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Encasing the American Dream: The Story of Plastic and Steel

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Encasing the American Dream: The Story of Plastic and Steel

Abstract
This thesis considers a preservation understanding and treatment for mid twentieth-century building materials that were designed and promoted to appear “brand new” in perpetuity. Based on their significance as pervasive mid-twentieth-century building materials, as well as their broader social, cultural, and technological roles, this study focuses on porcelain enameled steel and high-pressure plastic laminate. In order to comprehend the role and cultural importance of these materials, this study investigates how innovations in the manufacture of enameled steel and plastic laminate, as well as the corporations that developed these products, helped to create an ideal American kitchen, a symbol of postwar prosperity, patriotism, and progress. In addition to explaining the history of how these materials were produced, marketed, and used, this thesis provides a practical guide for preservation professionals, curators, and historic home owners, detailing the options involved in preserving, restoring, and conserving plastic laminate and enameled steel.

Keywords
recent past, mid-century, kitchens, plastic laminate, steel

Disciplines
Architectural History and Criticism | Cultural History | Historic Preservation and Conservation

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ENCASING THE AMERICAN DREAM:
THE STORY OF PLASTIC AND STEEL

Patton Howell Roark III

A THESIS

in

Historic Preservation

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Partial Fulfillment of the Requirements of the Degree of

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2014

__________________________________
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__________________________________
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This thesis is dedicated to my grandparents and great-grandparents, who lived through this fascinating time in our country’s history.
ACKNOWLEDGEMENTS

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INTRODUCTION

This thesis considers a preservation understanding\(^1\) and treatment for two mid-twentieth century\(^2\) building materials, plastic laminate and enameled steel, which were developed and promoted to appear “brand new” in perpetuity. Based on their significance as pervasive, nearly ubiquitous building materials at the time, as well as on the broader social, cultural, and technological roles these materials played in American life, this study focuses on porcelain enameled steel and high-pressure plastic laminate. In order to comprehend the role and cultural importance of these materials, this thesis investigates innovations in the manufacture of enameled steel and plastic laminate, the corporations that developed these products, and their creation of the phenomenon of a sleek, modern, clean American kitchen ideal, which symbolized post-war prosperity, patriotism, and progress. In addition to explaining the history of plastic laminate and enameled steel production, marketing, and use, this thesis provides a practical guide for preservation professionals, curators, and historic home owners, detailing the options involved in preserving, restoring, and conserving plastic laminate and enameled steel.

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\(^1\) A preservation understanding determines the values of the individual materials and the preferred method by which to conserve their physical properties.

\(^2\) For the purposes of this thesis, the mid-twentieth century is defined as approximately 1945 through 1970.
Additionally, this thesis examines two houses currently operating as house museums as case studies in the preservation of both plastic laminate and enameled steel. The Ohio History Center in Columbus, Ohio recently acquired a 1949 Lustron kit house for its ongoing exhibit, *1950s: Building the American Dream*. The home, originally constructed in Arlington, Virginia, was completely disassembled, restored, and reassembled inside the Ohio History Center. The Lustron house restoration project provides an example of the problems encountered when moving, restoring, and conserving porcelain enameled steel. Furthermore, the Ralph Sr. and Sunny Wilson house, built in 1959 in Temple, Texas, offers an excellent example of a forward-thinking plastic laminate kitchen, telling not only a story of material and design innovation and corporate symbolism of Ralph Wilson Plastics (now WilsonArt International), but also the heroic rescue and restoration of the house in 1998 by Grace Jeffers.

In order to situate this thesis in the literature of the field, research has naturally included both primary and secondary resources, examining period promotional materials from both plastic laminate and steel companies, provided primarily by the Building Technology Heritage Library archive. Other related fields surveyed include twentieth-century building technology and materials, the
changing ideals of the American home, and the influences of corporations on building technology in mid-century America.

While this thesis will address scenarios in which the material conservation of either plastic laminate or steel has been executed, it will not address technical material conservation issues.³

³ Conservation techniques for twentieth-century building materials involve the process of trial and error. As these materials are coming of age, this process will certainly continue.
REVIEW OF PERTINANT LITERATURE

Over the past decade, the historic preservation community has faced the challenge of understanding, interpreting, and preserving works of the recent past. Preservation of the recent past originally focused on works of high Modernism and notable architects; however, as the movement has expanded, the focus has shifted to include both vernacular Modernism and examples of mid twentieth-century everyday architecture. The period following the end of World War II engaged in mass production of architectural building materials on a scale never previously seen. Additionally, this post-war period proliferated brand-name modern materials in the building construction industry. As we approach the burgeoning field of preserving the recent past, we must determine the most appropriate methods for treating the mass-produced, the brand-name, and the “maintenance-free” material.

As is often the case, the first moment of nostalgic reflection upon America’s collective recent past came by way of popular culture. The first cited example of this phenomena is the 1971 stage musical production Grease, followed by George Lucas’s 1973 film American Graffiti. The events of the film took place only ten years prior to the release date, yet the world was presented through a lens of heavy nostalgia. As early as 1973, popular culture already
recognized the post-war period of the 1950s and early 1960s as a time vastly different from its own. This idealization of the post-war period may be attributed to the turbulent social events of the late 1960s and early 1970s. Nostalgia for the economically expanding, family-oriented suburban 1950s and early 1960s proliferated through the television program *Happy Days*, which first aired in 1974, the 1978 film version of *Grease*, and the 1982 musical pastiche *Little Shop of Horrors.*

Popular culture’s yearning for the “simpler time” of the 1950s continued into the 1980s with the *Back to the Future* franchise, released in 1985. The first critical examination and interpretation of the recent past occurred in 1986 with the release of Thomas Hine’s book *Populuxe*. For many scholars of mid-century culture, *Populuxe* stands as the defining study of post-war culture and design. Hine effectively linked mid-century design with the larger social context, including post-war consumerism and suburbanization. While Hine set the scene and provided context for the development and use of high-pressure plastic laminate and enameled steel in post-war kitchen design, his book did not describe the materials or their usage in detail. Hine successfully introduced mid-

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4 In particular, the musical number “Somewhere That’s Green” comically characterizes a city dweller’s longing for the ideal suburban life.
century design and culture to the academic arena, establishing its legitimacy among designers, historians, and social anthropologists.

Through the late 1980s and the 1990s, scholarly works regarding developments during the post-war era rose in popularity, due primarily to Hine’s *Populuxe* and the growing cultural fascination with America’s recent past. Typically, these texts, such as Neil Harris’ 1990 *Cultural Excursions: Marketing Appetites and Cultural Tastes in Modern America* or Karal Ann Marling’s 1994 *As Seen on TV: The Visual Culture of Everyday Life in the 1950s*, related to either high Modern design or post-war suburbanization and urban planning. While both of these subjects provide excellent context for the use of plastic laminate and enameled steel in post-war kitchens, rarely do either mention the materials or their usage.

The post-war suburb played an integral role in the propagation of the modern steel and plastic laminate kitchen. At mid-century, high-pressure plastic laminate and enameled steel were introduced to the American home. While these materials existed prior to World War II, developments in the materials’ production, increased demand, and changes in consumer taste following the war allowed for their incorporation into the new “modern” American kitchen.
As World War II ended, the Servicemen’s Readjustment Bill, also known as the G.I. Bill, passed in 1944. The G.I. Bill, among other benefits, provided returning servicemen with readily-available access to low-cost mortgages and low-interest loans. The availability of financing, combined with abundant building materials and a sudden rise in young, newly-forming families, resulted in an enormous housing demand. After returning from the war, men desired to move their new families out of dying city centers, and into the rural suburban areas of major cities, where land was available and inexpensive. Additionally, the G.I. Bill increased the housing stock tremendously, therefore allowing for the installation of thousands of steel and plastic kitchens. Consequentially, the steel and plastic kitchen became synonymous with the ideal American suburban home, and a symbol of the new, modern America.

During the post-war housing “boom,” companies, including Sears and Roebuck, Aladdin Homes, Montgomery Ward, and Lincoln Homes, published catalogues of house plans. Prospective home-owners then selected which model house they would like built. The architectural styles of the “kit houses” ranged from traditional to modern, often mixing various American vernacular forms. Common types included Cape Cod, split-level, and Ranch-style houses. Once the

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desired house pattern was selected and purchased, a construction team would arrive at a property to assemble a series of prefabricated panels over the course of several days. With the shell of the building complete, sub-contractors next installed other components such as electricity and plumbing. Efficient building methods learned from wartime military construction, combined with the use of prefabricated components, meant that a family could inexpensively erect a quality-built house in a very short amount of time. Additionally, the houses included a variety of options and upgrades that could be applied if desired. Often, steel and laminate kitchens were included as part of the kit-home designs.

