

buser

Thermally sprayed coatings by Buser

for highest demands and quality standards



Thermally sprayed surfaces with metal, carbide and ceramics – quality coat for coat

Finished surfaces protect against wear, increase corrosion resistance, insulate heat or electric current, and improve aesthetics. Requirements for surfaces are not only diverse, but are also increasingly demanding from one application to the next. So, it is good to know who guarantees the properties and quality you need.

Buser guarantees: Surfaces that make all the difference

Demand is increasing. Qualities frequently required are wear and corrosion protection, electrical insulation, high hardness, and even food compatibility. A decorative appearance may also be necessary or desirable – as its own requirement or in combination with other properties. Often, it is difficult or even impossible to create a surface with these properties from the base material of a component. In such cases, an additional functional coating can be applied that meets the requirements.

Buser guarantees: Thermal spraying according to exact requirements

If a surface must have properties equivalent to metals, carbides or ceramics, for example, these properties are best achieved using the thermal spray process to apply the coating. With this process, coatings can be applied either onto a partial area or onto the entire surface of various base materials. There are several coating methods available to modern surface engineering. The correct method must be chosen when coating with metals, carbides and ceramics. We successfully apply the following processes:

- Atmospheric plasma spraying (also for internal bore applications)
- High-velocity oxygen fuel spraying HVOF (with gas and kerosene)
- Powder flame spraying (and melting)
- Wire flame spraying (also for internal bore applications)
- Arc wire spraying



Buser guarantees: Quality coatings with metal

A metallic coating is the optimal solution when high wear resistance, good low-friction properties and erosion resistance are required. Coatings can be produced from virtually all metallic materials (pure metals and alloys) and in different coat thicknesses.

Buser guarantees: Quality coatings with ceramics and hard metals

Many different applications become possible through applying ceramic or carbide spray coatings. Such coatings stand out for their hardness, high electrical insulation characteristics, excellent corrosion resistance, good thermal insulation and high resistance against chemical attacks even at high temperatures.

Buser guarantees: Special coatings for these special applications

There is no challenge that cannot be overcome. One of our specialties is coating calendar rolls. Those are for example used in foil production. As an alternative to chrome, we apply a hard metal coating of tungsten carbide. Once grinded and polished to a high gloss surface, this coating guarantees a significantly longer service life and optimal impact protection in the event of a collision. With our specially developed approach, we can repair any kind of damage on partial surface areas and on site.



REPAIR IS OFTEN LESS EXPENSIVE: A new coating and the subsequent finishing of an existing component can often prevent having to purchase a replacement. Depending on the type of damage, we can also perform repairs on site.

