PVI®
A WATTS Brand

AquaPLEX®

Duplex Stainless Steel Water Heaters and Hot Water Storage Tanks

AquaPLEX®
Engineered Duplex Alloy

119 to 4500 Gallon Tanks, ASME code,
Standard warranties up to 25 years

WATERHEATING DIRECT

Never Replace a Water Heater or Storage Tank Again

AquaPLEX is an engineered blend of austenitic and ferritic steels that combines advantages of both 300 and 400 series stainless steel. This synergy makes AquaPLEX very strong and highly resistant to aqueous corrosion in addition to chloride stress corrosion cracking, a known failure mode of 316L and 304L stainless steel in potable water. It provides a long service life in all potable water conditions at any temperature without the need for tank linings or anode rods, which are both non-permanent methods that require service over time.

Features and Benefits

- No tank lining needed -- fully pickle-passivated, duplex stainless steel is naturally resistant to aqueous corrosion in potable water and needs no additional corrosion protection
- No anode rods or impressed current anodes are required
- More durable than 316L or 304L stainless steel in potable water because it’s more resistant to chloride stress corrosion cracking
- Capable of storing water >200°F year after year with no effect
- The only long-term solution for solar thermal storage

ASME U

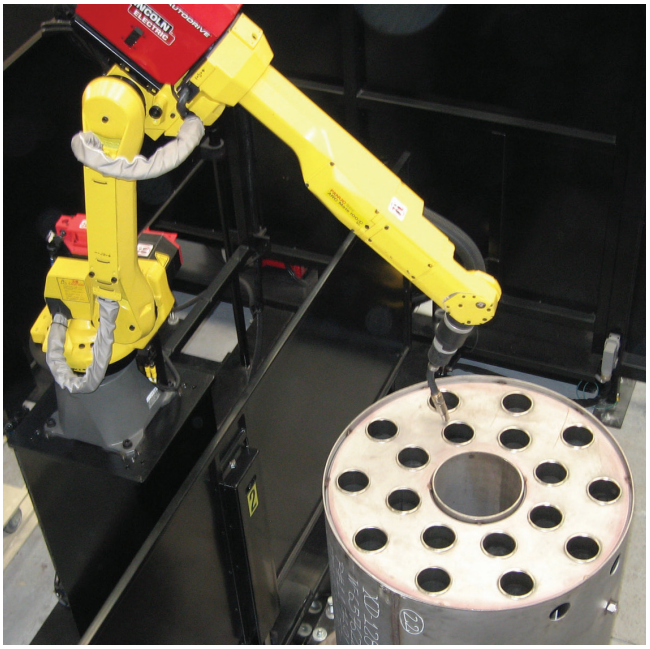
ASME HLW

Advanced Material and a Highly Specialized Process

PVI has manufactured pressure vessels for more than 50 years and has shipped more than 150,000 ASME stamped products. AquaPLEX combines an innovative material with advanced vessel design and fabrication technology to create heaters that are impervious to corrosion in potable water.

Unique Vessel and Water Heater Design
The duplex material is only as good as the vessel design. Using AquaPLEX as an "unlined" hot water storage tank material mandated a thorough understanding of corrosion mechanics in order to design internal tank geometries and fabrication techniques that eliminate all possible corrosion "foot holds." With assistance from international corrosion experts, PVI optimized its water heater and tank designs for use with AquaPLEX.

Welding Technology
The unique characteristics of AquaPLEX have resulted in the application of several new welding technologies in PVI's manufacturing facility. PVI now employs synergic pulse welding machines that automatically and instantly manage the arc current and voltage based on the welding speed to optimize the size and quality of the welds. PVI also utilizes 6-axis robotic welding to ensure consistent high quality welds across the wide variety of welding operations required for the family of AquaPLEX water heaters.



Six-axis, robotic, synergic-pulse welding

Pickling and Passivation
AquaPLEX material arrives in the fully passive state, but the manufacturing processes can compromise this corrosion-resistant condition. To return AquaPLEX to its fully passive condition, PVI utilizes its in-house chemical processing capability. The vessels are completely immersed in a time, temperature, and concentration controlled pickling and passivation solution. When rinsed with purified water and exposed to air, AquaPLEX reacts with oxygen to create the oxide layer responsible for its lifelong corrosion resistance.

In-house, full-immersion pickling and passivation

The Assistance of World Renowned Experts
PVI has developed an AquaPLEX team of world class engineers and scientists to assist in the material selection, product design, material handling, welding technology, vessel fabrication, chemical processing and testing to ensure our customers receive the lifelong value they expect. Join the technology revolution and say goodbye to corrosion – with AquaPLEX.

Frequently Asked Questions

Are there other benefits to AquaPLEX?

AquaPLEX is made from 90% recycled material and contains no lead. The surfaces of AquaPLEX vessels are non-porous and the material does not absorb water; characteristics which help to reduce the harborage of bacteria inside the water heater. AquaPLEX can withstand plumbing system sterilization cycles (180°F sanitizing temperature water flushing) without compromising the longevity of the vessel. AquaPLEX can withstand hyperchlorination sanitizing procedures as detailed in ASHRAE guidelines.

What makes AquaPLEX so corrosion resistant?

Immediately after pickle-passivation, the AquaPLEX material forms a continuous chromium oxide layer on its surface. The process occurs when the high chromium content of AquaPLEX combines with oxygen in the air to form a “passive” layer of protection. This layer is permanent and prevents AquaPLEX from corroding when exposed to the dissolved oxygen and other aggressive elements found in all potable waters.

What certifications does AquaPLEX have?

AquaPLEX is approved by ASME for construction of Section IV (H stamp), Section IV, Part HLW and Section VIII vessels. AquaPLEX is also NSF 61 accepted.

Is AquaPLEX proprietary?

No. AquaPLEX is listed by ASME as an approved material for pressure vessel construction and any material listed in the ASME code is available for use by any manufacturer. True to all manufacturing, how a material is processed to completion will dictate its ultimate performance. If others choose not to use the material due to the processing requirements, that does not make it proprietary to PVI.

Are there equivalent materials to AquaPLEX?

There are materials that match the performance and life expectancy of AquaPLEX. Examples include tanks constructed from Inconel, copper-nickel or other high-chromium duplex stainless steels such as 2205 and 2304. There is no lined steel storage tank that can match the performance of AquaPLEX.

Is there a temperature limit to AquaPLEX?

No. Although PVI recommends a maximum stored water temperature of 140°F for general use potable water service, AquaPLEX vessels are suitable for continuous exposure to water temperatures greater than 200°F, as often seen in solar thermal storage and process applications. Such temperatures would quickly erode tank linings like porcelain enamel (glass) or epoxy polymer. Temperature limits for AquaPLEX water heaters are dictated by ASME code limitations or appropriate safety certifications, and not the vessel material itself.

WATERHEATING
DIRECT

waterheatingdirect.com • help@waterheatingdirect.com • 401-552-HEAT

PV 8085-WHD 6-2020