A number of texts examine the mid-century period of American suburbanization that adopted the steel and plastic kitchen the symbol of prosperity. While these works rarely mention the kitchens specifically, they lend insight into the larger story that allowed the steel and laminate kitchen to flourish. Works such as Greg Hise’s 1997 *Magnetic Los Angeles: Planning the Twentieth-Century Metropolis* and Andrew Shanken’s 2009 *194X: Architecture, Planning, and Consumer Culture on the American Home Front* contextualize large-scale societal and architectural changes in post-war America. Hise and Shanken explain that the post-war period was one of incredible change not only in technology but also in social attitudes. Understanding these changes helps
contextualize the importance of modern building materials such as plastic laminate and enameled steel, especially their use in the mass-produced American kitchen.

In addition to the rise of the American suburb, the post-war era also saw an increase in consumerism. The consumer culture of the 1950s and 1960s, coinciding with suburbanization and the rise in mass-production, is explained in Lizabeth Cohen’s 2003 book *A Consumers’ Republic: The Politics of Mass Consumption in Post-war America*. During this period, everything from cars to can-openers were promoted and advertised to the American public by every means possible. Through the coincident advent of television and the rise in magazines’ popularity, Cohen explains, products went from being mere objects to symbols of prosperity and modernity on a scale never previously seen.

Undoubtedly, advertising had the single greatest effect on selling the plastic and steel kitchen to middle-class America. Carefully calculated period advertisements exclaimed that in order to join the new modern America and the emerging middle class, a new steel and plastic kitchen was essential; anything else was declared sub-par and unacceptable. Additionally, each individual brand of enameled steel and plastic laminate used similar sales tactics to promote products. Purchasing a Youngtown Kitchen was a patriotic duty and only Formica countertops would keep a wife happy. Over-the-top advertisements and sales copy that oozed absurdity by contemporary sensibilities inundated the American
home buyer (see Appendix C). Apart from sales brochures, the door-to-door salesmen\(^6\) tooted artfully crafted and tactfully, blatantly convincing trifold boards and miniature models in order to sell a steel kitchen to every home owner. Salesmen were trained in the art of making the home owner’s current piecemeal farmhouse kitchen seem humorously outdated and the steel kitchen the solution to every housewife’s woes. While Cohen’s book provides excellent insight into the consumer culture of the post-war period, it does not discuss consumer culture as it related to the building industry specifically, let alone steel and plastic kitchens.

Reducing labor for the housewife was key to the salesman’s pitch regarding steel and laminate kitchens. Hired help was less commonplace after World War II, therefore, following the war, women of the house typically spent more time in the kitchen than previously. Advertisements and sales brochures, while aimed at husbands’ wallets, directed focus towards wives, in hopes that the wife would then convince her husband to purchase the product. Texts on the subject of the woman’s role in household management at mid-century include Ruth Cowan’s 1983 *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave*, Maria Diedrich and Dorothea Hornung’s 1990 *Women and War: The Changing Status of American Women from the 1930s*

\(^6\) Door-to-door salesmen were more common for steel kitchens than for plastic laminate.
to the 1950s, and Alice Friedman’s 1998 *Women and the Making of the Modern House: A Social and Architectural History*. These works thoroughly investigate women’s roles in the development of the modern house; however, they do not examine the relationship between the mid-century woman and plastic and steel kitchens and the cultural phenomena inherent in the mid-century materials.

Texts regarding aspects of mid-century culture and design are limited to those written within the time frame necessary for social reflection. However, technical guides to both plastic and steel are abundant. Synthetic plastic has existed for nearly one hundred years. The first widely manufactured plastic material, Bakelite, was developed in 1907. In 1913, Formica plastics began to produce plastic mechanical components. It was not until the 1920s that Formica developed the first plastic laminate, primarily used in commercial and industrial vertical applications initially. High-pressure decorative plastic laminate did not appear in horizontal countertop applications until the late 1940s. At mid-century, Formica reigned as the top producer of plastic laminate, however other top manufactures of the post-war era included WilsonArt, GE Textolie, Arborite, and Pionite. There are a number of technical guides to the chemistry and use of plastic including Harry DuBois’ 1972 *Plastics History U.S.A.*, and Herbert Simonds and James Marion Church’s 1963 *A Concise Guide to Plastics*. Additionally, two
notable texts have been written on the history and use of Formica plastic laminate. Susan Grant Lewin’s 1991 groundbreaking book *Formica & Design: From the Counter Top to High Art* provides a thorough history of the use of Formica, ranging from residential kitchen applications to works of modern art. This book is the first to critically examine the use of plastic laminate, adding legitimacy to what many, especially in the contemporary art field, did not consider a “serious” material. Furthermore, in order to celebrate its one hundred year anniversary (and corporate image) Formica produced *Formica Forever* in 2013. *Formica Forever*, composed of a series of essays by scholars, designers, and historians, essentially echoes the sentiments of *Formica & Design*, while adding an impressive collection of archival graphics. Neither *Formica & Design* nor *Formica Forever* address the conservation of plastic laminate or place it in the context of historic preservation. Moreover, while several technical guides to steel exist, a complete history of enameled steel kitchen cabinetry has never been assembled.

Within the past decade, numerous texts have delved into various aspects of post-war life, including suburbanization, consumerism, the development of the modern home, and the shifting social roles of men and women. While these texts provide the context, none directly address the history of plastic laminate and
enameled steel kitchens in post-war America. Thus, this thesis is a beginning at filling this gap in the literature of post-war life and manufacturing in America.
MATERIAL CULTURE

In order to fully understand the significance of a material, one must consider the history and context of its usage. Therefore, a first step in understanding high-pressure plastic laminate and enameled steel as modern building materials is to examine their roles in the modern domestic kitchen of mid-twentieth century America.

The lens of the kitchen is a window on the development of modern society. More than any other room in the house, the kitchen has served as the stage for changes in social structure, in technological advances, as well as in fashion and personal taste. Over the course of the twentieth century, the kitchen has evolved from the workplace of industrious household help to the social heart of the home. Despite its crucially important role in the development of the contemporary house, the kitchen is often overlooked by historians and remodelers alike, and due to its ephemeral nature, the kitchen is typically the first room to change in a house.

The kitchen has served as a home for household technological advancements since the late nineteenth century. Most of this technology came with a short shelf-life, transforming the kitchen into a palette of ever-changing style and personal taste. Therefore, a well-preserved surviving kitchen provides
historians with a core sample of the periods during which it developed, lending insight into large-scale social and technological changes and the daily lives of its inhabitants.

**THE PRE-WAR KITCHEN**

The lineage of the modern efficient kitchen can be traced to Catharine E. Beecher and Harriet Beecher Stowe’s 1869 treatise *The American Woman’s Home*. In their seminal work, the Beecher sisters prescribed the most efficient kitchen configuration. Their design organized the storage of various necessary tools and ingredients based upon their usage in the preparation of food. Although their suggestions relate mostly to layout and organization rather than materiality, the Beecher kitchen is the first attempt at kitchen planning. Prior to the Beecher sisters’ writings, most cooking was done either outside in separate out buildings or in piecemeal setups around the hearth. The Beecher design introduced a dialogue between the kitchen and the rest of the house, permanently establishing the kitchen’s role as an integral part of the house. Aside from introducing efficient planning, the Beecher design promoted hygiene as a crucial component to food preparation, a concept that would remain prevalent through the mid-twentieth century, proliferated by both plastic laminate and enameled steel.

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7 Jane Powell, *Bungalow Kitchens* (Salt Lake City: Gibbs Smith, 2000), 14.
By the end of the nineteenth century, the kitchen had found permanent residence in house design. Although kitchen efficiency was on the mind of some architects and designers, the kitchen was often regarded as a purely functional and service-oriented space. Through the early twentieth century, the kitchen was almost always located towards the rear of the house, typically connected to both the yard and the dining room. Kitchens in larger, upper-class houses often included a butler’s pantry, connecting the primary kitchen space with the dining room. The butler’s pantry served as storage for china, glassware, and linens; it also usually contained a copper sink for the washing of dirty dishware. It was not until the 1920s that the kitchen began to contain spaces intended for everyday family usage, usually facilitated through a built-in breakfast nook or room for a small table. The merging of family and service life in the kitchen can be attributed to changing social attitudes and economic factors. After World War I, household help became less common than during the late nineteenth and first decades of the twentieth century, relegating the woman of the home to the

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10 Washing dishes was done exclusively in the copper sink in the Butler’s pantry. Soft copper was thought less-likely to chip fine china. Additionally, it was considered unsanitary to wash dishes in the kitchen sink were food was prepared.
kitchen. Additionally, the kit houses and arts and crafts bungalows of this period often had limited space, therefore, the functions of rooms consolidated.

