

## Speciality chemicals products:

— ESIM Chemicals expands its technology, adding phosphorus trichloride reactions —

New, cutting-edge production facility makes the Linz-based chemicals company a reliable partner for sensitive phosphorus compounds and secures a sustainable supply to the European market.

Developing new complex molecules and transferring them into production facilities requires specialist knowledge, innovative strength and decades of experience. All of these qualifications can be claimed by ESIM Chemicals, which has its registered office in Chemiepark, Linz, and has now expanded its portfolio with the addition of a new, cutting-edge facility. This makes it possible for them to now implement phosphorus trichloride ( $\text{PCl}_3$ ) with various reaction partners — something for which there is plenty of market demand.

“With the investment in the new production facility for  $\text{PCl}_3$  reactions, we have achieved an important milestone in the technological development of ESIM Chemicals. We now offer a wide range of key technologies and can even more successfully support our customers in the

custom manufacturing business,” comments Dr. Frank Wegener, ESIM Chemicals CEO, welcoming the next step in the company’s technological expansion.

### A reliable partner for sensitive phosphorus compounds

Production at the new plant has been under way at full capacity since July 2023, aligned to the specifications set by customers across various industries.

“We are proud of the expertise in the area of sensitive phosphorus compounds which we are able to offer our customers. With the new facility, we can now supply custom-tailored solutions to meet a huge range of requirements. This makes us a reliable partner for our customers in the European market,” reports Frank Wegener, looking to the future with confidence.

In its facility compound which includes this plant and neighbouring production buildings, ESIM Chemicals is also able to further process the created reaction mixture by means of distillation, extraction or isolation of solids. Moreover, the Linz-based chemicals company has implemented an advanced logistics concept which includes the capability to store ISO tank containers.



Dr. Frank Wegener, ESIM Chemicals CEO: “With this investment in a new production facility for  $\text{PCl}_3$  reactions, we have achieved a key milestone in technological development at ESIM Chemicals, and are thereby further expanding our European market position in the custom manufacturing business.”

### Phosphorus trichloride: extensive expertise

Phosphorus trichloride is an inorganic compound with the chemical formula  $\text{PCl}_3$ . This colourless liquid is an important industrial chemical. It is used for purposes including production of phosphites that can, for example, be utilised as ligands or in other organophosphorus compounds. Phosphorus trichloride reacts instantly with water or humidity, forming hydrogen chloride. Specialist knowledge is required to safely work with this substance. ESIM Chemicals has over 40 years of experience in handling phosphorus chloride. This expertise in dealing with the substance as well as its chemical conversion guarantees the highest level of safety and quality standards in the new production facility.

Phosphorus trichloride is also an important precursor for phosphorus pentachloride ( $\text{PCl}_5$ ) and phosphorus oxychloride ( $\text{POCl}_3$ ), which are used in many applications such as herbicides, insecticides, plasticisers, oil additives, and fireproofing.



Successful implementation of the new facility by the multi-disciplinary ESIM project team (under project leaders Dr. Gerhard Steiner & Dr. Franz Anders)



## ESIM Chemicals

ESIM Chemicals is one of the larger European synthesis service providers in the chemicals industry and has its registered office in Linz, Austria. It custom produces fine chemicals at scales from around 50 tonnes to several thousand tonnes per year. With 80 years of experience in the area of chemical science, the company is able to meet the requirements of customers in a huge range of industries.

in the execution of  $\text{PCl}_3$  reactions, but also making an active contribution to sustainability,” emphasises Frank Wegener.

ESIM Chemicals received the EcoVadis Platinum Medal in 2021, which highlights the company’s continuous commitment to sustainability and social responsibility.

### Successful implementation by a multi-disciplinary project team

Every product launch at ESIM Chemicals, including the implementation of  $\text{PCl}_3$  reactions, is guided by an interdisciplinary team. This team includes experts from the areas of chemical synthesis, analytics, technology, engineering, and of course production as well as supply chains.

“This means that together we are able to resolve complex challenges in the best ways possible,” reports Frank Wegener, praising the successful teamwork achieved by bringing together diverse expertise from across the company.

With a timeline of just 15 months, the schedule for setting up the new production facility was very tight; nonetheless, and in spite of many supply bottlenecks, the project was completed on time. Preparations for commissioning the facility and the start of production were also approached like a precision landing: the correct specification quality was created right from the first batch, and production was up and running at full capacity after just a few days.

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Further information is available at [www.esim-chemicals.com](http://www.esim-chemicals.com)

A new production facility for the implementation of  $\text{PCl}_3$  reactions makes ESIM Chemicals a reliable partner for sensitive phosphorus compounds.

Both chemicals can also be handled in the new facility operated by the Linz-based chemicals company.

### The highest safety and quality standards

ESIM Chemicals has set up the new production facility to meet the highest safety and quality standards. These cover everything from preventing substances being mixed-up in raw material storage, representative sampling of air-sensitive substances, as well as HAZOP measures to prevent incidents, up to and including inert processing of end-product samples in a glovebox.

The key components of the  $\text{PCl}_3$  conversion facility are:

- Concept for drying the reagent
- Enamel boilers with condensers for reaction temperatures up to 200°C
- Water-free heat transfer medium for heating and cooling
- Column for absorption of HCl
- Infrastructure (tanks, safety washers, utilities)
- Trays for truck and rail loading and unloading

The ESIM Chemicals facility compound can do more than just carry out the  $\text{PCl}_3$  reactions themselves. The generated reaction mixture can be further processed in the neighbouring production buildings, by means of additional procedures such as distillation, extraction and isolation of solids. On the logistics side, ESIM Chemicals has implemented a concept that enables storage of ISO tank containers both for the required raw materials and for the acquired product, thereby ensuring flexible production.

### Energy-efficient facility

Sustainable action is firmly anchored in ESIM Chemicals’ business strategy. As one of the larger European synthesis service providers in the chemicals industry, ESIM considers itself to be a partner that reliably and sustainably supplies the European market with fine chemicals. The investment in the new production facility also demonstrates this:

“Our facility is designed to be technologically advanced, but also energy-efficient. As such we are not only setting standards