

Cable Lore

ANACONDA 

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A WIRE AND CABLE SPECIFICATION, PER SE, IS ONE OF THE MOST ABUSED TOOLS IN THE WIRE AND CABLE BUSINESS. WHEN USED JUDICIOUSLY THEY IMPLY QUALITY AND ARE INVALUABLE AS STANDARDS OF MEASUREMENT. WHEN SPECIFICATIONS ARE PREIMARILY USED AS "GIMMICKS", VALUES ARE THROWN OUT OF CONTEXT AND THEIR CONTRIBUTION IS LIMITED.

A recent visitor to the mill made the statement that he has tried for 25 years to get a cable specification that would insure reliability so that he could sleep well nights. The odds are pretty good that this search will continue. Quality is built into a cable, not a specification. The following lists a few of the things a specification can and cannot do:

(1) A Specification Does:

- A. Identify a product and provide a scope of its application.
- B. Identify materials and standardizes dimensions.
- C. Standardizes geometrical arrangements of components.
- D. Lists minimum acceptance tests.

Note: These characteristics can be checked on a routine basis and are a function of the Inspection Department.

(2) A Specification Does Not:

- A. Reflect performance beyond the minimum requirements.
- B. Identify all application characteristics necessary to insure maximum quality and customer acceptance.
- C. Have enough flexibility to act as a criteria for evaluating one class of products against another - for example, high-voltage butyl versus TPE, EPR and Polyethylene. Each is an individual product with its own peculiar set of properties.
- D. Necessarily weed out the cats and dogs. It only gives them some minimum values to shoot at.

Fuzziness begins to appear in specifications when one tries to incorporate item from (2) into item (1). Differences of opinion and gimmicks tend to deteriorate original attempts at standardization and what was intended to be a simple, orderly document becomes an instrument of confusion.

A word of explanation on various types of testing will be profitable in placing proper perspective as to what type of test requirement is applicable and necessary in specification writing.

During the normal course of development of a new cable construction, R and D test evaluation falls into three areas of testing:

(1) Design or Qualification Tests

These tests are severe in nature and measure the upper limits of performance of a cable. Often the tests are destructive. These tests include: dielectric breakdown, cyclic aging, long-time immersion voltage life tests, and current overload tests. Results are indicative of how well the cable is engineered.

(2) Routing Physical and Electrical Tests per IPCEA, ASTM, or U/L

These include tests such as tensile strength, elongation, aging, power factor, SIC, ozone-resistance, etc. This is an established test pattern to determine that a cable has been manufactured correctly and confirms that the physical and electrical properties are within acceptable statistical limits.

(3) Application Type Tests

When the application of a cable construction is known, special tests simulating conditions peculiar to that application can be performed and give some feel for predicting performance. The more extended the tests, the less the calculated risk. These tests are not usually a part of conventional specs and include: abrasion, chemical-resistance, weathering, overload, flexing, etc.

Design and application tests, because of their nature and time involved in testing, are not readily applicable to routine spec requirements.

Once a cable design is established and backed up by sound engineering data, the integrity of the manufacturer in reproducing this design consistently becomes a major consideration. Once this integrity is established, a specification can be an orderly document requiring only the following:

1. Complete identification of the product and a scope of its application.
2. General identity of materials and standardization of dimensions.
3. Standardization of component arrangement.
4. Defines minimum acceptance tests.

Design and application data form a sound basis for cable recommendation and when used in proper perspective are the meat for a good promotional story.