
- High and long-lasting effectiveness of the antibacterial substances
- Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the AATCC 147:2004 standard
- Resistance to moulds in accordance with EN ISO 846 Method A
- Efficient reduction of odour formation
- Extremely skin-friendly (dermatologically tested, SGS Institut Fresenius GmbH Deutschland)
- No impairment of physical characteristics and forming properties by the addition of antibacterial substances











Lower Limb Prosthetics

Soft inner socket

Pedilin SilverShield®

Pedilin SilverShield® protects the skin and the prosthetic socket against a wide range of different microorganisms. The benefit for the user is that discolouration and odour caused by microbes are considerably reduced and that the lifespan of the socket is extended. These additives thus provide for more pleasant wearing characteristics and improved skin comfort.

Advantages at a glance

- · Highly recommended for fabricating soft inner sockets and as a padding material for prosthetic sockets
- The proven classic material for soft sockets!
- 617S203=10 is suitable for fabricating redression helmets
- · Antibacterial effect
- PE foam, closed-cell
- · Hardness approx. Shore A 35 (proven Shore hardness for fabricating soft sockets)
- Density approx. 140 kg/m³
- · High resilience
- · Good thermoforming properties
- · Good adhesive characteristics
- · Good sanding characteristics
- Washable
- Temperature recommendation: 130 °C/266 °F (hotplate), 130 °C/266 °F (convection oven)
- 646F265=GB
- 646F295=GB
- 646D300=GB
- 646D695=EN

Order example:

Reference number	= Thickness
617S203	= 3
Reference number	617S203
Sheet size (length x width)	1050 x 1050 mm
Thickness	3 mm, 4 mm, 5 mm, 6 mm, 10 mm
Colour	skin colour

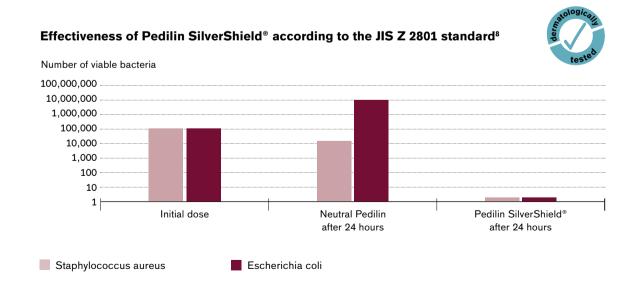


- Effective long-term antibacterial characteristics thanks to the continuous release of silver ions
- Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the JIS Z 2801 standard
- Efficient reduction of odour formation
- Extremely skin-friendly (dermatologically tested, SGS Institut Fresenius GmbH Deutschland)
- No impairment of physical characteristics and forming properties by the addition of antibacterial silver



In accordance with the specifications of the JIS Z 2801 standard, an independent laboratory proved that Pedilin Silvershield® causes a reduction of

99.9% in bacteria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative).7



SilverShield® is a registered trademark of North Sea Plastics.

⁷ Laboratory in Japan, A.C. Barclay, August 2005.

⁸ JIS (Japanese Industrial Standard), Z 2801, March 2008.

Lower Limb Prosthetics

Harmony socket

Antibacterial ThermoLyn PETG clear (Copolyester)

Antibacterial ThermoLyn PETG clear can be used for all liner fittings with/without distal connection. It is used as the first layer in definitive sockets, e.g. for Harmony fittings, but is also suitable for all transfemoral fittings with/without liner. Antibacterial ThermoLyn PETG clear is a shatter-proof copolvester. The extremely high impact resistance and excellent thermoforming properties make this an ideal material for numerous orthopaedic technology applications. The benefit of the antibacterial additive for the user is that odour and discoloration caused by microbes are considerably reduced and that the lifespan of the product is extended. The additives assure pleasant wearing characteristics and enhanced skin comfort.

