



**BAM**



**TÜV Rheinland Group**

## **Nondestructive Testing (NDT) as a component of the quality surveillance at the production and the use of the Type B-Packaging**

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### **Abstract**

The quality assurance during the production of construction materials is able to ensure manufacturing almost without essential inhomogeneities.

But material inhomogeneities never can be excluded completely.

In the light of a loss of integrity of a component, which has the consequence of a significant radiological influence to persons or the environment, a detailed NDT is needed.

The high requirements of the Type B- Packaging demand a special attend.

For the design of the Type B-Packaging therefore it is necessary to pay attention to:

- the fracture-mechanics characteristics of the materials,
- the reliability of the manufacturing methods of the packaging,
- the detection sensitivity of the NDT.

Thus a definition of acceptance criteria (size of, frequency, minimum distances etc.) of inhomogeneities is possible.

The NDT has to prove these acceptance criteria surely.

The lecture describes the use of the NDT during the manufacturing and recurring examination of Type B-Packaging by selected examples.

Special attention finds the view of the consultant of the BAM (BAM is responsible for the supervision of the quality assurance and quality control as the national authority in Germany).

The importance of

- the procedure selection,
- the technology of application and
- the examination by the independent consultant

for the efficiency and limits of the mainly used procedures are demonstrated.

These procedures are:

- ultrasonic testing,
- magnetic particle testing,
- penetration testing,
- visual examination,

The experience from the NDT of more than 100 casks will be presented.

The main components of application for the NDT are the container bodies, the lids, the trunnions and the screws.

The ultrasonic testing of a container body for example requires planning, execution and evaluation of more than 30 different test procedures, in order to have a sufficient detection sensitivity.

Professional application and surveillance makes the NDT to an important component of the quality assurance and the security of the Type B-Packaging.