Materials Of Construction

Determining the appropriate material of construction for a project depends on several factors, including water quality, climate and environmental conditions, availability of time and manpower for maintenance, unit lifetime requirements, and budget. BAC provides the widest variety of material of construction options in the industry and has the ability to provide a solution to meet all conditions and budgets. Options such as EVERTOUGH™ Construction and the TriArmor® Corrosion Protection System provide superior corrosion resistance and durability at a tremendous value To determine the best material options for your specific project, consult your local BAC Representative.

EVERTOUGH™ Construction

EVERTOUGH™ Construction combines a number of BAC's innovative corrosion protection features in a single cost-effective package.

TriArmor® Corrosion Protection System

TriArmor® Corrosion Protection System is a proprietary polyurethane barrier that offers a level of corrosion protection for cold water basins that is superior to conventional stainless steels. The TriArmor® Corrosion Protection System was specifically designed for evaporative cooling applications and has undergone accelerated testing to simulate years of operation in the harshest environments.

Corrosion Resistant Distribution System

For Series 3000 Cooling Towers, pultruded fiberglass reinforced polyester (PFRP) hot water basins provide a lightweight and high strength alternative to conventional stainless steel with an added level of corrosion resistance. BAC's fiberglass reinforced panels are impervious to a wide variety of chemical and atmospheric contaminants.

For the PT2, VCA, FXV, and CXVB the distribution system is constructed of corrosion resistant PVC.

Thermosetting Hybrid Polymer

A manufacturing process fuse bonds a hybrid polymer to heavy-gauge G235 galvanized steel providing superior corrosion protection. Over the past 25 years, this corrosion protection system as been installed on thousands of units worldwide.

Warranty

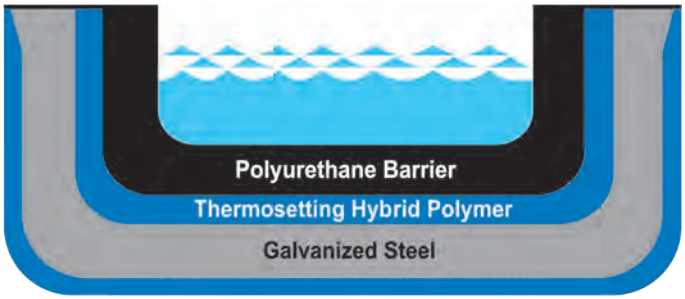
Backed by a comprehensive Louver-to-Louver℠ 5-year warranty.

Materials Of Construction

TriArmor® Corrosion Protection System

The TriArmor® Corrosion Protection System is a triple protection process consisting of:

- **G-235 Galvanized Steel** - the heaviest commercially available galvanized steel which provides a durable structure to the cold water basin.
- **Thermosetting Hybrid Polymer** - electrostatically applied to both sides of the G-235 galvanized steel, providing a second layer of protection from corrosion. This material also serves as a mechanical and chemical bonding agent between the polyurethane barrier and the galvanized steel.
- **Polyurethane Barrier** - factory applied, corrosion resistant impermeable armor that completes the system and creates a seamless basin.



TriArmor® Corrosion Protection System Spray Booth

Ultimate in Material Advancement

The TriArmor® Corrosion Protection System was introduced after a decade of extensive R&D and field testing. This new material has consistently demonstrated the following characteristics:

- ✓ Leak free
- ✓ Tough and durable
- ✓ Slip resistant
- ✓ Resistant to thermal shock
- ✓ Self extinguishing

Compare the Factory Installed TriArmor® Corrosion Protection System Advantages:

	Test	Galvanized Steel	Type 304 Stainless Steel	Type 316 Stainless Steel	TriArmor™ Corrosion Protection System
Corrosion	Acid Test pH=4	○	●	●	●
	Alkaline Test pH=11	○	●	●	●
	Chloride Levels	○	◒	●	●
	5% Salt Spray Test	○	◒	●	●
Environmental	UV Resistance	●	●	●	●
	Thermal Shock	●	●	●	●

○ Good
◒ Better
● Excellent
● Superior

The TriArmor® Corrosion Protection System has been specifically designed for evaporative cooling applications to provide the best corrosion resistant material available in the marketplace.

