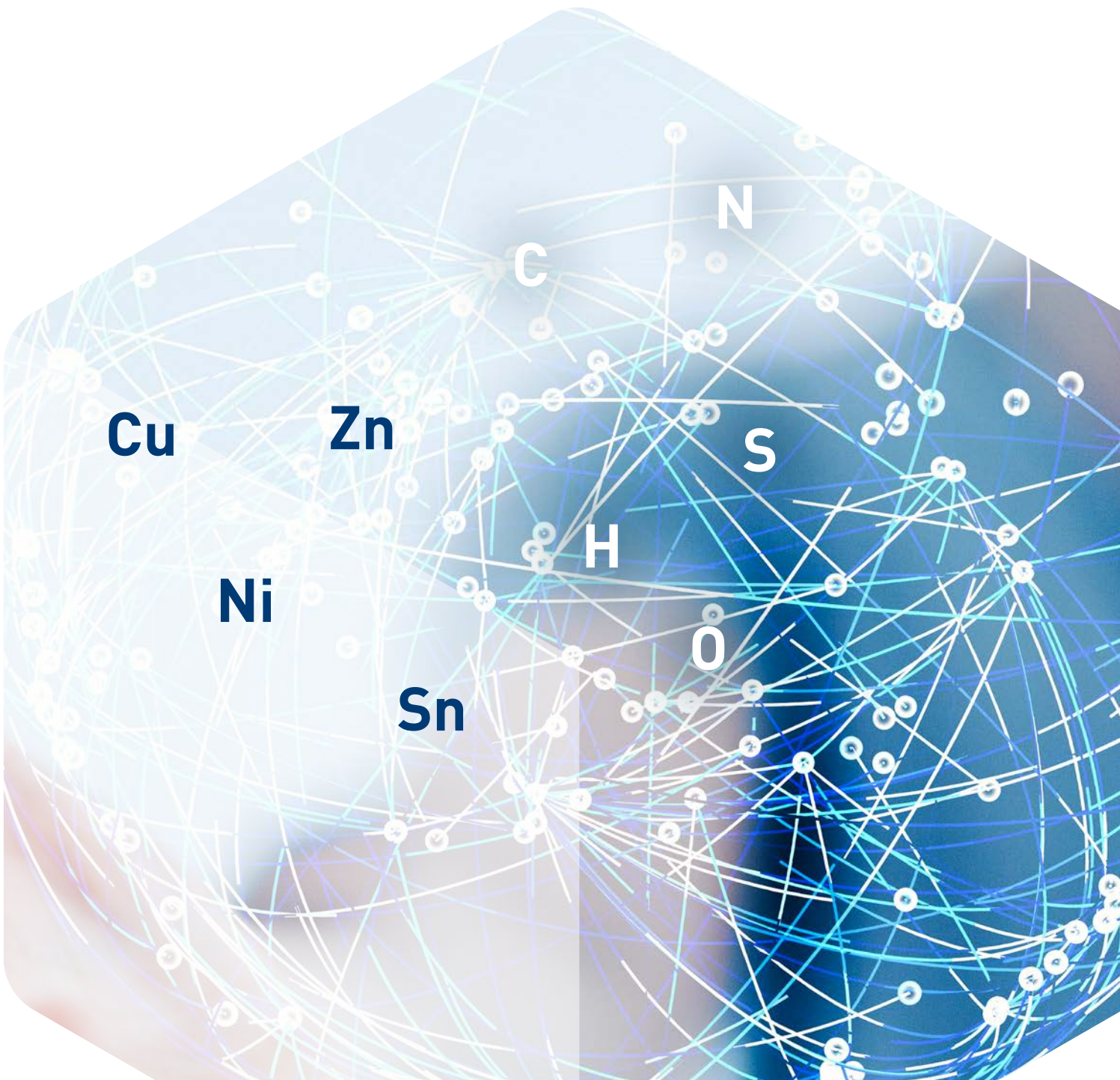




TIBCHEMICALS

Metal Finishing

Salts and intermediates for advanced industrial applications



TIB Chemicals at a Glance

We, TIB Chemicals AG, are a global medium-sized chemical company. We offer our customers a diversified product range as well as custom solutions in the fields of basic chemicals, inorganic specialty chemicals and plating systems.

Our diversification offers an extensive product range and stable financial base. Our tight organisation and lean structure translate to short decision-making processes within the company. Consequently, we are flexible and adaptive to the requirements and wishes of our customers. The economic success of TIB Chemicals is definitely based on three key factors:



EXPERTISE

We draw on a broad product range and over 140 years of tradition.



EMPLOYEES

With our 480 motivated and committed employees we are able to steer the company towards success by means of creativity, discipline and an investigative spirit.



QUALITY

With innovative and customised products we are flexible and adapt to dynamic market conditions.

Through our subsidiaries TIBChemCorp Mexicana in San Luis Potosí, Mexico and TIB Chemicals Corp. in Houston, USA we have a very good global structure and are well positioned to deal with the demands of our customers. This allowed us to grow continuously over previous years, together with our customers.



THE FOUNDATION
FOR YOUR SUCCESS

TIB metal finishing chemicals – the basis for your innovative formulations



Metal finishing products from TIB Chemicals have a long tradition. Back in the 1980s, we were already supplying our customers with high-quality metal compounds such as tin sulphate for traditional tin baths.

And our portfolio has been steadily expanding ever since. In doing so, we always respond to new requirements. This is reflected in our metal methanesulphonates along with basic salts for cyanide-free bath formulations or chrome bath wetting agents free of fluorotensides.

Our portfolio includes salts and solutions of a broad range of metals, especially tin, zinc, copper and nickel. These basic materials are characterised by their high quality, which we ensure through careful selection of the raw materials and reliable process management.

The range of metal compounds is supplemented by acids and organic intermediates and by a growing range of ready-to-use formulations. In terms of the breadth of materials, the TIB Chemicals product portfolio represents a unique offer to metal finishing customers. It allows them to participate in value added chains in vital industries such as automotive and electronics.



TIB metal finishing chemicals – material diversity and excellence

Metal methanesulphonates

Metal methanesulphonates are suitable for the formulation of electroplating baths especially in the electronics sector when plating metal and alloy layers for manufacturing and surface modification of, for example, printed circuit boards and connectors.