Prior to the advent of plastic laminate and enameled steel, one iconic piece of kitchen furniture embodied the spirit of efficiency, modernity, and hygiene, ushering in the age of the modern twentieth-century kitchen. The Hoosier\textsuperscript{12} cabinet, produced by the Hoosier Manufacturing Company of New Castle, Indiana, creatively combined food storage with preparation to create a compact and well-organized yet movable unit, emblemizing the mass-marketed efficient kitchen (see Figure 1).\textsuperscript{13} The oak cabinet included built-in flower sifters, storage for dry goods, spice racks, and jars. Some models even included cookbook holders, a perpetual calendar, and grocery list wheels with nutrition information.\textsuperscript{14} The outfitted units featured a sliding white porcelain enamel countertop, which was far easier to clean than traditional wood block countertops.\textsuperscript{15} This early use of enameled surfaces because they are more sanitary than wood sets the precedent and tone for enamel’s usage in kitchens.

\textsuperscript{12} A “Hoosier” refers to a person originating from Indiana. The etymology of the term “Hoosier” is debatable, however, it predates the Hoosier cabinet.
\textsuperscript{13} Nancy Camilla Carlisle and Melinda Talbot Nasardinov, \textit{America’s Kitchens} (Boston: Historic New England, 2008), 120.
\textsuperscript{14} \textit{Ibid}.
\textsuperscript{15} White enamel topped kitchen tables were also very popular at this time.
Figure 1: The Hoosier Cabinet, complete with retractable porcelain enamel work surface, built-in flour sifters, spice racks, and shopping lists.

*Carlisle and Nasardinov, America’s Kitchens, 120.*
An advertisement in a 1920 edition of *The Saturday Evening Post* noted the efficient qualities of the Hoosier cabinet. “In it every staple food, every utensil, every movable adjunct to the preparation of meals - and the cleaning up after them - finds its logical place. Each is easy to get at - without walking, reaching, or stooping.”16 Not only did the Hoosier cabinet propagate sanitation through choice of materials, it also aspired to transform arduous and laborious kitchen tasks into easy work for women and servants alike. Additionally, unlike built-in cabinetry, the Hoosier cabinet was a piece of furniture, and could be added or moved without extraneous cost or renovation. Furthermore, the Hoosier cabinet transformed the kitchen into a room to be furnished like any other. A 1924 edition of *The Ladies Homes Journal* proclaimed “Your kitchen! - furnished as completely and tastefully as any other room - now you can have it so with little trouble and expense.”17 Whereas a mere decade before it would have seemed unthinkable to show guests the kitchen, the well-furnished kitchen became a showcase of pride and status.

The Hoosier cabinet undoubtedly aided in altering consumer views of the kitchen. However, early twentieth century advancements in technology

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17 Ibid.
transformed the kitchen from the setting of grueling chores to exciting modern automation. By the mid-1920s, most houses in America had been fitted with electricity and running water, facilitating gas and electric appliances and refrigeration. Technological advancements indeed changed the role of women in the kitchen; the role of the traditional housewife gained new meaning and attention as strenuous work to store and prepare food became an exciting science.\(^{18}\)

Building upon sentiments of the Beecher sisters’ writings, kitchens of the early twentieth-century also reexamined the efficiency of kitchen layout. Typical kitchens of the 1910s through the 1920s consisted of individual components, sometimes referred to as a “farmhouse” kitchen, assembled gradually over time, rather than planned at the time of a house’s construction. Homeowners accumulated the contents of their kitchen as they could afford to: a wall-hung porcelain sink, an ice box, a Hoosier cabinet, tables, and an oven (see Figure 2). As house design progressed to include pre-planned kitchens, thought went into how appliances and workspaces functioned and how efficiency could be improved through layout. Popular period magazines such as *House Beautiful* or *The Ladies Home Journal* touted the work-saving layout known as the “work triangle.”\(^{19}\) By

\(^{18}\) Carlisle and Nasardinov, *America’s Kitchens*, 123.

\(^{19}\) *Ibid*, 124.
systematically organizing the location of the oven, sink, and ice box, the foot traffic of women could be decreased considerably. Continuous cabinetry and countertops would later be employed in order to fill the voids between appliances and increase efficiency.

The Great Depression of the 1930s forced families to embrace what they already owned, therefore fewer new kitchens were built during this period.

Figure 2: A typical pre-war kitchen.  
*Powell, Bungalow Kitchens, 20.*
However, the advent of World War II set the stage for a new era in kitchen design. The kitchen served as the battlefront for American homes, forming the “Arsenal of Democracy.”\textsuperscript{20} Properly managing a kitchen became a woman’s patriotic duty as she carefully conserved rationed food and saved fats for the production of glycerin for explosives. In addition to food conservation, many families grew Victory Gardens in order to ease reliance on rationed goods; produce grown in the garden could then be canned and saved.\textsuperscript{21}

The American kitchen changed little during the war as focus shifted abroad. Many manufactures of kitchen appliances produced machines for the war efforts. However, many homeowners took advantage of the opportunity to instill dreams of tomorrow’s kitchen for when the United States declared victory. The kitchen of tomorrow was viewed as the ultimate reward for the wartime sacrifice of American women. Republic Steel, a major manufacturer of post-war steel cabinetry, proclaimed “When a peacetime dawn dispels the dusk of war, the American housewife will find a new joy in the kitchen of tomorrow. It will be bright, cheerful, efficient- because steel, especially stainless steel, will make it

\textsuperscript{20} Ibid, 149.
\textsuperscript{21} Carlisle and Nasardinov, America’s Kitchens, 149.
Nearly two decades of depression and war set the stage for a new era in kitchen design.

**THE POST-WAR KITCHEN**

Homefront hardships were indeed rewarded when the United States declared peace in 1945. During the war, plentiful employment for both men and women and limited spending resulted in an unprecedented post-war financial surplus. Most kitchens had not been upgraded since before the Great Depression, and women were eager to redeem the money they had saved during the war to build their dream home (see Figure 3). Due to the Servicemen’s Readjustment Act of 1944, commonly known as the G.I. Bill, and changing economic and social factors in large cities, families flocked to newly developed neighborhoods in suburban areas.\(^23\) Although suburban development predates the early 1950s by nearly one hundred years, the mass-production of building materials and advancements in technology made post-war expansion possible on a previously unseen scale.

Perhaps the most notable planned post-war suburban developments were the three Levittowns, built in Pennsylvania, New Jersey, and New York between

\(^{22}\) Quoted in Carlisle and Nasardinov, *America’s Kitchens*, 151.

\(^{23}\) Dying city centers were abandoned by returning Caucasian soldiers and their families in favor of new, modern housing developments in suburban areas.
1947 and 1964 by William Levitt. Post-war houses, such as those built for the Levittowns, dramatically changed the way kitchens were incorporated into the home. While pre-war kitchens featured an amalgamation of technologies that were neither visually nor efficiently well-organized, the Levittown house boasted a brand-new kitchen featuring sparkling General Electric appliances and modern steel cabinetry. The dramatic technological and aesthetic improvement over

Figure 3: An image from the 1958 Kitchen Book by Sears, Roebuck and Co. illustrating the difference between the “old-fashioned” pre-war kitchen and the “modern” post-war kitchen. 1958 Kitchen Book, by the Sears, Roebuck and Co., 1958.

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24 Carlisle and Nasardinov, America’s Kitchens, 147.
cramped apartment tenements or pre-Depression kitchens lured families to new houses. Furthermore, advancements in architectural design and theory of the 1930s had finally manifested itself in the form of the suburban house. Modernism, with roots in the Bauhaus philosophy of 1920s Germany, prescribed simplified and open house plans. While most post-war suburban houses do not entirely reflect the ideals of High Modernism, its influence is clearly present. The design of the suburban house mixed Modern sentiments with vernacular forms and notions of Colonial-Revival nostalgia, however, the open-floor plan became widely adopted, establishing the kitchen as the epicenter of the home. The open plan allowed the kitchen and family room to connect with few to no dividing walls. The kitchen was intended to be the command post of the house, in which a woman could cook and clean while entertaining or watching the children. Furthermore, the kitchen became a public space: in the age of the cocktail party, a woman could showcase her new Kelvinator refrigerator or shiny St. Charles cabinets all while preparing California dip and sloe gin fizzes.

