

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Amendment No. 3
to
AS/NZS 4692.1:2005
Electric water heaters
Part 1: Energy consumption, performance and general requirements

CORRECTION

The 2005 edition of AS/NZS 4692.1 is amended as follows; the amendment should be inserted in the appropriate place.

SUMMARY: This Amendment applies to Appendix C, Paragraph C4 of the version of AS/NZS 4692.1:2005 that incorporates Amendment 2:2015. This Amendment 3 reinstates text that was erroneously deleted with the incorporation of Amendment 2 into the Standard.

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Appendix C, Paragraph C4 of AS/NZS 4692.1:2005 as amended by Amendment 1:2011 and Amendment 2:2015

At the end of the Paragraph but before the notification ‘Text deleted’ *insert* the following:

The thermal energy in the container at the start and end of the test (E_1 and E_2), in kilowatt hours, may be approximated by the thermal mass of the water in the container and water in any heat exchanger together with the thermal mass of all metal in direct contact with the heated water as follows (e.g., container walls, internal heat exchangers):

$$\begin{aligned}
 E &= (\rho V C_p \times 10^{-3} + Y C_m) T_H \text{ (J)} & \dots \text{C4(4)} \\
 &= \frac{(\rho V C_p \times 10^{-3} + Y C_m) T_H}{3.6 \times 10^6} \text{ (kWh)}
 \end{aligned}$$

where

T_H	= hot water temperature, in degrees Centigrade, as defined in Paragraph B3.2.2
V	= static capacity of the storage water heater and any associated internal heat exchangers, in litres
$C_p = 4186 \text{ J/(kg.K)}$	= representative specific heat value of water for the operating range 20°C to 75°C
Y	= mass of metal(s) in direct contact with hot water, in kilograms
C_m	= specific heat of the metal(s) in contact with hot water, in joules per kilogram kelvin
ρ	= density of water at 75°C, in kilograms per cubic metre

There are 3.6×10^6 joules per kilowatt hour.

There are 10^{-3} cubic metres per litre.

NOTE: Where more than one metal is present in a water heater, the mass and specific heat of each metal are multiplied and added in Equation C4(4). Representative values of C_m for common water heater metals are steel and stainless steel = 470 J/(kg.K), magnesium = 1000 J/(kg.K) (e.g. anodes where fitted for the test) and copper = 390 J/(kg.K). Values for the metals actually used should be used where known. As a guide, only metals with a total thermal mass greater than 0.5% of the total system thermal mass need be included. The thermal mass of the metal in a typical container is usually of the order of 1% to 6% of the total thermal mass, depending on the container size and construction. Information on the mass and type of metal in contact with hot water may need to be supplied for verification tests. If there is no data on mass of metal, an initial estimate for calculation purposes may be made by taking 80% of the empty dry mass of the containers.
