





BASIC CHEMICALS | INORGANIC SPECIALTY CHEMICALS | COATING SYSTEMS

Thermal Curing Systems | for long-lasting protection



∴ LEADERS IN QUALITY AND SERVICE

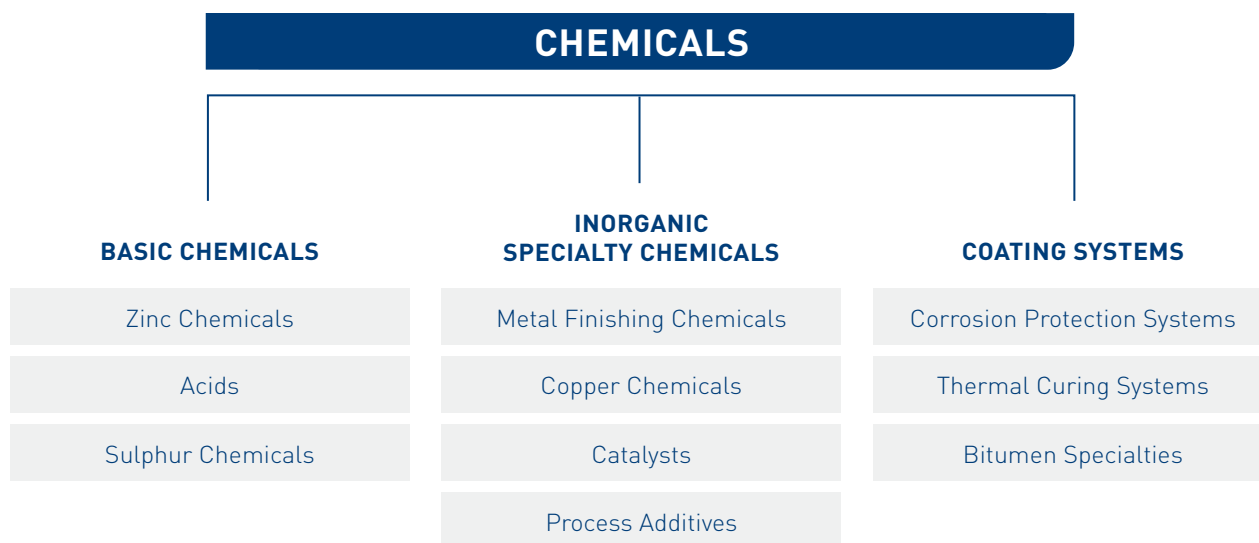
TIB Chemicals was born following the merger of Goldschmidt TIB of Germany and Goldschmidt Química de México. The nickel chemicals specialist Königswarter & Ebell joined the TIB Chemicals Group in 2010.

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	INORGANIC SPECIALTY CHEMICALS	COATING SYSTEMS
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.	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 metalworking 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.	Based on two-component liquid polyurethane and epoxy systems, serve as anticorrosion protection for the pipeline and valve manufacturing industry, as well as for water treatment and power plants. In the area of thermal curing systems, we produce dip coatings for the electroplating and tool industries, as well as stoving varnishes for the packaging industry. Bitumen specialties find their application in civil engineering and traffic areas.

Our **Thermal Curing Systems** are presented on the following pages.



Thermal Curing Systems

:: LONG-TERM PROTECTION FOR VALUABLE SURFACES

TIB Chemicals has been producing PROTEFAN® plastisols for more than 40 years, providing lasting protection of surfaces for tool manufacturers and for the galvanising industry. Additionally, we produce PROTEFAN® stoving varnishes for interior drum linings.

The trademark PROTEFAN® is established throughout Europe.

PROTEFAN® dip coating

- is designed for application to metallic surfaces. It can also be used on glass surfaces and shows excellent chemical and mechanical resistance properties.
- withstands temperatures from -20 °C up to +80 °C and for limited periods up to +160 °C.
- isolates electro hand tools up to 1000V.
- provides decorative cover with excellent abrasion resistance and anti-slip properties.

