

We offer you



German **Plastics Center**
Product Quality · Training · Research · Certification

SKZ

Failure Analysis and Expert Reports

Failure analyses and expert reports for

- producers of plastic parts
- users of plastic products
- insurance companies
- courts

for identification of the failure cause in the field of

- construction
- material
- processing
- stress

on all plastic products, e.g.

- injection-moulded parts
- extrusion products, pipes
- containers, tanks
- films, sheets, geosynthetics
- weld joints

for all sectors of industry, e.g.

- automotive industry, suppliers
- mechanical and electrical engineering
- medical engineering
- construction industry and craft trades

Further application areas

- moulding analysis as a basis for process optimizations
- finishing processes (galvanizing, enamelling)
- mould proving
- determination of the actual condition, determination of rationalisation potentials

All expert services from a single source

Our recognized experts have many years of experience in their specific fields. They have various accredited state-of-the-art testing and examination facilities at their disposal such as MFR, VZ, IR, DSC, TG, TMA, optical microscopy, REM, CT and specially adjusted product tests.

SKZ – “THE ADDRESS” when it comes to plastics.

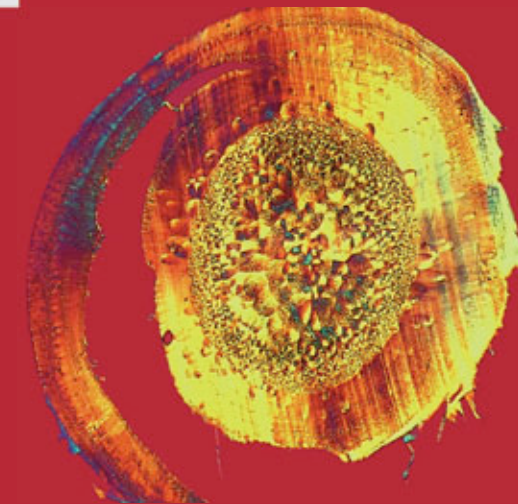
As the largest plastics institute in Germany we offer practical solutions – tailored exactly to your requirements. For the past 50 years now we have seen ourselves as a partner to the plastics industry providing extensive system expertise: By means of **Testing and Quality Assurance** we support your product policy, supplying you with valuable arguments for your key markets. With more than 10,000 participants each year, we are the market leader for **Training and the Transfer of Knowledge** in the field of plastics. Our **Research** division bets on the development and improvement of production technologies in line the market requirements. With the **Certification of Management Systems** we offer you the best prerequisite for efficiency and economic success.

Become part of a strong community!

With more than 340 members, the association for the promotion of the SKZ currently constitutes the most important and dynamic network in the field of plastics. Benefit from the numerous opportunities for cooperation achieved through the networking of experts from all areas of the plastics industry. Our network reflects the wide spectrum of the industry and offers excellent opportunities for the cooperation of economy, science and politics. For further information, please visit www.skz.de or contact us at fskz@skz.de

SKZ – TeConA GmbH | Testing, Quality Assurance, Certification

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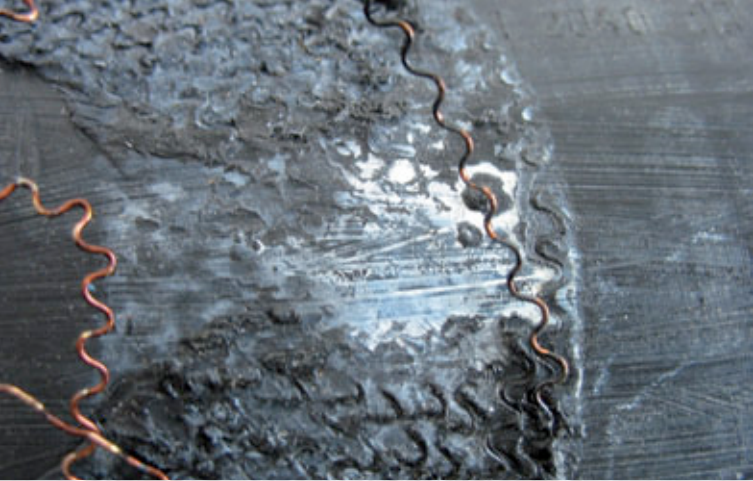