In what author Thomas Hine designated the “Populuxe” era, color became a kitchen fixture. Prior to World War II, white dominated as the prevalent kitchen color, instilling the importance of cleanliness and sanitation. Reds, blues, and creams made only occasional appearances. Post-war exuberance and changes in
design aesthetic brought a flood of pastel pinks, blues, and yellows, as well as vibrant turquoise greens.\textsuperscript{25}

In the 1930s, planners and designers devised the streamlined kitchen, in which continuous countertop and cabinetry replaced the ramshackle assemblage of appliances and work surfaces. The continuous form unified the various elements of the kitchen, resulting in an organized and coherent form. Due to the financial strain of the Great Depression followed by the war, few continuous-form kitchens were installed before 1945.\textsuperscript{26} However, the post-war market eagerly adopted the continuous form kitchen in suburban houses and older kitchen remodels alike. The continuous-form kitchen, enabled in part by plastic laminate and enameled steel, established the kitchen design standard of the twentieth and twenty-first centuries, and with the exception of materials, colors, and technologies, the continuous-form kitchen remains largely unchanged.\textsuperscript{27}

\textsuperscript{25} Hine, \textit{Populuxe}, 56.
\textsuperscript{26} Carlisle and Nasardinov, \textit{America's Kitchens}, 151.
\textsuperscript{27} \textit{Ibid}, 159.
A STORY OF STEEL

Enamel has been used for the decoration of jewelry and pottery by cultures ranging from the Greeks to the Chinese since antiquity. Porcelain, or vitreous enamel, refers to the application of a powdered glass material, known as frit, to a metal, glass, or ceramic substrate. Once coated, the substrate is fired at a very high temperature, causing the frit to melt, flow, and harden. Once cooled, the enamel creates a glossy and impervious surface. While the enameling process has remained essentially unchanged since antiquity, the substrate materials and frit coatings developed tremendously as a result of the nineteenth-century industrial revolution. Beginning in the late nineteenth century, enameled steel and iron gained wide acceptance, facilitating the production of new technological innovations such household appliances and plumbing fixtures. As the production of enameled steel and iron standardized, the material’s sleek, shiny, modern finish and sanitary, easy-to-clean durability proved highly desirable. Enameled steel and iron became widely used in the fabrication of cookware, building products, appliances, signage, automobile components, and kitchen cabinetry.

29 Usually between 1380 and 1560 °F
30 Jester, Twentieth-Century, 255.
The first instance of enameled steel and iron in the domestic kitchen appears in the form of the wood, gas, or coal-burning range (see Figure 4). At first built into brick-lined niches or retrofitted into existing fireplaces, stoves became freestanding appliances by the turn of the century. The first gas stove was introduced in 1879, and became common by 1890; early ranges often combined with wood or coal-burning within the same unit. Advances in the vitreous porcelain enameling process around the turn of the century resulted in the popularity of porcelain enamel stoves. Enameded stoves were far easier to clean than cast iron, which required the constant application of stove blackener, therefore, they were promoted as being far more hygienic than traditional cast iron stoves. The electric range was introduced in the 1920s, adopting the same porcelain enamel coating of the earlier ranges.

Cooking ranges slowly evolved from a fireplace to a freestanding appliance; because the range was a completely new device, now detached from its fireplace roots, it readily adopted the new technology of porcelain enamel. The icebox, however, endured a slower transformation from a piece of furniture into a

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31 Powell, _Bungalow Kitchens_, 108.
32 _Ibid_, 108.
33 _Ibid_, 109.
freestanding appliance. Nineteenth and early twentieth-century iceboxes were essentially pieces of fine wood cabinetry with tin or zinc-lined interiors. Advances in refrigeration technology led to the introduction of the first mass-produced, commercially-available "modern" refrigerator in 1927: the General Electric

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34 Although, early refrigerators, as well as early ranges, had cabriole legs, indicating stylistic connections with furniture traditions.
“Monitor-Top” refrigerator (see Figure 5).\textsuperscript{35} Unlike its wooden predecessors, the Monitor-Top refrigerator used modern hygienic white enamel to announce that it was a complete departure from the icebox, forever changing the American kitchen.

Because these were new and exciting innovations, appliances readily adopted modern enamel coatings. Cabinetry, however, deeply rooted in the tradition of woodworking, took longer to embrace enameled steel. While hailed by some, average pre-War American homeowners may have found modern enameled steel cold and clinical. Through the advent and eventual departure of the steel kitchen, the competitive dichotomy between modern steel and traditional wood never disappears. Nevertheless, by the 1930s, enameled steel cabinetry found its way into the American kitchen.

The history of enameled steel kitchen cabinetry originates with early Hoosier cabinets. Hoosier cabinets of the 1920s often integrated a number of enameled surfaces into the cabinetry, including flour sifters, bins, and retractable countertops.\textsuperscript{36} The enameled surfaces were easy to clean and promoted as vermin-proof. While Hoosier cabinets integrated enameled surfaces, they were

\textsuperscript{35} Fred W. Wolf invented the refrigeration unit in 1913, however the Monitor-Top, so-called because the compressor assembly on top resembled the gun-turret of the 1860s battleship, \textit{USS Monitor}, was the first to gain wide acceptance. Powell, \textit{Bungalow Kitchens}, 113.

\textsuperscript{36} Powell, \textit{Bungalow Kitchens}, 21.
still constructed of wood, and stood alone as pieces of furniture. The first documented example of entirely enameled kitchen cabinetry was produced by the Cabranette Corporation, a division of the Murphy Door Bed Company of Philadelphia, Pennsylvania in 1926 (see Figure 5). Murphy Door Beds were widely popular through the 1920s, especially in small city apartments with limited space,

Figure 5: A “Standard 6’-6½” Alcove Kitchen Unit” by Cabranette. *Porcelain Kitchen Units for the Condensed Kitchen, by Cabranette Corporation, 1926.*
therefore, advertisements and product guides for Cabranette units tout their space-saving efficient design. “Cabranette Porcelain Kitchen Units, when used in combination are designed to meet every kitchen need. Sufficient storage space is provided, so that utensils and provisions, which are ordinarily kept in the pantry, are stored in the more convenient Cabranette, thus eliminating the obsolete pantry.”

Unlike later steel substrate enameled cabinets, Cabranette units were “stamped from heavy gauge ‘Armco Ingot Iron’,” functioning more like heavy oven doors than cabinets for storage. Furthermore, the white enamel proved far easier to clean than outdated, dirty wood cabinetry: “Porcelain enamel is the most sanitary and easily cleaned surface known. It is impervious to water, heat, and dirt, and will not chip nor discolor.” Additionally, Cabranette was sold in units, which allowed the purchaser to conveniently mix and match in order to achieve the most efficient layout. Presumably because this product was new to the market, Cabranette even provided a list of high-end apartment units in major cities that featured its modular kitchen units. Despite valiant efforts, the enameled cast iron kitchen cabinet never caught on, and Cabranette switched production to enameled steel cabinetry in the 1930s.

38 Ibid.
During the 1930s, steel cabinetry developed in conjunction with the fitted kitchen. Tired of the seemingly outdated “farmhouse” kitchen of the 1910s and 1920s, the American market was eager to install modern, standardized efficient kitchens. While innovations in enameled steel drove this movement, early fitted kitchen units were still crafted of traditional wood.\(^{39}\) Fitted kitchen brands of the 1930s, such as the 1935 DeLuxe Kitchen Units by Huttig Sash and Door Company of St. Louis, used traditional wood material in a fashion which mimicked modern white enameled steel (see Figure 6). Cabinet doors feature a “lipped, five-ply, flush type, full length Ponderosa Pine core, cross banded and face veneered with close grained hardwood veneers, smoothly sanded” with a “heavy durable primer and two finish coats of semi-gloss, clear-tone enamel.”\(^{40}\) Additionally, DeLuxe units were outfitted with sleek streamlined chromium plated hardware, further distinguishing this cabinet type from the Hoosier cabinets of the past. White was still the most common color for cabinetry during this period. However, a more diverse color palette was introduced through wall finishes, countertop surfaces, and flooring. “Like so many other things in this restless world of ours, the old fashioned kitchen of the past two decades is vanishing. Gone is the hospital and


\(^{40}\) Ibid.
Figure 6: DeLuxe Kitchen Units, while constructed of pine, imitate white enameled steel. *DeLuxe Kitchen Units: Recipe for Modern Living*, by Huttig Sash & Door Co., 1935.
laboratory ‘look’ of yesterday’s all white kitchen. In its place has blossomed the
gay, livable kitchen of today—modern in design, colorful in appearance and
efficient in plan and operation.”