- offers high protection against leaking and splintering.
- extends the performance life of galvanized tools and is easy and efficient to apply.
- achieves variable dry film thickness of 1-5 mm.

INDIVIDUAL CUSTOMER SOLUTIONS

Through constant dialogue with our customers we are able to recognize their specific needs and can be certain that our services meet their expectation.

CONTINUOUS CONSULTATION WITH CUSTOMER BASE

Our highly trained technical personnel are available for advice, also on site, to provide and recommend the product system that results in the best solution for the customer. They offer expert support in finding solutions for application problems, which are then carried out fast and with reliable efficiency.



⚡ GALVANISING EQUIPMENTS WITH LONG DURABILITY

PROTEFAN® dipping pastes for the protection of tubes, galvanising racks, and steel-accu vessels.

Resistant to temperature loads, acids and chemical attack, PROTEFAN® dipping pastes are formulated to withstand even strong mechanical loads. They have high impact resistance and excellent flexibility properties, especially for durable bending of the hanging clips.

UNIFORM LAYERS ON ANY KIND OF SURFACE

PROTEFAN® dip coating has excellent design qualities as protective coating for galvanising racks, particularly for galvanising procedures such as ABS plating and other electroplating processes. By application through the dipping bath, the racks receive a dense and smooth surface coating which at the same time completely covers difficult and nearly inaccessible areas.

PROTEFAN® DIPPING PASTES FOR ELECTROPLATING APPLICATIONS

PROTEFAN® dipping pastes	4000	4013 HS	4015	4110	4125
Viscosity (mPas at 23 °C)	1500	1700	1700	2200	2500
Density (g/cm³)	1.2	1.18	1.18	1.19	1.2
Shore hardness (A)	70	68	68	72	68
Baking times (180-190 °C)	●	●	●	●	●
Rheologic properties	Standard viscosity	Intermediate viscosity	Intermediate viscosity, specially for ABS	High viscosity	Thixotropic viscose material, high viscosity, higher temperature resistance temporary up to +160 °C



❖ DECORATIVE TOOLS PROVIDING SAFE INSULATION

PROTEFAN® plastisols are designed to create covers, that are free of pores, providing lasting protection for tools and chemical glass vessels.

Tools coated with PROTEFAN® are chemical resistant and isolate up to 1000 V. The highly abrasion-resistant properties of the resulting surface grant a safe and reliable insulation during handling of the coated tools. Chemical glass vessels with the transparent PROTEFAN® dip coating do not splinter or spill, even in the event of bursting.

PROTEFAN® surface coatings combine both functional and aesthetic characteristics and can be supplied in all current RAL colours and with different surface structures. The surface finishes provide both decorative and security aspects. For example, glossy finishes with very smooth surfaces can be combined with highly effective insulating properties for the electrical industry, mat and rough surfaces for industrial services, or antistatic surfaces for the computer industry.

EASE OF APPLICATION

PROTEFAN® plastisols, designed for tools and glass flasks, are thermal curing plastisols applied through the hot dipping process. PROTEFAN® is highly efficient.

- Regardless of the required thickness, a single coat application is sufficient for complete protection of the tool surfaces.
- The pore-free and durable coating fulfills specific customer requirements.

⚡ SPECIAL APPLICATION

The PROTEFAN® plastisol range includes use for specialty designed parts and its “Hot Dip Application” method offers varying thicknesses by either lengthening or shortening the dipping time. It is possible to generate dual colour coatings and thereby providing an excellent design of the products.

PROTEFAN® DIPPING PASTES FOR TOOLS AND SPECIAL APPLICATIONS

PROTEFAN® dipping pastes	4300	4300 AS	4350	4011	4260	4050
Viscosity (mPas at 23 °C)	1500	1400	1800	1200	1200	2000
Density (g/cm³)	1.17	1.2	1.16	1.2	1.2	1.19
Shore hardness (A)	70	70	70	70	60	75
Baking times (180-190 °C)	●	●	●	●	●	●
Properties	Glossy surface	Glossy, electrically conductive surface	Slightly rough surface	Glossy surface, low viscosity	Glossy, non-slip surface	Glossy, translucent surface with glazed effect

⚡ PROTEFAN® STOVING VARNISHES PROVIDE HIGH CHEMICAL RESISTANCE

PROTEFAN® products enhance the function of drum linings and are physiologically inert.

In addition to its resistance when in contact with oils, greases, solvents, acids, salts, salt solutions, foodstuffs and water, PROTEFAN® is approved with respect to the current food legislation.



COST-EFFICIENT PRODUCTION

PROTEFAN® stoving varnishes can be applied efficiently.

PROTEFAN® when stove heated retains its colour of “Light Grey” up to +220 °C, after which it changes to “Olive Green/Brown” colouring, which is an indication of the quality of the coating system.

PROTEFAN® STOVING VARNISHES FOR DRUM LININGS

PROTEFAN® stoving varnishes	10-1	10-1
Viscosity (DIN 4 mm cup)	150 sec	150 sec
Density (g/cm³)	1.28	1.25
Baking times (220-240 °C)	●	●
Colour after baking	olive-green/matt	brown/glossy
Flash point	< 21 °C	> 21 °C



Sealings

❖❖ RELIABLE SEALING FOR GAS AND HEATING

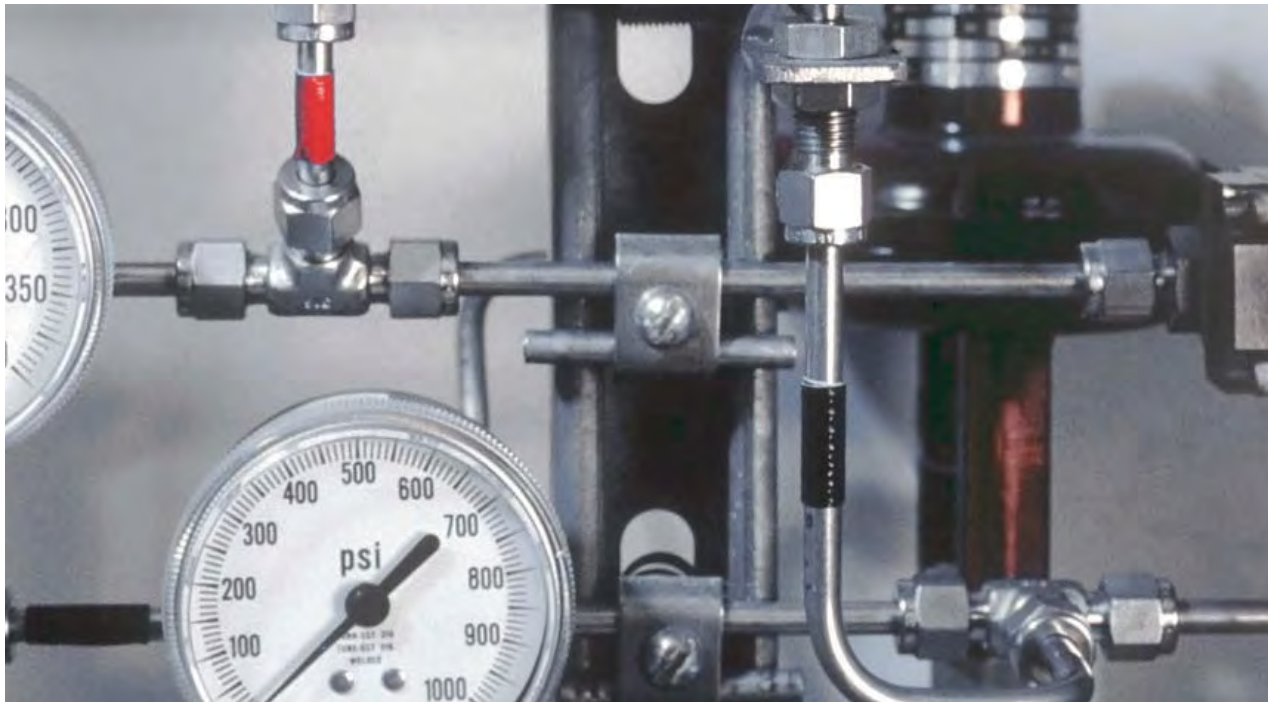
TIB Chemicals is Europe's leading manufacturer of sealing products for thread connections in interior gas pipes. We also manufacture sealings for heating systems and under floor heating.

