

# *You may never replace a water heater or storage tank again.*



AquaPLEX duplex alloy combines the advantages of both 300 and 400 series stainless steel. Potable water heaters and storage tanks fabricated from AquaPLEX provide the following benefits:

No tank lining needed. Fully pickle-passivated, duplex stainless steel is naturally resistant to aqueous corrosion and needs no additional corrosion protection

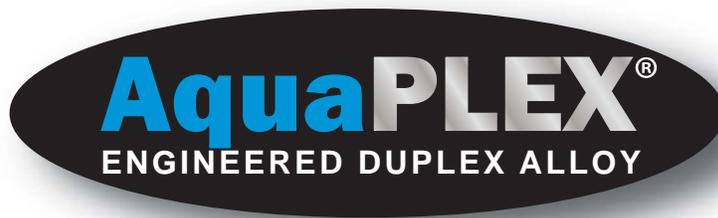
No corrosion means that no anode rods or impressed current anodes are required. Inside the AquaPLEX tank, there's simply nothing for an anode to do

Better than 316L or 304L stainless steel in potable water because AquaPLEX is immune to chloride stress corrosion cracking

Capable of storing water >200°F year after year with no effect

The ultimate solution to all water heating applications and the only long-term solution for solar thermal storage





### What is AquaPLEX?

AquaPLEX is an engineered blend of austenitic and ferritic steels that combines the grain structures and physical properties of 300 and 400 series stainless steels. This synergy makes AquaPLEX very strong and highly resistant to aqueous corrosion. It also provides resistance to chloride stress corrosion cracking, a known failure mode of 316L and 304L stainless steel in potable water.

### What is the biggest advantage of AquaPLEX?

AquaPLEX is an inherently corrosion resistant material that PVI fully restores to a passive state after vessel fabrication. AquaPLEX 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.

### What makes AquaPLEX so corrosion resistant?

Immediately after final processing, 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.

### 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 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.

### 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 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.

### 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.

### Are there other benefits to AquaPLEX?

AquaPLEX is made from 90% recycled material.

AquaPLEX contains no lead.

The surfaces of AquaPLEX vessels are non-porous and the material does not absorb water, two characteristics which help to reduce the harborage of bacteria inside the water heater.

AquaPLEX can withstand repeated 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.

## A remarkable material and a highly specialized process.

PVI has manufactured pressure vessels for more than 50 years and has shipped more than 130,000 ASME stamped products. We are excited to introduce the next generation of PVI water heaters, and AquaPLEX has introduced new approaches and processes in our production facility.

### Unique vessel and water heater designs

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.

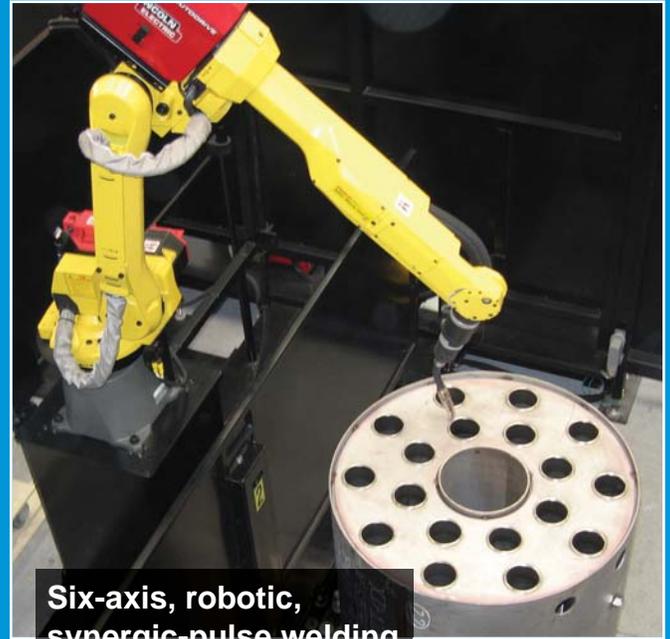
### Welding Technology

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.

### Pickling and Passivation

(an essential processing step with welded stainless steel components)

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, the AquaPLEX reacts with oxygen to create the oxide layer responsible for its lifelong corrosion resistance.



**Six-axis, robotic,  
synergic-pulse welding**



**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.



The following are just some of the PVI water heaters available with AquaPLEX vessels.



**Conquest®**  
 Condensing gas water heaters  
 Up to 96% efficiency at full fire  
  
 Inputs: 199 • 250 • 300 • 399  
 500 • 600 • 700 • 800 MBH  
  
 Capacity: 100 and 130 gallons  
 15-year tank corrosion warranty



**DURAWATT®**  
 Electric water heaters  
  
 Inputs: 9 to 500 kW  
  
 Capacity: 125 to 3000 gallons  
 25-year tank corrosion warranty



**Power VTX®**  
 Condensing gas water heaters  
 95.5% efficiency at full fire  
  
 Inputs: 500 to 1000 MBH  
  
 Capacity: 225 gallons  
 15-year tank corrosion warranty



**COBRES®**  
 Steam water heaters  
  
 Inputs: 840 to 7000 MBH  
  
 Capacity: 150 to 3000 gallons  
 25-year tank corrosion warranty



**TURBOPOWER® 99**  
 Condensing gas water heaters  
 Up to 99% thermal efficiency  
 at full fire  
  
 Inputs: 500 to 2000 MBH  
  
 Capacity: 330 to 1200 gallons  
 25-year tank corrosion warranty



**EZ Plate®**  
  
 brazed-plate or  
 plate-and-frame heat exchangers  
 piped to storage tanks  
  
 Inputs: Broad range of available  
 exchangers for virtually any hot water  
 recovery requirement  
  
 Capacity: 150 to 3000 gallons



**TURBOPOWER®**  
 Gas, oil or gas/oil water heaters  
 Non-condensing design  
  
 Inputs: 199 to 2000 MBH  
  
 Capacity: 150 to 3000 gallons  
 25-year tank corrosion warranty



**Flex-Fuel®**  
 Dual-fuel water heaters  
  
 Inputs: Any combination of  
 two energy sources in a single tank  
  
 Capacity: 215 to 3000 gallons  
 25-year tank corrosion warranty



**Engineered Water Heating Solutions®**

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