Years ago, our customers' focus on lead-free solders encouraged the development of electrolytes of this type.

TIB Chemicals supported this pathway from the beginning. Well prior the relevant guidelines came into effect, we ensured the success of those advanced bath types by providing our respective raw materials.

This product group is characterised by the highest standards of purity and stability.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Tin(II) methanesulphonate	Solution	300 g/l Sn	Tin plating, alloy plating
Copper(II) methanesulphonate	Solution	125 g/l Cu	Alloy plating
Silver(I) methanesulphonate	Solution	275 g/l Ag	Cyanide-free electrolytic and immersion silver baths, for Sn/Ag alloy plating
Bismuth(III) methanesulphonate	Solution	210 g/l Bi	Stabiliser for electroless nickel, alloy plating
Lead(II) methanesulphonate	Solution	450 g/l Pb	Bearing plating
Indium(III) methanesulphonate	Solution	200 g/l In	Indium plating, alloy plating
Chromium(III) methanesulphonate	Solution	100 g/l Cr	Trivalent chrome plating
Iron(II) methanesulphonate	Solution	120 g/l Fe	Iron plating
Cobalt(II) methanesulphonate	Solution	120 g/l Co	Passivation additive
Nickel(II) methanesulphonate	Solution	100 g/l Ni	Special alloys



Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Zinc methanesulphonate	Solution	120 g/l Zn	Metal finishing
Sodium methanesulphonate	Solution	120 g/l Na	Conductivity additive and grain refiner for MSA-electrolytes
Potassium methanesulphonate	Solution	200 g/l K	Metal finishing

Fluoroborates

Classic alloy baths based on fluoroboric acid are still used primarily in the field of functional plating. Our metal fluoroborates cover most of the range of the

required salts. They are characterised by particularly high base metal concentrations in the solution.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Tin(II) fluoroborate	Solution	320 g/l Sn	Alloy plating
Copper(II) fluoroborate	Solution	210 g/l Cu	Basic salt for copper baths, alloy plating
Lead(II) fluoroborate	Solution	500 g/l Pb	Alloy plating



Additional tin products

For decades tin chemicals have been using throughout the world in many different areas of electroplating.

We manufacture our tin products at sites in Germany and Mexico – always based on high-quality raw materials. In this way, we are able to ensure very low contents of critical metal impurities such as iron and lead.

Our backwards-integrated manufacture means that almost all processes are based on tin metal which allows to monitor quality and costs perfectly.

Long-standing business relationships with our suppliers based on total trust mean that the tin we use is 100% conflict-free.

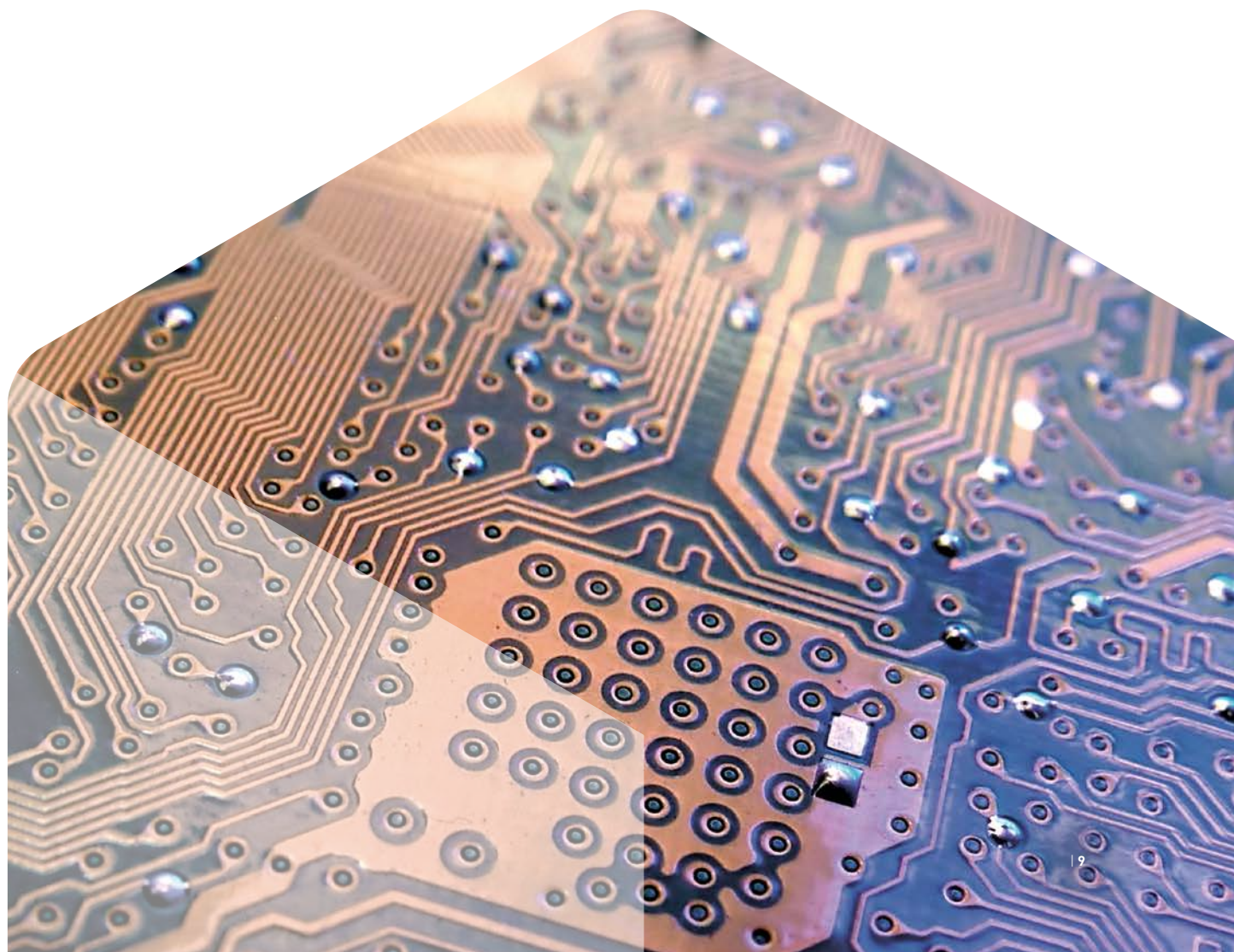
Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Tin(II) chloride	Anhydrous, dihydrate and as a solution	62% Sn (anhydrous) 52% Sn (dihydrate) up to 500 g/l Sn (solution)	Immersion tin plating, formulation of palladium-colloid activators
Tin(II) sulphate	Crystalline and as a solution	55% Sn (crystalline) 125 g/l Sn (solution)	Immersion and electrolytic tin plating
TIB Stanal TS	Crystalline	43% Sn	Stannous sulphate based formulation for the acid immersion tin plating on aluminium surfaces
TIB Stannocolor	Solution	219 g/l SnSO ₄	Formulation for the electrolytic colouring of aluminium surfaces based on tin sulphate
TIB SpeedPlate	Crystalline	10% Sn	Formulation for the immersion tin plating on copper and copper alloy surfaces based on tin sulphate
Tin(II) oxide	Tin oxide black	88% Sn	Metal finishing
Tin(II) pyrophosphate	Crystalline	55% Sn	Alloy plating
Sodium hexahydroxystannate	Crystalline and as a solution	43% Sn (crystalline) 125 g/l Sn (solution)	Alkaline immersion tin plating on aluminium surfaces, white bronze plating
Potassium hexahydroxystannate	Crystalline and as a solution	38% Sn (crystalline) 160 g/l Sn (solution)	Alkaline immersion tin plating on aluminium surfaces, white bronze plating

