ALCAN CABLE
WHITE PAPER

The Importance of Brand Confidence, a Manufacturer's Reputation and their Quality Management Principles in Selecting Aluminum Building Wire

When deciding on the purchase of electrical building wire, it is important to know what you are buying and not only consider the price, but the brand, the reputation of the manufacturer and the quality that is designed and tested in that product. In these current economic conditions and time of uncertainty, there is a greater chance for unsafe non-compliant product to be available in the marketplace. Therefore, contractors and distributors should be extremely vigilant and ensure they select manufacturers and brands that they know and trust. It is important to look at quality assurances for products and testing procedures, in addition to the company's reputation and commitment to their customers, and to the integrity of the electrical industry.

With over 100 years in the cable industry, second-to-none reputation and world-class operations, Alcan Cable's brand name and superior quality assurance methodologies set the benchmark for reputable cable manufacturers across North America. This strong reputation and standard of excellence will assure customers that they will always receive top quality products and avoid the risk of using non-compliant products.

1. How big a problem are counterfeit and/or non-compliant products for the electrical industry?

Counterfeit products are estimated to be a $500 billion dollar problem growing at a rate of 20% to 25% annually. US customs officials seize roughly $1 million worth of counterfeit products each month. The National Electrical Manufacturers Association (NEMA) is the leading US trade association representing the interests of electro-industry manufacturers and recently stated in an anti-counterfeiting brochure that: "Counterfeiting typically employs substandard materials, resulting in poor performance and dramatically increased risk of fire and electrocution in residential, commercial and industrial properties."

When it comes to non-compliant products, quality and safety are unfortunately often a secondary consideration to price, as purchasers reasonably assume that all cables bearing an approval mark are legitimate and meet the required standards.

The declining US economy and pressures to reduce spending, coupled with the potential for unregulated products in the supply line, make this infiltration inevitable. Some products have entered the marketplace that cannot pass the rigorous safety and physical tests required by the industry, despite the fact that they carry marks of certification. Through independent testing efforts, Alcan Cable has witnessed the market presence of cable products that do not comply with US industry standards first hand, and are deemed to be potentially unsafe.

2. What have test results revealed about non-compliant aluminum building wire?

The Alcan Cable Technology Center recently performed testing on samples of some commercially available products based on customer feedback, and found the cable did not meet or come close to meeting industry standard requirements for alloy chemistry, mechanical or physical properties. Specifically, we found significant non-compliance issues in the following areas:

- A registered 8000 series aluminum alloy was not used. The cable was marked 8000 series alloy, however, all samples failed to meet, or even come close to any of the important chemistry limits that have been established for over 30 years for any registered 8000 series alloy.

  Registered 8000 series alloys have been specifically formulated, tested and approved to avoid issues with creep in the connectors and have been a proven commodity for over 30 years. On September 29, 1975, Alcan Cable was the first company in North America to register a suitable 8000 series alloy with the Aluminum Association. Alcan Cable AA8030 alloy is widely recognized by its reputable brand name STABILOY®.

- Mechanical properties of the non-compliant aluminum conductors failed to comply, or come close to ASTM/UL 8000 series alloy requirements for tensile strength and elongation to break. The properties indicated that the conductors had not been heat treated as required by UL44 and UL1581, and consequently would be subject to compressive relaxation in service. Combined with the inadequate alloy chemistry, this lack of heat treatment will compromise in-service connection performance and result in increased failure rates.

- The polymeric insulation used in the tested cables failed to meet, or come close to the basic UL44 and UL1581 requirements for XHHW-2 products as follows:

  Negligible carbon black content and poor dispersion – this will result in complete insulation failure due to embrittlement during exposure to sunlight, rendering these products unsuitable for outdoor use.

  Inadequate flame retardant composition – this will result in significantly reduced fire performance and potential safety issues.

  Inadequate insulation thickness and crosslink properties – this will result in the insulation performing as a thermoplastic, rather than thermoset material during service. This will cause the polymer insulation to melt and deform at operating service temperature, and can lead to potentially significant safety issues.

3. What are some of the consequences of these laboratory test failures and how is cable field life potentially affected?

Failing to meet these important industry product standard specifications could result in serious hazardous conditions causing injury to persons or property. The long-term consequences are not only economic risk for the building owner, but may result in increased product liability risks for contractors, installers and distributors. In addition, there may be no recourse for building owners and contractors who would have issues with electrical product quality or performance in non-compliant cable products.

The inferior quality construction of non-compliant cable may not only suffer from an increased defect rate resulting in increased costs, but may ultimately result in decreased time to failure rate. Specifically, these failures may result in connection failures and/or total collapse of the insulation systems.

Non-compliant cable will have a much shorter life span as a result of the inferior materials that have been used to construct the cable. Non-compliance of these products can result in:

- connection failures
- insulation embrittlement
- reduced fire safety performance
- inferior mechanical and thermal performance

Non-compliant cable will typically need to be replaced in a fraction of the time of fully tested and compliant products. In contrast, superior quality cable will have a service life of several decades. Alcan Cable produces high quality cable, which has a documented history of superior performance. Alcan Cable has built this reputation through industry excellence over the past 40 years.

4. How can buyers better protect themselves?

Understanding the supplying company, its manufacturing plants of origin and the quality-testing regime to which the product has been subjected will provide confidence when making purchasing decisions. Contractors and installers must use caution and look for reputable cable manufacturers that will warrant their products.

Alcan Cable marks all of its UL certified aluminum building wire products with our company name and a letter to identify the plant of manufacture. We confidently stand behind our products, and follow strict adherence to quality and testing.

5. What quality assurance guarantees does Alcan Cable offer? What accreditations does Alcan Cable have?

The differences between the quality products supplied by Alcan Cable and non-compliant products produced elsewhere can be quite substantial. Alcan Cable is a fully integrated manufacturer of aluminum cable, rod and strip products operating throughout North America. All Alcan Cable products are stringently tested to ensure they meet or exceed industry product and safety standards. Contractors should ask all suppliers to provide similar assurances and documentation as substantiation.

The Alcan Cable Technology Center is responsible for cable design and standards review, compound development, product and process development, divisional quality management and a full range of product qualification testing. It performs extensive testing according to ASTM, ICEA, IEC and UL, and CSA industry standards and products qualified at this facility consistently meet or exceed these requirements.

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The Technology Center's Quality Management System is registered to the ISO 9001:2000 standard. It is accredited by CSA International as a Prototype Verification/Design facility under their Option 9000 test program. Underwriters Laboratories (UL) has accredited it as a Product Certification Testing facility under the Client's Test Data Program and the Center is an ISO 17025 registered laboratory.

In addition, the Technology Center is fully registered to the ISO 14001:2004 Environmental standard, as well as the OHSAS 18001:2007 Health and Safety standard.

These accreditations confirm Alcan Cable's commitment to providing customers with fully compliant products that meet or exceed industry standards. This devotion to ensuring that product reaches the customer in superior condition is what sets exceptional cable manufacturers apart from those that supply non-compliant cable.

Conclusion

By making the right choices after considering product quality assurance and brand confidence, manufacturing reputation and the source of supply, contractors and distributors can better protect themselves in order to avoid the negative consequences of non-compliant products. By remaining aware of the liability and safety issues associated with using non-compliant electrical cable products, customers can make an informed choice based on reputation and trust. At Alcan Cable our commitment to customer safety is demonstrated by our practice of meeting and exceeding industry standards on each foot of cable we produce. The talent of Alcan Cable employees, market-leading positions, broad industrial and geographic reach, proprietary technology and unparalleled wire knowledge, distinguishes our products from the non-compliant products entering the market today.

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