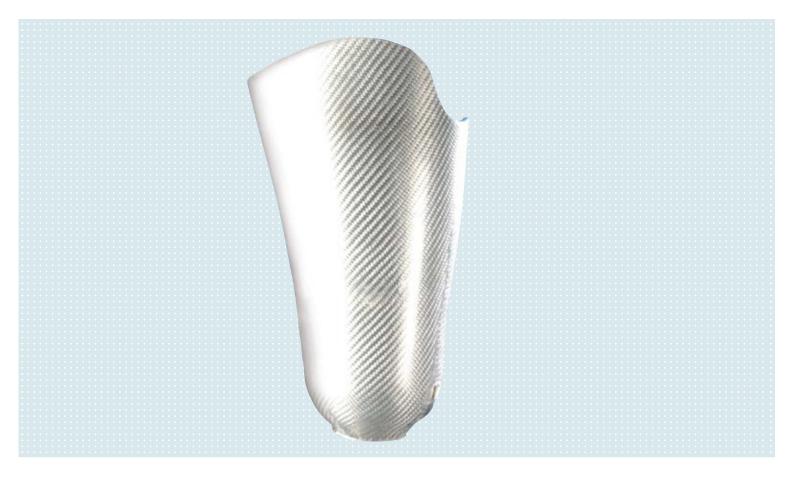
Advantages at a glance

- For all liner fittings with/without distal connection
- Used as the first layer in definitive sockets, e.g., for Harmony fittings
- · For transfemoral fittings with/without liners
- · Antibacterial effect
- · Highly transparent
- Shatter proof
- · High impact strength
- · Low shrinkage: approx. 1 %
- · After the check socket has been transferred, the plaster requires no drvina
- Moist plaster requires no isolation for laminating
- · PETG replaces the inside sheeting
- · Very smooth inner surface
- · Makes donning easier and increases the service life of the liner/soft socket/sealing sleeve
- Temperature recommendation: 170 °C/338 °F (convection oven), 160 °C/320 °F (infrared oven)
- Practical recommendation: Coat the model with 633F50 Silicone Grease
- · Practical recommendation: For working edges we recommend hot air or 634A80 SuperSkin Cleaning Agent
- 646F265=GB
- 646D300=GB
- 646D695=EN

Article number	616T483=3	616T483=5
Sheet size (length x width)	400 x 400 mm	400 x 400 mm
Thickness	3 mm	5 mm
Colour	clear	clear



- Effective long-term antibacterial characteristics of the thermoplastics
- Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the JIS Z 2801 standard
- Effective reduction of odour formation
- Extremely skin-friendly (dermatologically tested, SGS Institut Fresenius GmbH Deutschland)
- No impairment of physical characteristics and forming properties of thermoplastic materials

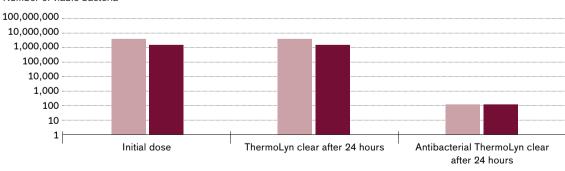


In accordance with the specifications of the JIS Z 2801 standard, an independent laboratory proved that antibacterial ThermoLyn PETG clear caused a

reduction of 99.9% in bacteria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative).

Effectiveness of antibacterial ThermoLyn PETG clear according to the JIS Z 2801 standard9 Number of viable bacteria





Escherichia coli

Staphylococcus aureus

⁹ JIS (Japanese Industrial Standard), Z 2801, May 2011.

Upper Limb Prosthetics

Inner Prosthetic Socket

Antibacterial ThermoLyn soft (Ethyl vinyl acetate)

Skin colour antibacterial ThermoLyn soft is used for the fabrication of flexible prosthetic sockets in upper limb prosthetics. It protects the prosthetic socket against a wide range of different microorganisms. The antibacterial effect, high flexibility and suppleness of skin colour ThermoLyn soft enhance wearer comfort and therefore the useful life of the prosthesis. This translucent, skin-coloured material features optimum matching with the natural skin colour of the prosthesis wearer. The material characteristics offer ease of processing and a high level of comfort for the wearer.

