

Material

Quality begins with the material.

Brake discs and brake drums are made out of unmachined castings containing flake graphite (grey cast iron). The configuration of the cast iron is based on the one of the vehicle manufacturer for brake discs. Different ingredients are added on the basic material, in order to influence positively the properties of cast iron for durability and machining. Supplements in the iron alloy like e.g. copper, molybdenum, titanium and carbon are analyzed in the OE discs and are also used for the Zimmermann discs. Therefore cast material for each individual brake disc of Zimmermann matches with the OE parts.

Over the last few years, an increasing number of brake discs, which are not identical to the respective original part in terms of their design and function, have been sold on the market. Tests have revealed, that basic material specifications in particular, but also changes to tolerances result in deformations and increased cracking of brake discs.

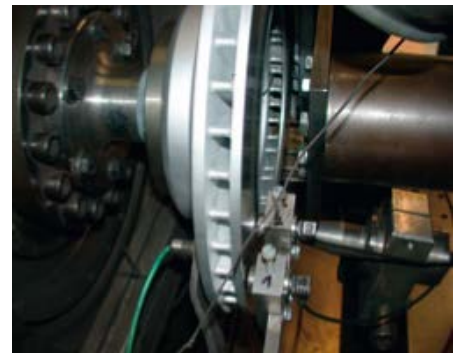
Otto Zimmermann GmbH has been performing inertia dynamometer tests and driving tests together with TÜV NORD Mobilität GmbH & Co. KG on an ongoing basis for more than 10 years, at great financial cost. On the basis of these tests, we are able to offer the free spare parts market qualitatively equivalent spare parts.

Zimmermann brake discs are "spare parts of the same quality" as original brake discs. The third-country brake discs tested by TÜV NORD do not fulfill this demand.

In all the brake discs tested, third-country products break considerably more quickly. The Zimmermann brake disc and the original product therefore have a significantly longer life expectancy.

The thermo-mechanical deformation is identical for the Zimmermann brake disc and the original brake disc. The third-country brake disc falls significantly below this level with respect to nearly all the criteria tested.

- Made in Germany in conformity with DIN EN ISO 9001:2008 and DIN ISO TS 16949
- Consistently high product quality meeting the very highest quality standards
- Responsible awareness of your safety
- Reliability
- In-house development
- Permanent program maintenance and extension



Loading test on the inertia dynamometer of the TÜV Nord



Zimmermann Brake Disc with 200 break applications in the overload test



Competitors brake disc with 81 brake applications in the overload test

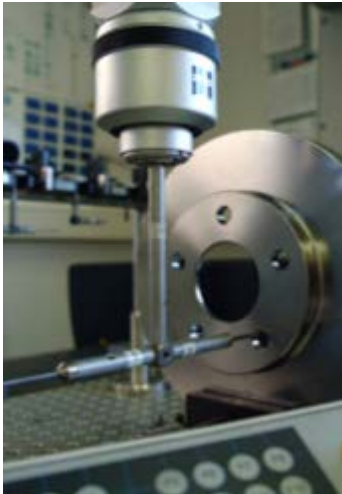
Quality ensurance

Our company is managed on the basis of a quality management system conforming to the requirements specified by DIN EN ISO 9001 and ISO TS 16949 and with due regard for - and compliance with - the terms stipulated in contractually applicable rules and regulations. This can be realised by the usage of best available raw material, best testing and measuring equipment, clearly defined working procedures and qualified staff.

In addition most of our brake parts program is approved with an ABE by the German Kraftfahrtbundesamt (KBA) meeting the requirements of §22 together with §20 of the German Road Traffic Licensing Regulations (StVZO).

Essentially original Zimmermann products are equivalent-quality spare parts, as defined by motor vehicle block exemption regulation KFZ-GVO (EU) 330/2010, which are on a par with the respective original parts first fitted. The dimensioning and the materials used meet the respective specifications of the motor vehicle manufacturers.

Our above-mentioned Quality Management System according to DIN EN ISO 9001 as well as to ISO TS 16949 together with the approval ABE ensures an optimum in braking and therefore a safe driving of our customers when using our brake parts.



ZEISS ECLIPSE 775 CNC
3D-coordinate measuring machine



SPECTROCAST
spectral analysis instrument



Certificate ISO 9001 as PDF



Certificate ISO TS 16949 as PDF

Quality checks

A comprehensive quality management after most modern standards guarantees a remaining product quality on highest level.

Initial sample checks, incoming inspections, initial sample approvals, in-process inspections and - if necessary - final inspections are implemented. Using the principle of operator-self-inspection program (OSI) these checks are minimised to realise cost optimisation. Additional checks are only used where necessary to supplement the OSI in case of special requirements.

Damages and defects in the cast material are recognized by visual inspections at all stages of production, allowing the affected units to be sifted out of the manufacturing process and withdrawn from further use. Damage includes for example scratch marks, blemishes or material fractures, which can occur through handling during manufacture and internal transportation.

Surface defects in the cast material, such as areas of porosity, shrink holes, cavities (hollows) and material shortage caused by insufficient mould filling or moulding, can occur during the casting and cooling process.

In addition to the customary analogue and digital testing and measuring equipment in standard use, Quality Assurance has access to other devices and facilities used to carry out further inspections.



Multi-position test control unit for running characteristics

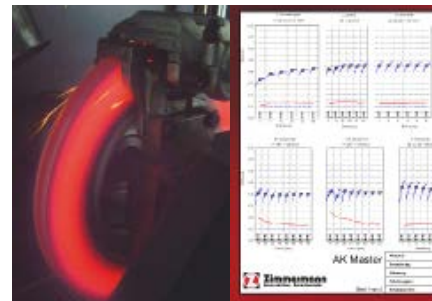


Damage in the cast material

Brake Pads: Quality and Requirements

Guaranteed quality – and safe!

Permanent controls in all phases of manufacturing guarantee consistent quality. Friction coefficient stability, compressibility, shearing strength and pad stability are continually monitored in the laboratory. As a rule our brake pads are pre-treated in a so-called "scorching" process, in order to guarantee optimal brake performance from day one (even before initially engaging the brake pads and discs.)



Test facility

Inspection certificate

Friction coefficient

During the friction coefficient testing, an average friction coefficient at various temperatures is determined. The measurement is performed before, during and after the temperature load. The aim is to maintain a relatively constant friction coefficient. For example has to be avoided, that there is a high reduction of the friction coefficient because of increasing temperature (known as brake fade).

Wear

During each friction coefficient testing the wear is also documented.

Compressibility test

During the compressibility test it is checked how far the friction material can be compressed at different temperatures. If the friction material can be compressed too much as of certain temperatures the desired braking effect cannot be achieved anymore.

Shearing strength

The friction material and the backing plate are bonded together under high pressure. In addition, for some pads pins are incorporated into backing plate to prevent the detachment of the friction material from the backing plate. Intention of the shearing strength tests the is to determine the force, under which the friction material detach from the backing plate.