

*Otto Bock*<sup>®</sup>

QUALITY FOR LIFE



# **SKINGUARD<sup>®</sup>** **Thermoplastics and Lamination Resins**

for Prosthetics and Orthotics

Information for Practitioners



## 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 and antimicrobial thermoplastics for prosthetic 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. These additives assure more pleasant wearing characteristics and enhanced skin comfort.



SKINGUARD® Technology is an umbrella brand representing technologies with various antibacterial and antimicrobial substances based on different active principles. For example, this umbrella brand includes technologies such as Sanitized® and SilverShield®.

In the area of lamination resins, Otto Bock offers the innovative C-Orthocryl® Sanitized®. The Sanitized® additive has been integrated into this lamination resin. Sanitized® is an antimicrobial additive that protects the product against a wide range of different microorganisms. Thanks to the ability to attack the membrane of microorganisms, the antimicrobial additive reduces their uptake of nutrients which impairs growth. Damage to the membrane caused by the antimicrobial additive also leads to the leakage of cellular liquid, causing the bacteria to die.

SilverShield® Technology is the first antibacterial product line of thermoplastic resins 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 SilverShield® Technology, Otto Bock is now also offering antibacterial ThermoLyn® stiff for check sockets in lower limb prosthetics, ThermoLyn® soft

(clear) for inner prosthetic sockets and ThermoLyn® soft (skin colour) for upper limb prosthetics. ThermoLyn® PP-C SilverShield®, ThermoLyn® PP-H and ThermoLyn® PE 200 are available for the fabrication of orthoses.

The biological compatibility of the antibacterial and / or antimicrobial thermoplastics for prosthetic and check sockets has been proven by biological compatibility tests according to EN ISO 10993. These thermoplastics from Otto Bock 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 and antimicrobial additives caused a reduction in bacteria colonies of *Staphylococcus aureus* (gram-positive) and *Escherichia coli* (gram-negative).

Antibacterial and antimicrobial 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.

SKINGUARD® and Orthocryl® are registered trademarks of Otto Bock.  
Sanitized® is a registered trademark of Sanitized AG.  
SilverShield® is a registered trademark of North Sea Plastics.

- 646F265=D
- 646A39=D
- 646A263=D



# Table of Contents



## Prosthetics

### Lower Limb Prosthetics

Check socket:  
**Antibacterial ThermoLyn® stiff** ..... 6

Inner prosthetic socket:  
**Antibacterial ThermoLyn® soft (EVA), clear** ..... 8  
**ThermoLyn® EVA/LDPE SilverShield®** ..... 10  
**C-Orthocryl® Sanitized®** ..... 12

Soft inner socket:  
**Pedilin® SilverShield®** ..... 14

### Upper Limb Prosthetics

Inner prosthetic socket:  
**Antibacterial ThermoLyn® soft (EVA), skin colour** ..... 16  
**C-Orthocryl® Sanitized®** ..... 12

## Orthotics

FO:  
**ThermoLyn® PP-C SilverShield®** ..... 18  
**Antibacterial ThermoLyn® PP-H** ..... 20

DAFO:  
**Antibacterial ThermoLyn® PP-H** ..... 20

AFO:  
**ThermoLyn® PP-C SilverShield®** ..... 18  
**Antibacterial ThermoLyn® PP-H** ..... 20

Positioning orthosis:  
**Antibacterial ThermoLyn® PE 200** ..... 22

KAFO:  
**ThermoLyn® PP-C SilverShield®** ..... 18  
**Antibacterial ThermoLyn® PP-H** ..... 20  
**Antibacterial ThermoLyn® PE 200** ..... 22

Wrist orthosis:  
**Antibacterial ThermoLyn® PE 200** ..... 22

TLSO:  
**ThermoLyn® PP-C SilverShield®** ..... 18  
**Antibacterial ThermoLyn® PE 200** ..... 22

# Lower Limb Prosthetics | Check Socket

Antibacterial ThermoLyn® stiff (polystyrene)

## Antibacterial ThermoLyn® stiff (polystyrene)

The antibacterial interim material ThermoLyn® stiff 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® stiff 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 check sockets (limited period of use)
- The proven, classic material for the fabrication of check sockets!
- Antibacterial effectiveness
- Transparency of the check socket facilitates precise verification of the fit and skin discolouration on the residual limb
- High stiffness
- Good fracture resistance
- High thermoplastic dimensional stability
- High resistance against the formation of stress cracks
- Extremely high impact strength
- May be over-laminated to secure adapters
- Low shrinkage
- Temperature recommendation: 170 °C (convection oven), 170 °C (infrared oven)

