

oerlikon
balzers

BALIMED

Make a healthy choice with the medical
PVD coatings from Oerlikon Balzers



Medical



BALIMED: the Oerlikon Balzers PVD range designed specifically for medical applications

The quality requirements for medical devices are increasing year by year. The functionalisation of surfaces through anti-microbial, highly wear-resistant coatings has become an indispensable component of modern medical technology. In addition to uncompromising quality, the medical industry also demands compliance with biocompatibility regulations.

The innovative BALIMED PVD coatings from Oerlikon Balzers are especially developed for medical applications. Oerlikon Balzers has the knowledge and experience to develop application specific solutions for the medical industry:

- A global leader in advanced surface technology
- Global network of more than 100 certified coating centres
- Worldwide unique coating services, e.g. for medical components, devices and tools
- More than 20 years of knowledge and expertise in medical applications
- Experience in working in the highly regulated medical industry

Innovative coatings deliver noticeable advantages

How can the high incidence of nosocomial infections be reduced? What makes the fight against MRSA more successful especially in conjunction with orthopaedic and medical devices? Oerlikon Balzers knows how to handle these and

other challenges with their BALIMED medical coatings. The functional colours of BALIMED coatings incorporate vital properties:

Optimised performance

Anti-glare properties



Black coatings help surgeons work faster and with greater comfort

Coated instruments



Retention of sharp cutting edges, scratch resistance and prevention of scuffing

Reduced friction



Eliminates or reduces the need for lubrication

Proven biocompatibility of medical coatings



Protects patients against damages or impairments

Resistance to repeated autoclave cycles



Advanced coating adhesion through repeated thermal cycling

Corrosion resistance



Protection against cleaning liquids and sterilisation

**BALIMED Coatings:
Higher cost-efficiency and higher quality of patient's life**

BALIMED provides excellent coating properties

BALIMED™	Coating material	Hardness (HV 0.05)	Coating colour
A	TiN	2,500	Gold 
ALTINA	AlTiN	3,300	Black 
ANTHRACITE SATIN	AlTiN	2,000	Black/Anthracite 
ARGENTA	TiNAg	2,500	Gold 
C	a-C:H:W (WC/C)	1,000 – 1,200	Grey 
CNI	CrN	1,750	Silver 
DLC	a-C:H	2,000 – 2,500	Black 
DLC DEEP BLACK	a-C:H	1,000 – 1,500	Black 
DLC STAR	CrN / a-C:H	2,000 – 2,500	Black 
FUTURA	TiAlN	3,300	Bronze 
TICANA	TiCN	3,500	Rose 
ZIRCONA	ZrN	2,000 – 2,500	Pale gold 

All given data are approximate values, they depend on application, environment and test condition.

More than 20 years of knowledge and expertise

Our experience and knowledge in the development of medical application-specific solutions in the medical industry is based on many years of cooperation with medical experts and universities/university clinics. Oerlikon Balzers' PVD coating solutions improve patient outcomes and add economic value to healthcare products. Through consistent procedures we are therefore able to transfer these solutions globally.

All our coating centres hold the ISO 9001 certification. Our coating centers in Antzuola/Spain, Balzers/Liechtenstein, Brügg/Switzerland, Cluses/France, Elgin/USA, Halmstad/Sweden, and Milton Keynes/UK specialize in coating medical products and are specifically certified for ISO 13485. All our BALIMED coatings meet the highest industry standards and hold the following specific medical certificates:

Cytotoxicity

MEM Elution, 72 hours (according to USFDA 21 CFR Part 58)

Sensitisation

Maximisation, Magnusson-Kigman Method (according to ISO 10993)

Irritation

Intracutaneous Reactivity (according to ISO 10993)

Applications of BALIMED Coatings

Medical instruments with BALIMED coatings contribute to making a patient's life better

Sharp cutting edges on medical instruments make wounds heal faster while antimicrobial properties reduce infections and avoid revision surgery. Anti-glare properties help surgeons work faster and more easily. Take a look at BALIMED medical application possibilities:

Dental instruments

The gears of high-speed dental drills operate with no oil.



Micropituitary rongeurs

Bone punches with wear resistant cutting edges and black DLC antiglare coating.



Bone repositioning instruments

Wear protection combined with anti-glare properties.



Bone drills and reamers

Wear-resistant ceramic coatings provide long-term cutting edge sharpness.



Dental screws

Improved screw adjustability. Reduction of torque during the assembly of the screws combined with a higher holding force.



Minimally invasive keyhole operations

The Knotless Fixation System – recipient of the Frost & Sullivan Product Innovation award – uses BALIMED ALTINA to indicate the depth of insertion.



