

# In the SPOTLIGHT:

## UNIFORMITY AND REPRODUCIBILITY

S<sup>3</sup>P treatments are low-temperature diffusion processes that greatly improve the mechanical properties of corrosion-resistant materials. Due to the low process temperatures, no carbides or nitrides are formed, which, in contrast to standard procedures, maintains corrosion resistance. As a reproducible and reliable solution, millions of S<sup>3</sup>P treated components are used across a broad range, from the automotive sector to the offshore industry to medical technology.



In all industries, high demands for process safety coupled with reproducible results play an important role. Apart from technical reasons concerning component design, high standards are applied particularly in safety-critical applications related to component certification. In this case, all steps must comply with the relevant standards, and often with corporate policies too.

With its decades of experience in surface hardening of corrosion-resistant materials, Bodycote S<sup>3</sup>P is a reliable partner when quality matters. Working within a quality management system certified to ISO 9001 and full control of internal processes, the results of the thermo-chemical hardening process are reproducible with high precision. Furthermore, all of our plants are certified to ISO 14001 for their environmental management.

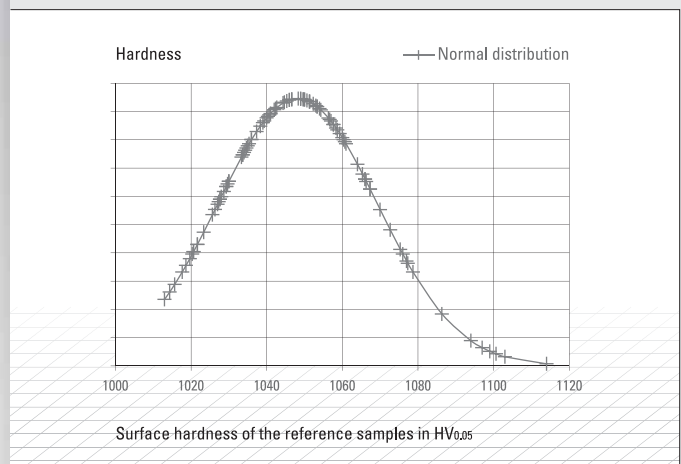
Bodycote S<sup>3</sup>P quality procedures certify the reproducibility on a batch-to-batch basis but also the uniformity within the treatable volume. In addition to examining internal quality control samples with defined chemical composition and microstructure, customer components, if required, may also be analyzed for quality assurance.

## Advantages

- Homogenous and reproducible diffusion zone
- High surface hardness > 1000 HV<sub>0.05</sub>
- Eliminates fretting and galling
- Maintain corrosion resistance
- Increase fatigue resistance
- Diffusion based process, no delamination possible
- Improve wear resistance

	Min.	Max.	Ø	σ
Surface hardness HV <sub>0.05</sub>	1019	1051	1034	9,60
Diffusion depth in µm	31.7	33.8	32.8	0.69

*Example of the uniformity of treatment: S<sup>3</sup>P K22; Material: 1.4404; reference samples; solution-annealed; treatment unit: 02*



*Surface hardness of the reference samples for the K22 process during the 2012 calendar year; Treatment unit: 12; the minimum surface hardness of 1000 HV<sub>0.05</sub> was reached safely in all treatments.*