Our trademarks PRODORAL®R6-1 and PRODORAL®H are of proven quality. PRODORAL®R-1 has been established for 25 years.

With PRODORAL®R6-1 thread connections in interior gas pipes can be sealed, and with PRODORAL®H heating systems such as underfloor heating.

The sealing is carried out fast, economically and environmentally friendly. In a simple procedure, PRODORAL®R6-1 and PRODORAL®H are pumped into the pipes and seal automatically: durably and reliably.

We deliver worldwide. Our customers receive not only the product but also the necessary equipment. Furthermore, we offer on-site training sessions.



❖❖ PRODORAL®R6-1 – THE SAFE AND ECONOMICAL SEALANT FOR THREAD CONNECTIONS IN INTERIOR GAS PIPES

PRODORAL®R6-1, a dispersion, is certified by the "Deutsche Vereinigung des Gas- und Wasserfaches e.V. (DVGW)" for thread connections in interior gas pipes, which can be sealed after construction or repair.

PRODORAL®R6-1 is used for leakage rates of maximum 5 l/h and at a maximum operating pressure of 100 mbar.



:: PRODORAL®R6-1 – OFFERS MANY ADVANTAGES

SAFE

PRODORAL®R6-1 is resistant to vibrations and aging processes. Furthermore, it withstands any media that may occur in domestic gas lines.

ECONOMICAL

PRODORAL®R6-1 is easy to apply and therefore economical. Under pressure, it is pumped into the gas lines and seals the leakages. No costly wall breaks are required.

FAST TO APPLY

With PRODORAL®R6-1 the pipe is sealed within a few hours.

ECONOMICAL IN CONSUMPTION

The required quantity of the sealant depends on the pipe volume. Due to the high dispersion ability, only a small quantity is necessary for 100 % sealing efficiency. PRODORAL®R6-1 penetrates under pressure into the leaky threads and durably seals the leakage. After draining, the recovered material may be reused several times.

SUPPLIED IN PRACTICAL CONTAINERS

We supply PRODORAL®R6-1 in practical one-way plastic containers.

ENVIRONMENTALLY FRIENDLY

PRODORAL®R6-1 is a water-based plastic dispersion. It is solvent free; no dangerous vapours occur. It can be harmlessly disposed and is not inflammable.

APPROVED ACCORDING TO DIN-DVGW

NG-5153 AR 0634

PRODORAL®R6-1 fulfils all requirements according to DIN EN 13090 in one-pass application.

COMPLETE SERVICE

We do not only supply the material but also the necessary equipment, such as diaphragm pumps and hoses. Our qualified technical advisors coach your specialists on-site in correct application methods. After successful participation attendees are certified according to DVGW worksheet G 624 "Technical rules for resealing of gas pipework".

❖❖ PRODORAL®R6-1 – EASE OF APPLICATION: SIMPLE AND FAST

PRODORAL®R6-1 seals leakages of gas lines from the main valve to the gas meter or to the gas outlets. The sealing procedure is easy and fast.

Under pressure, PRODORAL®R6-1 penetrates into the leaking thread connections. Sealing is carried out within a few hours.



1 | Screw the bleed valves onto every gas outlet. Put in the connecting valve to the lowest part of the main pipe. Blow out the dust from the pipe through all bleed valves, working from top to bottom.

2 | Fill the pipe with PRODORAL®R6-1 by using the diaphragm pump. The pump may be operated either by nitrogen gas or by pressurised air supplied from a compressor.

