# STATEMENT OF COMPLIANCE AND DECISION RULE

**What is a statement of compliance?**

The customer, in addition to requiring tests from an accredited laboratory, can request a *statement of compliance*. The laboratory, on the basis of the results obtained, decides whether the samples comply or not with the specifications requested by the customer.

**How is it expressed?**

Let's consider for example the test which assesses a surface's tendency to retain dirt. For the "countertops" class of UNI 11216, this test is passed with a value ≤4 (limit). If the result obtained by the laboratory is 4 with an uncertainty of ±1 , the statement of compliance would be:

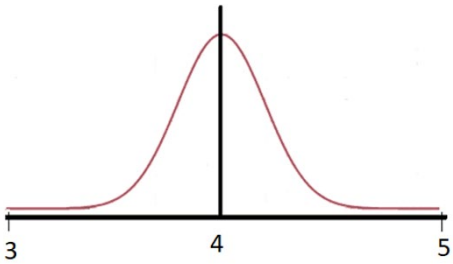
*"Alleged compliance of countertops class of UNI 11216 with a probability of 50%, according to the relaxed acceptance rule for numerical assessments, with a confidence level of 95%"*

Let's see how this sentence should be interpreted.

In order to issue a statement of compliance, the laboratory must:

- report the standard or the specifications on the basis of which it is determined.
  The laboratory must check whether the test results exceed the limits imposed by the standard or by the specifications requested by the customer.
- report the test results accompanied **by the measurement uncertainty**.
  Nobody is perfect, not even an accredited laboratory! As much as it performs tests analytically and accurately, it will always be subject to systematic and random errors that produce uncertainty. The result provided will therefore not be a single value, but a **range of values.** In the event of a result of 4 with an uncertainty of ±1:


*Value without uncertainty*




*value with uncertainty*

- report the **decision rule** applied.
  When the laboratory must state the compliance of a product, it must compare the result obtained to the limit to be exceeded, but in order to do so it must take into account the measurement uncertainty.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In the example above, the result with ± 1 uncertainty will have an equal probability of exceeding the limit or not exceeding it. Then, there will be only a 50% probability that it complies with the standard, that's why it is only an alleged compliance.

To make these considerations, the laboratory relies on the **relaxed acceptance/stringent rejection decision rule**, which consists in judging the result as non compliant only if it does not exceed the limit with the whole range of uncertainty. If, on the other hand, it exceeds the limit with the whole range, it would certainly be compliant, while if the range of uncertainty lies in between the limit, as in the example, compliance is only alleged.

This rule is used for all NUMERICAL ASSESMENTS (es. abrasion resistance, scratch resistance) and for DIMENSIONLESS ASSESSMENTS as the one in the example (e.g. dry heat, wet heat).

In the case of multi-line assessments (chemical resistance, thermal shocks, cross-cut), the **simple acceptance/rejection decision rule** is applied: measurement uncertainty is not taken into account; only the result obtained is considered.

- report the confidence level applied.
  This factor is not related to the truthfulness of the compliance statement, but to the goodness of the result, because it depends on the accuracy with which the laboratory has determined the measurement uncertainty. For the Performance Lab the confidence level is always of 95%.
  N.B the confidence level is not the probability of exceeding).