## Order no. (order example)

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

## Order no. (order example)

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

 646F265=D

 646A263=D

## SKINGUARD® Technology – Advantages at a Glance

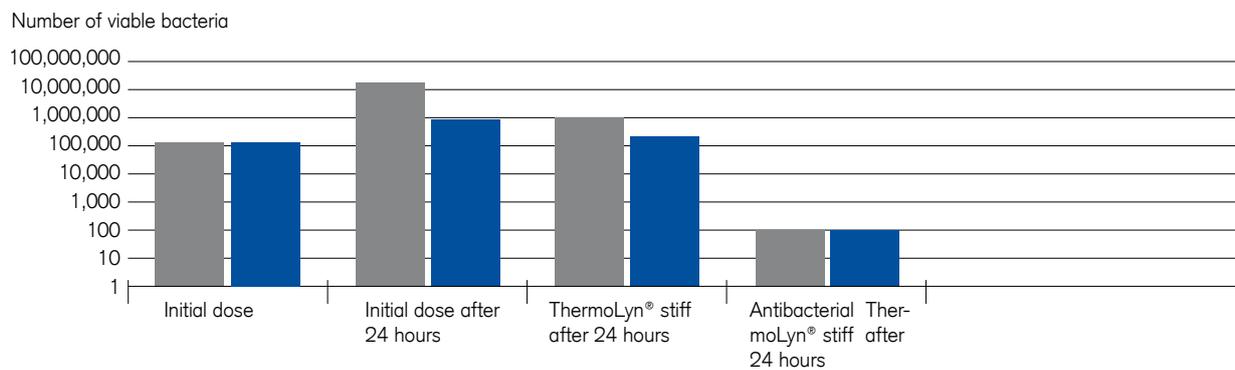
-  High and long-lasting effectiveness of the antibacterial substances
-  Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the JIS Z 2801 standard
-  Efficient reduction of odour formation
-  Extremely 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® stiff caused a reduction of 99.9% in bacteria colonies

of *Staphylococcus aureus* (gram-positive) and *Escherichia coli* (gram-negative).

### Effectiveness of antibacterial ThermoLyn® stiff according to the JIS Z 2801 standard<sup>1</sup>



■ Escherichia coli      ■ Staphylococcus aureus

ThermoLyn® is a registered trademark of Otto Bock.

<sup>1</sup> JIS (Japanese Industrial Standard), Z 2801, March 2008.



# Lower Limb Prosthetics | Inner Prosthetic Socket

## Antibacterial ThermoLyn® soft (EVA, clear)

### Antibacterial ThermoLyn® soft (EVA), clear

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 material include good vacuum-forming characteristics and transparency.

### Advantages at a Glance

- Suitable for the fabrication of flexible inner prosthetic sockets in lower limb prosthetics
- Antibacterial effectiveness
- Clear
- High flexibility
- High surface quality
- Subsequent thermoformability
- Comfortable to wear
- Readily washable
- Temperature recommendation: 150 °C (convection oven), 150 °C (infrared oven)

### Order no. (order example)

Article number	=	Thickness
616T253	=	8

Article number	616T253
Sheet size (length x width)	400 x 400 mm
Thickness	8 mm, 10 mm, 12 mm, 15 mm
Colour	clear

 646F265=D

 646A263=D

### SKINGUARD® Technology – Advantages at a Glance

- + 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
- + 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

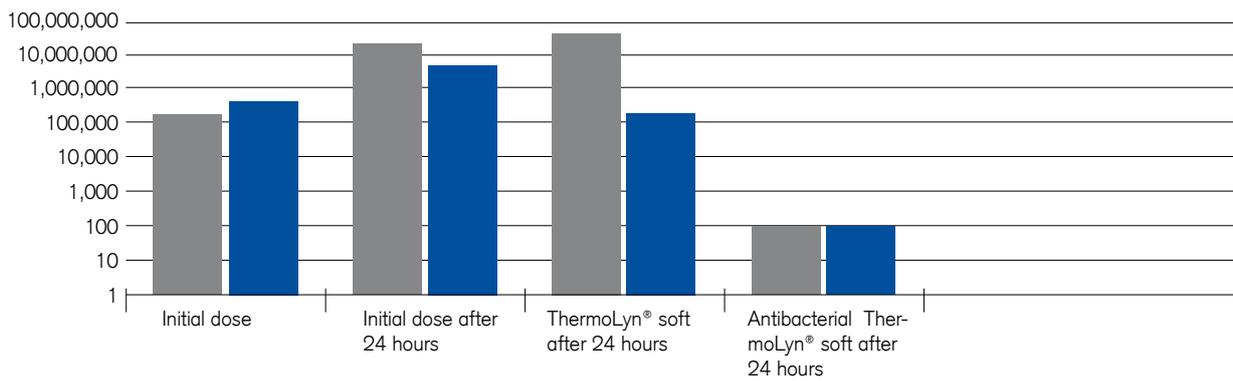


In accordance with the specifications of the JIS Z 2801 standard, an independent laboratory proved that antibacterial ThermoLyn® soft (EVA, clear) causes a reduction of 99.9% in bac-

teria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative).<sup>2</sup>

### Effectiveness of antibacterial ThermoLyn® soft (EVA, clear) according to the JIS Z 2801 standard<sup>3</sup>

Number of viable bacteria



■ Escherichia coli      ■ Staphylococcus aureus

<sup>2</sup> Laboratory in Japan, A.C. Barclay, August 2005.

<sup>3</sup> JIS (Japanese Industrial Standard), Z 2801, March 2008.