Advantages at a glance

- Suitable for fabricating flexible prosthetic sockets in upper limb prosthetics
- · Antibacterial effect
- Translucent
- · High flexibility in the area of the socket edges
- · High surface quality
- Low shrinkage: approx. 3 %
- · Can be subsequently thermoformed
- · Comfortable to wear
- · Readily washable
- Temperature recommendation: 150 °C/302 °F (convection oven), 150 °C/302 °F (infrared oven)
- Practical recommendation: We recommend using the 503F3 Socket Screw with Allen Head in combination with the 29C3 or 29C5 Setting Nut.
- 646F265=GB
- 646D695=EN
- 646D300=GB





2010

Order example:

Reference number	=	Thickness
616T269	=	6

Reference number	616T269
Sheet size (length x width)	400 x 400 mm
Thickness	6 mm, 8 mm, 10 mm, 12 mm
Colour	skin colour



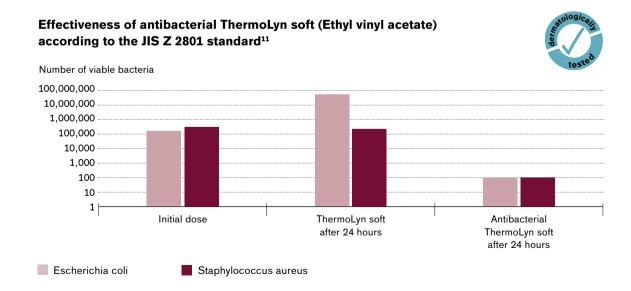
- Effective long-term antibacterial characteristics of the thermoplastics
- Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the JIS Z 2801 standard
- Efficient reduction of odour formation
- Extremely skin-friendly (dermatologically tested, SGS Institut Fresenius GmbH Deutschland)
- No impairment of physical characteristics and forming properties of thermoplastic materials by the addition of the antibacterial substance





In accordance with the specifications of the JIS Z 2801 standard, an independent laboratory proved that antibacterial ThermoLyn soft (Ethyl vinyl

acetate) causes a reduction of 99.9 % in bacteria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative).10



¹⁰ Laboratory in Japan, A.C. Barclay, August 2005.

¹¹ JIS (Japanese Industrial Standard), Z 2801, March 2008.

Orthotics

FO, Dynamic AFO, AFO, KAFO

Antibacterial ThermoLyn PP-H (Polypropylene homopolymer)

Antibacterial ThermoLyn PP-H protects the orthosis against a wide range of different microorganisms and is used for the fabrication of shape-retaining orthosis components, e.g. in paralysis orthoses, Dynamic AFO and Ankle seven. This synthetic material features high deformation stability and a reduced impact value. The low impact value means great care must be taken during machining in order to avoid brittle fractures (stress concentration).

Advantages at a glance

- · For shape-retaining orthosis components, e.g. paralysis orthoses, Dynamic AFO and Ankle seven
- · Antibacterial effect
- · High stiffness
- · High strength
- High thermoplastic dimensional stability
- Reduced shrinkage: approx. 7 %
- Can be reinforced with 617R11=PP Thermoprepreg PP
- Easy to dye with Ottobock thermopapers
- Temperature recommendation: 215 °C/419 °F (hotplate), 185 °C/365 °F (convection oven), 185 °C/365 °F (infrared
- Practical recommendation: The low impact value means great care must be taken during machining in order to avoid brittle fractures (stress concentration).
- 646F265=GB
- 646D695=EN
- 646D300=GB





2010

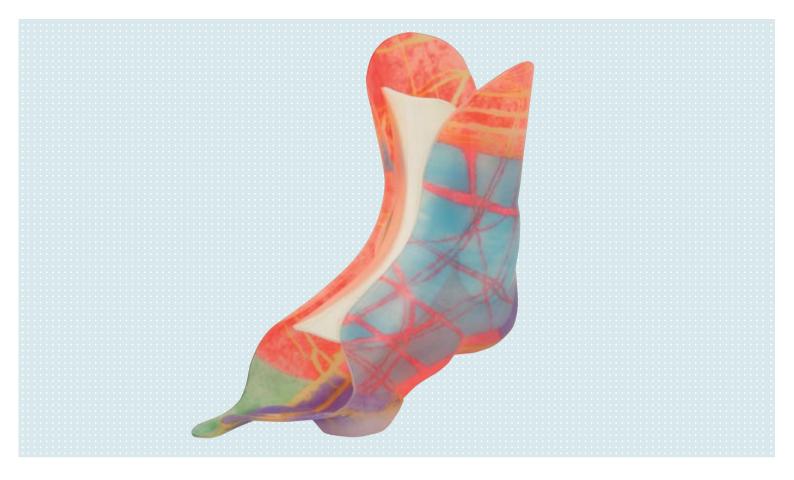
Order example:

Reference number	= Thickness
616T420	= 2

Reference number	616T420
Sheet size (length x width)	2,000 x 1,000 mm
Thickness	2 mm, 3 mm, 4 mm, 5 mm, 6 mm, 8 mm, 10 mm, 12 mm, 15 mm
Colour	natural colour



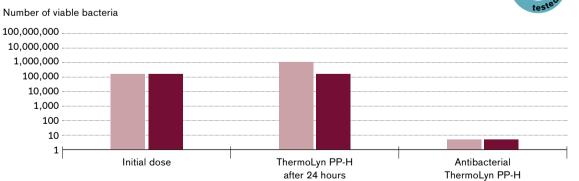
- Effective long-term antibacterial characteristics of the thermoplastics
- Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the JIS Z 2801 standard
- Efficient reduction of odour formation
- Extremely skin-friendly (dermatologically tested, SGS Institut Fresenius GmbH Deutschland)
- No impairment of physical characteristics and forming properties of thermoplastic materials by the addition of the antibacterial substance



In accordance with the specifications of the JIS Z 2801 standard, an independent laboratory proved that antibacterial ThermoLyn PP-H caused a

reduction of 99.9% in bacteria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative).

Effectiveness of antibacterial ThermoLyn PP-H according to the JIS Z 2801 standard12



Escherichia coli

Staphylococcus aureus

after 24 hours

¹² JIS (Japanese Industrial Standard), Z 2801:2000, July 2009.

Orthotics

Antibacterial Nora® Lunairmed

Compared to our proven Nora® Lunairmed, additives with an ionising effect have been integrated into the innovative antibacterial Nora® Lunairmed. These additives with antibacterial effect are anchored to the substrate through their size and composition, and therefore cannot escape from the material. They are effective for many different microorganisms such as bacteria and fungi. Because the additive remains in the material, its effect continues for years. The closed cell structure of the antibacterial Nora® Lunairmed stops bacteria and fungi from entering the material; in addition, the antibacterial effect of the padding material stops bacteria and fungi from settling on the material surface.

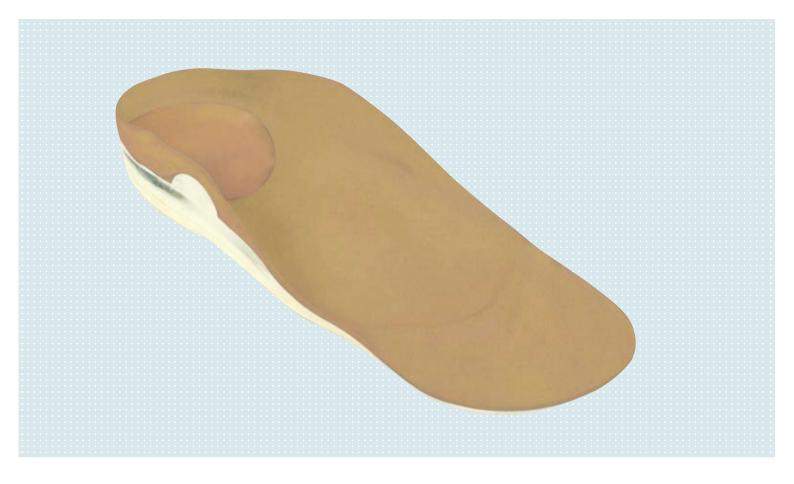
Advantages at a glance

- Particularly recommendable for padding FOs
- · Individual padding when indicated for heel spur
- · For fitting diabetics
- Antibacterial effect
- EVA copolymer, closed-cell
- · Hardness approx. shore A 18
- Density approx. 80 kg/m³
- · Good padding characteristics
- · Highly elastic
- · Good adhesive characteristics ideal for combining with other padding materials!
- · Good sanding characteristics
- Washable
- Temperature recommendation: 120 °C 130 °C/248 °F -266 °F (hotplate), 120 °C - 130 °C/248 °F - 266 °F (convection oven)
- 646F265=GB
- 646F295=GB
- 646D300=GB
- 646D695=EN

