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NETZSCH
Proven Excellence.

Accessories for Differential Scanning Calorimeters and Thermobalances

Crucibles, Sensors, Sample Carriers, Calibration Kits
for DSC, TGA and STA Systems

Analyzing & Testing

Introduction

Accessories for Thermal Analysis – DSC/DTA, TGA and STA

At NETZSCH, we always strive to be a step ahead. We place as much importance on the development and production of accessories as on that of new instruments. Accessories in contact with the sample or in close proximity to it require special attention. Potential reactions between the sample material and instrument parts must be prevented while ensuring that the test results remain reliable and accurate. For these reasons, one of our primary areas of focus is crucibles and sensors for DTA/DSC, TGA and STA instruments.

This catalogue provides an overview of all such crucibles and sensors for DTA, DSC, TGA and STA measurements. You will find many different crucible materials listed, and a variety of types and special shapes. From among these, we can help you find the right crucible size and material for any application, be it standard or special. In addition to standard aluminum crucibles, our portfolio includes autoclaves with low to medium or high pressure-tightness, as well as ones for determining the oxidative-induction time (OIT) and solid fat index (SFI). We offer crucibles made of ceramics or metals covering a wide temperature range. In the high-temperature range, special TGA and DTA crucibles, slip-on plates, meshes and baskets are available to accommodate specific sample dimensions and densities.

Lately, the demand for special crucibles has been increasing. Of course, measurements can only be carried out when the right sensor or sample carrier for these special crucibles is available. We have therefore listed these special cases here, often providing application examples to demonstrate their characteristic advantages.

Our accessories can open up a world of possibilities for your thermoanalytical needs. It is our hope that this catalogue will serve to acquaint you with these. If you have any questions, or if you require something specific which you cannot find in the following tables, please simply contact us – NETZSCH welcomes the challenge of working out a solution tailored to your application, and we are always happy to hear from you.

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Crucibles

Crucibles and Their Selection

Crucibles and their lids are made of materials resistant to high temperatures, usually porcelain or an inert metal. Ceramics such as alumina, zirconia, and especially magnesia will tolerate the highest temperatures. One of the first metals used in crucible production was platinum; more recently, metals such as nickel and zirconium have also been used. The type of crucible used for thermo-analytical measurements can have a strong influence on the measurement results obtained. Additionally, the crucible can also influence the characteristics of the instrument's measuring cell.

Important Factors for Selection of Suitable DSC, TGA and STA Crucibles for Your Sample

- The DSC crucible should have a flat bottom and be made of a material with a high thermal conductivity. This guarantees optimum heat transfer and low temperature gradients between the sample, crucible and sensor.
- The crucible should be made of an inert material in order to prevent reactions with the sample in the programmed temperature range. Exceptions are crucibles for which a catalytic effect on the sample is desired (e.g., copper crucible for OIT tests, etc.).
- The crucible should not exhibit anyphase transitions or other effects in the programmed temperature range; the melting point or fusion temperature must exceed the maximum application temperature to a sufficient degree.
- The dimension, shape and specific heat of the crucible should be optimized to achieve and/or maintain the highest caloric sensitivity and lowest time constant for the measuring system. Optimized parameters will result in sharp, well-defined and clearly separated peaks.
- Crucibles should be reusable, especially special ones for specific applications.