# Lower Limb Prosthetics | Inner Prosthetic Socket

ThermoLyn® EVA/LDPE SilverShield®

## ThermoLyn® EVA/LDPE SilverShield®

ThermoLyn® EVA/LDPE SilverShield® 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 the fabrication of inner prosthetic sockets in lower limb prosthetics
- Antibacterial effectiveness
- Very high flexibility
- Very low shrinkage due to pressed thermoplastic material
- Pleasant wearing characteristics and skin comfort
- Temperature recommendation: 150 °C (convection oven), 150 °C (infrared oven)
- Practical recommendation: Place wet plaster cast in the oven. Prior to vacuum forming, coat the model 633F23=1 with silicone grease!

## Order no. (order example)

Article number	=	Thickness
616T200	=	9

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

► Other sheet thicknesses available upon request.

i 646F265=D

i 646A39=D

i 646A263=D

## SKINGUARD® Technology – Advantages at a Glance

- + 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
- + 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

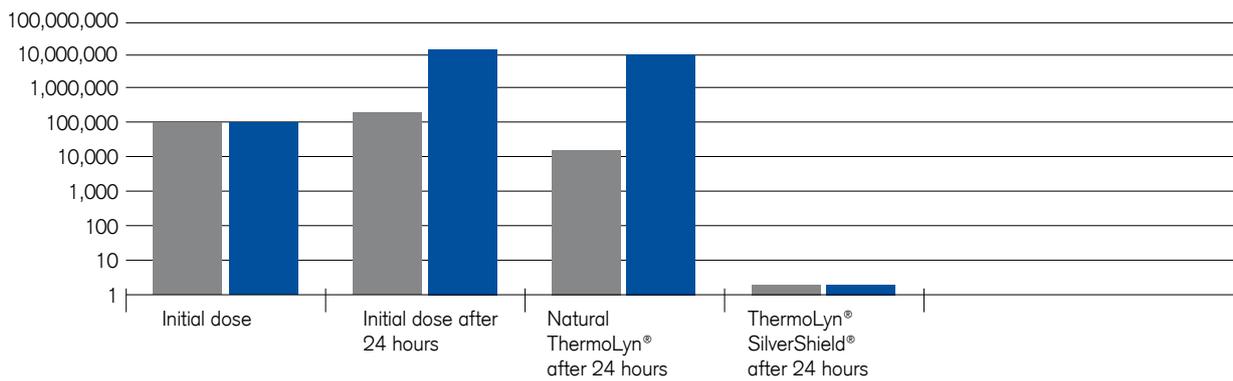


In accordance with the specifications of the JIS Z 2801 standard, an independent laboratory proved that antibacterial ThermoLyn® EVA/LDPE SilverShield® causes a reduction of 99.9%

in bacteria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative).<sup>4</sup>

### Effectiveness of ThermoLyn® EVA/LDPE SilverShield® according to the JIS Z 2801 standard<sup>5</sup>

Number of viable bacteria



■ Staphylococcus aureus    ■ Escherichia coli

SilverShield® is a registered trademark of North Sea Plastics.

<sup>4</sup>Laboratory in Japan, A.C. Barclay, August 2005.

<sup>5</sup>JIS (Japanese Industrial Standard), Z 2801, March 2008.



# Lower/Upper Limb Prosthetics | Inner Prosthetic Socket

## C-Orthocryl® Sanitized®

### C-Orthocryl® Sanitized®

The Sanitized® additive has been integrated into the innovative C-Orthocryl® Sanitized® material. Sanitized® protects the product against a wide range of different microorganisms. Thanks to the ability to attack the membrane of microorganisms, the antimicrobial additive reduces their uptake of nutrients which impairs growth. Membrane damage caused by the antimicrobial additive also results in the leakage of cellular fluid, causing the bacteria to die.

### Advantages at a Glance

- Laminating resin for carbon fibre technology
- Antimicrobial effectiveness
- Casting carbon on carbon, no filter layers are required
- Supports the fabrication of components with a low proportion of resin
- Optimum ratio of matrix to reinforcing materials
- Practical recommendation: Only use 616F4 PVA sheeting and / or the 99B81 PVA bag for foil casting

