

**REVERE.**

**THE WORLD'S COPPER LEADER FOR OVER TWO HUNDRED YEARS.**

When the world needs architectural copper, the world turns to Revere Copper Products, Inc. Architects, designers, building owners and specifiers have long regarded Revere's bare/bright Classic Copper as the premier roofing and wall cladding product. Classic Copper is complemented with an unparalleled selection of aesthetic choices for every application. Revere goes beyond producing the highest quality products and demonstrates its commitment to leadership through ongoing capital investment, development of applications, sound technical assistance, AIA/CES recognized training seminars and nationwide market support.



The company history of Revere Copper Products, Inc. has run parallel with that of the United States itself.

Since Paul Revere founded America's first copper rolling mill in 1801, Revere has been the unrivaled copper leader. In addition to developing numerous product innovations, Revere published the first modern – and most widely referenced – sheet copper design manual, *Copper and Common Sense*. The book has been in continuous publication since 1945. No copper company can match Revere's long history, and none can compare with its commitment to service and quality.





# FOR ARCHITECTURAL COPPER AND BRASS, REVERE HAS BUILT A SHINING REPUTATION.

**When copper meets inspiration, great things happen.**

Revere is America's premier copper and brass mill, with the production and distribution capabilities to supply exactly what today's architects require. The company is widely acclaimed for helping to innovate many inspired uses of its products. The people of Revere are not fabricators or installers, they are simply the leading resource for copper – *and* copper knowledge.

For more than two centuries, Revere materials have been used in countless applications by the most visionary architects, painstaking craftsmen and cost-conscious specifiers.

**Wherever it can be imagined, copper fits right in.**

There is a seemingly endless assortment of architectural possibilities created by copper. It is easily adaptable and aesthetically pleasing in so many places. In addition to roofing, copper is ideal for sidewall cladding, gutters and downspouts, flashings, sunscreens, fascias, interior and exterior accents and more.

Despite its elegant appearance, copper is inherently an economical choice. Its long-term durability, value retention and freedom from maintenance make copper the most cost-effective architectural solution.

It's noticeably lighter than many roofing materials, and is environmentally friendly.

**Revere uses approximately 95% recycled material to produce its architectural copper.**



**Durability vs. other materials**  
*Copper is extremely corrosion-resistant. From New York Harbor to the Rocky Mountains, it is the durable choice for roofs, wall coverings, rainwater goods and other exposed applications. Copper requires no underside venting, no temperature limitations and no special tools or installation techniques.*

**Economy vs. initial cost**  
*Consider the total cost over the life of the material, and copper comes out on top, as shown in this example for 120 feet of gutters and downspouts.*

|                | Aluminum  | Copper    |
|----------------|-----------|-----------|
| Installed Cost | \$485     | \$1,225   |
| Life           | 10 years  | 30 years  |
| Cost           | \$49/year | \$41/year |



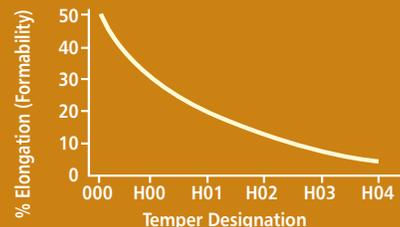
**Copper specification procedures.** To ensure best results, attention should be paid when specifying architectural copper. A number of key characteristics should be specified, including ounce-weight, thickness, temper, type/color, ASTM designation and form (sheet or coil).



### Temper

As hardness (temper) of metals increases, their ductility decreases. As shown below, the workability of three-quarter hard copper (H03) is significantly less than H00 cold-rolled. For roofing and flashing applications, Revere recommends H00 or H01, since higher tempers reduce ductility and may cause breakage at tight-radius bends.

### Effect of hardness on workability



### Copper thickness, by weight

| Weight/sq. ft. | Thickness          |
|----------------|--------------------|
| 12 oz.         | 0.0162" (0.411 mm) |
| 16 oz.         | 0.0216" (0.549 mm) |
| 20 oz.         | 0.0270" (0.686 mm) |
| 24 oz.         | 0.0323" (0.820 mm) |
| 32 oz.         | 0.0431" (1.095 mm) |

Use the ounce-weight method (weight of a square foot of copper in ounces), rather than gauge. To determine the correct weight, consider structural requirements and refer to the Revere sheet copper design manual, *Copper and Common Sense*.