Additional copper products

Plating on copper and copper alloys is important for all types of metal finishing processes. Our copper containing products are used primarily for functional

plating, as in PCB production for example. They are therefore characterised particularly by low levels of critical impurities.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Copper(II) nitrate	Hemipentahydrate and as a solution	27% Cu (crystalline) 15–2% Cu (solution)	Metal finishing
Copper(II) acetate	Monohydrate and as a solution	32% Cu (crystalline) 4% Cu (CH ₃ COO) ₂ (solution)	Metal finishing
Copper(II) oxide EPG	Very pure	79% Cu	Replenisher for copper baths in PCB production
Copper(II) hydroxide carbonate	Bulk density > 1.5 kg/l	55% Cu	Replenisher for copper baths in PCB production
Copper(II) sulphate EPG	Solution	70 g/l Cu	Basic solution for copper electrolytes
Copper(II) pyrophosphate	Crystalline and as a solution	34% Cu (crystalline) up to 67 g/l Cu (solution)	Basic salt for copper baths



Additional nickel products

The applications for nickel salts in electroplating ranges from corrosion protection for metal surfaces through decorative layers of nickel on metal-plated plastics to electronics applications.

Our nickel products are made using ultra-pure metal as the only nickel raw material. They thus meet the toughest standards of product quality for our customers in the electroplating industry. Not only do we guarantee

a permanently low level of impurities, we offer our customers both customised product modifications and the exclusive contract manufacture of complete bath formulations.

The production site in Hagen fulfils the particular requirements of occupational safety and environmental protection that nickel chemicals manufacturers have to meet.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Nickel sulphate	Heptahydrate and as a solution	21 % Ni (crystalline) 10 % Ni (solution)	Basic salt for nickel baths
Nickel chloride	Hexahydrate and as a solution	23.5 % Ni (crystalline) 13.4 % Ni (solution)	Basic salt for nickel baths
Nickel nitrate	Hexahydrate and as a solution	19.7 % Ni (crystalline) 14 % Ni (solution)	Corrosion protection formulations
Nickel hydroxidecarbonate	Dust-free or as a powder	Up to 48 % Ni	Electroplating
Nickel acetate	Tetrahydrate	24 % Ni	Electroplating, anodizing
Nickel sulphamate	Solution	12 % Ni	Electrolytic nickel plating
Nickel phosphate	Solution	9 % Ni	Phosphating

Additional zinc products

We cover a wide range of electroplating applications in which the use of zinc compounds is essential, whether

as a basic salt in electroplating baths or as a component in corrosion protection formulations.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Zinc chloride	Crystalline and as a solution	96 – 97 % ZnCl ₂ (crystalline) 40 – 65 % ZnCl ₂ (solution)	Basic salt
Zinc nitrate	Solution	680 g/l Zn(NO ₃) ₂	Corrosion protection
Zinc citrate	Powder	32 % Zn	Metal finishing

Additional trivalent chromium solutions

Trivalent chromium salts are used as basic materials for the chromium(VI)-free formulation of passivation and chrome plating baths.

Our solutions are characterised by a particularly low content of organic impurities.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Chrom(III) chloride	Solution	50% hydrate 9 – 10% Cr	Cr(VI)-free passivation and chrome plating baths
Chrom(III) sulphate	Solution	50% hydrate 8 – 9% Cr	Cr(VI)-free passivation and chrome plating baths
Chrom(III) nitrate	Solution	74% hydrate 9 – 10% Cr	Cr(VI)-free passivation
Chrom(III) hydrogenphosphate	Solution	20% salt 6 – 7% Cr	Cr(VI)-free passivation

Acids

Acids are components of many metal finishing formulations. They are used as a basic acid or additive in plating baths. We supply the standard mineral acids

and some organic acids of utmost purity and in variable concentrations.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Sulphuric acid	Solution	Up to 98%	Metal finishing
Methanesulphonic acid	Solution	70%	Metal finishing
Methanedisulphonic acid	Solution	50%	Metal finishing
Hydroxyethanesulphonic acid	Solution	70%	Metal finishing
Fluoroboric acid	Solution	50%	Metal finishing
Sulphosuccinic acid	Solution	70%	Metal finishing
Hydrochloric acid	Solution	32%	Metal finishing

Organic chemicals

Our range of organic chemicals comprises both intermediates and mixtures. It thus perfectly complements our range of inorganic basic materials for metal finishing applications.

Organic intermediates, especially surfactants, are important raw materials for the formulation of electroplating baths. They are used here as grain

refiners, brighteners or solubilisers for other bath components.

Our ready-to-use formulations include components mixed in the correct ratio for certain applications in the electroplating sector, for example, for the pretreatment and finishing of plated components.

