

AS/NZS 4766:2020

Rotationally moulded, partially buried and non-buried storage tanks for water and chemicals

Amendment No. 1

Revised text amendment

Publishing and Approval Dates

Council of Standards Australia Approval: 5 April 2024

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Summary

This Amendment applies to the following elements:

- Preface
- Clauses 1.1, 1.2, 1.3, 1.6 (new), 1.7 (new), 2.6, 2.7.2, 2.12, 2.13.5, 3.2, 4.2, 4.3, 4.8, 5.2.1, 5.2.3, 5.2.4, 6.2.2, 8, 9, 13 and D.2
- Tables 1, 2, 3, A.1, A.2 and D.1
- Bibliography

Amendment Details

AS/NZS 4766:2020 is amended as follows. The amendments should be inserted in the locations as instructed.

Element	Instruction / New text
Preface	1 <i>Delete</i> second paragraph and <i>replace</i> with the following: The objective of this Standard is to specify requirements for the design and manufacture of storage tanks that are rotationally moulded either in one piece or multiple pieces (subsequently joined together with structural connections). The storage tank can be constructed using either single or multi-layer construction. This includes the following: 2 <i>Delete</i> the commentary box at the end of the Preface.
Cl 1.1	<i>Delete</i> first paragraph and <i>replace</i> with the following: This Standard specifies requirements for the design and manufacture of storage tanks that are rotationally moulded either in one piece or multiple pieces (subsequently joined together with structural connections). The storage tank can be constructed using either single or multi-layer construction.
Cl 1.2	1 <i>Delete</i> list item (g)(ii) and <i>replace</i> with the following: (ii) Installation of septic tanks, pump wells, holding tanks and collection wells in accordance with AS/NZS 1546.1. 2 After list item (g)(iii), <i>add</i> the following new list item: (h) Access covers for buried tanks (refer to AS 3996).
Cl 1.3	1 <i>Delete</i> "AS 2070, Plastics materials for food contact use".

Element	Instruction / New text
	2 Add "AS 3996, Access covers and grates".
CI 1.6 (new)	After Clause 1.5, <i>add</i> the following new clause: 1.6 Retrospective upgrade The requirements of this document do not apply retrospectively to tank designs undertaken in accordance with the previous edition of AS/NZS4766. However, if an existing tank design has either its geometry or applied load modified or has its material substituted with a different polymer, then such a tank design shall be upgraded to the current edition of AS/NZS 4766.
CI 1.7 (new)	After Clause 1.6, <i>add</i> the following new clause: 1.7 Limitations on design actions This Standard provides methods in which the structural design of rotationally moulded tanks can include (but are not limited to) the following site-specific design actions: (a) Wind actions. (b) Earthquake actions. (c) Snow actions. (d) Imposed actions which include (but are not limited to) surcharge actions for buried or partially buried tanks and imposed actions on the roof of a non-buried tank. It is permissible within this Standard to limit the above design actions to specific levels (to suit specific environmental criteria) which shall adhere to the following requirements: (i) The professional engineer shall clearly indicate the extent of such limitations within reports and/or certificates associated with the structural design. (ii) The manufacturer shall clearly state such limitations in the documentation that the end user is provided with. (iii) The manufacturer shall conform to the marking requirements specified in Clause 13.
CI 2.6	Delete third paragraph.
CI 2.7.2	1 In the third line, <i>delete</i> "50 % tensile elongation after 8 000 h" and <i>replace</i> with "50 % of its original elongation at break after 12 000 h". 2 Delete the commentary box at the end of the clause.
CI 2.12	Delete all paragraphs in clause and <i>replace</i> with the following: Refer to the following for relevant regulations relating to materials for food contact use: (a) The US FDA as set out in the Code of Federal Regulations 21CFR Parts 170 to 199 and any subsequent amendments or revisions. (b) Commission Regulation (EU) No 10/2011 and any subsequent amendments or revisions. In addition, for the use of plastic materials for food contact, refer to any relevant requirements set out in the Australia New Zealand Food Standards Code. Materials in contact with drinking water shall be in accordance with AS/NZS 4020, at a surface area to volume ratio of 15 000 mm²/L. Pigments and additives based on heavy metals shall not be used. Testing should be carried out with pigment masterbatch at the intended use add rate. Additives and pigments shall be tested combined with a base resin. If a material change is made, such as a formulation change, then re-testing shall be required. Appendix A shall be used to determine what constitutes a material change. A base resin may be tested by itself (without pigment package) in accordance with AS/NZS 4020 or in combination with a certain pigment masterbatch. A pigment masterbatch shall be tested with a base resin at the specified use level.

