



CLIMATE TESTING OF LIGHT-ALLOY WHEELS



Corrosion resistance is a must for light-alloy wheels

There are standard aluminium wheels and there are Fuchsfelge® wheels. When hearing this product name, every Porsche owner immediately thinks of outstanding driveability and the famous Porsche 911, with which the Fuchsfelge® became a legend as well.

Today, manufacturer OTTO FUCHS supplies various car makers with **light-alloy wheels**. Surfaces are produced with uni colour and twin tone paint as well as polished. The complex forged, distinctive **light-alloy wheels** have become an integral part of leading car makers' premium class. Therefore, the manufacturer **Otto Fuchs KG** from Meinerzhagen, located in the German Sauerland, places great importance on quality assurance. In a **Memmert climatic test chamber**, prototypes and pilot runs are tested for **corrosion resistance**.

Testing for filiform corrosion resistance



In a **Memmert climatic test chamber CTC**, Otto Fuchs tests **light-alloy wheels** for filiform **corrosion resistance**



Designs with twin tone surfaces (polished sections) and/or polished surfaces show an increased tendency for **filiform corrosion**. In a **Memmert climatic testing chamber CTC**, **Otto Fuchs** tests the quality of paint adhesion to polished aluminium surfaces in accordance with DIN ISO 4623-2 (paints and varnishes – determination of resistance to **filiform corrosion**) or the factory standard DBL 7381. This form of **corrosion**, with its typical **filiform** appearance, can be caused in particular by mechanical damage of the coating, e.g. a scratch. The main reason is thought to be chlorides, which are for example contained in road salt or in sea air.

Important: Long-term stability of the climatic test chamber

Once a scratch mark is applied to the surface to-be-tested, it stays in a salt fog chamber for 24 hours under defined conditions (e.g. in accordance with DIN EN ISO 9227 CASS, a different inoculation is possible) and is afterwards put in a **Memmert climatic test chamber CTC** for 28 days for **corrosion**. The temperature-humidity combination varies according to the applied standard or manufacturer. However, usually 40 °C/82 %rh or 60 °C/82 %rh is used. At the end of the test period, the **corrosion** creep depth of the **filiform corrosion** is evaluated subsequently.

Temperature may deviate by a maximum of ± 1 K over the entire test period. For this reason, Holm Vogt, responsible for **corrosion testing** at **Otto Fuchs**, along with the simple menu navigation, especially appreciates the long-term stability and associated failure-free weekend operation of the **climatic test chamber CTC**. After all, there is hardly any quality manager who would be pleased having to repeat a test that had been running for weeks under certain circumstances.

Atmosafe wants to thank **Otto Fuchs KG**, in particular the head of the chemical laboratory, Holm Vogt, for the assistance in writing this article.



Characteristic appearance of **filiform corrosion**, ©Corrosion and Protection Centre, School of Materials, The University of Manchester

Climatic test chamber with compressed air drying

The **climate chamber** from the Memmert custom products department is able to cover a wide range of temperature/humidity combinations, reaching from tropical to arctic climate. In addition, the operating personnel is enabled to operate the **medical devices** inside the chamber from the outside without having to open the door.

[mehr Information](#)

An overview of the main topics

- Corrosion testing
- Light-alloy wheels, aluminium
- Filiform corrosion resistance
- Otto Fuchs KG, Meinerzhagen
- Climate chamber, climatic test chamber DIN EN ISO 9227 CASS, DIN EN ISO 4623-2, DBL 7381

Laboratory equipment for climate testing

[Humidity chamber HCP](#)

[Constant climate chamber HPP](#)

[Climate chamber ICH](#)

[Climatic test chamber TTC/CTC](#)

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www.atmosafe.net > [Applications](#) > [Climate testing](#) > [Light-alloy wheels](#)

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