The fitted kitchen form, established by brands such as DeLuxe, readily
incorporated enameled steel in order to create a kitchen that was modern not
only in function, but also in material. One of the first entirely steel enameled fitted
kitchen was produced by Whitehead Metal Products Company of New York in
1937. The Whitehead Work-Saving Kitchen offered a range of features that aided
housewives in operating an efficient and modern kitchen. Among these features,
the easy-to-clean enameled steel was sold in convenient units which could be
arranged to create the ideal kitchen. The Whitehead Work-Saving Kitchen was
sold as an entire corporate package, composed of Whitehead enameled steel
cabinets, Monel countertop surfaces and hardware, and Westinghouse brand
appliances. The cabinets offered a variety of specific storage compartments and
built-in components, including built-in cutlery trays, slicing boards, a step shelf, a
soap powder rack, a refuse container, bulk storage bins, a bread bin, a lid rack, a
tray rack, and even a planning desk. Because every kitchen item had its storage

41 Ibid.
42 Advertisement for Whitehead Work Saving Kitchens, 1937, by the Whitehead Metal Products Co., New York,
New York, Building Technology Heritage Library.
space strategically planned out and conveniently located, the Whitehead kitchen claimed to eliminate arduous labor. This 1937 kitchen planning guide proclaims the benefits of the Whitehead Work-Saving Kitchen in exuberant and extravagant detail:

Imagine a kitchen so wonderfully convenient that kitchen chores, as you know them today, are practically abolished! Imagine a kitchen teeming with electric appliances that work for you at the snap of a switch! ...Imagine that same Kitchen with back-saving Monel working surfaces and time-saving Whitehead cabinets. Picture all this, and you visualize a Whitehead Work-Saving Kitchen, deliberately built to spare your energy, and to allow new freedom for more agreeable interests...Fancy the gleaming lustre of Monel Tops and working surfaces...the sparkling cheer of cabinets, sink and electric appliances...the delightful colors that make your kitchen as charming as a modern living room...haven’t you often longed for a nearby working surface where you could conveniently prepare salads and cold dishes? Haven’t you missed a convenient compartment where refrigerator utensils could be easily reached without unnecessary steps? If only your footprints could talk! What a story of wasted energy they would tell!...You can have Whitehead Cabinets of lasting, highest-grade furniture steel- a material that won’t warp and swell with the weather, that will ‘take’ hard wear indefinitely, that is coated with a beautiful baked enamel finish, then it is easy to see how your entire kitchen becomes a more satisfying place to work in. Moreover, the same kind of material, the same finish, that is employed in your modern kitchen appliances.43

While the Whitehead kitchen tantalized homeowners, because of the Great Depression followed by World War II, few steel kitchens were installed during this period.44 During World War II, steel corporations focused their efforts on wartime

43 Ibid.
44 Carlisle and Nasardinov, America’s Kitchens, 151.
production. Knowing that they would soon return to the consumer-driven market, steel corporations encouraged saving up for new kitchens after the war. From the earliest steel kitchens of the 1930s through the 1960s, approximately eighty companies introduced some form of steel kitchen cabinetry. A number of these companies were fairly small and regional, and most only were in production for a few years. However, the primary three major manufacturers of enameled steel kitchen cabinetry during the 1950s were Youngstown Kitchens by Mullins Manufacturing Corporation of Warren, Ohio, Geneva Kitchens, of Geneva, Illinois, and St. Charles Kitchens, produced by the St. Charles Manufacturing Corporation of St. Charles, Illinois. Aside from the “Big Three” companies, other popular manufactures included Republic Steel, American Kitchens by AVCO, Sears, Crosley, and General Electric. Due to the abundance of steel manufacturing facilities in Ohio, Indiana, and Illinois, many enameled steel cabinet companies were based in the Midwestern United States.

46 Ibid.
YOUNGSTOWN

Youngstown by Mullins, introduced in 1940s, and popular through the 1950s and into the 1960s, stood as one of the primary manufacturers of enameled steel kitchens (see Figure 7). Its most popular line, known as the “Diana” line, sold nationwide during the 1950s. Youngstown sold cabinet units

Figure 7: Youngstown Kitchen advertisement.

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47 Ibid.
48 In reference to their logo, feature the Roman goddess of the hunt, Diana.
individually, and encouraged homeowners and renovators to purchase pieces incrementally as they could afford, eventually building a whole Youngstown kitchen. Typically, homeowners would start with a sink base and integral porcelain drainboard sink. Youngstown became the leader in mass-marketing steel kitchens to the eager post-war public. Kitchen planning guides were available through catalogue advertisements or at department stores. The glossy and cheerful guides educated prospective customers on the benefits of modern kitchen planning.

Aimed at the housewives’ taste and husbands’ wallet, the guide first introduced the variety of potential kitchen layouts, often referencing scientific studies which allegedly determined optimal floor plan options. After introducing the cabinet layout, color, and built-in options, the guide encouraged customers to contact a sales representative. Sales representatives would then present customers with a miniature model kitchen, which they could then customize:

Youngstown has created a unique miniature planning kit. In this kit every size of Youngstown kitchen equipment...has been duplicated on a scale of 1”=1’... The beauty of this miniature kitchen is that it not only gives the buyer a concrete idea of what the kitchen will look like, but it allows re-arrangement of cabinets until the best possible arrangement has been found.49

In addition to planning guides and visiting sales representatives, Youngstown fabricated a singing ensemble known as “The Mullinaires” which regularly appeared on television programs shamelessly touting the praises of Youngstown Kitchens. In one 1953 television segment, the “conductor” encouraged audience members to sing along, with the aid of a “bouncing ball” above the lyrics:

Here’s the word, here’s the flash
That will roll up loads of cash
Youngstown kitchens are keeping the lead.

Diana style is the key
To our new supremacy
Youngstown kitchens are keeping the lead.

We make more history
In the kitchen industry
Sales records we’ll pile up by the score.

For we’ve led the pack
Now we have what others lack
Watch the public come running for more.

Sinks are sleek, cabinets smart
Kitchens new in every part
Youngstown kitchens are keeping the lead.

Built-in look, smart designs
Smother flowing modern lines
Youngstown kitchens are keeping the lead.

We will make history
With new flexibility
Our kitchens no others can exceed.

Just watch us sell
Give the competition hell
Youngstown kitchens are keeping the lead.\textsuperscript{50}

\textbf{GENEVA}

Geneva Modern Kitchens appeared on the market in the mid-1950s, and were popular later into the 1960s than were Youngstown Kitchens. Perhaps more so than either Youngtown or St. Charles, Geneva kitchens adapted to the Danish mid-century modern aesthetic of the early to mid-1960s. During the late 1950s and early 1960s, kitchens began to open up to living spaces as the popularity of the “great room” or “family room” increased. Therefore, Geneva kitchens offer suggestions on how the transition between kitchen and living space could be made. Geneva proliferated the “peninsula,” which was a countertop surface with cabinetry overhead free-standing from the wall, allowing one to “pass-through” the space.\textsuperscript{51} The peninsula could fill an assortment of roles: one option, the “double utility peninsula cooking top,” served as a cook top and snack bar. Other

\begin{footnotesize}
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\item \textsuperscript{50} \textit{The Mullinaires}, Mullins Manufacturing Co., (Handy Jam Organization, 1953).
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options included double sided cabinetry, acting as a space divider, or a planning desk. As with other manufacturers, Geneva offered an unlimited plethora of built-in accessories to complete the modern kitchen.\textsuperscript{52} By 1958, color had become highly-desirable, and although white was still popular, the kitchen palette had expanded to six distinctly-branded colors: Sandalwood, Willow Green, Desert Tan, Butter Yellow, Turquoise, and Blossom Pink (see Figure 8).\textsuperscript{53} Mixing and matching contrasting and complementary colors was encouraged. In addition to unlimited

![Figure 8: Color wheel by Geneva Cabinets showing six standard colors, contrasting colors, and related colors.](recipes.png)

\textit{Recipes for Your New Kitchen, by Geneva Modern Kitchens, 1958.}

\textsuperscript{52} Kueber, “Steel Kitchen Cabinets.”
\textsuperscript{53} \textit{Ibid.}
possible color combinations, Geneva introduced an atypical feature among steel cabinet brands: wood cabinet fronts on steel frames, so that “those who prefer the appearance of wood can have it without sacrificing all of the advantages that steel cabinets offer.”\textsuperscript{54} As the kitchen merged with the living room, customers desired cabinetry to appear furniture-like again.

