

Storage Tank Design Life

Expectancies 101

1. Concrete tank: built to commercial standards (walls up to 300mm thick) - 80 to 100 years if well maintained.
2. Concrete tank: domestic type (walls around 100mm thick) - 30 to 50 years depending on build quality.
3. Steel tank: built to commercial standards - 70 years if well maintained. Steel tanks will need to be re-coated internally every 20 to 25 years to maintain good condition. External re-coating is generally for aesthetic reasons rather than structural. Coastal areas will reduce the external intervals to 15 - 20 years and corrosion is mainly around the wall base areas. Coatings need to be looked at as an 'asset' due to the substantial costs incurred every 20 to 30 years. If you also factor in the inconvenience and the need to by-pass tanks for re-coating there is a significant investment in maintaining steel tanks.
4. Steel tank: domestic type with liner (as used for fire-fighting purposes at factories like Bunnings) - 20 to 40 years.
5. Roof structures: 30 to 50 years, depending on ventilation. Salt contamination in coastal areas to external rafter ends, connection areas and purlins could reduce this to 25 years. A renovation may be just re-sheeting using the existing framing (depending on the original material quality), but if ventilation is poor the complete roof structure may need to be replaced. The roof structures on the lighter quality tanks would be 15 to 20 years as the usual zincalume purlins and rafters are not suitable for moist conditions.
6. External ladders, handrails and fixings: galvanized - 30 to 50 years (coastal areas less due to salt contamination)
7. Internal ladders: galvanized - 10 to 20 years.
8. Internal ladders: epoxy coated - 20 to 30 years.
9. Internal ladders: FRP - 40 to 50 years.
10. Allow around \$260 per sq/meter of internal surface area for re-coating - this includes access machinery, grit blasting, dust extraction etc.

11. Concrete tanks generally require some sort of joint re-sealing at around 30 to 50 years – allow \$50 to \$80K depending on the tank size.
12. Internal fittings such as overflow risers, supporting brackets and ladders will last the first 15 to 20 years before replacement is required with more corrosion resistant materials than the originals – allow \$15K.
13. Internal liners for 'fire' type tanks will vary in quality and installation techniques, so allow 10 to 15 years' service life.
14. Most existing tanks (steel or concrete) around the 30 to 50 years life will require renovations to the roof, platform and hatch areas for water quality and OH&S reasons – allow \$25 to \$30K.

Concrete tanks should be tested for carbonation at their 'half-life' period to see if concrete renovations are required while the 'window of opportunity' is open. Leave it too late and renovation costs will increase substantially, or be too late to be effective.

All these figures are dependent on regular maintenance being carried out before an issue becomes substantial – roof flashings being maintained, sheets re-screwed before storm damage etc.