



The Fortress Reservoir: Engineering & Quality Standards

- **Advanced ZAM Coating** Our Zinc-Aluminium-Magnesium (ZAM) coating provides up to triple the lifespan of standard galvanizing, making it our most powerful selling point. This "self-healing" barrier is specifically engineered for the harsh Zimbabwean sun and moisture, ensuring your investment remains rust-free for decades.
- **Integrated Base Ring Beam** The integrated ring beam lifts the tank shell slightly to prevent "creeping rust" at the base, which is often the highest pressure point and most common cause of failure. By providing this solid foundation, we eliminate the sagging and structural shifting that can lead to premature collapse.
- **High-Performance Optional Cladding** For projects requiring maximum durability, our optional cladding features a ZAM coating plus a premium paint finish for a "super-corrosion" resistant barrier. This dual-layer skin doesn't just look clean and professional; it adds a significant layer of functional strength to the total structure.
- **ISQ550 Advanced High Strength Steel** We utilize ISQ550 steel, which is 83% stronger than traditional tank materials and provides a much stiffer wall that won't bulge or lose its shape. This "Full Hard" steel is toughened during manufacturing to ensure your reservoir stays perfectly round and leak-free, even under massive water loads.
- **Rigid Corrugated Profile** By utilizing a corrugated profile, our reservoirs have a built-in structural rigidity that flat steel simply cannot match. The corrugations act as a built-in skeleton, providing the natural strength required to resist the intense outward pressure of thousands of liters of water without needing bulky supports.
- **Staggered "Checkered" Sheet Layout** Our steel sheets are installed in a staggered "checkered" pattern, similar to how bricks are laid in a wall to break up vertical stress lines. This smart design prevents the "zipper effect" and ensures the tank seams remain locked tight, preventing splits even under the heaviest hydraulic loads.
- **Liner-Safe Silo Pinch Bolts** We use 12mm flat-head Silo Pinch Bolts strategically recessed into the valleys of the corrugation to avoid "point-loading" and friction. Unlike protruding hex-head bolts that create sharp pressure points, our flat-head bolts sit nearly flush to protect your liner from long-term wear and tear.
- **Precision Double-Row Bolting** Every joint features a double-row bolting pattern with a precise 75mm spacing to maximize the shear capacity of the structure. By spreading the hydraulic pressure across two rows of bolts instead of one, we effectively prevent "seam-slippage" and keep the entire reservoir perfectly square and secure.
- **Fortress Top-Rail System** Our Top-Rail features a pre-curved, 32mm galvanized square tube that locks the tank into a perfect circle and provides massive rigidity against wind

damage. This heavy-duty rim serves as a precision foundation for roof trusses and acts as a smooth, secure anchor point that keeps the liner perfectly in place.

- **ZAM LST Roof & Whirly Bird Ventilation** Our ZAM Lightweight Steel Trusses are 60% lighter than welded alternatives, significantly reducing structural strain on the tank shell. An integrated Whirly Bird vent pulls out hot, humid air to prevent internal condensation, keeping the roof structure dry and ensuring a maintenance-free lifespan for years to come.
- **Self-Supporting Shade Cloth Roof** For agricultural use, we offer a specialized shade cloth roof supported by our clear-span truss system that requires no central support pole or wire spokes. This unobstructed design effectively reduces UV degradation and algae growth while preventing dirt and leaves from entering your water supply.
- **Premium Polywoven PVC Liners** We exclusively use Polywoven PVC liners with an internal mesh for extreme tear resistance compared to standard HDPE sheets. We offer a 720g Potable liner with zero plasticizer leaching for drinking water, and a 550g Agri liner optimized with high UV stabilizers for long-term farm and irrigation use.
- **15 Years of Field-Tested Design** The Fortress design is the result of 15 years of hands-on installation experience and constant refinement based on real-world customer feedback. We have analyzed every failure point in traditional reservoirs to create a "battle-hardened" solution that represents the very best in modern liquid storage technology.
- **100% Local Manufacture & Support** Every component is manufactured in our single Zimbabwean factory, ensuring total accountability and strict quality control over the entire production line. Our local proximity is your greatest security, offering full technical backup and rapid warranty support that imported products simply cannot provide.

Lifespan Estimation

Lifespan is determined by the "weakest link" in the structure. By upgrading every component, the total system longevity is multiplied.

1. Industry Standard Reservoir

- **Estimated Lifespan: 7 to 12 Years**
- **Primary Failure Points:** Standard galvanizing often begins to show "white rust" within 5 years in high-humidity tank environments. Without a ring beam, "creeping rust" typically attacks the base within the first decade. Standard liners are also prone to "point-loading" tears from hex-head bolts, leading to leaks that accelerate external corrosion.

2. Fortress Reservoir

- **Estimated Lifespan: 30+ Years**
- **The Difference:** The **ZAM coating** is chemically engineered to last up to three times longer than galvanizing, especially inside the tank where the **Whirly Bird** prevents condensation. The **ISQ550 steel** and **Ring Beam** ensure the structure never sags or

bulges, while the **Silo Pinch Bolts** and **Polywoven Liner** work together to eliminate the friction-based leaks that usually shorten a tank's life.

Comparison of Fortress Tanks against traditional steel reservoirs:

Technical Comparison: Fortress vs. Industry Standard

Feature	Industry Standard	Fortress Reservoir
Steel Grade	ISQ300 (Soft Structural)	ISQ550 (Advanced High-Strength)
Steel Profile	Flat sheets (requires external stiffeners)	Corrugated "Skeleton" Profile
Coating	Standard Galvanizing	ZAM (Zinc-Aluminium-Magnesium)
Base Design	Direct ground contact (rust risk)	Integrated Base Ring Beam
Sheet Layout	Linear vertical seams	Staggered "Checkered" Layout
Fasteners	Protruding Hex-head bolts	Recessed Flat-head Silo Pinch Bolts
Bolt Pattern	Single-row bolting	Precision Double-row (75mm spacing)
Top Rim	Exposed edge or plastic capping	32mm x 1.6mm Square Tube Rail
Roof Trusses	Heavy welded/hot-dipped steel	Engineered ZAM LST (60% Lighter)
Ventilation	Sealed (causes "Sauna Effect")	Active Whirly Bird Turbine Vent
Agri Roof	Support pole with wire "spokes"	Clear-span Self-supporting Trusses
Liner Type	Standard HDPE Sheet	Polywoven PVC (Internal Mesh)

The "Total Cost of Ownership" Logic

While a standard tank might have a lower or similar initial price, it often requires a full liner replacement or structural repair within 8 years. A **Fortress Reservoir** is designed as a "set-and-forget" asset. Over a 30-year period, a Fortress tank is significantly more cost-effective because it eliminates the need for mid-life refurbishments and avoids the risk of catastrophic water loss.