Article number	617S229=3	617S229=6
Sheet size (length x width)	980 x 640 mm	980 x 640 mm
Thickness	3 mm	6 mm
Colour	skin colour	skin colour



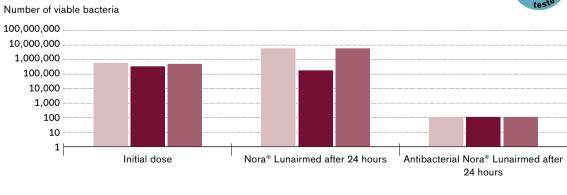
- High and long-lasting effectiveness of the antibacterial substances
- Efficiency against a broad spectrum of pathogenic bacteria and fungi
- Effective reduction of odour formation
- Extremely skin-friendly (dermatologically tested, SGS Institut Fresenius GmbH Deutschland)
- Antibacterial substance exhibits no adverse effect on physical properties as well as forming properties



In accordance with the specifications of the JIS Z 2801 standard, an independent laboratory proved that antibacterial Nora® Lunairmed caused a reduction of 99.9% in bacteria colonies of Staphylococcus aureus (gram-positive), Escherichia coli (gram-negative) and Pseudormonas aeruginosa (gram-negative).

Effectiveness of the antibacterial Nora® Lunairmed according to the JIS Z 2801 standard13





Pseudormonas aeruginosa

Nora® is a registered trademark of Freudenberg.

Escherichia coli

Staphylococcus aureus

¹³ JIS (Japanese Industrial Standard), Z 2801:2000, July 2010.

Orthotics

Positioning Orthosis, KAFO, Wrist Hand Orthosis, TLSO

Antibacterial ThermoLyn PE 200 (Polyethylene 200)

Antibacterial ThermoLyn PE 200 protects the orthosis against a wide range of different microorganisms and is suitable for the fabrication of orthoses, e.g. positioning orthoses and KAFOs. The hard polyethylene features good welding and grinding characteristics as well as low shrinkage.

Advantages at a glance

- For the fabrication of orthoses
- · Antibacterial effect
- · Hard polyethylene
- · Low molecular weight
- · Good welding characteristics
- · Good sanding characteristics
- Minor shrinkage
- · Can be combined with, for example, 617S7/617S8 Plastazote®
- Low shrinkage approx. 8 %
- Can be reinforced using 617R11=PE Thermoprepreg PE
- Easy to dye with Ottobock thermopapers
- Temperature recommendation: 180 °C/356 °F (hotplate), 165 °C/329 °F (convection oven), 165 °C/329 °F (infrared oven)
- 646F265=GB
- 646D300=GB
- 646D695=EN



2010

Order example:

Reference number	= Thickness
616T495	= 2

Reference number	616T495
Sheet size (length x width)	2,000 x 1,000 mm
Thickness	2 mm, 3 mm, 4 mm, 6 mm, 8 mm, 10 mm, 12 mm
Colour	natural colour

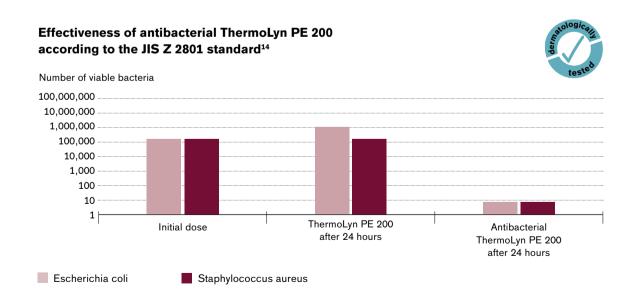


- Effective long-term antibacterial characteristics of the thermoplastics
- Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the JIS Z 2801 standard
- Efficient reduction of odour formation
- Extremely skin-friendly (dermatologically tested, SGS Institut Fresenius GmbH Deutschland)
- No impairment of physical characteristics and forming properties of thermoplastic materials by the addition of the antibacterial substance



In accordance with the specifications of the JIS Z 2801 standard, an independent laboratory proved that antibacterial ThermoLyn PE 200 caused a

reduction of 99.9% in bacteria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative).



