

Assistance in the formulation of test requirements involving measurements:

It is difficult to define which measurements can be classified as trivial, i.e. those for which a measurement method need not necessarily be described. Measurements may often be regarded as trivial if they can generally be performed with standard equipment and reproducible results can be expected from them even where no measurement method is described.

Requirements in product standards which are based upon variables the measurement of which is not trivial must describe a suitable measurement method or make reference to such a method. In order for the requirements to be formulated such that the results of the required measurements are representative and reproducible, certain *generic* criteria must be satisfied, and generally also certain *specific* criteria:

- Comprehensive provisions concerning the *generic* criteria to be met in the formulation of measurement requirements already exist in the principles for standardization activity ¹.

Page 1 of the checklist is based essentially upon these provisions.

- A study commissioned by KAN has further shown that measurement requirements can be classified intelligently according to *certain influencing factors and their parameters*, and that the undefined concepts in the standardization rules referred to above can be substantiated.

The result is essentially that shown on **Page 2 of the checklist**.

Application of this short checklist enables the necessary measurement procedures to be formulated in the required detail but with the maximum brevity and ease of use.

Should it transpire however that defining measurement methods in sufficient detail or applying them in practice would entail excessive effort, consideration may instead be given to formulating a reasonable qualitative requirement (such as specific measures to reduce a hazard rather than a quantitative test involving measured variables).

¹ See Section 6.3.5 of CEN/CENELEC Internal Regulations Part 3:2011/modified ISO/IEC Directives – Part 2:2011.

Generic issues relating to the formulation of measurement requirements (derived from: see Footnote 1, p. 1)	<u>Where relevant</u>, proceed as follows	Conclusion for the specific measurement task
1. Do other documents already exist for general or related test methods for similar properties?	Consider existing documents and make reference to them if applicable. Avoid duplication of provisions	
2. How precisely should the requirement be defined?	Define tolerances for all values other than minimum and maximum values	
3. Can the test method be applied, with little or no difference or even verbatim, to more than one product or to a product type ? 4. Is it probable that other documents will also contain references to this test method?	Formulate the test method as a document in its own right, then make reference to it in a suitable way (for example by supplements or amendments). Avoid duplication of provisions	
5. Does more than one adequate test <u>method</u> exist for the measurement task?	Define only one test method where possible. If for whatever reason, standardization must encompass more than one test method, state the reference test method	
6. Is the required measurement apparatus not readily available ?	In order to ensure that a comparable method can be performed by all parties, provide precise information on the measurement apparatus if at all possible, rather than referring to the product of a single instrument manufacturer (refer also to page 2 in the checklist for the test arrangement)	
7. Is it necessary to standardize an item of test <u>equipment</u> which can also be used to test other products?	Produce a separate document in agreement with the committee responsible for such equipment	

Influencing factor	Can this parameter influence the test result?	If so, provisions which may then be required in the standard	Conclusion for the specific measurement task
1. Test object	<p>Condition of the test object e.g. old, new, used, cold, warm, damp, dry, sanded, smooth If applicable, type and condition of parts of the test object (drill bit, saw blade, etc.), e.g. old, new, used, sharpened, blunt, dimensions</p>	Pre-treatment, conditioning	
2. Test arrangement	<p>Measurement equipment e.g. accuracy of measurement, scanning rate, compliance with specifications in standards, storage, evaluation e.g. dimensions, weight, sensitivity, compliance with specifications in standards, response time, alignment of <i>sensors</i></p>	Properties of the measurement equipment; if applicable, validation methods, and Properties, point of measurement, position and means of attachment of the <i>sensors</i>	
	<p>Further components of the test arrangement e.g. energy sources, testing bench, application of the loading to the test object, test finger, impact test bench, target panels, torso/dummy</p>	Properties of these components (dimensions, drawings, weight, strength, etc.)	
	<p>Condition of the test equipment/work piece, if necessary e.g. old, new, used, concentration, cold, warm, damp, dry, sanded, smooth, hard, soft, standardized concrete, dimensions</p>	Pre-treatment, conditioning	
	<p>Ambient conditions e.g. background noise, climate (temperature, atmospheric humidity), room dimensions</p>	Related to practice or simulated conditions	
	<p>Arrangement of the test object e.g. direction of action, application of the loading, affixing</p>	Dimensions, position/body posture of the test person, drawings	
3. Performance of the test	<p>Test procedure e.g. sequence, time, time of day</p>	Test sequences, time intervals, number of repetitions	
	<p>Conditions of use/operation for the test object e.g. speed, tool, voltage</p>	Related to practice or simulated conditions	
	<p>Number of objects to be tested</p>	Number	
4. Test subject	<p>Experience, anthropometrics</p>	Minimum/maximum requirements	
5. Interpretation	<p>Calculation method</p>	Mean, median, rms value	