

SHIMMER AND SHINE: CUTTING-EDGE MATERIALS WITH ART DECO PIZZAZZ

BY KATHLEEN MURPHY SKOLNIK

Many of the glamorous, exuberant buildings of the Art Deco era owe their smooth, sleek, shiny façades and shimmering ornamentation to innovative building materials introduced in the early twentieth century. Novel steel alloys, such as nickel silver, monel, Nirosta, and duralumin, and creative new glass products, including pigmented structural glass and glass block, were among the technological advances that made architecture of the 1920s and 30s in New York, as well as other parts of the country, shimmer and shine.

Nickel Silver

Nickel silver is something of an oxymoron. These copper-nickel-zinc alloys contain no silver and relatively low percentages of nickel. Nickel silver's origins go back to seventeenth century China, where it was more accurately labeled *pek* meaning white and *tung* meaning copper. Also known as white brass and German silver, nickel silver became popular in the United States in the 1920s as a less expensive alternative to silver for decorative grilles and panels, railings, and elevator doors.

Nickel silver's resistance to corrosion and elegant silvery-white appearance were among the desirable attributes that made it so sought-after for architectural applications. The copper content, which typically ranged from 60% to 75%, accounted for its anti-corrosive properties, and the presence of 5% to 20% nickel provided its visual appeal. Zinc, which made up another 5% to 20%, lowered the melting point and enhanced its strength.

The original City Bank-Farmers Trust Company Building at 20 Exchange Place in lower Manhattan, an especially outstanding illustration of nickel silver's decorative potential, is said to represent the alloy's first extensive architectural use. The nickel silver panels on the curved center doors of the entrance at William Street and Exchange Place depict historical methods of transportation, including sailing ships, hot air balloons, and steam locomotives. Modern means of transportation—airplanes, ocean liners, and diesel engines—appear on the flat side doors. Nickel silver panels above the doors frame allegorical bronze figures symbolizing banking and abundance, surrounded by animal and floral motifs.

The Hanover Street entrance doors repeat the transportation motifs found at William Street and Exchange Place, but the nickel silver grilles above the doors contain two *caducei*, the ancient Greek symbols of commerce, rather than allegorical figures.



LEFT: The nickel silver doors, grilles, and details of the City Bank-Farmers Trust Company Building entrance at William Street and Exchange Place. Photo: Sawani Chaudhary

MIDDLE: Detail of the curved nickel silver center doors of the City Bank-Farmers Trust Company Building depicting historical methods of transportation, including sailing ships, hot air balloons, and steam locomotives. Photo: Meghan Weatherby

RIGHT: Detail of nickel silver panels above the entrance to the City Bank-Farmers Trust Company Building featuring an allegorical bronze figure symbolizing abundance, surrounded by animal and floral motifs. Photo: Meghan Weatherby

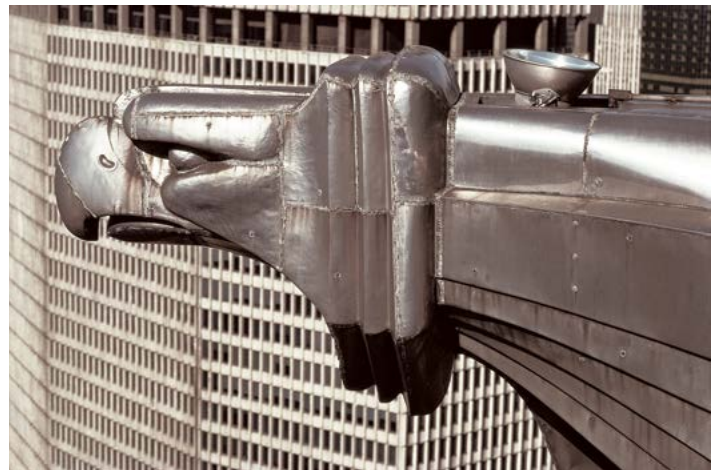
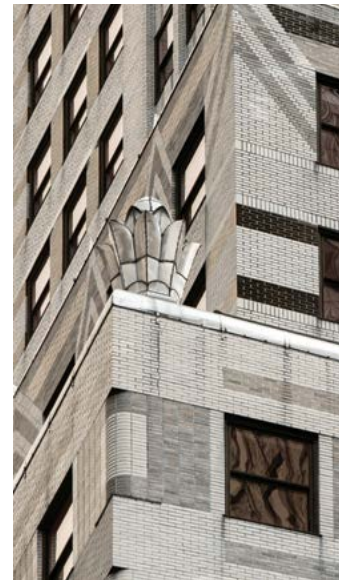