Plastazote® is a registered trademark of Zotefoams.

¹⁴ JIS (Japanese Industrial Standard), Z 2801:2000, July 2009.



Features & Benefits

- High and long-lasting effectiveness of the antibacterial substances
- ●Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the JIS Z 2801 standard and the AATCC 147:2004 standard
- ▶ Resistance to moulds according to EN ISO 846 Method A (applies to C-Orthocryl Skinguard)
- Efficient reduction of odour production
- ► Extremely skin-friendly (dermatologically tested, SGS Institut Fresenius GmbH Deutschland)
- No impairment of physical characteristics and forming properties by the addition of antibacterial substances









Skinguard Thermoplastics and Lamination Resins

Please send fax orders to the number of the relevant Ottobock company listed at the end of this product information.

	Customer			Shipping address (if different from customer address)
Customer no.			Customer no.	
Company			Company	
Street			Street	
Postal code/city			Postal code/city	
Prosthetist/orthotist		Com.		
Description		Article Number	Colour	Order quantity
		616T420=2	natural colour	
		616T420=3	natural colour	
		616T420=4	natural colour	
		616T420=5	natural colour	
Antibacterial ThermoLyn PP-H		616T420=6	natural colour	
		616T420=8	natural colour	
		616T420=10	natural colour	
		616T420=12	natural colour	
		616T420=15	natural colour	
		616T495=2	natural colour	
		616T495=3	natural colour	
		616T495=4	natural colour	
Antibacterial ThermoLyn PE 200	616T495=6	natural colour		
		616T495=8	natural colour	
		616T495=10	natural colour	
		616T495=12	natural colour	

Comments	Company stamp/signature		



Skinguard Thermoplastics and Lamination Resins

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Customer			Shipping address (if different from customer address)
Customer no.		Customer no.	
Company		Company	
Street		Street	
Postal code/city		Postal code/city	
Prosthetist/orthotist		Com.	
1 Tostiletist/ orthodist		Cont.	
Description	Article Number	Colour	Order quantity
Antibacterial ThermoLyn rigid	616T252=8	clear	
	616T252=10	clear	
	616T252=12	clear	
	616T252=15	clear	
	616T252=600x600x12	clear	
	616T252=600x600x15	clear	
Antibacterial ThermoLyn clear	616T283=8	clear	
	616T283=10	clear	
	616T283=12	clear	
	616T283=15	clear	
	616T283=20	clear	
Antibacterial ThermoLyn PETG clear	616T483=3	clear	
	616T483=5	clear	
Antibacterial ThermoLyn soft	616T253=8	clear	
	616T253=10	clear	
	616T253=12	clear	
	616T253=15	clear	

Comments	Company stamp/signature		



Skinguard Thermoplastics and Lamination Resins

Please send fax orders to the number of the relevant Ottobock company listed at the end of this product information.

Customer		Shippi	ing address (if different from customer address)	
Customer no.		Customer no.		
Company		Company		
Street		Street		
Postal code/city		Postal code/city		
		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		
Prosthetist/orthotist		Com.		
	_			
Description	Article Number	Colour	Order quantity	
Antibacterial ThermoLyn soft	616T269=6	skin colour		
	616T269=8	skin colour		
	616T269=10	skin colour		
	616T269=12	skin colour		
ThermoLyn SilverShield®	616T200=9	natural colour		
	616T200=12	natural colour		
	616T200=16	natural colour		
Pedilin SilverShield®	617S203=3	skin colour		
	617S203=4	skin colour		
	617S203=5	skin colour		
	617S203=6	skin colour		
	617S203=10	skin colour		
Nora® Lunairmed	617S229=3	skin colour		
	617S229=6	skin colour		
Description	Article Number	Net contents	Order quantity	
C-Orthocryl Skinguard	617H255=0.900	0.90 kg		
	617H255=4.600	4.60 kg		
	617H255=25	25 kg		
Comments		Company stamp/signature		