### Color

For aesthetic purposes, the application may call for Classic Copper, pre-patinated copper or tin/zinc alloy coated copper. Many applications are enhanced by the unique weathering process of plain copper. Weathering can be dramatically influenced by humidity, air quality, location and environment. Full maturity may take 25 years or more to achieve. The gradual transformation offers its own appeal, with indistinct stages which may include bare-bright, tarnished black, purple, brown, statuary bronze and green patina.



### ASTM designations

Revere Architectural Coppers are produced to ASTM standards, as follows:

| Product name             | ASTM designation |
|--------------------------|------------------|
| Revere Classic Copper™   | B370             |
| Ultrapan™                | B370             |
| EverGreen™               | B882             |
| Pre-Patinated Copper     | B882             |
| PatriotGreen™            | B370             |
| Partially Painted Copper | B370             |

Gradual maturation of copper.

## REVERE CLASSIC COPPER™

Plain, bare-bright or red copper. It is copper in the most familiar sense of the word, and it is the foundation for all other Revere Architectural Coppers. Classic Copper – in sheet, strip or coil – is the flagship material, available in various sizes and thicknesses, for use in a limitless list of applications. It is the starting point for every Revere product. With its superior surface quality, Revere Classic Copper has been the preferred choice of architectural professionals for 200 years, and counting.

## ULTRAPAN™ COPPER

The only copper specifically engineered for use with portable pan-forming machines. Available in coil form, this highly engineered copper yields the best shape and superior handling before, during and after forming. This form of Classic Copper is highly malleable and easily fabricated.



## EVERGREEN™ PRE-PATINATED COPPER

This is sheet copper as it would appear in the future, today. Through a manufacturing process that duplicates and accelerates the natural aging process, EverGreen offers a true patinated surface – without the wait. It provides the aesthetics previously possible only after many years of weathering. Those who envision patina in their designs, no longer have to wait to make it a reality.

- Unique product replicates the natural aging process
- Atmospheric exposure completes weathering
- None of the problems associated with artificial patinas
- Very natural appearance, with warm, random shadings
- Handled, formed and installed like standard copper
- Ideal for roofing, wall cladding and most applications where plain copper would be used
- For interior use, maturation may be slower due to relative humidity
- Available in standard sheets as well as sheets of custom thicknesses and dimensions



## REVERE CLASSIC COPPER™

Revere Classic Copper, a naturally green product, is an ideal choice for sustainable construction and may help earn USGBC LEED™ credits:

- More than 95 percent of the copper contained in Revere Classic Copper is recycled material
- No VOC's are released during manufacturing, fabrication, installation, and/or use
- No "land-filled" wastes generated during manufacturing, fabrication, and/or installation
- Completely recyclable - copper roof or wall cladding will be recycled when useful life is served

Revere Classic Copper for HVAC ducts is an attractive compliment to the architectural product family. This application provides a rustic and natural additive to the interior of residences, commercial buildings and other sites. Copper in architecture is finding more and more unique and distinguished applications.

For additional information on these applications and benefits contact Revere Architectural Services Department.



## FREEDOMGRAY™ Z-T ALLOY COATED COPPER

Revere FreedomGray is pure standard sheet copper, coated on both sides with a rugged tin/zinc alloy. For durability, attractiveness and environmental friendliness, FreedomGray delivers. FreedomGray weathers naturally to an attractive earth-tone gray, and is lead-free for use in all environments.

- Copper core with alloy coating makes it unique
- The economy of copper, with a different look
- Highly malleable; easily fabricated
- Will not rust or corrode; durable for long-term use
- Never needs painting
- Appropriate for roofing, wall cladding, rainwater systems, etc.
- Available in sheets or coils for "long pan" roofing
- Should NOT be installed below plain copper or EverGreen copper
- Interior application details available from the experts at Revere

# REVERE COPPER ALPOLIC COMPOSITE PANELS™

Around a corner, over a curve or under an arch, this revolutionary new copper product fits beautifully with any design. The unique multi-layer composition combines pure copper sheeting with a thermo-plastic core, allowing the panels to take almost any shape imaginable. It was initially developed for wall cladding, but has proven ideal for fascia bands, entryways, column covers, ceilings and signage. Roofing, countertops and other interior applications are currently in development for the future.