**ST. CHARLES**

St. Charles ranked as arguably the most popular brand of steel kitchen cabinets on the market during the 1950s and 1960s.\textsuperscript{55} St. Charles produced steel kitchen cabinetry longer than any other brand, lasting well through the 1970s. As with Geneva, St. Charles also offered wood-veneer steel cabinetry in the 1960s and 1970s, as well as popular colors of the period, such as avocado green, harvest gold, coppertone brown, and burnt orange.\textsuperscript{56}

As the popularity of steel kitchens waned in the mid-1960s, traditional wood, wood veneer, and plastic laminate veneer cabinetry dominated the market through the 1970s. By the 1980s, steel kitchen cabinets were nearly forgotten, and regarded as a symbol of a time gone by. In 2008, the Viking Range Corporation purchased the St. Charles name and briefly revived the brand, albeit

\textsuperscript{54} Ibid.
\textsuperscript{55} Kueber, “Steel Kitchen Cabinets.”
with a stainless steel rather than enamel finish; Viking, however, discontinued the line in 2012. As of 2014, the only enameled steel cabinetry still available on the market is Crème de la Crème, produced by John Lewis of Hungerford. Taking heavy inspiration from the prominent British line, English Rose, Crème de la Crème, is a fairly faithful reproduction.
A STORY OF PLASTIC

The history of high-pressure decorative laminate began in 1904, when Belgian chemist, Dr. Leo Baekeland, founder of the Bakelite Corporation, experimented with phenols, a type of thermosetting resin. Baekeland developed a combination of formaldehyde, phenol, and an alkaline catalyst in order to form a thermosetting resin, which, once cured, could not be melted down again with heat to be reformed. Although phenolic resin existed previously, Baekeland’s process made its mass-production more viable. Baekeland patented his method of plastic production in 1909.

Concurrently, in an effort to develop new electrical insulation products, the Westinghouse Electrical and Manufacturing Company in Pittsburg, Pennsylvania, tasked the head of the Research and Engineering Department, Daniel J. O’Conor, to experiment with cloths, resins, papers, varnishes, and solvents. By 1909, O’Conor recognized the moisture and heat resistant qualities of the phenolic resin and decided to pursue a working relationship with Baekeland and the Bakelite Corporation. At first, O’Conor was unable to successfully adhere the phenolic

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59 A thermosetting resin is one which cures irreversibly once heated above 390 °F.
60 Also known as carbolic acid.
62 Ibid.
resin to paper or cloth. He then developed a technique for winding paper around a metal roller while simultaneously coating the paper with warm resin. Once cool, the cylinder could be cut and flattened in order to produce a sheet of plastic-coated paper. O’Conor produced the very first sheet laminate, patented by Westinghouse in 1918, under the trade name Micarta. However, in 1913, before Westinghouse was able to acquire the patent, O’Conor teamed with Herbert Faber, the Westinghouse Technical Sales Manager of insulating products, in order to found their own new company in Cincinnati, Ohio: Formica.63

Formica, initially Formica Insulation Company, began producing “V” commutator rings, an insulative motor component, for the Chalmers Motor Company. Two company legends for the origin of the Formica name persist. The official story claims that the material served as a replacement for mica, mica being a mineral which was commonly used as electrical insulation during the early twentieth century. The other story claims that Formica is an abbreviated version of “formally Micarta,” Micarta being the Westinghouse-owned trade name.64 In 1914, Westinghouse attempted to eliminate Formica, its sole laminate competition, by entering into an exclusive agreement with Bakelite, Formica’s phenolic resin supplier. With its source for phenolic resin unavailable, Formica

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64 Jeffers, "Machine Made Natural."
sought the aid of a Canadian chemist, Dr. L.V. Redman, to develop an alternate chemical. The new chemical, called Redmanol, combined phenol with ammonia, formaldehyde, hexamethylene, and tetramineammonia, resulting in a suitable replacement for Bakelite’s phenolic resin. Between 1919 and 1924, Westinghouse brought three lawsuits against Formica, all of which Formica won. During this period, competition between Westinghouse and Formica largely drove research and development campaigns.65

During the 1930s, Formica experimented with decorative patterns. Up until this time the company produced only motor components, tubes, rods, and other molded parts. The first decorative plastic laminates combined different resin mixtures, resulting in a web-like “cracked” pattern, reminiscent of Chinese or Japanese ceramic glazes.66 During this period, Formica also developed a process by which genuine wood veneers could be laminated with the Redmanol resin, producing a decorative and highly-durable “real wood” surface. In 1931, Formica introduced a “cigarette-proof” laminate which incorporated a layer of aluminum foil, dispersing the heat of a lit cigarette in order to prevent burns.67 Another Formica innovation during this period was the decorative layer, commonly

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65 Lewin, Formica, 24.
66 Jeffers, "Machine Made Natural."
67 Ibid.
referred to as the "deco" layer, containing a printed pattern. However, because the Redmanol resin altered the color of the deco layer and darkened when exposed to light, the first patterns were wood grains. The decorative laminate process was not perfected until 1938, when melamine supplanted the Redmanol resin, producing a clear, glossy, and protective coating. In addition to being less expensive than the previous resins, melamine allowed the deco layer pattern to appear unaltered (see Figure 9).

Decorative plastic laminates became wildly popular during the post-World War II era. While this rise in popularity can be attributed in part to the post-war

![Figure 9: Formica catalogue showing the composition of plastic laminate.](image)

*Formica Laminated Plastic Sunrise Colors & Patterns, The Formica Company, date unknown.*
housing boom, a variety of other factors prevented plastic laminate from becoming mainstream until 1945. Following the innovation of the melamine layer in 1938, a flood ravaged the Formica plant in Cincinnati, damaging the building and machinery. In addition to this setback, partial founder Herbert Faber suffered a heart attack and resigned. Following these blows, the onset of World War II forced Formica to focus on the production of war goods rather than decorative surfaces.

Through the 1930s and 1940s, decorative plastic laminates were used exclusively for vertical wall surfaces, rather than for horizontal applications, such as flooring or countertops (see Figure 10). Vertical applications of plastic laminate provided a decorative wall pattern, similar to historic uses of wallpaper or lincrusta, with the added benefit of protective coating and added durability. Plastic laminate was first applied as a horizontal countertop in bars, restaurants, bowling alleys, barbershops, and beauty parlors. The demand for housing following World War II resulted in the first usage of plastic laminate as a countertop surface in the American domestic kitchen and bathroom. Prior to World War II, domestic kitchen countertops where typically wood, ceramic tile, or

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69 Ibid.
70 Ibid.
Linoleum was a very popular countertop choice during the 1930s and 1940s for its durability and easy cleanability. That it was offered in a variety of decorative patterns also contributed to its popularity. Linoleum paved the way for the introduction of plastic laminate to the American kitchen. Plastic laminate

Figure 10: A 1930s Formica catalogue showing vertical laminate applications for bars and soda fountains.  
*Striking Modern Soda Fountains with Formica, The Formica Company, date unknown.*
proved easy to install, inexpensive, and highly durable, resulting its explosive
growth in popularity. Formica sales went from $4,251,109 in 1940 to over
$24,000,000 in 1950. In 1956, American Cyanamid, the supplier of melamine,
purchased Formica. The conglomeration earned higher profits by eliminating
shipping costs. In the 1970s, Formica became an independent corporation once
more when it was sold by American Cyanamid in a leveraged buyout.

At mid-century, Formica was undoubtedly the leader in plastic laminate
production and sales. The product was so pervasive that, like Kleenex, ChapStick,
or Xerox, the brand name became the generic name for the product, in this case,
plastic laminate. Despite Formica’s being the market leader, dozens of plastic
laminate manufacturers competed during the 1950s and 1960s. Early rivals to
Formica include the Nevamar Corporation, and Panelyte, both subsidiaries of
larger producers of plastics or paper goods. Following World War II, General
Electric produced its own brand of plastic laminate, known as GE Textolite. Other
plastic laminate brands available at mid-century included Ralph Wilson Plastics
(later WilsonArt International), Pionite, Arborite, Consoweld, Lamidall, Melamite,
Conolite, Reiss, Royalite, and Lamidall. Additionally, smaller companies, such as

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72 Jefferes, "Machine Made Natural."
Daystrom and Beautychrome, produced laminates exclusively for the manufacturing of tables and dinette sets.

**PRODUCTION**

Much like porcelain enamel on a steel substrate, plastic laminate is an applied decorative and protective skin. When applied to a substrate, typically plywood or medium density fiberboard, plastic laminate forms a highly durable assembly. Both high-pressure and low-pressure laminates are formed by pressing multiple layers of papers together at high temperatures. High-pressure laminates are manufactured by sandwiching six layers of phenolic resin-impregnated kraft paper substrate, followed by the printed decorative layer, and overlaid with a melamine layer, and a release layer, which is discarded after production. The layers are then pressed between two steel plates at 1200 pounds per square inch and 260 degrees Fahrenheit. The melamine paper melts to form a glossy, non-porous surface. Low-pressure laminates are pressed at 300 to 350 pounds per square inch at a slightly higher temperature. Low-pressure laminates are less rigid and not recommended for horizontal or countertop applications. Both high-pressure and low-pressure laminates were available at mid-century.