LEFT: Nirosta crown of the Chrysler Building with its seven concentric ribbed steel arches set with triangular windows. Photo: Richard Berenholtz

TOP MIDDLE: Detail of the stylized Nirosta Chrysler automobile radiator caps at the thirty-first level of the Chrysler Building. Photo: Richard Berenholtz

TOP RIGHT: Detail of the stylized Nirosta pineapple urn at the twenty-fourth floor of the Chrysler Building. Photo: Sawani Chaudhary

BOTTOM RIGHT: Detail of the stylized Nirosta gargoyles in the form of eagle heads at the sixty-first floor of the Chrysler Building. Photo: Richard Berenholtz



Nirosta

Corrosion-resistance also accounted for the desirability of Nirosta, a metal alloy developed in Germany by the Krupp firm in the early twentieth century. The trade name is a German acronym for *nichtrostender stahl*, meaning non-rusting steel. Nirosta steel contains approximately 18% chromium, which conveys its anti-corrosive properties.

The most prominent example of Nirosta's architectural use in New York is the iconic Chrysler Building. The tower's glistening crown, with its seven concentric ribbed steel arches set with triangular windows, is clad entirely in approximately 4,500 plates of Nirosta. A "glittering spire of Nirosta," as a 1930 issue of *Fortune* phrased it, tops the structure. The ornamentation at the building's setbacks—the stylized pineapple urns at the twenty-fourth floor, the Chrysler radiator caps at the thirty-first level, and the Art Deco gargoyles in the form of eagle head hood ornaments at the sixty-first floor—are also Nirosta.

The architect, William van Alen, described the merits of his use of Nirosta in the Chrysler Building in the 1933 and 1935 editions of Ernest E. Thum's *The*

Book of Stainless Steels: "The use of permanently bright metal was of greatest aid in the carrying of rising lines and the diminishing circular forms of the roof swing until it literally dissolves into the sky." He went on to explain the effect of light on the mirrored surfaces: "The splays get black and then brighter as the light reflexes occur, or the position of the observer changes, so that the entire building is changeable, like a brilliant piece of silk waving in the wind."

In 1929 the American Society for Testing Materials committee on stainless steel selected the Chrysler Building to evaluate Nirosta's durability for architectural applications. The building's Nirosta sheets were inspected every five years until 1960, when the evaluations ceased because of the virtual lack of deterioration detected over the previous three decades.

Monel

Monel—a product of the International Nickel Company, consisting of approximately two-thirds nickel and one-third copper—was another corrosion-resistant alloy popular during the Art Deco era. It was named for the company's president, Ambrose

Monell, but the final L was dropped because family names could not be used as trademarks. An early architectural use of monel in New York was the roof of Pennsylvania Station, installed in 1909. In 1936 monel replaced the copper roof on the New York Public Library at Fifth Avenue and 42nd Street.

But monel also had decorative applications. As stated in a manual for architects and metal craftsmen issued by International Nickel, "Monel Metal may be forged to create patterns which in earlier periods could be developed only in wrought iron, with a resulting brilliance and crispness to the work which exceeds the beauty of the inferior metal."

A prime example is the monel entrance gate of the five-story Art Deco townhouse at 49 East 80th Street that the architect Harry Allan Jacobs designed for Lionello Perera in 1930. As Jacobs told *The New York Times*, the house reflected "a modernistic spirit in decorations as well as in materials, as representative of this materialistic, artificial, and practical age." The monel grille at the entrance is covered with an intricate geometric pattern that includes wavelike forms and graceful scrolls. Jacobs also selected monel for the elegant curved railing of the interior staircase with abstract geometric designs that connects the first four levels of the residence. In later years, Barbra Streisand owned the Perera house for a time.

Duralumin

Duralumin is an aluminum alloy containing approximately 4% copper and a smaller amount of manganese that was developed by Dürener Metallwerke AG in Düren, Germany, in the first decade of the twentieth century. The name is a combination of Dürener and aluminum. Although it is not corrosion-resistant, duralumin is strong, hard, and lightweight; it was widely used for industrial applications, especially aircraft construction. It was also adopted for decorative metalwork during the Art Deco era.