Element	Instruction / New text
	A compound resulting from a combination of any base material that has passed the requirements of AS/NZS 4020, and a pigment masterbatch (within the percentage limits as stated in Clauses 2.6 and 2.8) that has passed the requirements of AS/NZS 4020, shall be deemed to have passed the requirements of AS/NZS 4020. Test certificates shall state the identity of the manufacturer and the product identification code of the base material.
CI 2.13.5	1 In Note, <i>delete</i> “for a maximum of 1.5 log cycles of time beyond the experimental data collected”. 2 In f_s definition <i>delete</i> “the applied stress adopted during the long term creep test” and <i>replace</i> with “the applied stress adopted during the long term creep test with a minimum of f_a as per Clause 4.8 (c)(i)”.
CI 3.2	Third paragraph, after “The structural design life of a tank shall be 20 years.” <i>add</i> the following: For the purposes of the derivation of wind, earthquake and snow loading, the Importance Level to be adopted shall be consistent with Table 101 below.

Table 101 — Importance levels

Importance Level	Tank application
1	Water storage tanks servicing residential dwellings (both urban and rural) and commercial buildings.
2	Chemical tanks with inert contents.
3	Tanks used in commercial applications storing liquids that are either flammable, hazardous or liquids that could react with other stored liquids stored in close proximity.
4	Tanks which have a post disaster function, examples of which are — (a) providing water for firefighting services; or (b) providing water for buildings that themselves have an Importance Level 4 rating (refer to AS/NZS 1170.0).

CI 4.2	1 In list item (e), second sentence, <i>delete</i> “ASCE/SEI 7-16 and NZS 1170.5. Earthquake design loads in Australia shall be determined using ASCE/SEI 7-16 and AS 1170.4.” and <i>replace</i> with “NZS 1170.5, ASCE/SEI 7-22 Clause 15.7.6 and API 650. Earthquake design loads in Australia shall be determined using ASCE/SEI 7-16 and AS 1170.4.” 2 After list item (e), <i>delete</i> commentary box C4.2.
CI 4.3	1 In list item (b), <i>delete</i> “density” and <i>replace</i> with “weight density”. 2 In list item (e), <i>delete</i> “Earthquake design loads in New Zealand shall be determined using NZS 1170.5 and API 650 Annex E. API 650 can be used to determine the impulsive and convective components, taking the factors R_{wi} and R_{wc} in API 650 Table E.4 as 1.5.” and <i>replace</i> with the following: Earthquake design loads in New Zealand shall be determined using NZS 1170.5, ASCE/SEI 7-22 Clause 15.7.6 and API 650 Annex E. API 650 Annex E can be used to determine the impulsive and convective components, taking the factors R_{wi} and R_{wc} in API 650 Table E.4 as 1.5. A_i and A_c shall be calculated according to Clause E.4.3 1 using R_{wi} and R_{wc} respectively in place of S_p/k_m in NZS 1170.5 Clause 5.2.1.1 and $C(0.2)$ and $C(T_c)$ respectively from NZS 1170.5 Clause 3.1.1. The D/H range for API 650 Clause E.6.1.2.1 Equation (E 6.1.2.1-2) shall be limited to greater than or equal to 1.0 and less than 1.3333 and for tanks with D/H values less than 1.0, X_i shall be defined as follows: