



SURFACE TREATMENT ENGINEERING FOR INDUSTRY

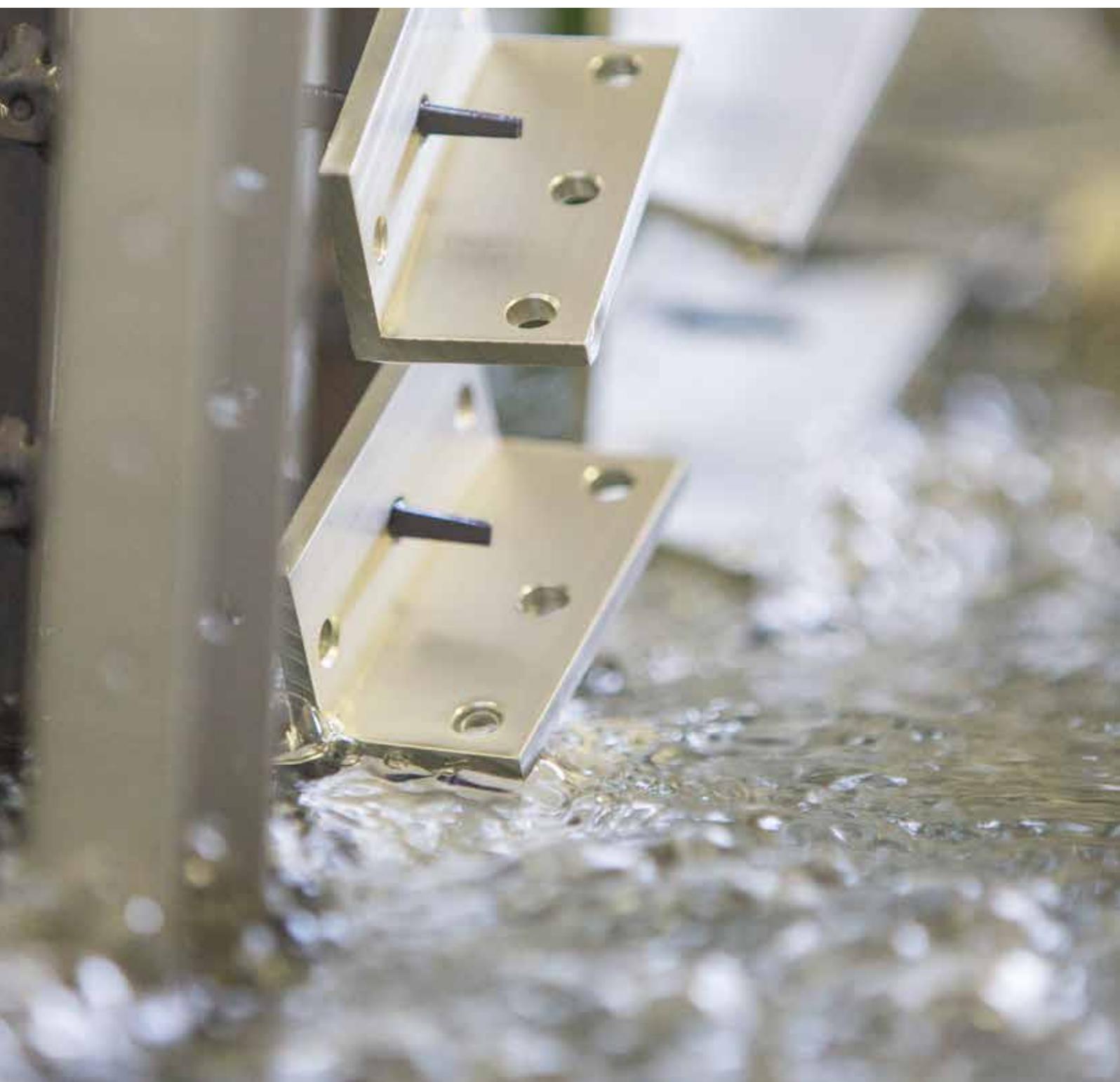
Machining and finishing of aluminium



SURFACE TECHNOLOGY

FOR INDUSTRY

SURFACE CONVERSION PROCEDURES



BWB carries out a very wide range of surface finishing procedures for industrial components in order to satisfy a variety of requirements regarding function, aesthetics and corrosion protection – in the automotive industry, for aerospace, medical technology and the consumer goods sector.