- A bold new way to employ copper
- Ease of fabrication
- Superior flatness
- Durable
- 100% recyclable
- Light weight
- Rigid, yet formable

To learn more visit [www.alpolic-usa.com](http://www.alpolic-usa.com)



*A few of the many available textures.*



## REVERE LIBERTY COLLECTION™

The Revere Liberty Collection is textured copper available in dozens of different patterns, taking the beauty of copper to a new level. Each texture combines attractive appearance with functionality, offering better damage resistance, lower maintenance and enhanced value. The Liberty Collection provides a modern, high-tech finish on most surfaces where flat metal would be used.

- Ideal for high traffic areas
- Resistant to damage; hides surface scratches
- Increases strength-to-weight ratio
- Prolongs life for long-term economy
- Minimizes the effects of "oil-canning"
- Increases rigidity
- Deters vandalism
- Easy to work with

### Potential applications

- Elevators • Store fronts • Doors • Counter tops and fronts • Hoods • Light fixtures

# ARCHITECTURAL GUIDE SPECIFICATIONS

The following are parts of a Guide Specification for incorporation into architectural specifications. Complete details, specifications, and descriptive text for the installation of copper roofs, gutters, flashings, etc. are contained in the Revere manual *Copper & Common Sense*.

## General

### QUALITY ASSURANCE

Unless otherwise shown or specified, comply with applicable recommendations and details in *Copper & Common Sense* by Revere Copper Products, Inc.

## Products

### Material Data

#### Physical Properties

|                                  |                   |
|----------------------------------|-------------------|
| Atomic Wt.                       | 63.54             |
| Specific gravity                 | 8.89 to 8.94      |
| Density                          | 0.322 lb./cu. in. |
| Coefficient of thermal expansion | 0.000098          |
| Melting point, liquidus          | 1981° F           |

#### Thicknesses

|        | Theoretical | Minimum | Wt./Sq. Ft. |
|--------|-------------|---------|-------------|
| 16 oz. | 0.0216"     | 0.0204" | 1.00 lb.    |
| 20 oz. | 0.0270"     | 0.0258" | 1.25 lb.    |
| 24 oz. | 0.0323"     | 0.0308" | 1.50 lb.    |
| 32 oz. | 0.0431"     | 0.0411" | 2.00 lb.    |

#### Mechanical Properties

|                       | Temper designation | Temper designation |                 |
|-----------------------|--------------------|--------------------|-----------------|
|                       |                    | O60 soft           | H00 cold-rolled |
| Tensile strength, ksi | 30-38              | 32-40              | 34-42           |
| Yield strength, ksi   | -                  | 20                 | 28              |
| Elongation            | 45%                | 30%                | 25%             |
| Rockwell, F Scale     | up to 65           | 54-82              | 60-84           |

## MATERIALS

**A. Copper** – Select copper or coppers as required for aesthetics.

**1. Standard sheet copper:** cold rolled ounce weight (12-ounce, 16-ounce, 20-ounce, 24-ounce, and/or 32-ounce as noted on drawings) copper sheet complying with ASTM B370. Unless otherwise noted, temper shall be H00.

**2. Pre-patinated copper:** cold rolled ounce weight (16-ounce, 20-ounce, 24-ounce as noted on drawings) copper sheet complying with ASTM B882 and with the color and finish of Revere **EverGreen™**.

**3. Tin-zinc alloy coated copper:** cold rolled ounce weight (12-ounce, 16-ounce, 20-ounce as noted on drawings) copper coated both sides with tin/zinc alloy. Base copper sheet or coil shall comply with ASTM B370. Finish and appearance shall be that of Revere **FreedomGray™**.

**4. Pan-forming copper:** cold rolled ounce weight (12-ounce, 16-ounce, and/or 20-ounce as noted on drawings) copper in coil complying with ASTM B370 and manufactured in accordance with specifications for Revere **Ultrapan™**.

