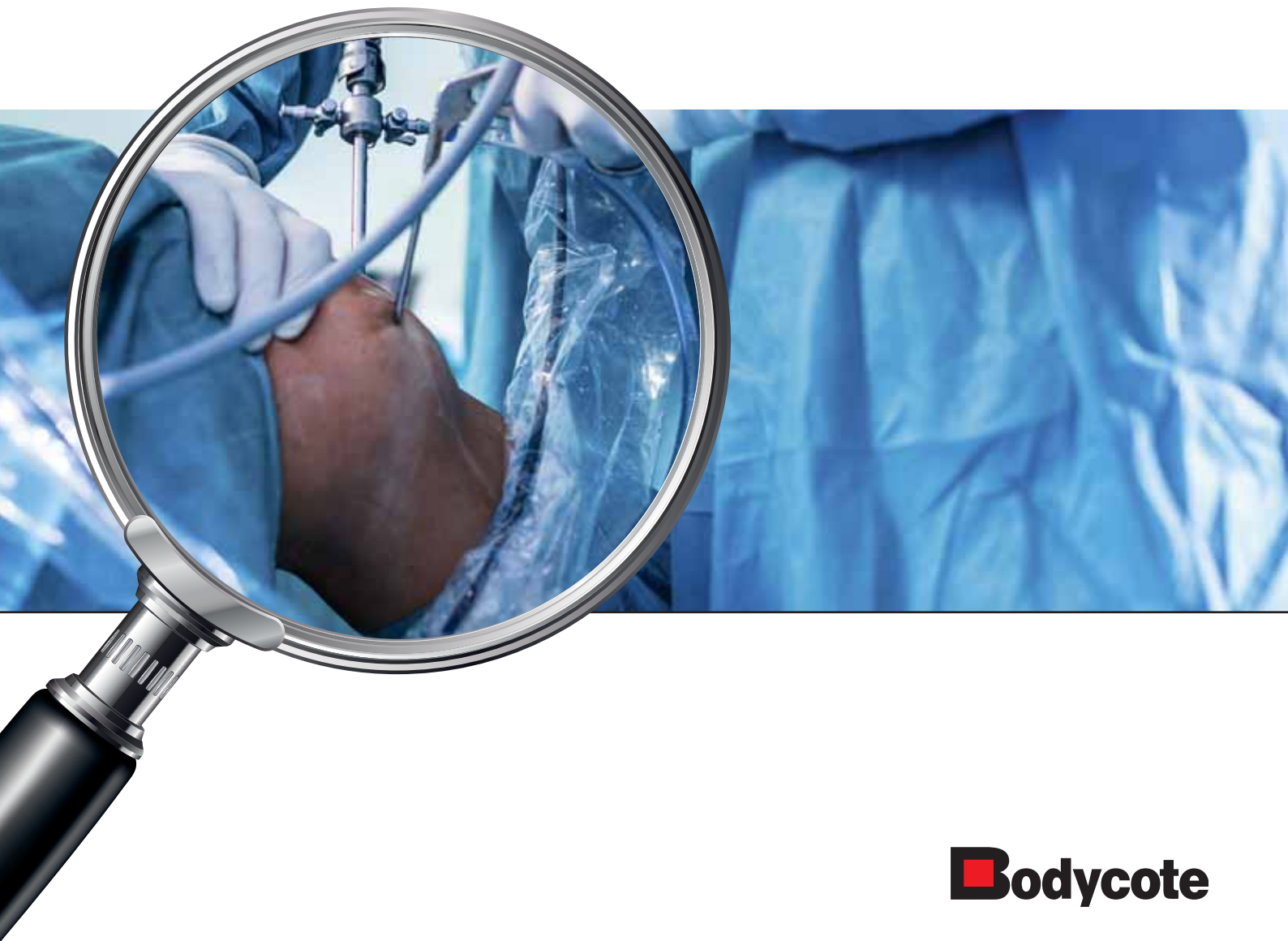


In the
SPOTLIGHT

S³P PROCESSES FOR MEDICAL GRADE MATERIAL

HIGH QUALITY AND DURABILITY
MAINTAIN BIOCOMPATIBILITY
EXTENDED LIFETIME
NO DELAMINATION

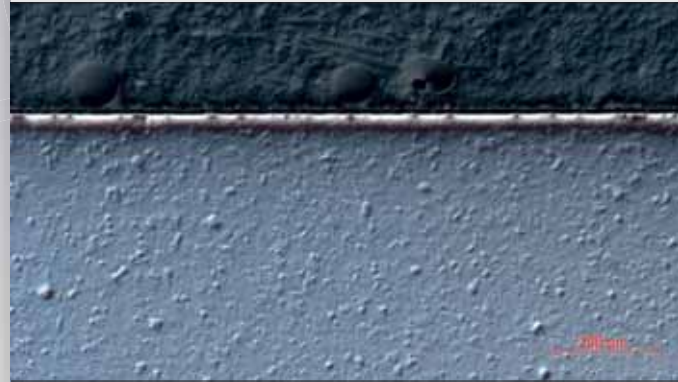


Bodycote

Maximized longevity for medical implants

An engineering challenge in the medical industry is prolonging the lifetime of implants. Cobalt-chromium alloys are a state-of-the-art material and optimal choice to maximise longevity of medical implants for aggressive in-body environments.

S³P processes, featuring Kolsterising®, offer a solution for surface hardening cobalt-chromium alloys to improve mechanical properties and maintain corrosion resistance. S³P processes can help maximise the life of implant components on various grades of cobalt-chromium alloys. The S³P surface treatment involves a low temperature diffusion of carbon into the material. This results in an extremely hard and wear resistant surface that maintains its corrosion resistance. Depending on the material and alloy composition, a surface hardness up to 1300 HV_{0.05} can be achieved