





BASIC CHEMICALS | INORGANIC SPECIALTY CHEMICALS | COATING SYSTEMS

Zinc Chemicals | high-value products
for industry and galvanising



❖❖ LEADERS IN QUALITY AND SERVICE

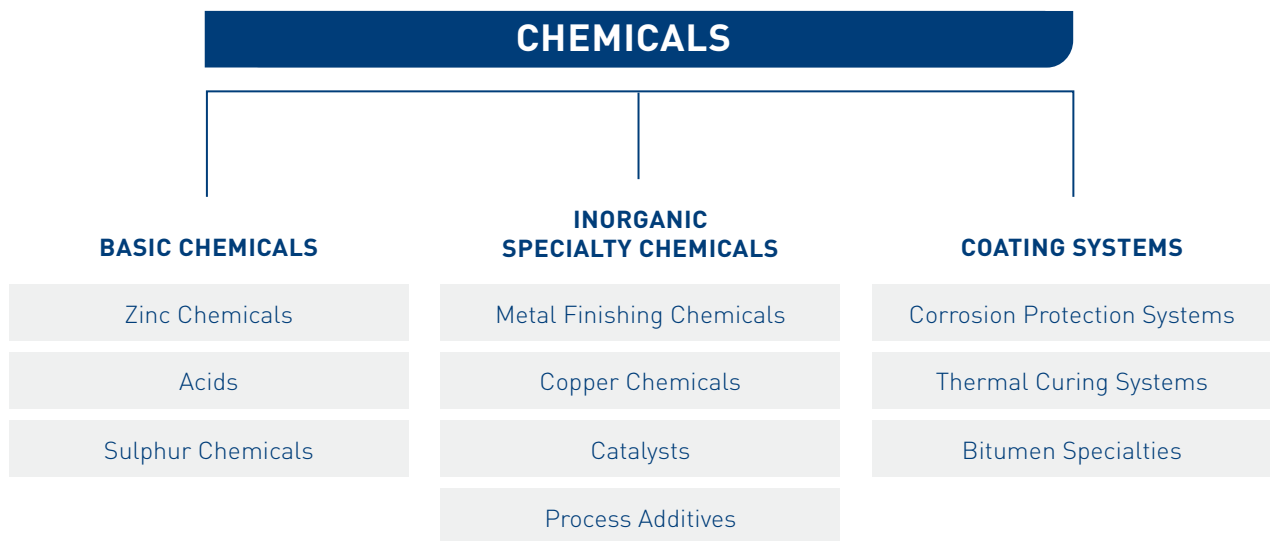
TIB Chemicals was born following the merger of Goldschmidt TIB of Germany and Goldschmidt Química de México. The nickel chemicals specialist Königswarter & Ebell joined the TIB Chemicals Group in 2010.

The company is a leading international supplier of a wide range of basic chemicals, innovative inorganic specialty chemicals and high-performance coating systems.

The largest production facilities are located in Mannheim and Hagen, Germany and San Luis Potosí, México. Our sales and distribution organisation operates worldwide. TIB Chemicals has more than 350 highly qualified employees who draw on the company's over 130 years of experience and accumulated expertise. Currently they produce and process more than 400,000 tonnes of chemicals and generate revenues of about 150 million euros a year, with an accelerating trend.

For years, the growth of TIB Chemicals has outpaced the industry average. Our success is based on the high-quality products and tailor-made solutions we develop for our customers, backed by a flexible logistics service. We are committed to supporting our customers and helping them to achieve business success.

The company is divided into three business units: Basic Chemicals, Inorganic Specialty Chemicals and Coating Systems. All three act flexibly and quickly to meet our customers' wishes and needs. Together they form a strong unit with a solid financial base and the logistical and organisational structure of a large corporation.



•• THE THREE BUSINESS UNITS OF TIB CHEMICALS

BASIC CHEMICALS

These products include acids, zinc- and sulphur-based chemicals for chemical companies, the metal-working industry, hot-dip galvanising, electroplating, the textile and plastics industries, water treatment and production of foods and beverages.

INORGANIC SPECIALTY CHEMICALS

Based on the elements tin, zinc, copper, nickel, bismuth and chromium. These special chemicals have numerous applications in today's high tech industries electroplating in the electronics and metal-working industries, performance enhancement in automotive and chemical industries, Catalysts for manufacturing resins, coatings and paints, process additives in glass, building and ceramic industries are our key markets.

COATING SYSTEMS

Polyurethane- and epoxy-based coating systems to prevent corrosion of pipelines and valves, water treatment facilities and power plants. Thermal Curing Systems, such as hot dip coatings for electroplating and tool manufacturing, as well as stoving varnishes for the packaging industry. Bitumen Specialties for use in building construction, civil engineering and road paving.