Product name / chemical designation	Form / property	Typical concentrations	Typical applications
TIB Suract A25	Solution	30% Di-4-methyl-2-amylestersulphosuccinate	Additive for electroless nickel plating, avoids pores
TIB Suract A40	Solution	40% Di-isoamylester-sulphosuccinate	Additive for electroless nickel plating, avoids pores
TIB Suract B30 P	Solution	30% Polysiloxanebetaine	Surfactant for degreasing and rinse baths
TIB Suract B35	Solution	35% Cocoamido-propylaminoxide	Amphoteric surfactant
TIB Suract B38 C	Solution	38% Capryl/caprinamido-propylbetaine	Surfactant for chloride-sensitive electrolytes
TIB Suract B40	Solution	40% Caprylimino-dipropionate	Salt-free surfactant, low foaming
TIB Suract N19	Solution	19% Fatty alcohol ethoxylate C9-C11, 6 EO	Surfactant stable in acids, for solubilising benzalacetone (TPB/TPB 10)
TIB Suract E00 P	Solution	Concentrate, contains polyetherpolysiloxane	De-foaming agent
TIB Suract ETG	Powder	99% 2,2-Ethylenedithiodiethanol	Complexing agent for precious metal baths
TIB Suract TPB/TPB 10	Solution	Solubilised benzalacetone 3%/10%	Grain refiner for tin plating baths
TIB Suract Trigonellin 20	Solution	20% Niacin betaine	Brightener for alkaline zinc and zinc/nickel plating baths
TIB Suract DRY	Solution	Aqueous solution of modified fatty amides	Hydrophobing agent
TIB Suract CR-H	Solution	Concentrate	Fluorine-free surfactant, wetting agent for chrome plating baths
TIB Suract AC 101	Solution	Concentrate, contains oleic acid amidoethanol-polyethoxylate	Metal finishing



Product name / chemical designation	Form / property	Typical concentrations	Typical applications
TIB Suract L 101	Solution	Concentrate	Emulsifying surfactant formulation for alkaline degreasing
TIB Lux OV/OV 21	Solution	Concentrate	Peroxide stabiliser
TIB Lux NPS	Solution	50% Sulphonated naphtholpolyether	Grain refiner
TIB Lux BN 13	Solution	>98% Naphtholethoxylate	For the formulation of brightener systems
TIB Stanno Plus	Solution	Concentrate	Additive for the electrolytic colouring of aluminium
TIB SpeedPlate Plus	Solution	Concentrate	Grain refiner and tarnish protection for immersion tin plating
TIB Stanal DG	Solution	Concentrate	Cleaner for alkaline degreasing
TIB Stanal DG-B	Solution	Concentrate	Demulsifying surfactant formulation for alkaline degreasing
TIB Stanal CP	Solution	Concentrate	Additive for nitric acid pickling baths
TIB Stanal CL	Solution	Concentrate	Additive for sulphuric acid pickling baths
TIB Stanal TP	Solution	Concentrate	Additive for immersion tin plating
Potassium methanedisulphonate	Crystalline	>99%	Catalyst for chromic acid electrolytes

TIB metal finishing chemicals – a wide range of applications

Pretreatment

We offer several surfactant formulations to optimise your alkaline degreasing.

Product name / chemical designation	Form / property	Typical concentrations	Typical applications
TIB Stanal DG	Solution	Concentrate	Cleaner for alkaline degreasing
TIB Stanal DG-B	Solution	Concentrate	Demulsifying surfactant formulation for alkaline degreasing
TIB Suract B35	Solution	35% Cocoamido-propylaminoxide	Amphoteric surfactant
TIB Suract B38 C	Solution	38% Capryl/caprinamido-propylbetaine	Surfactant for chloride-sensitive electrolytes
TIB Suract L 101	Solution	Concentrate	Emulsifying surfactant formulation for alkaline degreasing

Pickling and brightening

We offer the following products for processing methods such as deburring, brightening, etc.

Product name / chemical designation	Form / property	Typical concentrations	Typical applications
Sulphuric acid	Solution	Up to 98%	Basic acid
Methanesulphonic acid	Solution	70%	Basic acid
TIB Suract B35	Solution	35% Cocoamido-propylaminoxide	Amphoteric surfactant
TIB Suract B38 C	Solution	38% Capryl/caprinamido-propylbetaine	Wetting agent for chloride-sensitive electrolytes
TIB Suract B40	Solution	40% Caprylimino-dipropionate	For highly acid and alkaline cleaners
TIB Lux OV/OV 21	Solution	Concentrate	Peroxide stabiliser

Tin plating on aluminium pistons

Our TIB Stanal product group is a ready-to-use portfolio of process chemicals for the chemical tinning of aluminium components. The process covers pretreatment, activation, plating and posttreatment and can be adapted to the

needs of the basic material. TIB Stanal is used mostly in the production of aluminium pistons for engines and compressors.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Sodium hexahydroxystannate	Crystalline and as a solution	43 % Sn (crystalline) 125 g/l Sn (solution)	Alkaline immersion tin plating
Potassium hexahydroxystannate	Crystalline and as a solution	38 % Sn (crystalline) 160 g/l Sn (solution)	Alkaline immersion tin plating
TIB Stanal DG	Solution	Concentrate	Cleaner for alkaline degreasing
TIB Stanal DG-B	Solution	Concentrate	Demulsifying surfactant formulation for alkaline degreasing
TIB Stanal TS	Crystalline	43 % Sn	For the acid immersion tin plating on aluminium surfaces based on tin sulphate
TIB Stanal TP	Solution	Concentrate	Additive for immersion tin plating
TIB Stanal CP	Solution	Concentrate	Additive for nitric acid pickling baths
TIB Stanal CL	Solution	Concentrate	Additive for sulphuric acid pickling baths
TIB Lux OV/OV 21	Solution	Concentrate	Peroxide stabiliser

Aluminium bearing plating

TIB Stanal can also be used for the tin plating on aluminium bearing components. In this specific case, both electroless and electrolytic processes are used to

plate tin alloys with further typical bearing metals, such as copper, lead or bismuth. We offer the basic salts and acids for the formulation of such baths.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
TIB Stanal TS	Crystalline	43 % Sn	For the acid immersion tin plating on aluminium surfaces based on tin sulphate
TIB Stanal TP	Solution	Concentrate	Additive for immersion tin plating
TIB Stanal CL	Solution	Concentrate	Additive for sulphuric acid pickling baths
Sodium hexahydroxystannate	Crystalline and as a solution	43 % Sn (crystalline) 125 g/l Sn (solution)	Bronze plating
Potassium hexahydroxystannate	Crystalline and as a solution	38 % Sn (crystalline) 160 g/l Sn (solution)	Bronze plating

