

REVIEW MATTER E

Re: Research Project 1051 — Transformers

Staff Contact: Erin N. Topper Telephone — (703) 838-8856 topper@nmfta.org

Present Classification Provisions

Item	Description	Class
	<b>ELECTRICAL EQUIPMENT GROUP:</b> subject to item 60500	
63400	<b>Transformers</b> , used, having value only for reconditioning or for salvage of parts, in packages, or loose when weighing each 2,500 pounds or more .....	70
63410	<b>Transformers</b> , NOI, weighing each 25 pounds or more, see Note, item 63422, in boxes or crates or on skids with bushings and valves protected .....	70
63420	<b>Transformers</b> , NOI, weighing each less than 25 pounds, <b>or Transformer Parts</b> , NOI, see Notes, items 63422, 63423 and 63424, in boxes or crates.....	77.5
63422	NOTE—When in shipments of 30,000 pounds or more, provisions also apply on transformer hanger irons or hooks not exceeding 10 percent of weight upon which charges are assessed.	
63423	NOTE—Not Involved.	
63424	NOTE—Not Involved.	

Analysis

This issue was first presented to the Classification Panel that met on February 6, 2006, based on a report that indicated the packaging provisions for transformers in items 63400, 63410 and 63420 may not be consistent with NCC packaging policies and the provisions of item 63410 may present interpretation issues. At that meeting, the Panel directed the staff to continue its review, since the staff received new information a few days prior to the meeting from a shipper who was concerned with the possible changes. The shipper indicated that eliminating the packaging provisions for “on skids” would affect many shippers, as they typically ship transformers banded to lift truck pallets. Also, the shipper indicated that crates may be used, but are not commonly used in the industry to package transformers due to the expense. Based on this information, the Panel instructed the staff to work with the industry to develop packaging provisions that were appropriate for industry standards and sufficient for the LTL environment.

Research Project 1051 was established by the carriers present at the Panel meeting on August 7, 2006, based on a second report that contained possible provisions based on information provided by the industry. During this project, the staff contacted or attempted to contact 343 shippers or manufacturers of electrical transformers on December 5, 2006 and again on March 16, 2007. From those surveys, information was received from 18 companies, 11 questionnaires were returned from companies who either did not ship or manufacture these products or do not use LTL, and 20 questionnaires were returned as undeliverable. Additional information was culled from carriers and the NCC’s Density Study. The National Electrical Manufacturers Association (NEMA) contacted the staff in late April indicating they would be

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providing data by the end of June. As of this writing the data has not been furnished, but once that information is received, an addendum to this report will be prepared.

Used transformers, per item 63400, are currently authorized to be in packages or they may be shipped loose if they weigh each 2,500 pounds or more. If transformers are shipped loose, they may be difficult for carriers to safely handle and stow. If used transformers weighing less than 2,500 pounds are shipped in packages, according to Item (Rule) 680, Section 5, they may be fastened to lift truck skids or pallets or placed in boxes for easier stowing and handling. The provisions for item 63400, used transformers, originally appeared in Supplement 32 to NMFC A-4, effective June 7, 1960. Since the implementation of this item, it has remained substantially unchanged.

Transformers weighing each 25 pounds or more, as provided for in item 63410, may be shipped in boxes, crates or on skids. Generally, products shipped on skids are not as adequately protected as when shipped in boxes or crates. However, the staff received information from one shipper who indicated that they primarily ship transformers on lift truck skids or pallets with additional packaging around the product to protect it during distribution. Additionally, item 63410 states the bushings and valves must be protected, which may be the cause of interpretation issues. Recently a member carrier contacted the staff regarding a shipment that the carrier believed would be classified under item 63410. However, this particular shipment of transformers did not contain bushings or valves, so he was unsure if item 63410 was the appropriate item number. The general provisions for transformers, NOI were originally adopted from the rails in 1936. At that time, the packaging stated "in boxes, crates, or on skids." Over the years modifications have been made in the *NMFC* to reflect the transportation characteristics of transformers. However, the packaging has essentially remained unchanged, as stated in items 63410 and 63420.

