Materials of Construction

Operating environment, desired life expectancy, and budget all influence the materials of construction selected for an evaporative cooling product. BAC products are available in a variety of materials and BAC designs focus on long life and easy maintenance. This section describes the materials of construction available for BAC products. 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.

PFRP Composite Basins

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.

Thermosetting Hybrid Polymer

A manufacturing process fuse bonds a hybrid polymer to heavy-gauge G-235 galvanized steel providing superior corrosion protection. Over the past 25 years, this corrosion protection system has been installed on thousands of units worldwide.



TriArmor® Spray Booth

Warranty

Backed by a comprehensive Louver-to-Louver[™] 5-year warranty.



TriArmor[®] Corrosion Protection System The TriArmor[®] Corrosion Protection System is a TRIPLE PROTECTION PROCESS consisting of:





- **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.



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	Good
Corrosion	Acid Test pH=4	0				
	Alkaline Test pH=11	0				Better
	Chloride Levels	0				
	5% Salt Spray Test	0				Excellent
Environmental	UV Resistance					
	Thermal Shock					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:

ANDER	 Unsurpassed in corrosion resistance Impervious to chloride attack
	 Formulated to resist UV damage
Control Provide Action of the second se	 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.

Average Cold Water Basin Material Price



EcoArmor[™] Protection System (available on Aircoil[™] Evaporators)

EcoArmor[™] Protection System is a metallic impregnated polymeric coating specifically designed to provide outstanding corrosion protection without affecting the heat transfer capabilities. The coating is applied to an Aircoil[™] Evaporator constructed of 3003-O aluminum alloy.

- The fins make up 70% of an Aircoil[™] Evaporator's heat transfer surface. Therefore, protecting the fins from corrosion is critical to sustain nominal thermal performance.
- EcoArmor[™] is applied in a two-step process. First, the surface of the Aircoil[™] Evaporator is cleaned and passivated assuring adhesion. Then, the aluminum impregnated coating is applied creating a smooth surface.
- EcoArmor[™] protects the Aircoil[™] Evaporator against corrosion, assuring long lasting nominal performance.
- The coating prevents dirt and micro-organism adhesion to the surface of the coil and fins, inhibiting microbial growth and the formation of biofilm.



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

The thermosetting hybrid polymer is a unique system approach to evaporative cooling equipment protection. A special hybrid polymer, formulated for tenacious bonding, toughness, and impermeability to fluids, is applied by electrostatic spray to G-235 (Z700 metric) hot-dip galvanized steel surfaces.

The thermosetting hybrid polymer can extend the service life of equipment and alleviates concerns with white rust, virtually eliminating the need for periodic passivation of galvanized steel components.



Cooling Tower with the Optional Thermosetting Hybrid Polymer

Thermosetting Hybrid Polymer	
Zinc	
Steel	
Zinc	
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.



EASY CONNECT® Piping Arrangement



The Series 3000 Cooling Tower design uses two separate hot water basins, one above each fill section. As standard, two inlet pipes are required to supply water to the hot water basins. The piping is fabricated in the field at the time of installation. The contractor has to design, furnish, and install the piping, balancing valves, and proper piping supports.

As an option, BAC offers the EASY CONNECT[®] Piping Arrangement for Series 3000 Cooling Towers. This option simplifies water inlet piping and automatically balances flow within each cell, eliminating the need for balancing valves. A single water inlet connection, located on the side or bottom of each unit, does not require overhead piping and piping supports.

EASY CONNECT® Piping Arrangement reduces installation, material and design costs while providing a number of additional benefits.

- Reduces potential for errors during field fabrication of piping and supports.
- Eliminates the need for flow balancing valves and their maintenance.
- Constructed from corrosion resistant PVC.
- Bottom inlet EASY CONNECT® piping arrangement is ideal for multi-cell installations, keeping all the water supply and return piping underneath the units.



EASY CONNECT® Piping Arrangment

• No integral strainer.



- 5038(
- : (02)2717-5055 : taipei@arith.com.tw : www.arith.com.tw
- **詰鑫企業有限公司** arith company Ltd. 翻