



ENGINEERING DEPARTMENT

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GUIDELINES FOR METRIC CONVERSION OF NEMA STANDARDS

This document is a tool to help NEMA Subdivisions in converting NEMA standards to metric. It supplements those general policies as set forth in NEMA Standardization Policies and Procedures.

In the United States, movement was made in the 1970s toward adoption of the metric system with the passage of the Metric Conversion Act in 1975. Progress has been made toward this end, with the Omnibus Trade and Competitiveness Act of 1988, which designated the metric system as the preferred system of weights and measures for U.S. trade and commerce. It also required that all Federal agencies use the metric system in the procurement, grants and other business-related activities to the extent economically feasible, by the end of fiscal 1992. Executive Order 12770 also encouraged government agencies to voluntarily adopt metric usage in day-to-day activities, particularly in procurement. In 1992 the U.S. adopted the Fair Packaging and Labeling Act amendments. This said that products having labeling with units of measurements must use dual, inch/pound and SI measurements. There is no time limit on this requirement of dual labeling in the United States.

In the European Union, Directive 80/181/EEC was adopted in 1980 by the European Council (EC) relating to legal units of measurement. The EC was convinced that adoption of one system of measurement, the international system of units (SI), at community level was necessary to eliminate obstacles to trade due to differing units of measurement being used by member states for the same products. In order to ease the transition to SI, or metric units, article 1(c) of this Directive provided for labeling of products in both metric and other units of measurement termed "supplementary indications," for a specific period of time. These supplementary units of measurement were specified as the legal imperial units of measurement, and were allowed because of their usage in the United Kingdom and Ireland. According to the Directive, however,

labeling would have to be solely metric after December 31, 1989. This Directive covers all products, and does not distinguish between quantities and sizes.

Directive 80/181/EEC has been amended three times. Council Directive 85/1/EEC revised several definitions of measurements. Directive 89/617/EEC extended the use of dual labeling to no later than Dec. 31, 1999. Council Directive 1999/103/EC amended the Annex and also extended the use of dual labeling until Dec. 31, 2009. Consequently in the EU, unless the use of dual labeling is again extended, the "placing on the market" and use of products and equipment bearing indications of quantity in units of measurement which are no longer legal units of measurement will be prohibited beginning Jan. 1, 2010. In the EU, labeling with US Customary Units (inch pound system) will therefore be illegal as of Jan. 1, 2010.

As each NEMA Subdivision considers metrication on NEMA Standards, the following are important guidelines to be used in the conversion process:

1. A decision to metrify a NEMA Standard should be made in the informed judgment of each NEMA Subdivision unaffected by anti-competitive motives and with due consideration of the foregoing.
2. Subdivisions should identify standards that should be converted. Many of these standards may be outside the control of the Subdivision, i.e. developed and maintained by another Subdivision, and should be brought to the attention of those responsible for the standards.
3. Priorities should be established for the conversion of standards. Consideration should be given to US Federal Agency-directives. EU Directives should also be considered if products are to be marketed in the European Community. When establishing priorities it is important to remember that only product marked solely in metric units can be marketed in the EU as of Jan. 1, 2010.
4. Each Subdivision should consider the impact of metrication on other NEMA Subdivisions for the use of this equipment in their scope, and the impact of these changes on the products within its own Subdivision.
5. Since most electrical products are used in conjunction with other electrical products, the ability to interface between products is an important consideration. Methods for establishing dimensional tolerances should facilitate interchangeability of products.
6. A program should be implemented to notify users and other NEMA Subdivisions of the implications of the changeover to metric in the new or revised standard.
7. If converted, all NEMA Standards should follow metric practice as described in: IEEE/ASTM SI 10 - 1997 (Std. 268) - Standard for Use of the International System of Units (SI): The Modern Metric System and ANSI/IEEE 945 - 1984 Recommended Practice for Preferred Metric Units for Use in Electrical and Electronics Science and Technology.