Note, item 63422 is only applicable to shipments weighing 30,000 pounds or more, which is generally considered a truckload shipment. This Note first appeared in Supplement 3 to NMFC No. 4, effective October 5, 1939, and has also remained essentially unchanged.

Types of electrical transformers are shown below.

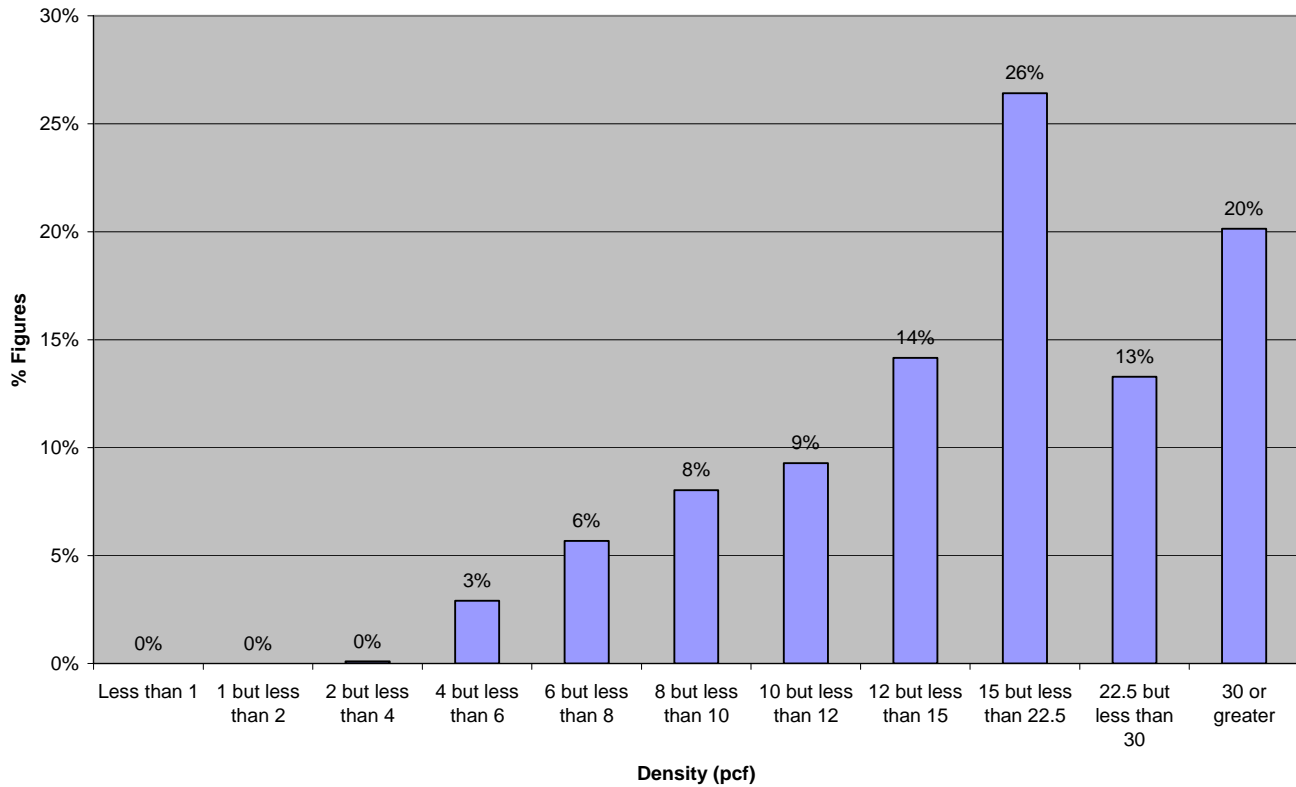


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*Transportation Characteristics*

**Density** — Data on 63,853 shipments of electrical transformers was received over the course of this project. The densities range from 2.47 pcf to 150.00 pcf, with an average density of 22.41 pcf. The frequency distribution chart of the densities is shown below.

