

ASTM D3244 – Standard Practice for Utilization of Test Data to Determine Conformance with Specifications

Critical vs. Non-critical Specifications

ASTM D3244

- Standard practice that presents guidelines for resolving product quality disputes
- Indicates how test imprecision should be interpreted relative to specification values
- Provides a technique for comparing an assigned test value with a specification value
- Defines specifications as either “critical” or “non-critical”

Critical Specification

- A specification for which the receiver must have a high degree of assurance that the product actually meets or exceeds the quality level indicated by the specification value
- Based on the test result(s), unless the receiver can be 95% confident that the product meets or exceeds the specification, the product would be considered nonconforming and would be rejected.

Critical Specification (continued)

- Critical specifications require an assigned test value (ATV) that is “better” than the specification value (S) in order to achieve product conformance and acceptance
- “How much better?” depends on the precision (R) of the relevant test method and the number of test results (N) used to determine the ATV.

Non-critical Specification

- A specification for which the receiver only needs assurance that the product quality is not substantially poorer than is indicated by the specification value
- Based on the test result(s), unless the receiver can be 95% confident that the product fails to meet the specification, the product would be considered conforming and would be accepted.

Non-critical Specification (continued)

- Non-critical specifications allow an assigned test value (ATV) to be “worse” than the specification value (S) and still achieve product conformance and acceptance
- “How much worse?” depends on the precision (R) of the relevant test method and the number of test results (N) used to determine the ATV.

D4683 Examples

- Proposed Specification Value: 3.5cP Non-critical
- $R = 0.126$ (3.6% of the mean)
 - ATV based on average of two test results (different labs)
 - Acceptance Limit (AL) = $3.5 - (0.126 * 0.419) = 3.45$
 - ATV based on one test result
 - Acceptance Limit (AL) = $3.5 - (0.126 * 0.593) = 3.43$

D4683 Examples (continued)

- Proposed Specification Value: 3.3cP Critical
- $R = 0.119$ (3.6% of the mean)
 - ATV based on average of two test results (different labs)
 - Acceptance Limit (AL) = $3.3 + (0.119 * 0.419) = 3.35$
 - ATV based on one test result
 - Acceptance Limit (AL) = $3.3 + (0.119 * 0.593) = 3.37$