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74 Ibid, 128.
TYPOLOGIES AND FINISHES

At mid-century, plastic laminate was available in four different decorative and functional finishes: gloss, satin, suede, and furniture.75 The gloss finish is shiny and glass-like, with a high degree of reflection. Conversely, the suede finish has a matte finish, and is slightly textured. Both gloss and suede finishes were created by the individual release papers. The suede finish release paper featured a subtle, pitted texture. Satin and furniture finishes were achieved through a secondary application after the laminate was produced. The satin finish features subtle, linear brush marks achieved by running a pumice brush over the original glossy surface. The furniture finish is similar to the satin finish, however, after being abraded by the pumice brush, the laminate was buffed and polished, resulting in a slightly textured surface, designed to mask fingerprints.76

Additionally, Formica offered two varieties of performance grade laminates: cigarette-proof grade and mar-proof grade. The cigarette-proof laminate introduced a layer of aluminum foil between the decorative layer and the kraft paper layers. Once the concentrated heat of a lit cigarette was introduced to the laminate surface, the foil distributed the heat, preventing burn marks. The mar-proof finish, available only for the satin and furniture finish

75 Jeffers, "Machine Made Natural."
76 Ibid.
Figure 11: This WilsonArt advertisement shows custom vertical and horizontal applications of plastic laminate.

laminates, prevented scratch marks as well as marks left by oil. This was achieved by a special brush which, when applied to the laminate, sealed off the crevices in which the oil collected.77

PATTERNS

The mention of plastic laminate or Formica typically conjures up images of parabolic boomerang shapes or metallic gold starbursts. The success of plastic laminate during the mid-twentieth century is due to not only its durability, but also its popular designs (see Figure 11). In an age of decoration and do-it-yourself home improvement, plastic laminate introduced high design to the average American through the marriage of Modernism and the mundane. Bold, colorful graphics, sleek, modern lines, and extravagant, kitschy patterns characterize graphic design of the mid-twentieth century. While high design certainly entered the average American home in the form of textiles, art, and furniture, plastic laminate serves as the only graphically-designed building material that was universally available and ubiquitous.

Formica was the first brand of plastic laminate to develop decorative patterns.78 In order to produce the decorative sheet layer, paper passed through a large copper cylinder engraved with the pattern. During the 1940s, Formica

77 Ibid.
78 Lewin, Formica, 66.
outsourced its pattern design to engravers, who used stock, prefabricated cylinders. The earliest decorative patterns available, aside from solid colors, were Formica Pearl and Linen. During this period, the engravers were the sole source of design patterns. As the popularity of decorative patterns expanded, Formica hired an in-house design staff to develop a line of patterns. Formica first hired Brooks Stevens, a noted industrial designer responsible for the Oscar-Meyer Weinermobile, to focus attention on pattern development. While only under contract from 1946 through 1952, Stevens developed some of Formica’s most recognizable patterns, including Skylark, commonly known as “boomerang.” After Stevens, Formica contracted high-end industrial design firm Loewy Associates to develop patterns as well as custom inlays and murals. Loewy aimed to transform Formica into a high-end fashion product through a new line of patterns known as the “Sunrise Collection”. Many of the patterns simply injected new color schemes to preexisting engraving cylinders, producing thirty eight new options.

Early patterns of decorative plastic laminate served to imitate other, more expensive materials. Popular patterns included Marble, Pearl, Linen, and Wood Grains. The introduction of Skylark “boomerang” in the mid-1950s ushered in a

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79 Ibid, 91.
80 Jeffers, "Machine Made Natural."
81 Lewin, Formica, 95.
new age of pattern for the sake of pattern, rather than imitation of other materials. Often times, decorative patterns, such as Formica’s Skylark, were graphically inspired by futuristic “Googie”\(^\text{\textsuperscript{82}}\) architecture, the Space Race, and the Atomic Age. During the mid-1950s, decorative plastic laminate came into its own as a medium for the delivery of graphic style. In her thesis research entitled *Machine Made Natural: The Decorative Products of the Formica Corporation, 1947-1962*, design historian Grace Jeffers defined six distinctive classifications of two-dimensional plastic laminate patterns: simulation, adaptation, translation, pure motifs, material, and process. Jeffers outlined the classifications as follows:

*Simulation*

A simulation pattern imitates another material. It is a more or less convincing counterfeit of a natural or man-made material. Simulation patterns are deceptive to the eye only, touch and close inspection may reveal the forgery.

*Adaptation*

An adaptation is the recognizable abstraction of a material. It directly refers to a genuine source material...without attempting to serve as a convincing forgery.

*Translation*

Translation is the transfer of any decorative motif, theme or stylistic tendency from a traditional to a non-traditional material.

\(^{82}\) Googie is a style of exaggerated futuristic architecture, popular in the 1950s and 1960s.
Pure Motifs

Pure motifs are patterns of graphic invention, having been subjected to the traditional rules of drawing. They reveal a perspective, and are created by a line.

Material

A material pattern is identified by the materials employed in the production of the final product. The formal qualities of the material components create the decorative effect.

Process

Process patterns are created by a technique or action, and such patterns are usually named by the motion that created them.83

Refer to Appendix A for examples of popular mid-century plastic laminate patterns.

KITCHEN APPLICATIONS

Due to its resistance to moisture and abrasion, plastic laminate became the most popular countertop surface of the mid-twentieth century. Architects and homeowners alike specified versatile, modern, and inexpensive plastic laminate for residences as diverse as Levittown and Fallingwater. Homeowners or builders could cut the selected pattern of laminate to the desired size and adhere it to a

83 Jeffers, "Machine Made Natural."
rigid substrate using a strong adhesive. Once the laminate was installed, an edging material was selected to protect the edge from damage and to add a visual termination point (see Figure 12). The most common edging options were the steel edge and the self-applied laminate edge. The steel edge provided added durability, and Formica, in partnership with steel cabinet brands, such as St. Charles, actively encouraged its use. The self-applied edge consisted of a matching one to two inch thick strip of laminate which butted against the horizontal surface at a ninety degree angle. Although the edge could be cut from a larger sheet of laminate, Formica sold a pre-cut edge in all available patterns.

Figure 12: The brochure for GE Textolite presents several different edging options. *Pattern for Better Living with GE Textolite Plastic Surfacing, General Electric, 1953.*
Wood trim edges were also available, but not commonly used. Ralph Wilson Plastics, later WilsonArt, developed the post-formed edge in the late 1950s. Post-formed laminate allowed for the edge of the sheet to be reheated and bent over the counter lip, forming a continuous curve. Although pioneered by Ralph Wilson Plastics, Formica and other laminate manufacturers soon adopted the post-forming process. During the 1960s, as the enameled steel kitchen cabinet became less popular, plastic laminate found new use as a viable cabinet material. Applied to a traditional plywood cabinet substrate, plastic laminate cabinetry became popular in the late 1960s and 1970s. Its sanitary and durable surface made it a popular choice for elementary schools, hospitals, and doctor’s offices, where it is still found quite commonly.
PRESERVATION OF ENAMELED STEEL

The popularity of porcelain enameled steel during the mid-twentieth century is due to its apparent durability and maintenance-free qualities. A 1938 promotional pamphlet from the Modern Steel Equipment Company touts:

Modern Steel cabinets provide lifetime, trouble-free permanence. They are built of heavy gauge steel electrically welded together for rigid strength. The drawers and doors work perfectly— all the time. There can be no swelling, sticking or warping of steel in damp weather— neither can it shrink when it is dry... It will not crack or chip and splattering cooking fats or fumes do not affect or stain the finish in any way. The finish cleans quickly and easily with a damp cloth and soap.84

In an era of florid and unregulated advertisement copy, skepticism is warranted when considering the claims made by corporations such as Modern Steel (see Figure 13). Non-porous porcelain enamel on a steel substrate remains reasonably durable; however, despite the assertions of Modern Steel, it can chip, crack, and warp. Porcelain enameled steel is not a forgiving material nor does it age especially gracefully, making the task of conservation understandably daunting. This chapter will describe and define common the deterioration mechanisms of porcelain enameled steel, as well as preferred current conservation methods, and in addition

Figure 13: The manufacturing process of porcelain enameled steel is highlighted in this 1955 advertisement for Dwyer Kitchens (formally Cabranette).

will outline options for restoration or replacement of enameled steel kitchen cabinetry.