Aluminium anodising

Anodising is an electrochemical process: the surface of the aluminium structural component is converted into aluminium oxide. This oxide layer is solidly attached to the substrate, and an accurate topographical copy of the original structure is created.

The multitude of anodising procedures offered by BWB make it possible to produce surfaces with very different properties and layer thicknesses.

- Anodising / electrolytic oxidation (GS)
- Hard anodising / hard electrolytic oxidation (GSX) with and without PTFE coating
- Chromic acid anodising (CAA)
- Tartaric sulphuric anodising (TSA)
- Ematal anodising / Hard ematal anodising
- Bilateral anodising
- Colouration (Sanodal)

Aluminium chromating

Chemical conversion coatings (hexavalent chromium or RoHS-compliant) are suitable for use as bonding agents for additional coatings and adherent surfaces, or as minimum protection against corrosion in dry conditions. Depending on the process, the coatings are yellowish or transparent.

- Chromating (hexavalent chromium)
- Chromating (trivalent chromium or chromium-free / RoHS-compliant)



PRE-TREATMENTS AND POST-TREATMENTS

FOR ANODISING - ALL FROM A SINGLE SOURCE

A clean surface on the work piece is a precondition for an even and stable surface finish. BWB offers competent advice, for optimal fulfilment of the customer's wishes and ideas.



Mechanical pre-treatments

In order to achieve special effects and for the correction of irregularities in a surface, we recommend mechanical pre-treatment. The surface finish ranges from matt to fully polished, depending on the selected procedure:

- Grinding /grinding-brushing
- Brushing /scotching
- Polishing
- Glass bead blasting
- Vibratory grinding /rotofinishing

Chemical pre-treatments

Contamination or residues of processing oils must be removed in a chemical pre-treatment. In addition, a chemical pre-treatment enables an even matt or polished surface finish. To this end, the BWB Group offers the following pre-treatment procedures:

- Degreasing
- Etching /matt etching
- Chemical polishing
- Electrolytic polishing

Sealing

With electrochemically produced oxide layers, the pores of the oxide layer are closed in a subsequent operation. The well-sealed oxide layer is enormously important for a top-quality surface on the work piece (Haptics/corrosion resistance)

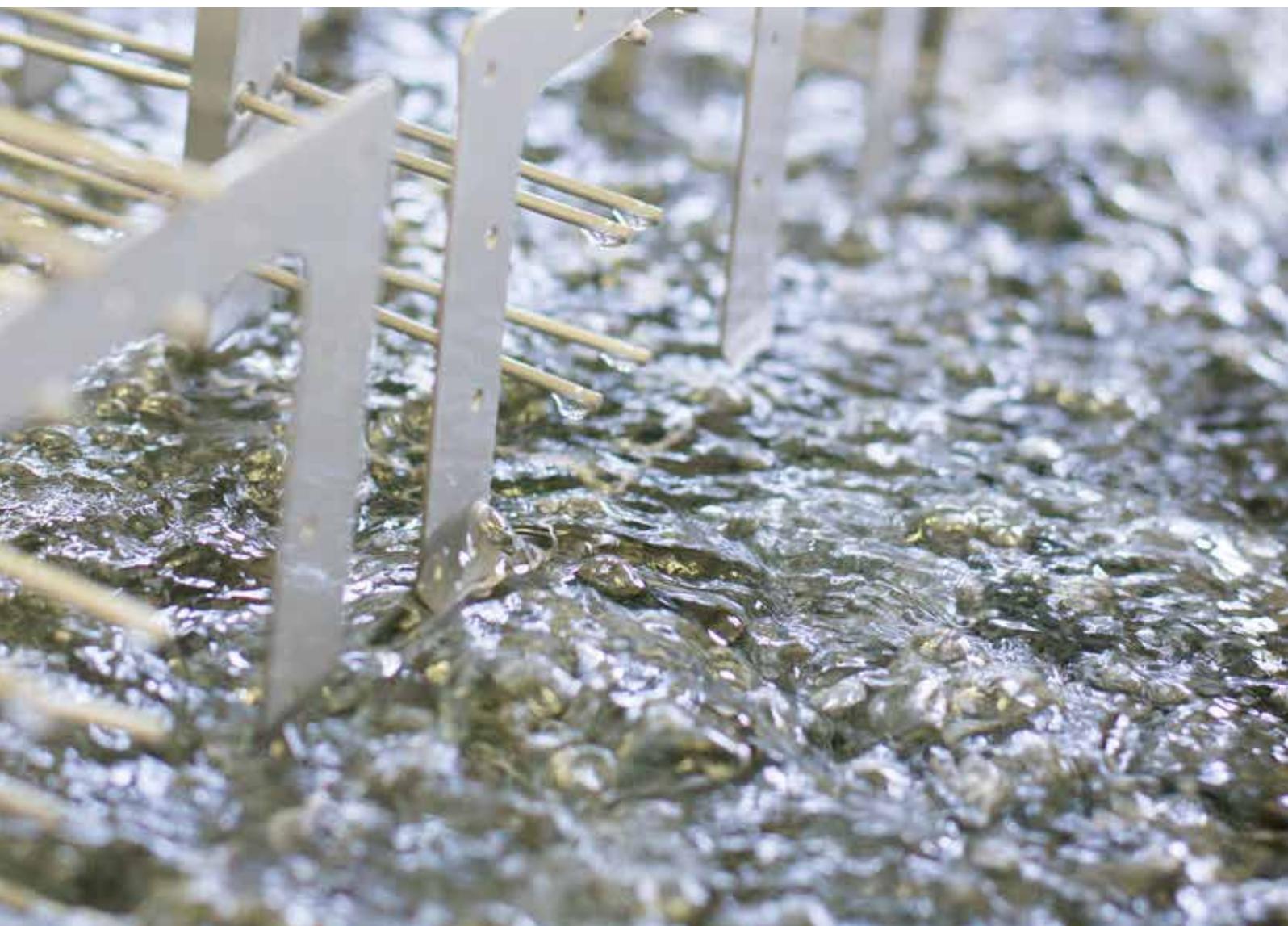
- Sealing (hot water sealing)
- Sodium dichromate/nickel acetate sealing