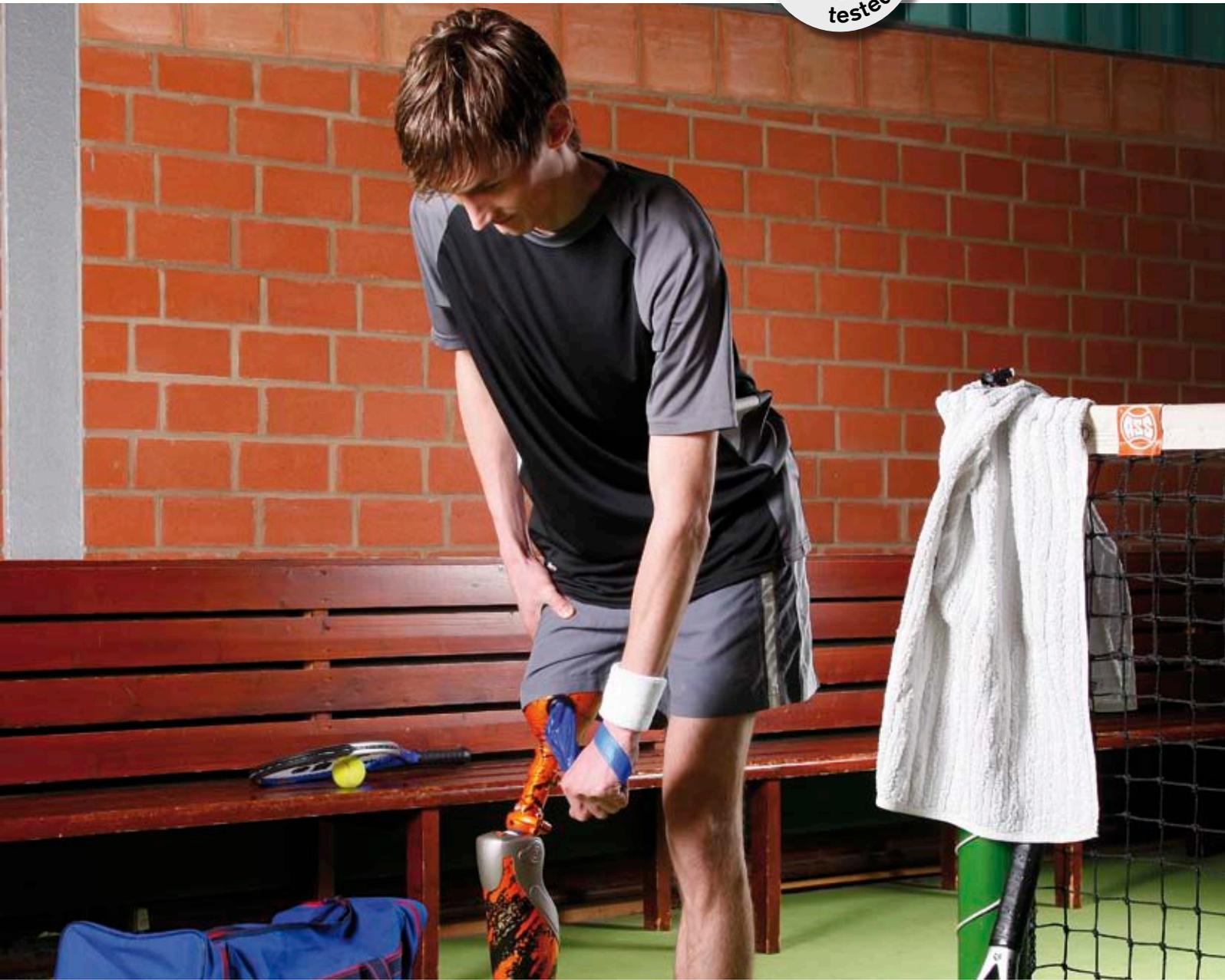
Article number	617H255=0.900	617H255=4.600	617H255=25
Net contents	0.900 kg	4.600 kg	25 kg

646A263=D

Orthocryl® is a registered trademark of Otto Bock.  
Sanitized® is a registered trademark of Sanitized AG.

### SKINGUARD® Technology – Advantages at a Glance

- + High and long-lasting effectiveness of the antimicrobial 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
- + 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®

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 the fabrication of soft inner sockets and as a padding material for prosthetic sockets
- The proven classic material for soft sockets!
- 617S203=10 is suitable for the fabrication of redression helmets
- Antibacterial effectiveness
- PE foam, closed-cell
- Hardness approx. 35° shore A (proven shore hardness for the fabrication of soft sockets)
- Density: Approx. 140 kg/m<sup>3</sup>
- High restoring capacity
- Good thermoformability
- Good bonding characteristics
- Good grinding characteristics
- Washable
- Temperature recommendation: 130 °C (hotplate), 130°C (convection oven)

## Order no. (order example)

Article number	=	Thickness
617S203	=	3

Article 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

 646F295=D

 646A39=D

 646A263=D

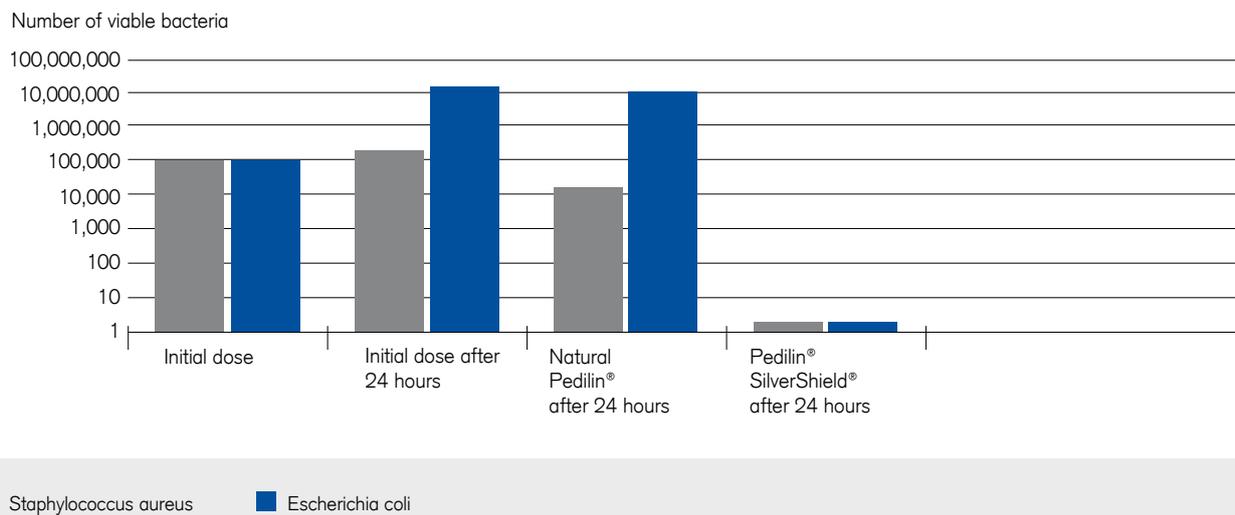
## SKINGUARD® Technology – Advantages at a Glance