The most notable examples of its decorative use in New York are found in Shreve, Lamb, & Harmon's Empire State Building of 1931. The metal silhouette of the building that embellishes the back wall of the lobby was cast in duralumin by the skilled German-born metal designer and fabricator Oscar Bach. The light rays extending from the top of the building's image and the outlines representing the boundaries of New York and neighboring states in the background map were also fabricated from duralumin.

In addition, circular duralumin medallions ringing the lobby pay homage to 12 crafts and industries that contributed to the building's creation: elevators, decoration, masonry, metals, stone, heating, concrete, machines, carpentry, excavation, plumbing, and steel.



TOP LEFT: Perera house, New York City's only Art Deco townhouse. Photo: Sawani Chaudhary

TOP RIGHT: Monel entrance gate of Perera house. Photo: Sawani Chaudhary

MIDDLE: Three of the twelve circular duralumin medallions ringing the lobby of the Empire State Building, which pay homage to crafts and industries that contributed to the building's creation. Photo: Sawani Chaudhary

BOTTOM: The cast duralumin silhouette of the Empire State Building that embellishes the back wall of the lobby by German-born metal designer and fabricator Oscar Bach. Photo: Meghan Weatherby

Duralumin medallions similar to those found in the Empire State Building adorn the façade of the New York City Health Department Building at 125 Worth Street in lower Manhattan, although here the metal plaques are octagonal rather than circular. Designed by the architect Charles B. Meyers in a “conservatively classic” style, the Health Department Building was completed in the early 1930s. The medallions, designed and fabricated by Bach, are located between the third and fourth stories on each of the building’s four façades. Although untitled, the images appear to relate to the building’s function. Medical imagery includes a man mixing a potion in a bowl, a woman examining a child’s knee, and a man performing an experiment on a laboratory rat in a cage. In others, a man fills a bowl with water and a woman sits under the sun, perhaps a reference to the health benefits of clean water and sunlight. The images of men reaping grain and catching fish suggest the value of a healthy diet; a woman washing clothing in a fountain and a man shoveling trash into a furnace stress the importance of cleanliness and sanitation.

Pigmented Structural Glass

Pigmented structural glass made its debut in the early years of the twentieth century. A combination of borax, cryolite, kaolinite, manganese, silica, feldspar, and fluorspar made it opaque. Structural glass was billed as an inexpensive substitute for marble, although the fusion of the components at a high temperature, followed by a lengthy annealing process, made it even stronger than marble. It was impervious to moisture, easy to clean, and simple to install.

The first such product, Sani Onyx, was introduced by the Marietta Manufacturing Company of Indianapolis in 1900. Sani Onyx was subsequently joined by similar products, such as Carrara glass from the Penn-American Plate Glass Company, named for the Italian quarries known for fine white marble, and

vitrolite, originally produced by the Vitrolite Company, which was later acquired by the Owens-Illinois Glass Company.

The first large-scale architectural application of pigmented structural glass came in the early teens when Cass Gilbert covered the restroom walls in New York’s Woolworth Building with Carrara glass. By the 1920s the use of these products had extended to lobbies and storefronts. Because of its ability to be curved and its availability in a number of colors and finishes, structural glass was an ideal cladding material for the Streamline Moderne architecture introduced in the 1930s.

The use of pigmented structural glass for remodeling storefronts received a boost from the 1935 Modernize Main Street competition sponsored by *Architectural Record* and the Libby-Owens-Ford Glass Company. As stated in the jury’s report, “The major objective of the competition was to create designs for remodeling stores which would ‘attract the public, display goods to the best advantage, and provide space, convenience, and light so that purchasing is a pleasure.’” The competition offered \$11,000 in cash prizes and attracted more than 3,000 entries for four storefront categories: drugstores, food stores, automobile sales and service stations, and apparel shops. The portfolio of 52 designs that received prizes or honorable mentions were published to “stimulate the interest and imagination of hundreds of thousands of store owners throughout the country and induce them to bring their stores up to date.” Surviving examples of pigmented structural glass are relatively rare today, but this portfolio provides a valuable record of its application and potential.