Coat		Target application					Applications	Max. application temperature (°C)	Max. coat thickness (mm)	Hardness (HV 0.3)	Notes
		Corrosion protection	Wear protection	Sliding/friction coating	Thermal requirements	Electrical requirements					
Ceramics B51											
Al ₂ O ₃		☺	☺		☺	☺	Wear-resistant ceramics with good electrical insulation, dielectric strength approx. 20 kV/mm	1000	0,8	1000–1200 ~ 62–66 HRC	Bondcoat required, surface quality up to Ra 0.05 µm
Al ₂ O ₃ -TiO ₂		☺	☺	☺		☺	Rubbing and sliding wear	550–1000	0,8	1000–1200 ~ 62–66 HRC	ditto
Cr ₂ O ₃		☺	☺	☺			Rubbing and sliding wear in corrosive media, engravable	600	0,8	1200–1400 ~ 68–70 HRC	ditto
TiO ₂		☺		☺		☺	Low electrical conductivity, no electrostatic charging	540	0,8	550–700	Fine surface possible, nonstick properties
ZrO ₂ -Y ₃ O ₂		☺	☺		☺		Heat insulation layer, protective layer for molten metals, thermal conductivity approx. 0.5–2.5 W/mK	Limited by base material	0,8	750–850	Bondcoat required
Hard metals B52											
WC-Co / WC-Ni		☺	☺				Abrasion, erosion (dry), high compressive strength, impact and hammer stress	500	0,1–0,8	1000–1200 ~ 62–66 HRC	Processing with diamond tools only, surface qualities up to Ra 0.05 µm
WC-CoCr		☺	☺				Extremely wear resistant in aqueous solutions	540	0,1–0,8	1100–1200 ~ 64–66 HRC	ditto
Cr ₃ C ₂ -NiCr		☺	☺	☺	☺		Highly wear resistant at high temperatures and in corrosive media, application range similar to hard chrome	850	0,1–0,8	750–850	ditto
Light alloys/non-ferrous metals B53											
Aluminum		☺			☺	☺	Corrosion protection even in seawater environments, repair for Al components	500	3	40	Rough coatings possible
Copper						☺	For electrical components, repair for Cu components	200	2	60–100	
Molybdenum			☺	☺			Wear resistant with low friction coefficient	350	1,0	700–800	Processing with diamond tools only
Brass/bronze		☺		☺			Bearing journals and shells	230	2,5	80–200	
Alloys B54											
Alloyed steel		☺	☺				Buildup with similar material	600	2	250–500	
NiAl, NiCr		☺	☺				Corrosion-resistant buildup material	800	0,8	160–350	
MCrAlY M = Fe, Co, Ni		☺			☺		High-temperature oxidation protection	900	0,8	250–350	
Ni basis		☺	☺				Buildup with similar material, corrosion-resistant	800	0,8	250–350	
Self-flowing materials B55											
Ni basis with hard phases		☺	☺	☺			Abrasion, erosion, corrosion resistant	540–800	2	400–900 ~ 35–60 HRC	Thermal compacting possible

Post-processing of sprayed coatings requires a lot of expertise. We can work with components up to 10 metres in length.

Hard metal coatings (HVOF)

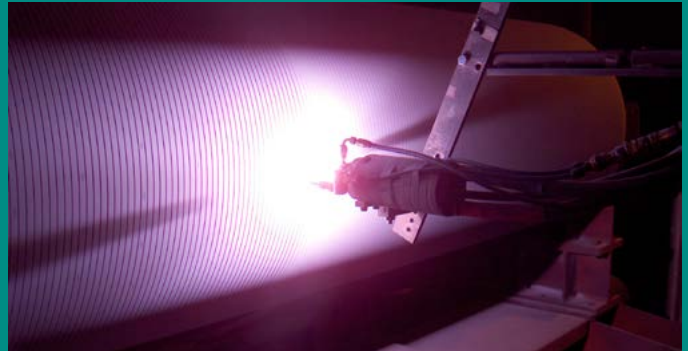
The densest coatings for the highest demands are created by High Velocity Oxy-Fuel Flame Spraying (HVOF). The coating materials are applied with a speed of up to 2000 m/s at approx. 3000 °C. Even so, the substrate temperature remains below 150 °C.

Special features/advantages

- High gloss surface by superfinishing
- Extreme hardness and highest wear resistance
- Close to solid body
- Mechanical strength due to residual compressive stress
- Individual design through choice of matrix and carbides

Application range

- Application on steel, light alloys, ceramics and compound materials



Kerosene HVOF by K2 system

Our kerosene-fueled HVOF system is an economical method of producing homogeneous hard metal coatings with minimum porosity. These are essential properties for extreme wear protection and for applications in seawater and other liquids. These coatings can be adapted to each specific application, including by hot grinding. We will be happy to advise you on the solution that best meets your individual needs.

Special features/advantages

- Better abrasion resistance than hard chrome plating
- Surface quality for highest demands
- Coating thickness in mm range possible
- Hardness adjustable from 800-1400 HV to suit application profile
- Application temperatures up to 850 °C

Application range

- Erosion protection for temperatures up to 850 °C (e.g. maritime diesel engines)
- Extreme wear protection, e.g. for application rollers or paper calendars
- Coatings close to final contour on complex geometries without reworking (e.g. corrugated rollers)
- High gloss surfaces possible by superfinishing (e.g. for foil manufacture)



Buser quality coatings – know-how and state-of-the-art technologies for the highest demands

Buser Oberflächentechnik AG specialises in the production of surface coatings.

