

CTL Provisional DECISION SHEET (PDSH)

Standard(s) (incl. year)	Subclause(s)	Tracking No.	Publication date
IEC 60335-1:2010 + A1:2013 + A2:2016	25.8	2219	2020
Category			
HOUS			
Subject	Keywords	Developed by	To be approved
Determination of nominal cross-sectional area of supply cord conductors	Nominal cross-sectional area; Supply cords	ETF 1	2023 CTL Plenary Meeting
Question			
<p>Shall the nominal cross-sectional area of conductors from supply cords that are compliant with IEC 60227 or IEC 60245 be physically measured? Or could the nominal cross sectional area of conductors from those supply cords be accepted based on marking and inspection of the supply cord test report/certificate?</p> <p>If physical measurement of conductor nominal cross sectional area would be required for those supply cords then how to measure this area: Measure dimensional cross sectional area or determine nominal cross-sectional diameter by measuring the conductor resistance according IEC 60228?</p>			
Decision			
<p>For conductors of supply cords compliant with the supply cord standard, such as IEC 60227 or IEC 60245, there is no need to measure the nominal cross-sectional area. Inspection of the supply cord marking and test report is allowed to check for compliance with nominal cross-sectional area indicated in 25.8.</p>			
Explanatory notes			
<ol style="list-style-type: none"> 1) The test specification of 25.8 says: ‘Compliance is checked by measurement’. But there is no detailed requirement about what to be measured and how to measure. In this clause, “if their length does not exceed 2 m”, “Rated current” (if no current is assigned to the appliance) will involve measurement. 2) In this clause, the text “Conductors of supply cords shall have a nominal cross-sectional area not less than that shown in Table 11” only mentioned about nominal cross-sectional area, not actual cross-sectional area. 3) For conductor, the key parameter associated with rated current is resistance, not actual cross-sectional area. If the resistance needs to be measured, IEC 60335-1 should specify this requirement clearly, such as “in case of doubt, measure the resistance of conductors according to IEC 60228”. And should add the equipment in the IECEE Testing Equipment List of IEC 60335-1. 4) The standards for supply cords are IEC 60227 or IEC60245, which referenced the standard IEC 60228 ‘Conductors of insulated cables’. In IEC 60228:2004, clause 2.2, nominal cross-sectional area is defined as “value that identifies a particular size of conductor but is not subject to direct measurement”. And there is no any requirement about actual cross-sectional area in IEC 60227, IEC60245 or IEC 60228. The resistance is not only determined by actual cross-sectional area and also by material composition. 5) It is difficult to measure the actual cross-sectional area due to the wires are not perfect circular, the diameters and the shape of each wire are not the same. If need to measure it, the detail method should be defined in IEC 60335-1. 			

In IECEE Testing Equipment List of IEC 60335-1, no related equipment is listed in Cl. 25 about measuring the actual cross-sectional area.

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