Glass Block

Glass block can be traced to 1886 and the French architect and engineer Gustave Falconnier, who received a patent for what he called *briques de verre*, or



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TOP: Octagonal duralumin medallions on the façade of the New York City Health Department Building by German-born metal designer and fabricator Oscar Bach. Photo: Sawani Chaudhary

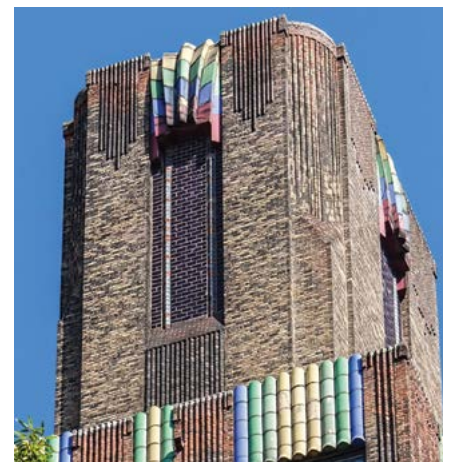
BOTTOM: Detail of the amethyst-colored glass block panel inset in the tower of the Towne House Apartments. Photo: Meghan Weatherby

OPPOSITE PAGE:

LEFT: William Lescaze House, said to be one of the first modern residences in New York City, features glass blocks prominently on the façade.

TOP RIGHT: Detail of the entrance to Kramer House, which features glass blocks above the door and on the fourth floor façade. Photo: Sawani Chaudhary

BOTTOM RIGHT: Detail of Morris B. Sanders House showing the distinctive blue glass bricks and glass blocks that frame the vertical steel casement windows on the fifth floor. Photo: Sawani Chaudhary





glass bricks, two molded pieces of glass annealed together with a hollow center. Early New York examples of the use of glass block from European suppliers include the four-story glass atrium roof of the former Barbizon Plaza Hotel at 106 Central Park South (now Trump Parc), which opened in 1930, and the large rectangular amethyst-colored glass block panels in the tower of the Towne House Apartments at 108 East 38th Street, also completed in 1930.

As the 1930s progressed, American manufacturers such as the Macbeth-Evans Glass Company, Owens-Illinois, and Pittsburgh Corning Corporation began producing glass block. In 1933, Owens-Illinois introduced this new material to the public in its Glass Block Building at Chicago's Century of Progress International Exposition. The symmetrical pavilion, with its staggered 50-foot tower flanked by two projecting wings, was constructed entirely of multicolored glass blocks, approximately 25,000 of them.

Glass block features prominently in the architect William Lescaze's remodeling of a nineteenth century brownstone at 211 East 48th Street that he transformed into his home and studio. Said to be one of the first modern residences in the city,

the four-story townhouse with its simple, flat stucco façade, originally painted off-white, contains two large rectangular glass block windows at the third and fourth levels that extend almost the entire width of the building. A solid glass block wall separates what was Lescaze's office, just below ground level, from the street. The attention Lescaze's unique design attracted earned him commissions for two other townhouses that incorporated glass block: the 1935 Kramer House at 32 East 74th Street and the 1941 Norman House at 124 East 70th Street.

Not far from the Lescaze House is another example of the residential use of glass block, a five-story townhouse completed in 1935 containing the ground-level office of the architect Morris B. Sanders, who designed it, and two duplex apartments above. The white marble facing of the first level is punctuated by a large panel of small glass blocks that illuminated the office space. Distinctive blue glass bricks clad the four upper floors of the townhouse. Large glass blocks frame the vertical steel casement windows at the third and fifth levels and within the balconies at the second and fourth levels. Glass block infill is also found on the rear façade. A 1936 article in *Modern Mechanix* labeled the house the "latest architectural miracle to be wrought by glass blocks."

Glass block became one of the hallmarks of the Streamline Moderne architecture of the 1930s and was prominently featured in several pavilions at the 1939 New York World's Fair. Glass blocks formed the curvilinear wall at the entrance to the Ford Building, although much of the glass block was replaced with white Carrara glass for the 1940 season. The Glass Center Building was fittingly constructed almost entirely of glass block, and a glass block fountain adorned the exterior of the Metals Building.

Many of the innovative materials that added such pizzazz to the architecture of the Art Deco era fell into oblivion as newer, and less expensive alternatives became available following World War II and tastes began to change. However, their legacy lives on in these surviving examples in New York City as well as skyscrapers, residences and storefronts found in cities and towns throughout the United States.

*Kathleen Murphy Skolnik teaches art and architectural history at Roosevelt University in Chicago, Illinois, and leads seminars on Art Deco design at the Newberry Library, a private research library also in Chicago. She is the co-author of *The Art Deco Murals of Hildreth Meière* and a contributor to the recently published *Art Deco Chicago: Designing Modern America*. She currently serves on ADSNY's Advisory Board.*