-  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
-  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 Pedilin® SilverShield® causes a reduction of 99.9% in bacteria colonies of *Staphylococcus aureus* (gram-positive) and *Escherichia coli* (gram-negative).<sup>6</sup>

### Effectiveness of Pedilin® SilverShield® according to the JIS Z 2801 standard<sup>7</sup>



Pedilin® is a registered trademark of Otto Bock.  
<sup>6</sup>Laboratory in Japan, A.C. Barclay, August 2005.  
<sup>7</sup>JIS (Japanese Industrial Standard), Z 2801, March 2008.



# Upper Limb Prosthetics | Inner Prosthetic Socket

Antibacterial ThermoLyn® soft (EVA), skin colour

## Antibacterial ThermoLyn® soft (EVA, skin colour)

Skin colour antibacterial ThermoLyn® soft is used for the fabrication of flexible arm prosthetic sockets in upper limb prosthetics. It protects the skin and 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 the fabrication of flexible prosthetic sockets in upper limb prosthetics
- Antibacterial effectiveness
- Translucent
- High flexibility in the area of the socket edges
- High surface quality
- Subsequent thermoformability
- Comfortable to wear
- Readily washable
- Temperature recommendation: 150 °C (convection oven), 150 °C (infrared oven)
- Practical recommendation: We recommend the use of the 503F3 Socket Screw with Allen Head in combination with the 29C3 or 29C5 setting Nut.

## Order no. (order example)

Article number	=	Thickness
616T269	=	6

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

## SKINGUARD® Technology – Advantages at a Glance

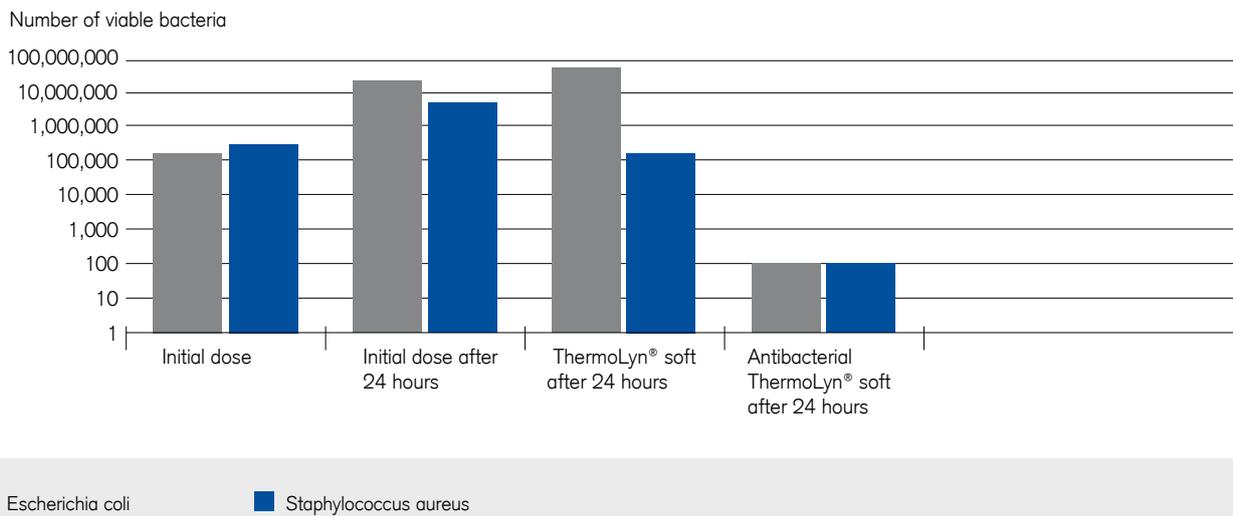
- + High and long-lasting effectiveness of the antibacterial substances
- + Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the JIS Z 2801 standard
- + Efficient reduction of odour formation
- + Extremely 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® soft (EVA, skin colour) causes a reduction of 99.9%

in bacteria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative).<sup>8</sup>

### Effectiveness of antibacterial ThermoLyn® soft (EVA, skin colour) according to the JIS Z 2801 standard<sup>9</sup>



<sup>8</sup>Laboratory in Japan, A.C. Barclay, August 2005.