**5. Copper shingles:** solid copper not less than 0.019" thick weighing not less than 140 pounds per square of the design and appearance of Revere **Bennington™** shingles.

**6. Textured copper:** Solid copper having a designated minimum copper content of 99.3% or higher, in thicknesses ranging from .008" to .135", as specified on drawings. Finish and appearance shall be that of Revere **Liberty Collection™ Rigidized®** textured copper.

**7. Copper composite panel:** Thermoplastic core coated both sides with lightweight copper sheet, with a protective film on exterior skin. Total thickness shall be 4mm or 6mm as specified on drawings. Finish and appearance shall be that of Revere **Alpolc Composite Panel™**.

**B. Solder** – Shall conform to ASTM B32.

For **FreedomGray** tin/zinc alloy coated copper – Pure tin or lead-free, high-tin solders such as Number 497 by Johnson Manufacturing.

**C. Fasteners** – for plain copper, **EverGreen** pre-patinated copper and **FreedomGray** tin/zinc alloy coated copper shall be copper, copper alloy or non-magnetic, series 300 stainless steel.

## Execution

### STORAGE AND COORDINATION

**A.** Store all architectural copper sheet and coils (plain/bare, **EverGreen**, and/or **FreedomGray**) off the ground in an enclosed structure so as to maintain dry conditions and exclude condensation. Do **not** store on bare ground under tarp. Store **EverGreen** pre-patinated copper patinated side to patinated side (green to green).

**B.** Handle sheets and formed shapes in a manner to reduce scratches, dents, etc. Pad or tape tables, beds, brakes, and other surfaces over which **EverGreen** pre-patinated copper may be moved or placed during fabrication.

*Note: The use of gloves may minimize fingerprints during initial weathering. Fingerprints fade and disappear with additional weathering. However, in arid locations they may persist for an extended period.*

### INSTALLATION

**A.** Except as otherwise shown or specified, comply with Revere Copper Products, Inc. recommendations and instructions as published in *Copper & Common Sense* and published Revere literature for **EverGreen**, and/or **FreedomGray**.

**B.** Separate and protect dissimilar metals as recommended by manufacturers of dissimilar metals (other than copper).

**C.** Solder plain/bare copper, **EverGreen**, and/or **FreedomGray** in accordance with instructions published by Revere Copper Products, Inc.

*Note: Prior to soldering, plain/bare copper, EverGreen, and/or FreedomGray must be mechanically cleaned to produce a bright, unoxidized surface. Plain/bare copper and EverGreen should be pre-tinned before soldering. It is not necessary to remove the tin-zinc alloy coating from FreedomGray.*

### CLEANING

Do **not** chemically or abrasively clean plain/bare copper, **EverGreen**, and/or **FreedomGray**. If necessary, construction dirt may be washed from copper with clean, fresh water only. Do **not** use soaps, detergents or other cleaning agents.

### PROTECTION

Protect plain/bare copper, **EverGreen**, and/or **FreedomGray** from oils and greases, masonry cleaning compounds, iron and steel fines and fasteners, and other construction materials that may stain or discolor copper surface. To minimize condensation or water stains, at the end of each workday remove tarps or other protections placed on copper.

Manufacturing representatives are available for assistance or on-site meetings.

Refer to current manufacturer's MSDS for safety and handling information.



## Revere Copper Products, Inc.

One Revere Park, Rome, NY 13440-5561  
1-800-448-1776  
Fax: 315-338-2105

For literature: 1-800-490-1776

www.reverecopper.com

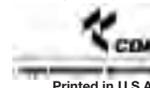
e-mail: archcopper@reverecopper.com

Revere Liberty Collection, FreedomGray, EverGreen, Bennington, Ultrapan and Revere Classic Copper are trademarks of Revere Copper Products, Inc.

Alpolc Composite Panel is a trademark of Mitsubishi Chemical America.

Rigidized is a registered trademark of Rigidized Metals Corporation.

Bennington Shingles available under exclusive license agreement with Paradigm Shingles, Inc.. ZT Alloy is a trademark of Follansbee Steel's patented product.



As a member of the U.S. Green Building Council, Revere is proud to offer environmentally friendly architectural coppers.