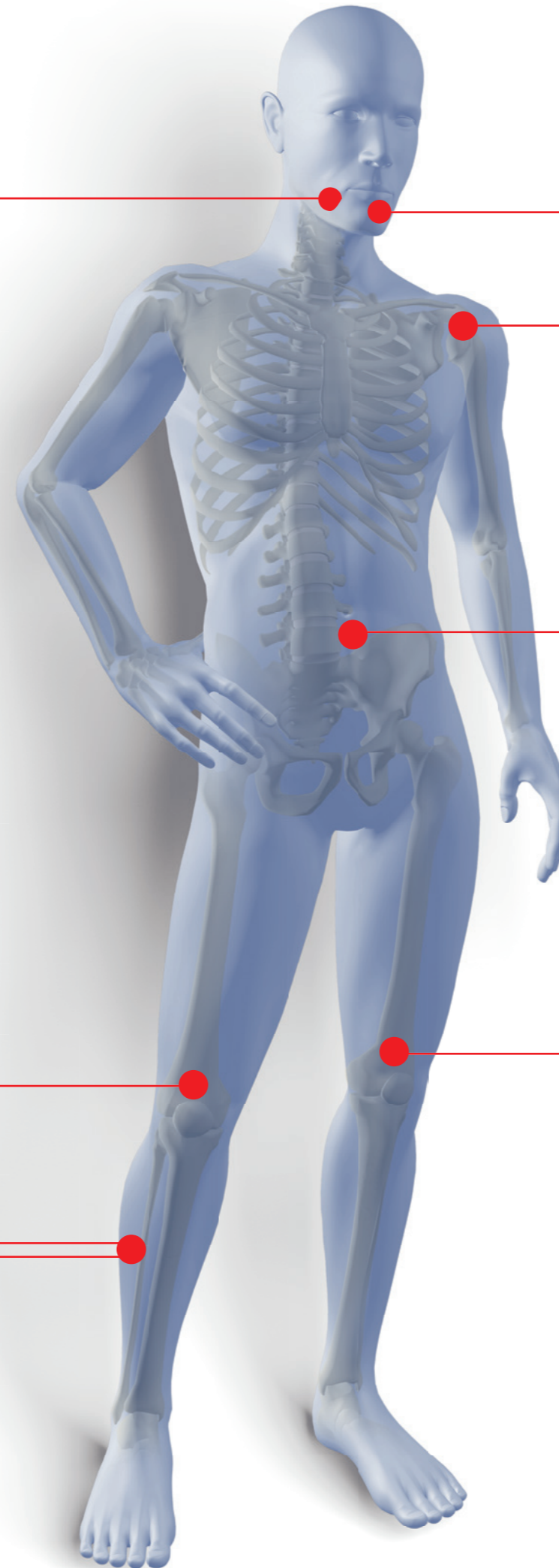
Surgical instruments

Scratch and wear resistance, anti-glare and antimicrobial properties.



Bone saws

Coatings provide oil-free lubrication and high-speed operation at low remaining temperatures.



Applications of BALIMED Coatings

Minimally Invasive Surgical (MIS) Instruments

Minimally invasive surgeries, such as laparoscopy, continue to see growth, driven by improved patient outcomes and reduced healthcare costs. Improvements to MIS instrumentation, as well as the continued expansion of robotic surgical platforms using MIS instrumentation, provide both

opportunities and challenges to medical device manufacturers. As medical OEM's push the boundaries of these new technologies, Oerlikon Balzers is helping to provide coating solutions to some of this industry's most demanding problems.

Benefits of using BALIMED Coatings on MIS Instruments

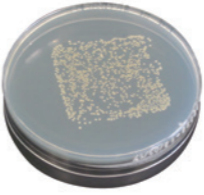

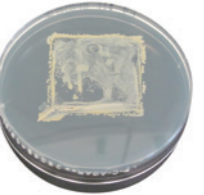
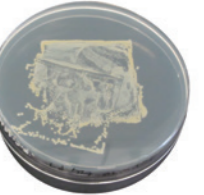
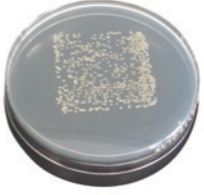

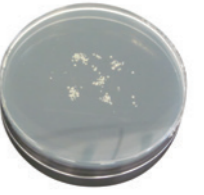
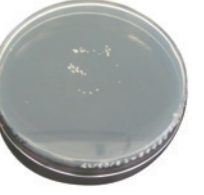
- Improves wear resistance and reduces friction on instrument components (for example: axle pins/shafts & pulleys for "jawed" instruments, such as graspers)
- Improved edge retention on shears and other sharp-edge instruments
- Eliminates the need for lubrication in some devices
- Eliminates "char" from bipolar and monopolar electro-surgical instruments
- Combines insulating and wear resistant properties for electro-surgical instruments
- Improved performance characteristics help OEM's achieve multi-use goals

