

VeriData

verifying your **existing data**

Safety data is critical in the definition of safe operating conditions for material handling and processing across all industries as it underpins the design and specification of safety systems. The EU Directive, ATEX 137, implemented as DSEAR 2002 in the UK, places considerable emphasis on understanding the fire and explosion properties of the materials you are handling or processing. Therefore, it is essential that your existing data is valid.

WHY VERIFY EXISTING DATA?

If existing data is available, are you confident that it is correct and still valid? Whilst you would expect data derived from a reputable source to be reliable, there may be many occasions where the validity of data may be questionable. Such circumstances include:

- Old data obtained using testing standards which have subsequently changed or been withdrawn. For example, if you have explosion severity data utilising the Hartmann tube apparatus - this method has been withdrawn for such applications, as the procedure has been improved.
- Data obtained using invalid methods (e.g. combustible dust data which is not verified within the 20-L sphere)
- Materials which, by virtue of evolving changes in manufacturing methods, may exhibit markedly different properties compared with the time when the existing data was obtained.
 - Significant differences in safety test results may occur due to changes in particle size, moisture content, particle shape, composition, impurity profile, etc.
- Occasions where the source of the original data is unknown (or otherwise dubious).
- Data which is questionable or untrusted (or simply requires confirmation).

- Data obtained from literature which is to be applied to a specific material manufactured by a specific method.
 - Many past examples indicate that literature data can be appreciably different from experimental data for any substance. Indeed, in most cases, conflicting literature data exists for a single substance.

If the basis of safety for your process or operation relies on material safety data, verification may be an important aspect in gaining confidence and confirming that the design basis is adequate. Erroneous data may lead to the over-design of safety provisions, resulting in unnecessary costs in equipment and time. Conversely, it could lead to the under-design of safety systems and increase the risk of fire and/or explosion on plant. The importance of having the correct data is clear.

HOW TO VALIDATE EXISTING DATA

If concerns exist regarding the original test methods employed to collect the data, a review of the test method evolution would be recommended. The timeframe from which the data originates will allow for our testing specialists to assess and make judgements regarding the adequacy of the existing data. Major test method changes would indicate a need to re-test a material property whilst minor changes would probably permit confirmation that the existing data is acceptable for the relevant application.

WHAT DEKRA CAN PROVIDE

Key areas to assess would be ignition sensitivity and explosion risk / severity.

Minimum Ignition Energy (MIE) and Minimum Ignition Temperature (MIT of a dust cloud and dust layer) data confirms whether potential ignition sources pose an explosion risk, by assessing a materials sensitivity to ignition. The MIE indicates sensitivity to electrostatic / mechanical sparks, whereas the MIT tests are used to determine the correct selection of electrical equipment within zoned areas.

The Minimum Explosion Concentration (MEC) and Limiting Oxygen Concentration (LOC) are key parameters for avoidance of a flammable atmosphere. Whether its ensuring that there is an insufficient quantity of fuel or oxidant

available to remove one aspect of the 'fire triangle', it is vital that the data is correct if directly implemented into any existing safety measures.

If the primary protection measures fail and a dust explosion occurs then it is vital the explosion is safety controlled, for example through venting, containment or suppression systems. Explosion severity testing will confirm that vents are correctly sized or that equipment can withstand the maximum pressures generated.

DEKRA has many decades of experience in the generation and application of process safety data. Our GLP compliant laboratories ensure strict procedures are upheld, utilising UKAS rated equipment. Our test laboratories are equipped to repeat these vital tests to investigate the explosive properties of dusts.

Our verification procedure involves:

- FREE review of the original test report for your first 10 data samples.
- Confirmation that the test method is correctly specified to meet the required data application.
- Confirmation whether the test standard remains applicable and, if not, do the intervening changes affect the validity of the data?
- Providing written confirmation of the validity of the test data or specifying a test program to obtain valid data.

Although there is no charge for the data review of your first 10 samples, a small fee would be made for the provision of a 'verification statement', over and above the written confirmation above, and to review further sample data. If re-testing is advisable, we will consult with you over the most appropriate test programme based on the volume of work and the safety range tests that match your needs.

We have designed a number of special test programs to compliment and build on the existing test data to make these as cost effective as possible where further testing is required. This can, in many cases, avoid the need to undertake the full testing; thus minimising sample volumes & higher costs.

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