<sup>9</sup>JIS (Japanese Industrial Standard), Z 2801, March 2008.



# Orthotics | FO, AFO, KAFO, TLSO

ThermoLyn® PP-C SilverShield®

## ThermoLyn® PP-C SilverShield®

Developed especially for orthopaedics technology, ThermoLyn® PP-C SilverShield® combines two characteristics that significantly increase the comfort of the orthosis and therefore the wellbeing of the patient. For one, the favourable characteristics of polypropylene are combined with the toughness of polyethylene through copolymerisation. For another, SilverShield® technology is integrated into the material. The silver ions integrated into the plastic material are effective against a wide range of pathogenic bacteria, thereby creating an antibacterial effect between the material and the skin. A high level of impact strength and good thermoformability of the material are achieved through the copolymerisation of polypropylene and polyethylene, thereby combining the positive characteristics of these two polyolefins. Thermoformable at 185 °C in a convection oven or infrared oven.

## Advantages at a Glance

- Predefined sheet size - direct application
- Versatile in application!
- Antibacterial effectiveness
- Low weight
- Good rigidity
- High impact strength
- Low tendency to white crack
- Good thermoformability
- Good shaping to orthotic joints
- Good welding characteristics
- Low shrinkage
- Can be reinforced with 617R11=PP Thermoprepreg PP
- Easy to dye with Otto Bock thermal papers
- Temperature recommendation: 185 °C (convection oven), 185 °C (infrared oven)

## Order no. (order example)

Article number	=	Thickness		
616T220	=	3.1		
Article number	616T220	616T221	616T222	
Sheet size (length x width)	600 x 400 mm	800 x 400 mm	1220 x 1220 mm	
Thickness	3.1 mm, 4.7 mm	3.1 mm, 4.7 mm	3.1 mm, 4.7 mm	
Colour	natural colour	natural colour	natural colour	
Area of application	AFOs for children	AFOs for adults and older children	Corsets for children and adults	

646F265=D

646A263=D

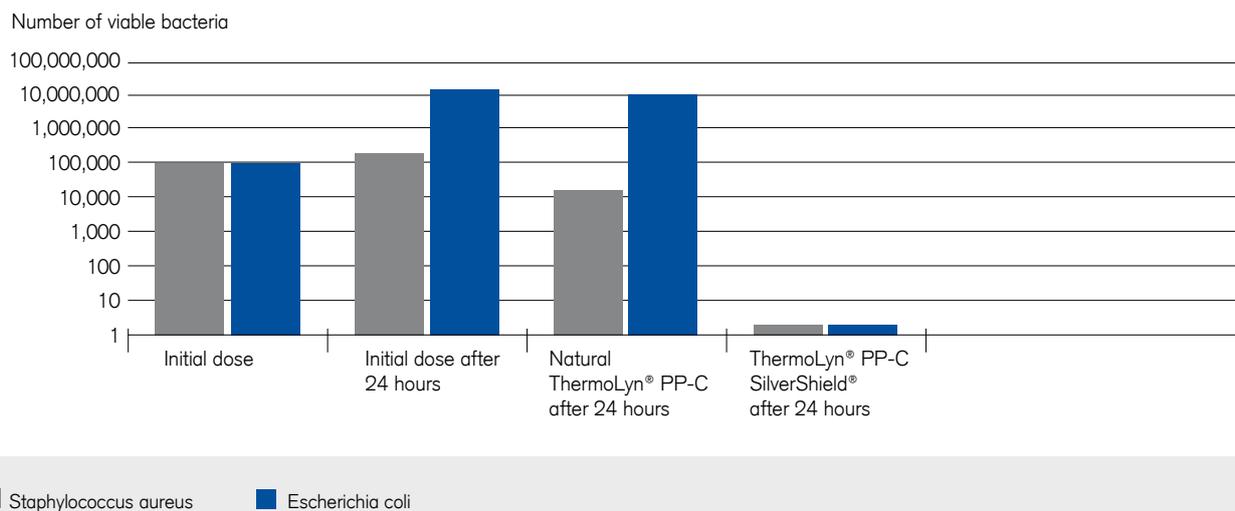
## SKINGUARD® Technology – Advantages at a Glance

- + 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
- + 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® PP-C Silvershield® causes a reduction of 99.9% in bacteria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative).<sup>10</sup>

### Effectiveness of ThermoLyn® PP-C SilverShield® according to the JIS Z 2801 standard<sup>11</sup>



<sup>10</sup> Laboratory in Japan, A.C. Barclay, August 2005.

<sup>11</sup> JIS (Japanese Industrial Standard), Z 2801, March 2008.



# Orthotics | FO, DAFO, AFO, KAFO

## Antibacterial ThermoLyn® PP-H

### Antibacterial ThermoLyn® PP-H

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, DAFOs and Ankle seven. This thermoplastic 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, DAFOs and Ankle seven
- Sheet size of 400 x 400 mm is ideal for the fabrication of prosthetic sockets
- Antibacterial effectiveness
- High stiffness
- High strength
- High thermoplastic dimensional stability
- Reduced impact value
- Can be reinforced with 617R11=PP Thermoprepreg PP
- Easy to dye with Otto Bock thermal papers
- Temperature recommendation: 215 °C (hotplate), 185 °C (convection oven), 185 °C (infrared oven)
- Practical recommendation: The low impact value means great care must be taken during machining in order to avoid brittle fractures (stress concentration).