3 | After filling of the pipes, bleed the valves installed at the gas outlets. Afterwards, allow the filled pipe to remain under pressure for 30 min.

4 | The surplus material is removed from the pipe by blowing out with nitrogen or pressurised air. Afterwards, foam sponges (pigs) are inserted into the pipe at the gas outlets and pressed through, by nitrogen or pressurised air.

5 | The pipe is dried with the PRODORAL®R6-1 blower by blowing ambient air from the bottom to the top. The drying time depends on the size of the pipe.

6 | After equalisation of the temperatures according to DVGW-TRGI 2008, Pkt. 5.6.4.2, the test for soundness is carried out for 10 min at 150 mbar. The gas pipe can now be put into operation.

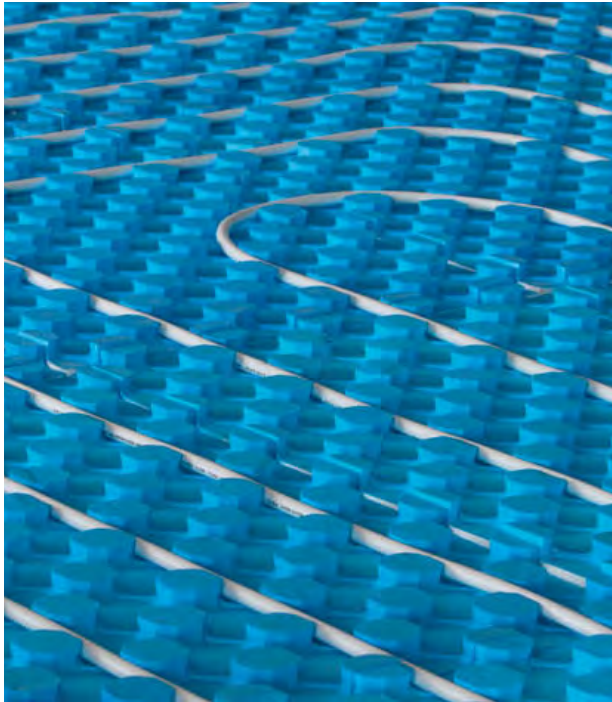




❖❖ PRODORAL®H – THE PERFECT SEALANT FOR HEATING SYSTEMS

The sealant PRODORAL®H reliably seals leakages in under floor heating systems, boilers and heating elements.

PRODORAL®H is suitable for usage in metal and plastic pipes.



❖❖ PRODORAL®H – CONVINCES

SAFE

Sealings carried out with PRODORAL®H are durably resistant to pressure as well as variations in temperature. PRODORAL®H remains in the heating installation and may eliminate future leakages.

ECONOMICAL

PRODORAL®H may be filled into the heating system using an ordinary hand pump for interior sealing of the leakage, without any need to break open the flooring.

EASY TO APPLY

PRODORAL®H is filled into the heating system with an ordinary hand pump, during the ongoing heating process, by connecting the pump to the filling valve of the heating system and filling in the sealant. Afterwards, all circulation pumps are bled and the heating system is allowed to operate for at least 12 hours with all radiator valves open. During circulation of the heating water, the sealant is spread within the system and penetrates into all the leaks. Sealing occurs within a few days.

ECONOMICAL IN CONSUMPTION

PRODORAL®H can be economically used and exactly dosed.

- for leakage rates up to 50 l/24 h, mixing ratio of approximately 1:200.
- for leakage rates between 50 l/24 h and 400 l/24 h, mixing ratio of approximately 1:100.

PRACTICAL CONTAINERS

We supply PRODORAL®H in commercial 5 l plastic cans.

HARMLESS

PRODORAL®H develops no dangerous vapours and is not inflammable.



☼☼ PRODORAL® – EFFECTIVE SEALING SYSTEMS WITHIN THE HOUSE AREA / QUESTIONS?

If you have any questions about specific sealing processes or our sealing products, please contact our sales team.

Our trained personnel will be happy to advise you on all matters related to effective sealing.





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