Selective anodising

If a certain surface of the component is not to be treated, it will be masked before the finishing process according to the preference of the client. In some cases selective anodising may also be necessary to ensure a flawless finish. Selective anodising is achieved with appropriate techniques such as lacquer or mechanical masks.



THE ADVANTAGES OF ANODISING



The BWB anodising procedures (electrolytic oxidation) combine the advantages of the electrochemically produced aluminium oxide layer with the technical properties of aluminium applications in industry.



Corrosion resistance

Anodising produces a resilient and corrosion-resistant protective layer. This enables value to be retained over decades.

Coating characteristics

Coating characteristics are developed for a very wide range of application areas by means of special procedures or procedural parameters.

- Hardness
- Electrical insulation
- Thermal insulation
- Dimensional accuracy
- Sliding characteristic
- Wear resistance
- Corrosion resistance
- Gloss level
- Mattness
- Chemical resistance
- Abrasion resistance

Investment in the future

The mechanical strength of anodised aluminium is very high. Even during slightly abrasive cleaning of the anodised aluminium component, the surface is not damaged.

Anodised aluminium components retain their functional properties, decorative appearance and metallic nature for years.

Ecology

Comprehensive evaluation of economic and ecological aspects speaks in favour of the use of anodised aluminium as a material in industry.



YOUR PARTNER
COMPETENT, RELIABLE, EXPERIENCED



As a construction engineer, designer or product manager, your requirements vary with regard to surfaces. Whether for purely functional aspects, aesthetic criteria, or both combined: BWB offers you comprehensive advice on material, colour, machining and structural design.

Material selection and structural design

Selecting and obtaining the right aluminium alloy is a decisive factor for optimal coating characteristics. Bringing BWB experts into the project at an early stage guarantees a more successful implementation of surface finishing. This enables typical peculiarities of the respective procedures to be accounted for in the structural design and integrated into the project in good time.

The bath sizes limit the dimensions of the work pieces to be finished. The BWB sales team will gladly advise you. Special attention is also paid to welded structures.

Treatment procedures

BWB offers various surface finishing procedures. We analyse your requirements with regard to the components and suggest suitable procedures, as well as appropriate pre-treatments.