This revolutionary material of construction has been subjected to accelerated testing to simulate years of operation in the harshest environments. Additionally, this system has performed successfully for a decade at customer installations. The TriArmor® Corrosion Protection System is:

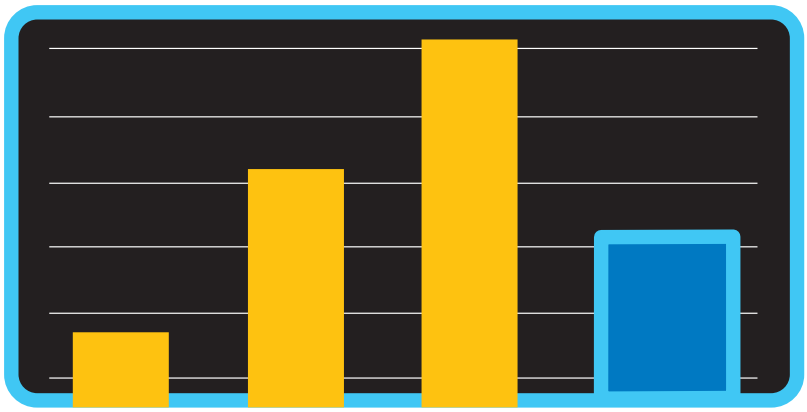
- ✓ **Unsurpassed in corrosion resistance**
  Impervious to chloride attack
- ✓ **Formulated to resist UV damage**
- ✓ **Backed by a 5-year leak and corrosion warranty**
- ✓ **Environmentally friendly, containing no solvents, volatile organic compounds (VOC), or chlorofluorocarbons (CFC).**

The TriArmor® Corrosion Protection System offers superior corrosion resistance compared to Type 304 and 316 Stainless Steel, but at a lower first cost.

- Factory applying the TriArmor® Corrosion Protection System using BAC's lean, ISO certified manufacturing process reduces manufacturing costs while maintaining high product quality.
- Triple protection provides extended material life which is backed by a 5-year leak and corrosion warranty.
- Tough and durable finish won't crack, peel or warp under harsh conditions, minimizing the cost of ownership.

Materials Of Construction

Average Cold Water Basin Material Price



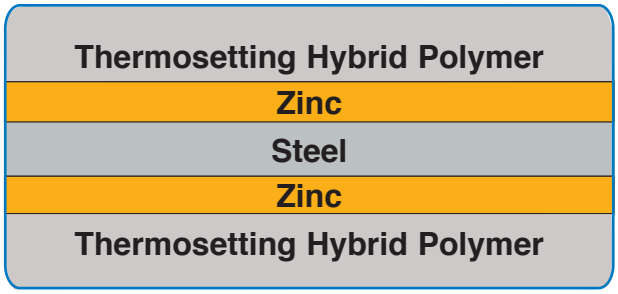
Galvanized Steel | Type 304 Stainless Steel | Type 316 Stainless Steel | **TriArmor® Corrosion Protection System**

Galvanized Steel

G-235 (Z700 metric) hot-dip galvanized steel is the heaviest commercially available galvanized steel, universally recognized for its strength and corrosion resistance. To assure long-life, G-235 (Z700 metric) hot-dip galvanized steel is used as the base material for all steel products and parts, and all exposed cut edges are protected with a zinc-rich coating after fabrication. With good maintenance and proper water treatment, G-235 (Z700 metric) galvanized steel products will provide excellent service life under the operating conditions normally encountered in comfort cooling and industrial applications.

Thermosetting Hybrid Polymer

A thermosetting hybrid polymer, used to extend equipment life, is applied to select G-235 hot-dip galvanized steel components of the unit. The polymerized coating is baked onto the G-235 hotdip galvanized steel and creates a barrier to the already corrosion resistant galvanized steel. The thermosetting hybrid polymer has been tested to withstand 6,000 hours in a 5% salt spray without blistering, chipping, or loosing adhesion.



Closed Circuit Cooling Tower with the Optional Thermosetting Hybrid Polymer

Stainless Steel

Type 304 stainless steel is the industry's traditional alternative to galvanized steel when elevated levels of corrosion resistance are required. Type 304 stainless steel materials can be provided in lieu of standard materials for unit structure, as well as many auxiliary components.

Component Construction

In addition to the various materials available for the structure of its units, BAC carefully selects the materials used for all components of its products. Additional materials such as fiberglass reinforced polyester (FRP), polyvinyl chloride (PVC), aluminum and copper are used for components when necessary to provide the corrosion resistance required on a unit providing evaporative cooling service.

Which Material Option is Right for My Project?

Included within the product sections of this handbook is a discussion on construction options. These sections define the availability of certain materials and combinations of materials for each product. Refer to these sections for specific product information. Your local BAC Representative can provide guidance on the proper unit construction for your project.