### Order no. (order example)

Article number	=	Thickness
616T420	=	2
Article 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	

646F265=D

646A263=D

### SKINGUARD® Technology – Advantages at a Glance

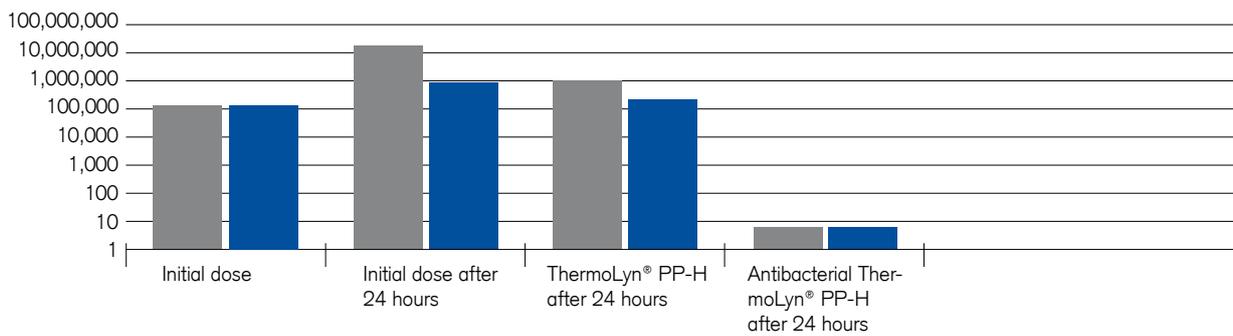
- + High and long-lasting effectiveness of the antibacterial substances
- + Effective against a wide range of pathogenic bacteria such as Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative) as specified by the JIS Z 2801 standard
- + Efficient reduction of odour formation
- + Extremely 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® 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 standard<sup>12</sup>

Number of viable bacteria



■ Escherichia coli

■ Staphylococcus aureus

<sup>12</sup>JIS (Japanese Industrial Standard), Z 2801:2000, July 2009.



# Orthotics | Positioning Orthosis, KAFO, Wrist Hand Orthosis, TLSO

Antibacterial ThermoLyn® PE 200

## Antibacterial ThermoLyn® PE 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 effectiveness
- Hard polyethylene
- Low molecular weight
- Good welding characteristics
- Good grinding characteristics
- Low shrinkage
- May be combined with, for example, 617S7/617S8 Plastazote®
- Can be reinforced using 617R11=PE Thermoprepreg PE
- Easy to dye with Otto Bock thermal papers
- Temperature recommendation: 180 °C (hotplate), 165 °C (convection oven), 165 °C (infrared oven)

## Order no. (order example)

Article number	=	Thickness
616T495	=	2
Article number	<b>616T495</b>	
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	
Colour	natural colour	

 646F265=D

 646A263=D

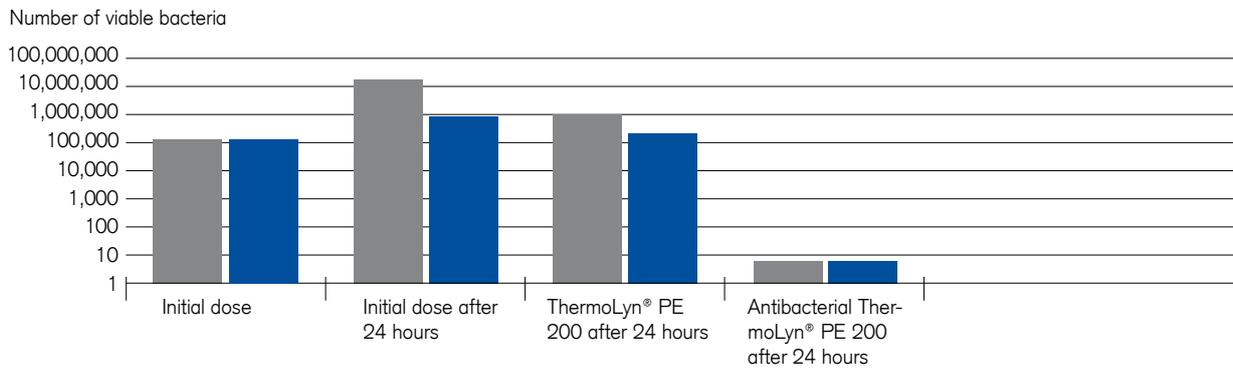
## SKINGUARD® Technology – Advantages at a Glance

-  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
-  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® PE 200 caused a reduction of 99.9% in bacteria colonies of Staphylococcus aureus (gram-positive) and Escherichia coli (gram-negative).

### Effectiveness of antibacterial ThermoLyn® PE 200 according to the JIS Z 2801 standard<sup>13</sup>



■ Escherichia coli      ■ Staphylococcus aureus

<sup>13</sup>JIS (Japanese Industrial Standard), Z 2801:2000, July 2009.