to a case depth of 20 µm. Bodycote's S³P treatment is suitable for both wrought and cast materials, and virtually eliminates the risk of delamination and metal debris.



BioDur® CCM Plus® alloy microstructure after Kolsterising®.

Advantages of S³P

- Improves wear resistance
- Ductile diffusion zone
- No cracking or flaking-off of the hardened layer
- No influence on the corrosion resistance
- Surface hardness > 900 HV_{0.05}
- Biocompatibility

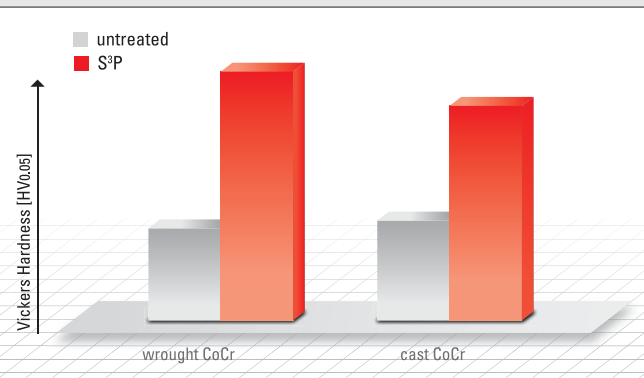
Material selection

All cobalt-chromium alloys with an austenitic structure can be treated by S³P processes. Contact your S³P representative for details on optimal material selection.

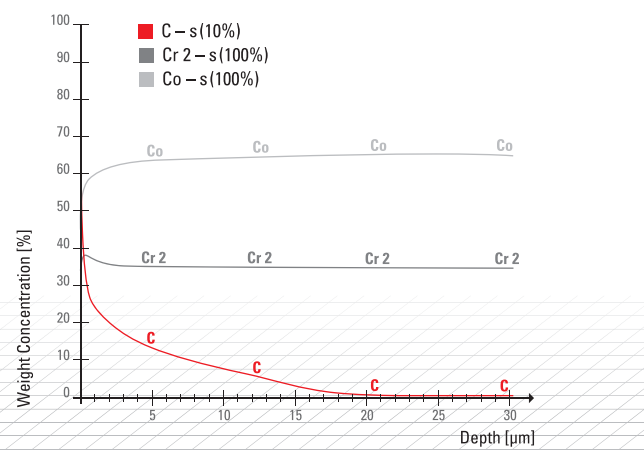
Examples of treatable alloys

- BioDur® CCM Plus® alloy
- Stellite® 21 alloy

For applications in the medical sector, a FDA master file is available for Kolsterising®.



Influence of S³P on the surface hardness. Surface hardness is doubled or even tripled by S³P



Chemical profile of S³P-treated CoCr alloys shows the desirable smooth profile allowing for non-brittle behaviour