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Tin(II) fluoroborate	Solution	320 g/l Sn	Alloy plating
Copper(II) fluoroborate	Solution	210 g/l Cu	Basic salt for copper baths, alloy plating
Lead(II) fluoroborate	Solution	500 g/l Pb	Alloy plating
Fluoroboric acid	Solution	50 %	Basic acid
Tin(II) methanesulphonate	Solution	300 g/l Sn	Tin plating, alloy plating
Copper(II) methanesulphonate	Solution	125 g/l Cu	Alloy plating
Bismuth(III) methanesulphonate	Solution	210 g/l Bi	Alloying additive
Lead(II) methanesulphonate	Solution	450 g/l Pb	Bearing plating
Methanesulphonic acid	Solution	70 %	Basic acid

Alloy plating

We offer a wide range of basic salts for alloy plating baths based on methanesulphonic acid and fluoroboric acid.

The range is supplemented by selected organic intermediates.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Tin(II) methanesulphonate	Solution	300 g/l Sn	Tin plating, alloy plating
Copper(II) methanesulphonate	Solution	125 g/l Cu	Alloy plating
Silver(I) methanesulphonate	Solution	275 g/l Ag	Cyanide-free electrolytic and immersion silver baths, for Sn/Ag alloy plating
Bismuth(III) methanesulphonate	Solution	210 g/l Bi	Alloying additive
Lead(II) methanesulphonate	Solution	450 g/l Pb	Alloy plating
Indium(III) methanesulphonate	Solution	Up to 200 g/l In	Indium plating, alloy plating
Chromium(III) methanesulphonate	Solution	100 g/l Cr	Trivalent chrome plating
Iron(II) methanesulphonate	Solution	120 g/l Fe	Iron plating

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Cobalt(II) methanesulphonate	Solution	120 g/l Co	Passivation additive
Nickel(II) methanesulphonate	Solution	100 g/l Ni	Special alloys
Zinc methanesulphonate	Solution	120 g/l Zn	Electroplating
Sodium methanesulphonate	Solution	120 g/l Na	Conductivity additive and grain refiner for MSA-electrolytes
Potassium methanesulphonate	Solution	200 g/l K	Electroplating
Methanesulphonic acid	Solution	70 %	Basic acid
Tin(II) fluoroborate	Solution	320 g/l Sn	Alloy plating
Copper(II) fluoroborate	Solution	210 g/l Cu	Basic salt for copper baths, alloy plating
Lead(II) fluoroborate	Solution	500 g/l Pb	Alloy plating
Fluoroboric acid	Solution	50 %	Basic acid
TIB Suract ETG	Powder	99 % 2,2-Ethylenedithiodiethanol	Complexing agent for precious metals (Ag, Sn/Ag)
TIB Suract TPB/TPB 10	Solution	Solubilised benzalacetone 3 % / 10 %	Brightener, grain refiner

Acid tin plating

This is where you will find basic materials for the formulation of acid baths for tin plating. In addition to tin sulphate and tin fluoroborate for classic formulations,

we also offer tin methanesulphonate for more sophisticated plating processes, e.g. in the electronics industry.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Tin(II) chloride	Anhydrous, dihydrate and as a solution	62 % Sn (anhydrous) 52 % Sn (dihydrate) up to 500 g/l Sn (solution)	Electroless tin plating
Tin(II) sulphate	Crystalline and as a solution	55 % Sn (crystalline) 125 g/l Sn (solution)	Chemical and electrolytic tin plating
Tin(II) fluoroborate	Solution	320 g/l Sn	Alloy plating
Tin(II) methanesulphonate	Solution	300 g/l Sn	Tin plating, alloy plating
Sulphuric acid	Solution	Up to 98 %	Basic acid

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Methanesulphonic acid	Solution	70%	Basic acid
Fluoroboric acid	Solution	50%	Basic acid
TIB SpeedPlate	Crystalline	10% Sn	For the acid immersion tin plating on copper and brass surfaces based on tin sulphate
TIB SpeedPlate Plus	Solution	Concentrate	Grain refiner and tarnish protection for immersion tin plating
TIB Suract N19	Solution	19% Fatty alcohol ethoxylate C9–C11, 6 EO	Acid-resistant wetting agent
TIB Lux NPS	Solution	50% Sulphonated naphtholpolyether	Grain refiner
TIB Lux BN 13	Solution	>98% Naphtholethoxylate	For the formulation of brightener systems

Immersion tin plating

We offer basic materials and ready-to-use formulations for the alkaline and acid electroless tin plating on various metal surfaces.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Tin(II) chloride	Anhydrous, dihydrate and as a solution	62% Sn (anhydrous) 52% Sn (dihydrate) up to 500 g/l Sn (solution)	Electroless tin plating
Sodium hexahydroxystannate	Crystalline and as a solution	43% Sn (crystalline) 125 g/l Sn (solution)	Alkaline immersion tin plating
Potassium hexahydroxystannate	Crystalline and as a solution	38% Sn (crystalline) 160 g/l Sn (solution)	Alkaline immersion tin plating
Tin(II) sulphate	Crystalline and as a solution	55% Sn (crystalline) 125 g/l Sn (solution)	Chemical and electrolytic tin plating
Sulphuric acid	Solution	Up to 98%	Basic acid
TIB Stanal DG	Solution	Concentrate	Cleaner for alkaline degreasing
TIB Stanal DG-B	Solution	Concentrate	Demulsifying surfactant formulation for alkaline degreasing
TIB Stanal TS	Crystalline	43% Sn	For the acid immersion tin plating on aluminium surfaces based on tin sulphate
TIB Stanal TP	Solution	Concentrate	Additive for immersion tin plating