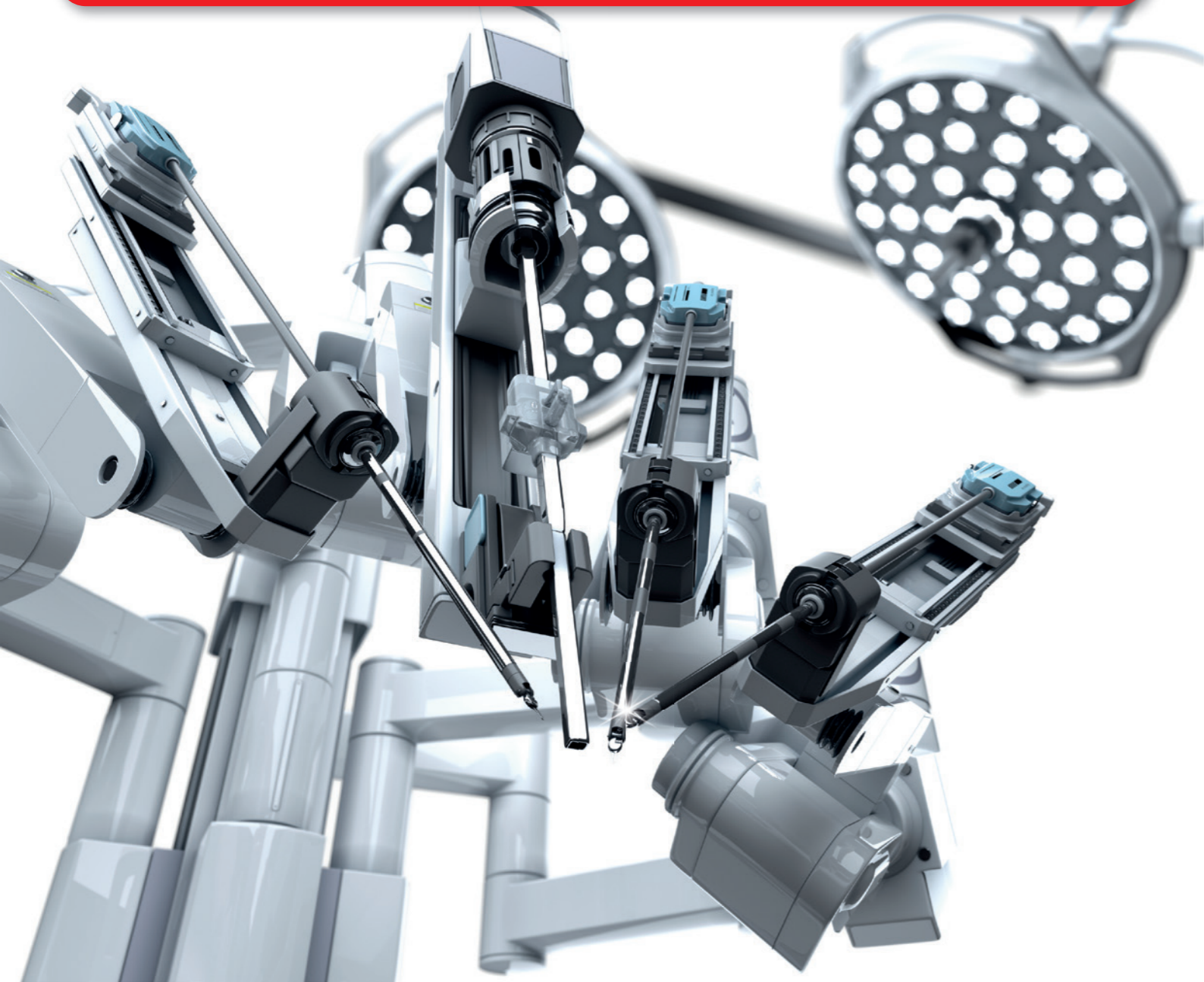
BALIMED ARGENTA: our antimicrobial silver coating

Surgical site infections demand for safe and efficient solutions that reduce bacterial biofilm formations. All invasive surgery devices bypass the body's natural lines of defense and therefore provide easy routes for infection. BALIMED ARGENTA offers unprecedented antimicrobial surface properties for these devices.

The bacterial log reduction test method has shown high antimicrobial efficiency of the new PVD-Ag-doped coatings. The unique properties of BALIMED ARGENTA at a glance:

- High antimicrobial efficacy: Log 3 reduction with SA (staphylococcus aureus) and MRSA strain (methicillinresistant staphylococcus aureus)
- No influence on the antimicrobial activity after autoclave sterilisation
- Log 3 reduction after autoclave cycles (50 times)
- No cytotoxic effect (ISO 10993-5)
- New-generation PVD coatings doped with 2 to 5% silver
- Film thickness of 2 μm
- Antimicrobial activity confirmed by ASTM 2180
- Autoclave stability

Sample	t _{0h}	t _{4h}	t _{18h}	t _{24h}
metal plate 4 x 4 cm blank				
metal plate 4 x 4 cm blank BALIMED ARGENTA Antimicrobial coating				



Close to you – Anywhere in the world



**There's much more to talk about –
please get in touch to discuss what we can do to improve your business**

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