**Frequency Distribution - Transformers**



**Handling** — Transformers tendered loose may cause negative handling considerations. However, when shipped in boxes or crates or securely fastened on lift truck skids or pallets, they present no unusual handling considerations.

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**Stowability** — Transformers shipped loose or on lift truck skids or pallets may cause negative stowing considerations. As shown in the photo on the right above, when transformers are shipped not encased they may not provide a flat load-bearing surface. Irregular shaped pallets can also affect the carriers' ability to load freight adjacent to these transformers. As shown in the picture on the left above, even when shipped in fibreboard containers, precautionary markings with instructions not to double stack or top load will make it difficult for the carrier to load freight adjacent to or on top of the transformers.

**Liability** — Electrical transformers are not perishable, susceptible to theft or prone to spontaneous combustion or explosion. They do, however, have a propensity to be damaged during handling when not adequately protected by packaging. Information gathered indicates an average value per pound of \$12.31, with a range from \$1.67 to \$82.86.

### Relationship to NCC Policies and Guidelines

NCC policies state that items should be structured so as to foster clarification and simplification. Canceling the provisions of items 63400 and 63410 and combining all transformers into item 63420 would be consistent with NCC policy. Information gathered during Research Project 1051 indicates that electrical transformers range in density from 2.47 pcf to 150.00 pcf, with an average density of 22.41 pcf. An average density of 22.41 pcf is generally associated with a class 70, which calls for a minimum average density of 15 pcf, based on the NCC's Density Guidelines. NCC packaging policies state that specifications in the *Classification* should ensure that freight is adequately protected in the motor carrier environment. When transformers are shipped in boxes or crates, they should be adequately protected and are more likely to provide a flat load-bearing surface to stack freight on and permit the carriers to load freight adjacent to them. Therefore, establishing a class 70 for those transformers shipped in boxes or crates would be consistent with NCC policies and guidelines.

However, information from the industry indicates that they often ship transformers on lift truck skids or pallets which may have the transformer encased in fibreboard for additional protection. Transformers tendered on lift truck skids or pallets may not provide the same level of protection when compared with those tendered in boxes or crates, even when the transformer is encased in fibreboard if interior packaging is not used to provide adequate

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support for stacking or loading of other freight. While the lift truck skids or pallets will help to facilitate handling, they may still present negative stowing considerations. In certain circumstances, the NCC has recognized that reduced packaging may still allow the product to be safely transported. However, in other circumstances, such as with transformers, the traits of stowing and handling are adversely affected by the reduced packaging. In similar situations in the past, to address the lesser packaging specific provisions based on packaging have been established with a one class increase from the NCC Density Guidelines. Consequently, the possible provisions shown in sub 2 would be consistent with NCC policies and precedent.

Likewise, additional care during handling and stowing may be necessary when transformers are not packaged enclosed in crates or fibreboard containers, or when securely fastened to lift truck skids or pallets. A two-class increase for transformers shipped in packages other than boxes, crates or on lift truck skids or pallets encased in doublewall fibreboard, would be consistent with NCC policies and precedent, in order to address the increased negative handling and stowing characteristics, as well as potential liability concerns.

Canceling Note, item 63422 as having no further application and removing the reference from item 63420 would also be in keeping with NCC clarification and simplification policies.

**Possible Classification Provisions**

Item	Description	Class
	<b>ELECTRICAL EQUIPMENT GROUP:</b> subject to item 60500	
63400	<b>Transformers, used, etc</b> .....	⇒Cancel; see item 63420
63410	<b>Transformers, NOI, weighing each 25 pounds or more, etc</b> .....	⇒Cancel; see item 63420
⇒63420	<b>Transformers, NOI, or Transformer Parts, NOI, see Notes, items 63423 and 63424:</b>	
⇒Sub 1	In boxes or crates.....	70
⇒Sub 2	In doublewall fibreboard containers securely fastened to lift truck skids or pallets.....	77.5
⇒Sub 3	In packages other than as set forth in subs 1 and 2 .....	85
63422	NOTE—⇒Cancel; no further application.	
63423	NOTE—No Change.	
63424	NOTE—No Change.	