Our **Zinc Chemicals** are presented on the following pages.



❖❖ ZINC CHEMICALS – IMPORTANT BASIS FOR A WIDE RANGE OF APPLICATIONS

TIB Chemicals is one of the largest producers of zinc chloride solution in Europe. Beside zinc ashes and zinc-rich stripping solutions, hydrochloric acid is one of the most important raw materials for the production of zinc chloride raw solution. Per tank ship, we handle more than 100.000 tons of hydrochloric acid per year and can hence ensure a smooth continuous supply.

The zinc chloride raw solution is the basis for the manufacture of zinc chloride solutions in different concentrations and qualities. Our customers mainly come from the chemical industry.

They use our zinc chloride solution for the fabrication of bactericides, fungicides, plastic stabilisers, zinc soaps and many more products. The zinc chloride raw solution is also used for the production of fluxes and zinc chloride powder. These products are mainly needed in metal surface finishing, for example for the pretreatment in hot dip galvanising.

Our product range of zinc chemicals is completed by zinc ammonium chloride, zinc bromide (solid, liquid), zinc nitrate solution, zinc carbonate, ammonium chloride, zinc acetate and zinc oxide.



In addition to our own production, we optionally offer toll-manufacturing – also with customer-owned packaging and labelling, if requested, e.g. cleaners, etching additives and passivators.

The supply of our liquid products can be effected in small packaging such as containers, but also in complete street tank cars or rail tank wagons. With regard to packaging of our solid products, we are completely adapted to our customers' requirements. By default, we deliver in steel drums with PE-inlet, in which our products can be stored for a very long time. Especially, for zinc chloride powder, smaller quantities can be offered in reclosable plastic buckets with PE-inlet or in plastic bags. Thanks to the good infrastructure of our production site in Mannheim, we can deliver to our customers via street, rail or ship.





❖❖ ZINC CHLORIDE – QUALITY IN LIQUID AND POWDER FORM

We produce our aqueous zinc chloride solution in concentrations of 35–65 %. Individual quality requests from our customers, for example concerning heavy metal concentrations or organic contamination and nitrogen compounds, can be considered.

Transport is effected in street tank cars or rail tank wagons. Smaller quantities can also be supplied in IBC.

Zinc chloride powder in free-flowing quality is packed in steel drums containing 300 kg or for special applications as electroplating, in plastic buckets or bags containing 25 kg.





❖ LOGISTICS

Customers all over the world appreciate both our products and our reliable and flexible delivery service.

We respond quickly, no matter whether you need samples or large product volumes. We also adjust our service to accommodate your needs by delivering just in time. In addition, we are highly flexible with regard to packaging. You can select the package that best suits your application, from 25 kg in plastic bags to full road and rail tank cars.

Our operations are virtually free of supply bottlenecks, as we obtain our raw materials from a wide range of reliable sources. In addition to stockpiling many of these materials, we also have access to products of other divisions of TIB Chemicals AG. This high level of backwards integration along the value-added chain has a stabilising effect on the costs of producing our chemicals.



❖❖ FLUXES – ECONOMICAL AND EFFICIENT

Our fluxes are mainly used in hot dip galvanising for the pretreatment of steel surfaces. They are also needed for the pretreatment of metals before soldering and welding. We can offer to our customers a complete range of standard, acid-buffering and low-fume fluxes.

We have added an iron-precipitating flux to our product range: TIB Flux Ferrokill ("extra strong" version = TIB Flux Ferrokill ES). This patented flux was specially developed for the requirements of our customers. TIB Flux Ferrokill is an acid-buffering universal flux for the hot dip galvanising process. Ferrokill is different from all other known fluxes in its characteristic to autonomously oxidise unwanted iron enrichments and to precipitate the accumulated iron as iron hydroxide sludge. Consequently, our customers can remove, on site, undesirable iron from the flux bath by simple filtration.

All our fluxes are produced as free-flowing powder and packed in reclosable steel drums containing amounts of 200-300 kg, depending on the composition of the product, or in plastic bags with 25 kg of the product. Fluxes can be stored in the drums for long times without quality loss. If requested, certain fluxes can also be manufactured as ready-made solutions and supplied in street tank cars or IBC.

As an additional service, we can offer to our customers the recycling or the reconditioning of their used flux baths, filter dusts, zinc rich stripping solution and zinc ashes. The necessary analyses for the control of the flux baths are performed in our analytical laboratory. The remaining residues from the recycling process are disposed of according to regulations in our own, officially authorised landfill.