Special effects

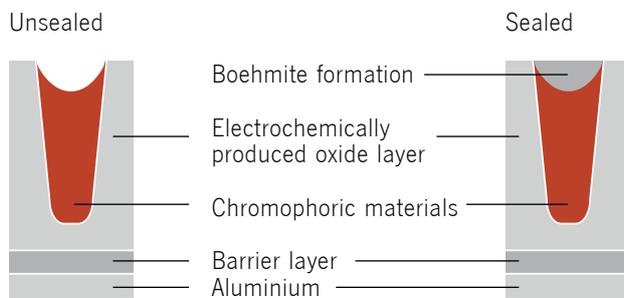
The interplay between mechanical and chemical pre-treatments and the different anodising procedures enables various special effects to be achieved. The BWB advisors are happy to help you.

Sampling

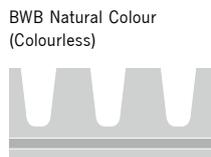
The colour chart on the next page can be used for initial colour selection. For specific component sampling, it is advisable to define not only the mechanical and chemical pre-treatment, but also the anodising and colouration with the designated original aluminium alloy.

We advise you on our procedural options, the colour palette and the characteristics of surface treatment engineering.

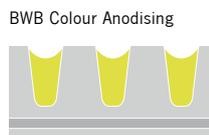
The procedural principle (schematic)



Natural-colour anodising is a precondition for colouration. The colouration takes place in additional procedural steps.



- Layer thicknesses 10, 15, 20, 25 µm
- Maximum durability, environmentally friendly procedure



- Adsorptive colouration procedure
- Layer thicknesses 15, 20, 25 µm
 - Bright colours, no chalking

Colouration

The actual colouring of the original sample is influenced by various factors:

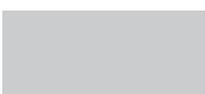
- The type of semi-finished product, the composition of the alloy and the composition of the material's structure
- The mechanical processing and surface roughness
- The mechanical and/or chemical pre-treatment
- The layer thickness

Due to their layer structure, GS-anodised layers form an excellent basis for colouration. The colouration procedure takes place between the anodising and the final sealing. Here, the dye is embedded in the pores and the sealing process gives it optimal protection.

The colouration procedures used in industry are suitable for indoor applications.

Colour selection

The BWB Group provides you with a broad palette of colours. The colour palette is shown in our colour chart for industry. For correct evaluation of colours, we recommend that you get us to carry out sampling with the envisaged original alloy and the planned surface finish.

BWB 210 – Black Schlierholz 16 Black	BWB 321 – Grey	BWB 320 – Grey Schlierholz 15a Dark Grey	BWB 312 – Grey	Schlierholz 15 Light Grey
				
BWB 340 – Violet Schlierholz 13 Violet	BWB 220 – Dark Blue Schlierholz 12 Dark Blue	BWB 221 – Medium Blue	BWB 222 – Light Blue Schlierholz 11 Light Blue	BWB 230 – Turquoise
				
BWB 313 – Dark Green	Schlierholz 10 Green	BWB 314 – Light Green	BWB – Bronze 21 Schlierholz 14b Bronze 21	BWB – Bronze 5 Schlierholz 14a Dark Bronze
				
BWB – Bronze 3 Schlierholz 14 Light Bronze	BWB 250 – Dark Red Schlierholz 8 Fire Red	BWB 251 – Light Red Schlierholz 7 Signal Red	BWB 240 – Orange	BWB 241 – Orange Schlierholz 6 Orange
				
Schlierholz 5 Gold	BWB 260 – Brass Schlierholz 4 Brass	BWB 270 – Sunflower Yellow	Schlierholz 9 Lemon Yellow	BWB 280 – Yellow
				
BWB 281 – Light Yellow	BWB 261 – Argentan Schlierholz 3 Dark Argentan	Schlierholz 2 Light Argentan	BWB 200 – Colourless Schlierholz 1 Colourless	
				

The colour samples shown in this colour chart serve only as orientation. For technical reasons, it is impossible to print an exact reproduction of how the material appears after anodising and colouration of the aluminium. For correct evaluation of the colour tone, please use the original aluminium alloy designated for manufacture. For sampling of coloured aluminium components, contact our sales advisors.

YOUR CONTACT PARTNERS

BWB is happy to advise you on material selection and procedures

The BWB Group is your partner for the machining and finishing of aluminium and nickel chromium steel

Due to our wealth of experience in surface treatment engineering, we offer economical all-in-one solutions for architecture, industry and design – from competent advice, to material procurement, right through to implementation, delivery and assembly. With our production sites, we have good regional support and are always where you need us.



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