# Features & Benefits



+ High and long-lasting effectiveness of the antibacterial and antimicrobial 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

+ 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 and antimicrobial substances





QUALITY FOR LIFE

## SKINGUARD® Thermoplastics and Lamination Resins

Fax orders to: 05527 848-1414

Customer no.	<input type="text"/>	Order no.	<input type="text"/>	Date	<input type="text"/>
<b>Shipping address</b>			<b>Billing address</b> (if different from shipping address)		
Company	<input type="text"/>	Company	<input type="text"/>		
Address	<input type="text"/>		Address	<input type="text"/>	
Postal code/city	<input type="text"/>	<input type="text"/>	Postal code/city	<input type="text"/>	<input type="text"/>
Telephone	<input type="text"/>		Telephone	<input type="text"/>	

Description	Order no.	Colour	Order Quantity
Antibacterial ThermoLyn® stiff	616T252=8	clear	
	616T252=10	clear	
	616T252=12	clear	
	616T252=15	clear	
	616T252=600x600x12	Clear	
	616T252=600x600x15	clear	
Antibacterial ThermoLyn® soft (EVA), skin colour	616T269=6	skin colour	
	616T269=8	skin colour	
	616T269=10	skin colour	
	616T269=12	skin colour	
Antibacterial ThermoLyn® soft (EVA), clear	616T253=8	clear	
	616T253=10	clear	
	616T253=12	clear	
	616T253=15	clear	

Comments	Company stamp / signature
<input type="text"/>	<input type="text"/>



QUALITY FOR LIFE

## SKINGUARD® Thermoplastics and Lamination Resins

Fax orders to: 05527 848-1414

Customer no.	<input type="text"/>	Order no.	<input type="text"/>	Date	<input type="text"/>
<b>Shipping address</b>			<b>Billing address</b> (if different from shipping address)		
Company	<input type="text"/>	Company	<input type="text"/>		
Address	<input type="text"/>		Address	<input type="text"/>	
Postal code/city	<input type="text"/>	<input type="text"/>	Postal code/city	<input type="text"/>	<input type="text"/>
Telephone	<input type="text"/>		Telephone	<input type="text"/>	

Description	Order no.	Colour	Order Quantity
<b>Pedilin® SilverShield®</b>	617S203=3	skin colour	
	617S203=4	skin colour	
	617S203=5	skin colour	
	617S203=6	skin colour	
	617S203=10	skin colour	
	617S206=3	white	
	617S206=4	white	
	617S206=5	white	
	617S206=6	white	
<b>ThermoLyn® EVA/LDPE SilverShield®</b>	616T200=9	natural colour	
	616T200=12	natural colour	
	616T200=16	natural colour	
<b>ThermoLyn® PP-C SilverShield®</b>	616T220=3.1	natural colour	
	616T220=4.7	natural colour	
	616T221=3.1	natural colour	
	616T221=4.7	natural colour	
	616T222=3.1	natural colour	
	616T222=4.7	natural colour	

<b>Comments</b>	<b>Company stamp / signature</b>
<input type="text"/>	<input type="text"/>



QUALITY FOR LIFE

## SKINGUARD® Thermoplastics and Lamination Resins

Fax orders to: 05527 848-1414

Customer no.	<input type="text"/>	Order no.	<input type="text"/>	Date	<input type="text"/>
<b>Shipping address</b>			<b>Billing address</b> (if different from shipping address)		
Company	<input type="text"/>	Company	<input type="text"/>		
Address	<input type="text"/>		Address	<input type="text"/>	
Postal code/city	<input type="text"/>	<input type="text"/>	Postal code/city	<input type="text"/>	<input type="text"/>
Telephone	<input type="text"/>		Telephone	<input type="text"/>	

Description	Order no.	Colour	Order Quantity
Antibacterial ThermoLyn® PP-H	616T495=2	natural colour	
	616T495=3	natural colour	
	616T495=4	natural colour	
	616T495=5	natural colour	
	616T495=6	natural colour	
	616T495=8	natural colour	
	616T495=10	natural colour	
	616T495=12	natural colour	
Antibacterial ThermoLyn® PE 200	616T420=2	natural colour	
	616T420=3	natural colour	
	616T420=4	natural colour	
	616T420=5	natural colour	
	616T420=6	natural colour	
	616T420=8	natural colour	
	616T420=10	natural colour	
	616T420=12	natural colour	
	616T420=15	natural colour	

Description	Order no.	Net contents	Order Quantity
C-Orthocryl® Sanitized®	617H255=0.900	0.900 kg	
	617H255=4.600	4.600 kg	
	617H255=25	25 kg	

Comments	Company stamp / signature
<input type="text"/>	<input type="text"/>



Technical changes reserved.

*Otto Bock*<sup>®</sup>

**QUALITY FOR LIFE**

**Otto Bock HealthCare GmbH**

Max-Näder-Straße 15 · 37115 Duderstadt/Germany · Phone +49 5527 848-0 · Fax +49 5527 72330 · [export@ottobock.de](mailto:export@ottobock.de) · [www.ottobock.com](http://www.ottobock.com)

© Otto Bock - 646D119-GB-02-1004