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
TIB Stanal CL	Solution	Concentrate	Additive for sulphuric acid pickling baths
TIB Stanal CP	Solution	Concentrate	Additive for nitric acid pickling baths
TIB SpeedPlate	Crystalline	10% Sn	For the acid immersion tin plating on copper and brass surfaces based on tin sulphate
TIB SpeedPlate Plus	Solution	Concentrate	Grain refiner and tarnish protection for immersion tin plating
Tin(II) methanesulphonate	Solution	300 g/l Sn	Tin plating, alloy plating
Methanesulphonic acid	Solution	70%	Basic acid
TIB Suract N19	Solution	19% Fatty alcohol ethoxylate C9–C11, 6 EO	Acid-resistant wetting agent and solvent for benzalacetone
TIB Suract TPB/TPB 10	Solution	Solubilised benzalacetone 3%/10%	Brightener, grain refiner

Alkaline tin plating and bronze plating

This is where you will find basic materials for the formulation of alkaline tin plating baths. They are also used for white bronze plating.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Sodium hexahydroxystannate	Crystalline and as a solution	43% Sn (crystalline) 125 g/l Sn (solution)	Bronze plating
Potassium hexahydroxystannate	Crystalline and as a solution	38% Sn (crystalline) 160 g/l Sn (solution)	Bronze plating
TIB Suract B40	Solution	40% Caprylimino-dipropionate	Salt-free wetting agent, low foaming





Acid copper plating

We offer the following products for the formulation of acid copper plating baths.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Copper(II) methanesulphonate	Solution	125 g/l Cu	Basic salt for copper baths
Copper(II) sulphate EPG	Solution	75 g/l Cu	Basic salt for copper baths
Copper(II) fluoroborate	Solution	210 g/l Cu	Basic salt for copper baths, alloy plating
Copper(II) oxide EPG	Very pure	79 % Cu	Replenisher
Methanesulphonic acid	Solution	70 %	Basic acid
Sulphuric acid	Solution	Up to 98 %	Basic acid
Fluoroboric acid	Solution	50 %	Basic acid
TIB Suract B40	Solution	40 % Caprylimino-dipropionate	Salt-free wetting agent, low foaming

Pyrophosphate baths

We offer the following basic materials for pyrophosphate-based baths as a cyanide-free alternative to highly acid or alkaline formulations.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Tin(II) pyrophosphate	Crystalline	55 % Sn	Basic salt for tin baths
Copper(II) pyrophosphate	Crystalline and as a solution	34 % Cu (crystalline) up to 67 g/l Cu (solution)	Basic salt for copper baths
TIB Suract B35	Solution	35 % Cocoamido-propylaminoxide	Wetting agent for copper plating baths
TIB Suract B40	Solution	40 % Caprylimino-dipropionate	Salt-free wetting agent, low foaming

Alkaline zinc plating

This is where you will find basic materials for the formulation of alkaline zinc plating baths. They are also used for alkaline zinc/nickel plating.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
TIB Suract Trigonellin 20	Solution	20 % Niacin betaine	Brightener
TIB Suract B40	Solution	40 % Caprylimino-dipropionate	Wetting agent

Acid zinc plating

We offer basic salts and intermediates for the cyanide-free acid zinc plating on various metal surfaces.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Zinc chloride	Crystalline and as a solution	96 – 97 % ZnCl ₂ (crystalline) 40 – 65 % ZnCl ₂ (solution)	Basic salt
Zinc nitrate	Solution	680 g/l Zn(NO ₃) ₂	Basic salt
Zinc citrate	Powder	32 % Zn	Basic salt
TIB Suract TPB/TPB 10	Solution	Solubilised benzalacetone 3 % / 10 %	Brightener, grain refiner
TIB Lux NPS	Solution	50 % Sulphonated naphtholpolyether	For high-performance electrolytes
TIB Lux BN 13	Solution	>98 % Naphthoethoxylate	Solubiliser for brighteners

Immersion silver plating

The following basic materials are suitable for the formulation of a cyanide-free baths for the chemical plating on thin silver layers.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Silver(I) methanesulphonate	Solution	275 g/l Ag	Basic salt for cyanide-free plating
Methanesulphonic acid	Solution	70 %	Basic acid
TIB Suract ETG	Powder	99 % 2,2-Ethylenedithiodiethanol	Complexing agent for precious metal baths
TIB Suract TPB/TPB 10	Solution	Solubilised benzalacetone 3 % / 10 %	Brightener, grain refiner

Plating on plastics

We provide key components for various stages of the POP process.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Tin(II) chloride	Anhydrous, dihydrate and as a solution	62% Sn (anhydrous) 52% Sn (dihydrate) up to 500 g/l Sn (solution)	Basic salt for palladium-colloid activators
TIB Suract CR-H	Solution	Concentrate	Fluorine-free surfactant, wetting agent for chrome plating baths

Chrome plating

This is where you will find additives for the formulation of chromic acid baths.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
TIB Suract CR-H	Solution	Concentrate	Wetting agent free of fluorotensides
Methanedisulphonic acid	Solution	50%	Catalyst
Potassium methanedisulphonate	Crystalline	>99%	Catalyst

Cr(VI)-free chrome plating

We offer the right solutions for the formulation of trivalent chromium plating baths.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Chromium(III) chloride	Solution	50% hydrate 9–10% Cr	Basic salt
Chromium(III) sulphate	Solution	50% hydrate 8–9% Cr	Basic salt
Chromium(III) methanesulphonate	Solution	100 g/l Cr	Basic salt



Conversion coating and passivation

Our product portfolio contains various basic salts for phosphating and other corrosion protection measures.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Nickel nitrate	Hexahydrate and as a solution	19.7 % Ni (crystalline) 14 % Ni (solution)	Corrosion protection
Nickel phosphate	Solution	9 % Ni	Phosphating
Zinc nitrate	Solution	680 g/l Zn(NO ₃) ₂	Corrosion protection
Chromium(III) chloride	Solution	50 % hydrate 9 – 10% Cr	Cr(VI)-free passivation
Chromium(III) nitrate	Solution	74 % hydrate 9 – 10% Cr	Cr(VI)-free passivation
Chromium(III) hydrogenphosphate	Solution	20 % salt 6 – 7 % Cr	Cr(VI)-free passivation

Printed circuit boards

For this branch of industry, our product portfolio contains various metal methanesulphonates, very pure tin and copper salts plus acids and organic intermediates.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Tin(II) methanesulphonate	Solution	300 g/l Sn	Tin plating, alloy plating
Copper(II) methanesulphonate	Solution	125 g/l Cu	Alloy plating
Silver(I) methanesulphonate	Solution	275 g/l Ag	Cyanide-free electrolytic and immersion silver plating baths, for Sn/Ag alloy plating
Bismuth(III) methanesulphonate	Solution	210 g/l Bi	Alloying additive
Lead(II) methanesulphonate	Solution	450 g/l Pb	Alloy plating
Methanesulphonic acid	Solution	70 %	Basic acid
Tin(II) sulphate	Crystalline and as a solution	55 % Sn (crystalline) 125 g/l Sn (solution)	Chemical and electrolytic tin plating
Sulphuric acid	Solution	Up to 98 %	Basic acid
Copper(II) oxide EPG	Very pure	79 % Cu	Replenisher for copper baths

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Copper(II) hydroxide carbonate	Bulk density > 1.5 kg/l	55 % Cu	Replenisher for copper baths
TIB Suract ETG	Powder	99% 2,2-Ethylenedithiodiethanol	Complexing agent for precious metals (Ag, Sn/Ag)
TIB Lux BN 13	Solution	>98% Naphthoethoxylate	For the formulation of brightener systems
TIB Lux OV/OV 21	Solution	Concentrate	Stabiliser for sulphuric acid pickling baths

Nickel plating

Our product portfolio covers a wide range of nickel salts. It incorporates nickel salts of both strong and weak acids. The product range is completed by nickel hydroxide carbonate as a replenisher on various drying levels.

In this way, we take into account the requests of our customers regarding an optimum occupational safety when handling nickel chemicals.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Nickel sulphate	Heptahydrate and as a solution	21 % Ni (crystalline) 10 % Ni (solution)	Basic salt
Nickel chloride	Hexahydrate and as a solution	23.5 % Ni (crystalline) 13.4 % Ni (solution)	Basic salt
Nickel sulphamate	Solution	12 % Ni	Basic salt
Nickel(II) methanesulphonate	Solution	100 g/l Ni	Special alloys
Nickel hydroxide carbonate	Dust-free or as a powder	Up to 48 % Ni	Basic salt
Nickel acetate	Tetrahydrate	24 % Ni	Basic salt
TIB Suract A25	Solution	30% Di-4-methyl-2-amylestersulphosuccinate	Additive for electroless nickel plating, avoids pores
TIB Suract A40	Solution	40% Di-isoamylester-sulphosuccinate	Additive for electroless nickel plating, avoids pores
Bismuth(III) methanesulphonate	Solution	210 g/l Bi	Stabiliser for chemical nickel plating



Anodizing

For the electrolytical colouring of aluminium surfaces, we offer not only basic salts such as tin sulphate and nickel products for sealing but also ready-to-use TIB Stannocolor.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
Tin(II) sulphate	Crystalline and as a solution	55 % Sn (crystalline) 125 g/l Sn (solution)	Basic salt for electrolytic colouring baths
TIB Stanno Plus	Solution	Concentrate	Stabiliser
TIB Stannocolor	Solution	219 g/l SnSO ₄	Electrolytic colouring of aluminium surfaces based on tin sulphate
Tin(II) oxide	Tin oxide black	88 % Sn	For pH regulation
Sulphosuccinic acid	Solution	70 %	For colouring and hard anodising
Nickel acetate	Tetrahydrate	24 % Ni	Additive for cold and hot sealing processes
Nickel sulphate	Heptahydrate and as a solution	21 % Ni (crystalline) 10 % Ni (solution)	Additive for cold sealing
TIB Lux OV/OV 21	Solution	Concentrate	Stabiliser for sulphuric acid pickling baths

Posttreatment

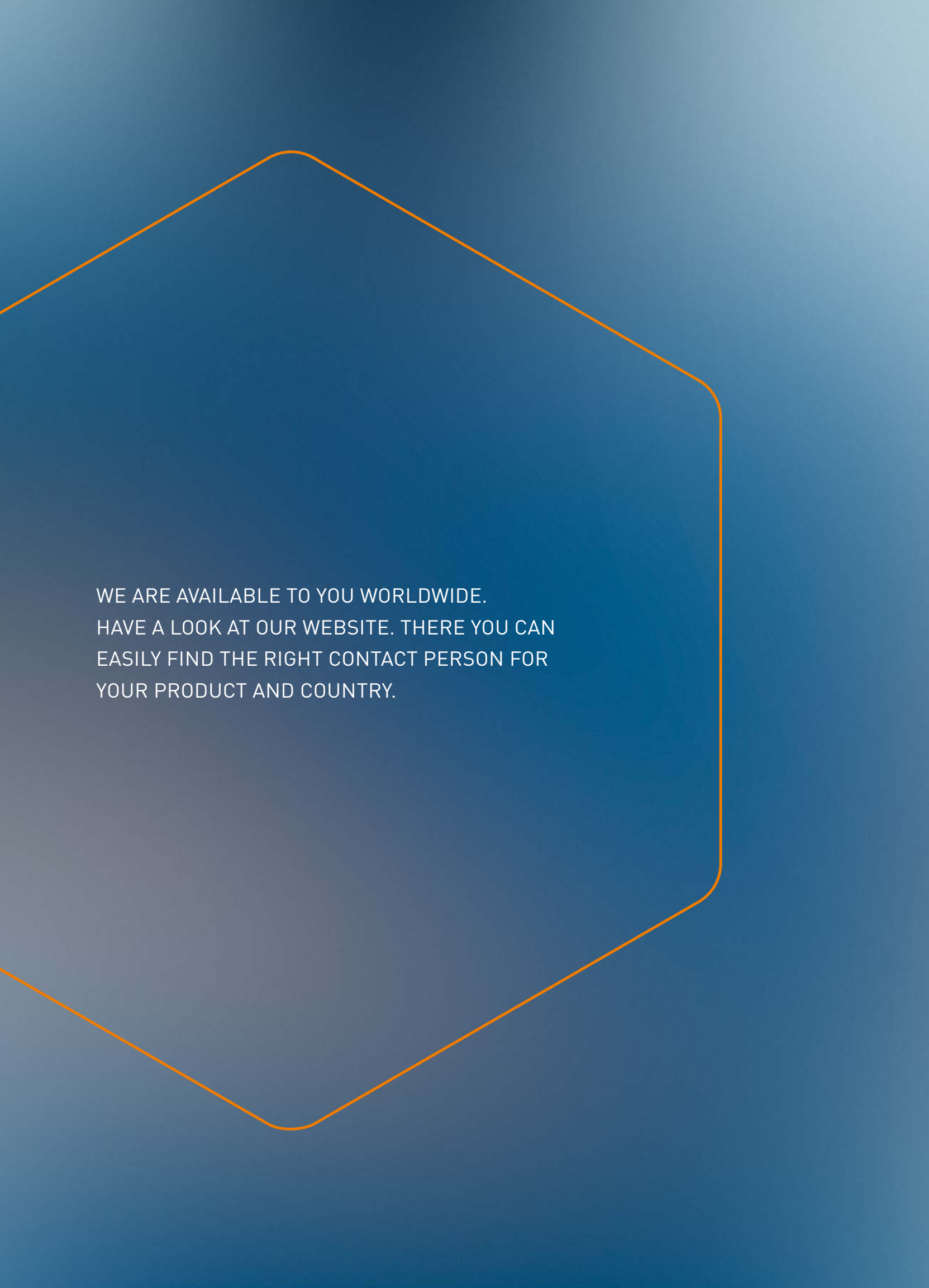
We offer additives for the spot-free drying of plated parts at room temperature. The hydrophobic film that forms during application also provides temporary tarnish protection for the freshly plated metal surface.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
TIB Suract DRY	Solution	Aqueous solution of modified fatty amides	Hydrophobing additive for rinsing baths
TIB Suract B30 P	Solution	30 % Polysiloxanebetaine	Amphoteric surfactant

Sewage treatment

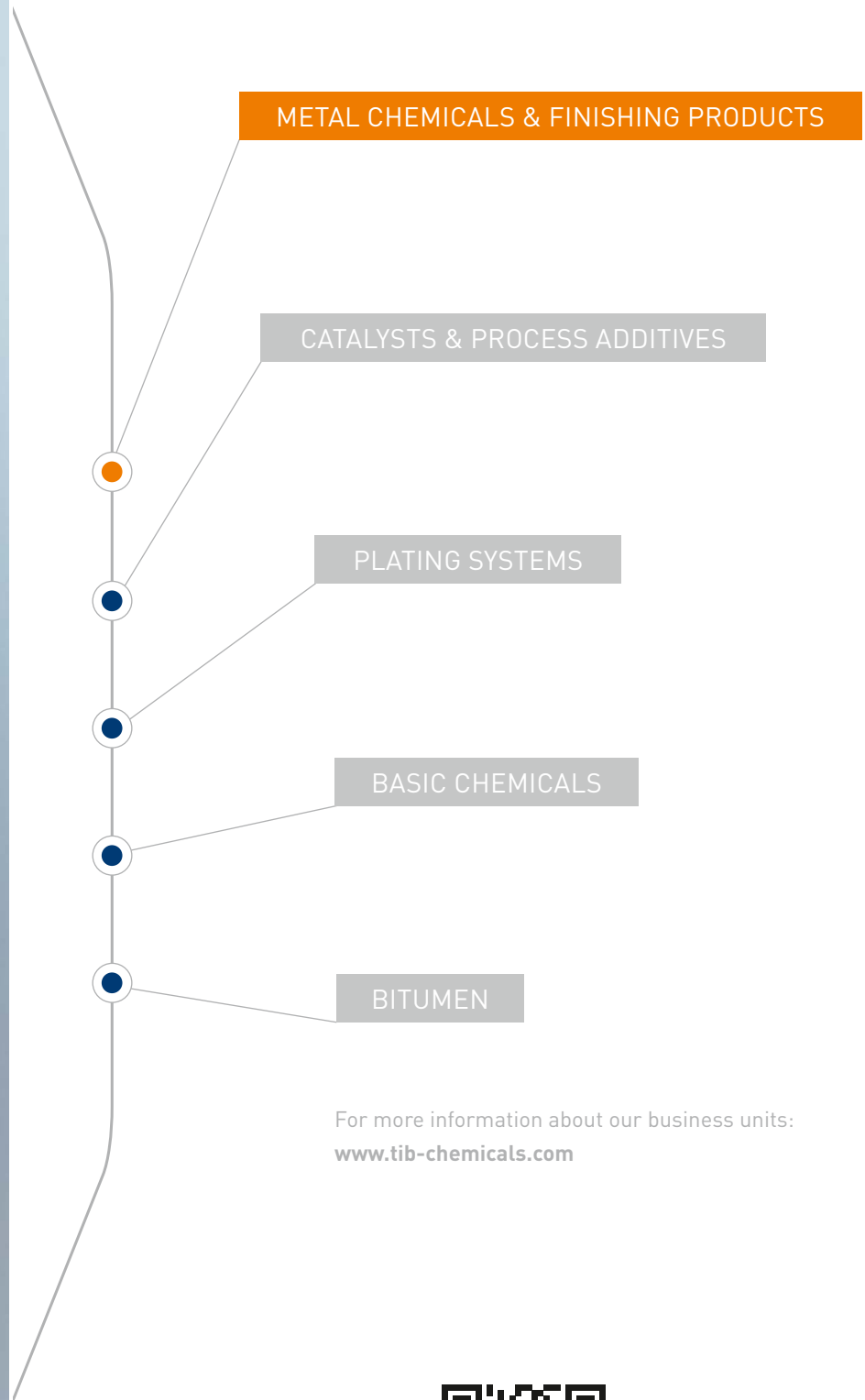
Our defoamer concentrate is ideal for the economic treatment of various types of waste water.

Product name / chemical designation	Form / property	Typical metal contents / concentrations	Typical applications
TIB Suract E00 P	Solution	Concentrate, contains polyetherpolysiloxane	Defoamer



WE ARE AVAILABLE TO YOU WORLDWIDE.
HAVE A LOOK AT OUR WEBSITE. THERE YOU CAN
EASILY FIND THE RIGHT CONTACT PERSON FOR
YOUR PRODUCT AND COUNTRY.

TIB Chemicals Business Units



For more information about our business units:
www.tib-chemicals.com





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