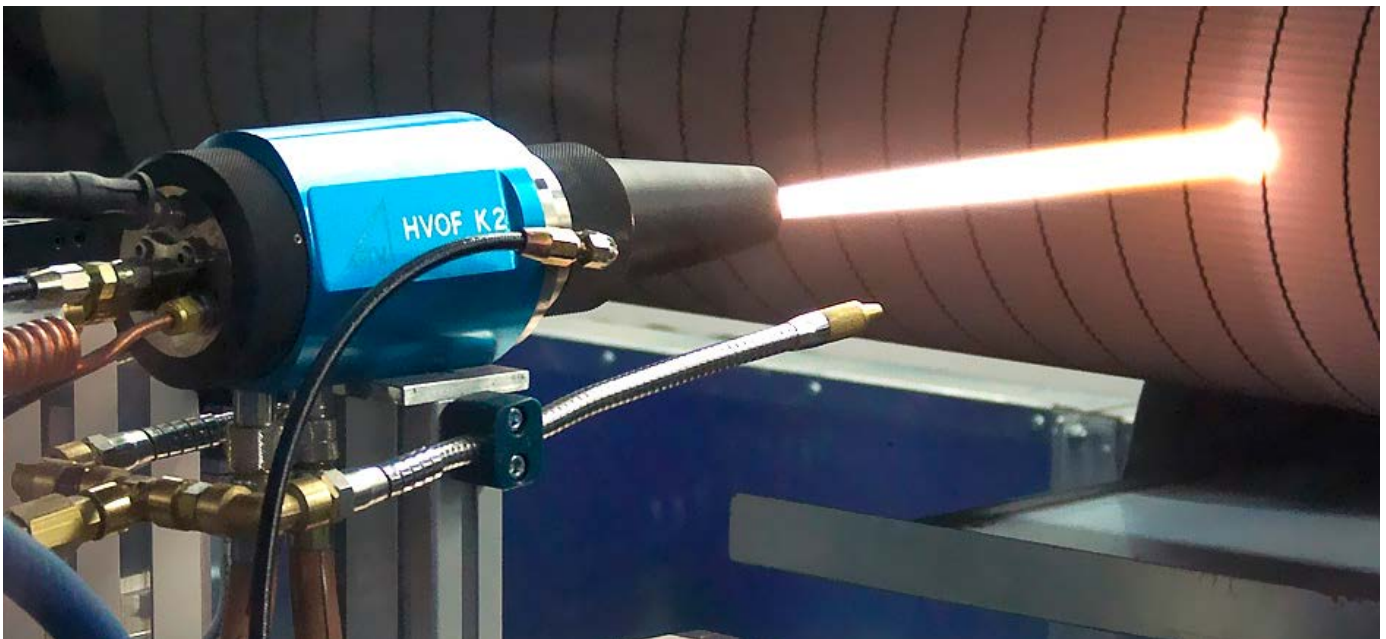
With many years of experience, we offer proven technologies for a wide range of applications in all branches of industry – for single piece, series production and as well as repairs. High-quality industrial parts and even entire assemblies can be custom-produced and/or repaired cost-effectively with our coatings. We have a very extensive range of coating materials in wire and powder form to select from specifically for each application. We coat series parts weighing from a few grams to 15 metric tons and anywhere up to 10 metres in length. Please contact us about larger parts.

Coated parts perform excellently under the toughest

operating conditions, withstanding wear and corrosion, and offering thermal and electrical insulation. Our highly sought-after and comprehensive services include:

- Competent and comprehensive consulting
- Manufacture of workpieces
- Preparation of workpieces to be coated
- Coatings to meet specified requirements profiles
- On-site coating
- Quality control with reports
- Packaging and worldwide shipping

Our quality work is supported by ISO 9001 and GTS certifications.



**STATE-OF-THE-ART PLANT AND CONTROL TECHNOLOGY:
Innovations and investments are a must for achieving superior quality coatings.**