Tracking down faults

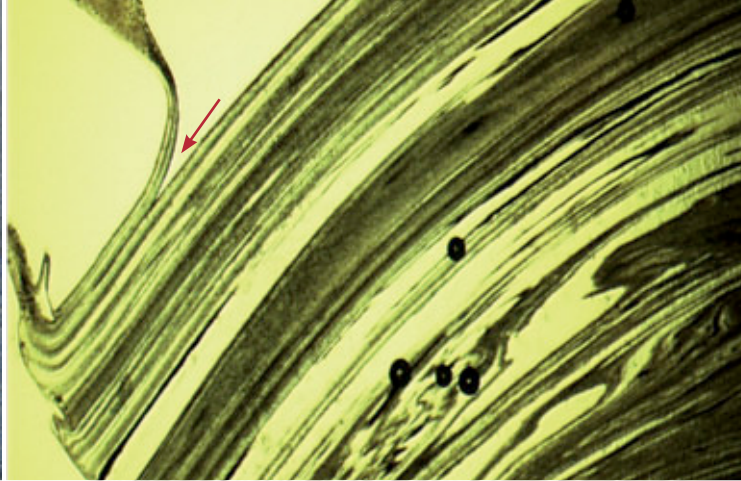
Industrial Consulting

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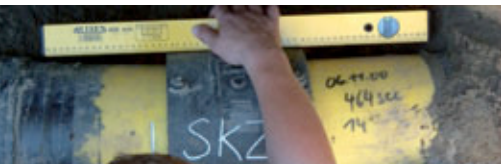
Leak of a joint connection due to impurities



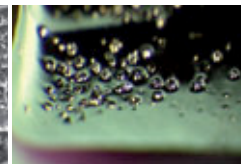
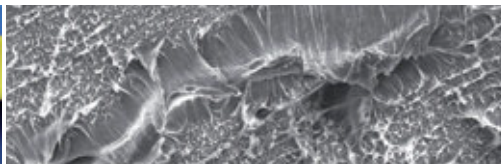
Microtome section with pigment streaks



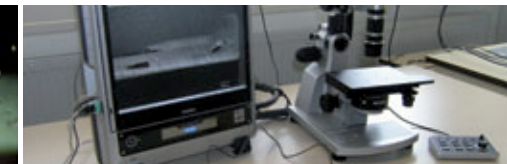
Pipe fracture caused by impurities



On the left: on-site evaluation – on the right: leak due to incorrect pipe insertion



On the left: analysis of the fracture surface structure – on the right: cratering in galvanized surface



On the left: optical microscope – on the right: flow wear, erosion on a pipe

Problem definition

According to our experience the various failure causes can be summed up in four main fields: processing failures, material problems, failures relating to the product design or also stress situations in individual cases. Often the failure has been caused during plastic processing. We support our customers with process analyses and optimizations on site.

More than 95% of all failures on pipes and joints are due to the inappropriate handling of products. One of our tasks is to identify the failure causes and show measures to avoid failures. With decades of experience, we prepare expert reports, perform tests and advise you in order to prevent failures and achieve optimum solutions.



Our testing services include for example

- microscopic analyses for failure investigation including REM and EDX examinations
- technological bend test according to DVS 2203-5
- testing of joints according to DVS 2202-1
- torsion shear test according to DVS 2203-6
- assessment of the joining process
- non-destructive tests (e.g. ultrasonic scanning and computer tomography)
- determination of the welding factor (short and long-term welding factor) according to DVS 2203-2 and -4
- assessment of the weldability and weld seam quality
- material analysis, e.g. by means of infrared spectroscopy (IR), dynamic-mechanical analysis (DMA), differential thermoanalysis (DSC), Vicat softening point...
- determination of the rheological properties, e.g. by means of MFR, capillary viscometer and cone/plate rheometer
- product and material-specific tests
- in-situ evaluations, on-site visits

Research and development

Moreover, as experts with industrial background knowledge, we assist you when it comes to the optimization of the processes for improving product quality and efficiency.

Expert reports and tests

It requires extensive specialist knowledge and considerable experience to perform failure analyses and prepare expert reports for courts. Our recognized experts have many years of experience in their specific fields. They have various accredited state-of-the-art testing and examination facilities at their disposal. We offer you advice and practical support in connection with e.g. the assessing of weld strength under specific conditions, service life predictions, acceptance and quality tests and much more. We can assist you in optimising processes, e.g. with regard to injection moulding or joining – also with numerical test evaluation (variance analysis with 3D representation) – or in analysing component characteristics (with determination of the short- and long-term tensile stress behaviour) or in preparing a structural analysis etc.

Our expert reports are issued in accordance with the VDI guideline 3822-K-TP "Failure analysis of plastic products" to the preparation of which SKZ has decisively contributed. All loading applications of plastic products are dealt with in individual cases in detail. An important support for the failure analysis is the testing laboratory of SKZ which is accredited according to DIN EN ISO/IEC 17025 and equipped with high-quality analysis devices, such as scanning electron microscope and computer tomography.

In addition to the preparation of expert reports with the relevant suggestions for improvement, the SKZ service also includes the application-oriented expert advice directly at the processing machine. Thus, we offer you a modular overall package. We do not leave the place until the problem is solved successfully once and for all.