



## Poly Tanks vs Steel Tanks – Strength and Durability Compared

In terms of durability, there is a belief circulated around that all poly water tanks will become brittle and break down in the Sun. After all, polymer is a plastic and we have all seen how plastic objects decompose and become powdery time. This is similar to saying all steel will corrode in the weather or upon contact water, after all we have all seen how steel rusts and corrodes.

Like chromium can be added to create stainless steel which provided protection from oxidisation and rusting, so too UV stabilisers can be added to a polymer mix prevents the plastic from becoming brittle and decomposing. Of course, all material has a finite life, however this is least of weaknesses in a UV-stabilised polymer tank.

That said, some stainless steel tanks will not to withstand corrosion if in contact with high marine environments (salty sea water) or with chlorine (found in pools). High industrial areas and welding can also leave iron deposits that can cause irreversible pitting and even result in tiny holes. To deal with these issues, it is important to wash stainless steel tanks with fresh water and spot clean them with a cloth if rust-like spots occur anywhere.

Traditional galvanised steel tanks, the iron within these tanks are coated by zinc which eventually wears away. The iron then react with oxygen in the air and begins to rust. Higher quality galvanised tanks have a thicker zinc coating, and could even last as long as your more modern ZINCALUME® steel often used for roofing.

While stainless steel is quite durable, it is important to note that many external factors can negatively impact upon the longevity of more modern steel technologies like ZINCALUME® and AQUAPLATE®.

AQUAPLATE® is BlueScope's specially constructed steel for rainwater tanks with a .2mm polymer layer on at least one side. It is what BlueScope recommend out of all their products for rainwater tanks. Unless you are purchasing a rainwater tank built of their next generation ZINCALUME® steel (AM125), then you are better off going for AQUAPLATE® which is 'old' ZINCALUME® steel (AZ150) hot-dipped in zinc with a poly lining.

With both these steels, it is important to understand that they cannot come into contact with moisture, fertiliser, pesticides, lead, copper and other dissimilar metals. Runoff from copper flashings and pipes will lead to corrosion. Warranties are void for these reasons, and if your tank is not kept clean from leaves and debris or not washing it down.

Steel tanks however are otherwise very strong and will not bulge or warp since they are made from steel. Being metal however, they are less impact resistant than a poly tank which easily withstand being struck with hard objects like a hammer. Poly tanks will just bounce back into place. Steel tanks will obviously receive dents and irreversible damage.

While stainless steel tanks are *largely* corrosion resistant, corrosion still often occurs at the joints, rivets or screws. With all steel tanks, the weakness is normally with how they have been manufactured into the final

product. Steel tanks that are well stitched together could mean it lasts any leaks for decades, versus a poorer one which might cause problems in just a couple of years.

As a side, [an investigation by the Public and Environment Health Services in Tasmania](#) found water in some stainless steel tanks containing harmful levels of lead, because lead was used to solder the stainless steel sheets together. So there is also the added risk of safety to your drinking water, that is, if your steel tank does not have a food-grade inner poly lining.

With your poly water tank, if it has been properly designed and manufactured according to Australian standards then it should not bulge, warp and stretch. Some features of a strong and quality poly tank include:

- moulded as one seamless piece (that is, without side seams)
- wall thickness 4.5mm or greater
- strong base corners with a radius of 25mm for a tank up to 1.8m in diameter, or a radius of 38mm for tanks over 1.8m in diameter
- tapered tanks walls (thicker poly walls at the base of your tank where the most pressure will be)
- ribs which provide greater strength.

Requirements for building a strong poly tank are found in the [Australian poly tank standard](#), AS/NZS 4766 Polyethylene storage tanks for water and chemicals. Note: Not all Australians poly water tanks comply with this standard. Always confirm your tank is certified by asking the manufacturer who certified them and for their certification number.

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