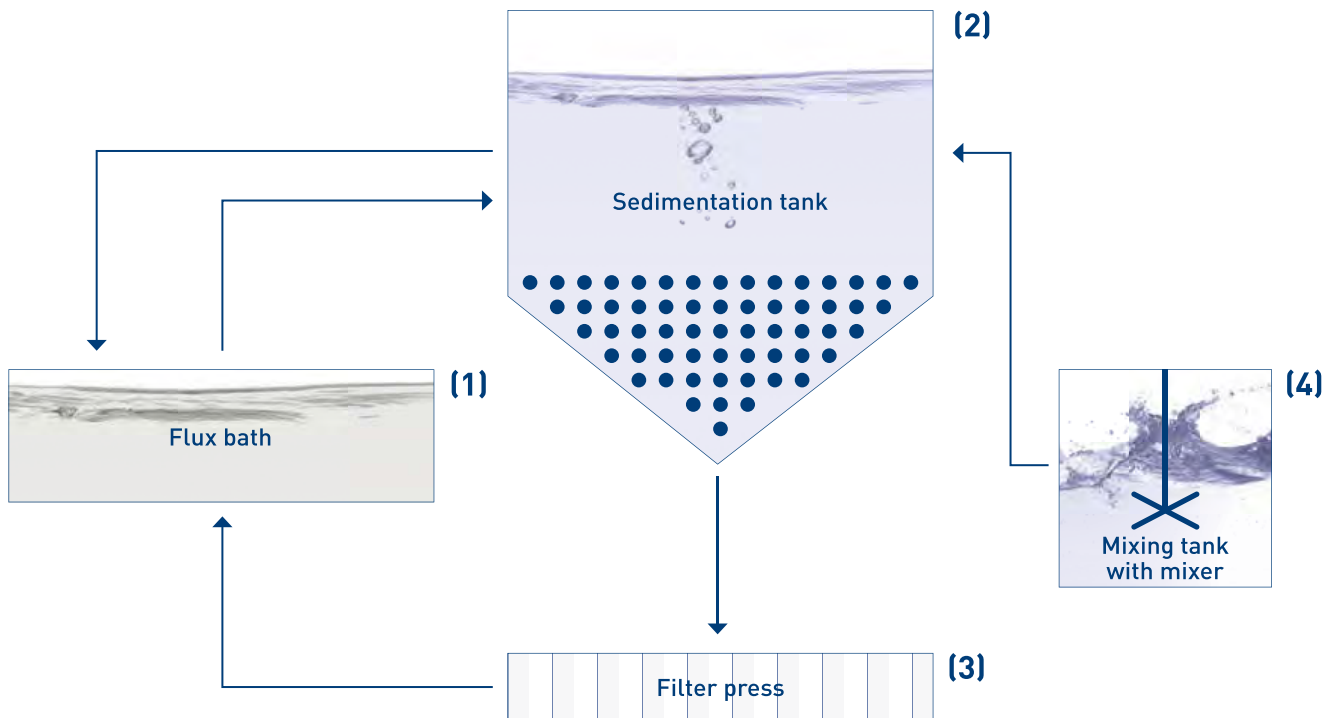


❖❖ TIB FLUX PRODUCTS AT A GLANCE

	Galvanising of pieces	Galvanising of small parts	Galvanising of wires	Galvanising of steel strips	
TIB Flux D1100	●	●	●	○	zinc ammonium chloride double salt
TIB Flux 60	●	●	●	○	standard flux
TIB Flux 60 SP	●	●	○	○	flux with acid buffer
TIB Flux SK	●	●	○	○	flux for acid correction
TIB Flux Ferrokill/ES	●	●	○	○	flux for iron precipitation
TIB Flux 69 S	●	○	●	○	low-fume flux
TIB Flux 72	●	●	○	●	low-fume flux
TIB Flux 73 S	●	●	○	●	low-fume flux
TIB Flux RA	●	○	○	●	low-fume flux
TIB Flux RSP	●	○	○	○	low-fume flux with acid buffer
TIB Flux RK	●	○	○	○	low-fume flux for acid correction

FLUXES FOR DRY GALVANISING

❖❖ TIB FLUX FERROKILL / FERROKILL ES – A DESCRIPTION OF THE IRON PRECIPITATION PROCESS



A PERFECT CYCLE

- A part of the flux bath **(1)** is pumped into the sedimentation tank **(2)**
- At the same time, Ferrokills dissolved in water is pumped with a dosage pump from the mixing tank **(4)** into the sedimentation tank **(2)**
- The iron sludge sediment is separated over a filter press **(3)** and is disposed of in a controlled way
- The filtrated and iron-free flux bath solution is pumped back into the flux bath **(1)** in such a way that both flux content and pH value increase as desired
- The flow rate of the treated flux and the dosage of the added TIB Flux Ferrokills depend on the production conditions



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