**DETERIORATION METHODS OF ENAMELED STEEL**

Porcelain enameled steel consists of a glass-like powder called frit applied to a steel substrate. Frit, a mixture of sand, flux, and sometimes dye, once fired, creates a smooth, glossy, non-porous enamel surface. Therefore, deterioration of enameled steel can occur in two places: the enamel or the steel substrate.\(^{85}\)

Deterioration of the enamel surface can be caused by prolonged exposure to water, acid, alkalis, or atmospheric pollution.\(^{86}\) Once deterioration occurs, exposure to changes in temperature and humidity, and further accumulation of water, hastens the process. Depending on the extent of the weathering, pitting of the enamel surface may occur. Deterioration can also result in hazing, which is the fading and color loss of the glossy enameled surface. As the enamel coating deteriorates, exposure to hand and cooking oils, water, or cleaning chemicals can exacerbate the corrosion.\(^{87}\)

Common areas for deterioration of enameled steel cabinetry are around the sink area, around handles and pulls, and near cooktops.

More frequently, deterioration occurs on the steel substrate through direct

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\(^{86}\) Ibid, 260.

\(^{87}\) Ibid, 261.
impact. The direct impact of a foreign object can fracture the chemical bond between the enamel and the steel substrate, resulting in spalling of the enamel coating.\textsuperscript{88} Thicker enamel coatings are less flexible, and therefore more prone to chipping and spalling. Once the steel substrate becomes exposed, the likelihood of additional corrosion increases.

\textbf{SECRETARY OF THE INTERIOR STANDARDS}

The Secretary of the Interior’s Standards for the treatment of historic properties outlines four treatment approaches for historic structures. Although intended for the study of entire buildings rather than specific materials, the following terminology can be used to assess condition and determine treatment for both enameled steel and plastic laminate:

The first treatment, \textit{Preservation} [Conservation], places a high premium on the retention of all historic fabric through conservation, maintenance and repair. It reflects a building’s continuum over time, through successive occupancies, and the respectful changes and alterations that are made.

\textit{Rehabilitation}, the second treatment, emphasizes the retention and repair of historic materials, but more latitude is provided for replacement because it is assumed the property is more deteriorated prior to work. (Both Preservation and Rehabilitation standards focus attention on the preservation of those materials, features, finishes, spaces, and spatial relationships that, together, give a property its historic character.) [This treatment is not applicable for enameled steel and plastic laminate preservation.]

\textsuperscript{88} \textit{Ibid}, 261.
Restoration, the third treatment, focuses on the retention of materials from the most significant time in a property's history, while permitting the removal of materials from other periods. [This treatment is not applicable to plastic laminate.]

Reconstruction [Replacement], the fourth treatment, establishes limited opportunities to re-create a non-surviving site, landscape, building, structure, or object in all new materials.  

CONSERVATION OF ENAMELED STEEL

Techniques for the conservation of enameled steel draw on multiple fields, from the conservation of enameled porcelain museum objects, to refinishing bathroom fixtures, and automobile restoration. Prior to performing conservation methods, the condition of the enameled steel should be carefully assessed and recorded.

Cleaning the surface of the enameled steel not only reveals the original color and finish but also prepares corroded areas for repair. Before cleaning visible portions of the enameled steel, testing the preferred cleaning solution on a less-visible or hidden area is recommended. First, clean the enameled steel using warm water and a clean cloth to eliminate dirt and grease. Particularly grimy portions may be cleaned with an alcohol-based solvent, however, acid based

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90 Jester, Twentieth-Century, 261.
cleaners should be avoided. Start with mild cleaning products, like distilled water, transitioning to harsher products as needed. Begin with a simple paste of baking soda and lemon juice. For persistent stains, a harsher proprietary product is recommended. If the enameled steel has been painted, proprietary paint strippers can be used; however, the use of caustic paint strippers, which may etch the porcelain enamel must be avoided. In instances of corroded areas, a protective coating can be applied to conceal and arrest further corrosion. Corrosion should be carefully removed with a wire brush prior to the application of a coating. Options for coatings include epoxy, lacquer, and urethane. These options have advantages and disadvantages, and the preferred coating should be selected on a case-by-case basis. Pigmented lacquer was used historically by porcelain enamel sign manufacturers to repair minor flaws. Urethane is commonly used to repair enameled cast iron bathroom fixtures. Both lacquers and urethanes have the ability to adhere to the steel substrate as well as retain the original color, however, they may not offer as durable a protective coating as an epoxy. Epoxies provide excellent durability. However, because they must be painted afterward, it may be difficult to achieve the desirable color and finish. Polyester fillers and patching, which are often used to repair bathroom fixtures and automobile

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91 Ibid, 261.  
92 Ibid, 261.
bodies, may be used to repair small areas of enamel loss, however they must be sanded, which can damage the coating of surrounding areas. Once all repairs are made and painted, a coating of paste wax should be applied to further protect the enamel surface.  

**RESTORATION AND REPLACEMENT OF ENAMELED STEEL**

If the enamel coating is beyond repair, or a different color is desired, it may be preferable to strip the enamel from the steel substrate and reapply a coating. This irreversible practice is not recommended and should be considered only when conservation is not a possibility. The most popular option for stripping and recoating steel is abrasive sand blasting, followed by powder coating. While sand blasting easily removes the enamel coating, it can damage the steel substrate and result in a textured surface. Once free of the porcelain enamel coating, the steel can be powder coated, which is the process of applying a free-flowing dry powder of the desired color, and heating it to form a smooth, glossy coating, similar in appearance to the original porcelain enamel finish. In some instances, the process of sand blasting followed by heating can result in the warping of steel components.

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enamel is the application of professionally-sprayed paint over the original coating. While this option can result in a desirable aesthetic appearance, pervasive corrosion may soon reappear, and therefore should be rectified prior to paint application.

Some instances may require the complete or partial replacement of enameled steel cabinetry. This option is only appropriate if the cabinetry or associated components are missing entirely. Unlike plastic laminate, steel kitchen cabinetry is no longer manufactured. Therefore, replacement relies on the procurement of used pieces. While it may be relatively easy to find a whole set of used steel kitchen cabinets, locating a specific brand, piece, and color specification may prove incredibly difficult, although not impossible. The recent resurgence of interest and popularity of steel kitchen cabinetry has made finding used pieces through internet retailers easier than ever before. In 2006, Journalist and mid-century enthusiast Pam Kueber started design blog Retro Renovation as a resource for owners of mid-century houses. Aside from being the first to widely document the history of steel kitchens based on primary resources, Kueber established a steel kitchen forum, which allows users to buy and sell steel kitchen components. Another option for recreating the appearance of steel kitchen cabinetry is to construct custom wood cabinets based on the documented
dimensions of steel cabinets, complete with reproduction hardware, color, and finish.
PRESERVATION OF PLASTIC LAMINATE

Much like enameled steel, plastic laminate was designed to withstand the wear and tear of domestic life. In addition to being easily cleaned, plastic laminate was sold as a seemingly eternal building product. Indeed, a 1943 advertisement for Formica in *Architectural Record* boasts “Formica will not buckle, crack or chip. It resists wear, moisture, and chemicals.”\(^{96}\) Despite its apparent maintenance-free qualities, plastic laminate does in fact deteriorate. While it has proven to be quite durable over time, when deterioration does occur, laminate is difficult to repair while retaining its original decorative appearance.

DETERIORATION METHODS OF PLASTIC LAMINATE

The durability of decorative plastic laminate is contingent upon its ability to function as a homogenous unit. Plastic laminate is composed of several layers of kraft paper substrate\(^{97}\), a decorative layer, and a layer of melamine\(^{98}\) resin (see Figure 14).\(^{99}\) Failure typically occurs when an outside force disturbs this carefully-balanced strata. Deterioration results in either physical or chemical changes to the laminate composition.\(^{100}\) Common sources of deterioration for plastic laminate are

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\(^{96}\) Advertisement for Formica, 1943, by the Formica Co., Cincinnati, Ohio, Building Technology Heritage Library.

\(^{97}\) Historically, plastic laminate was composed of seven layers, whereas contemporary laminate is composed of as few as three. The more layers the laminate contains, the more durable it is.

\(^{98}\) Older laminates used a phenolic resin rather than melamine.


\(^{100}\) *Ibid*, 130.
exposure to extreme temperatures, direct ultraviolet light, moisture, outside stress, and corrosive chemicals.

When plastic laminate is exposed to extreme high temperatures, the bond between the resin and kraft paper substrate disintegrates. This disintegration, coupled with continued exposure to high temperature levels, makes the plastic

Figure 14: The historic composition of plastic laminate.
*Formica Laminated Plastic Sunrise Colors & Patterns, The Formica Company, date unknown.*
laminate more susceptible to degradation, ultimately resulting in dimensional change, blistering, delamination, and cracking. Furthermore, prolonged exposure to cold temperature results in embrittlement. Additionally, extreme fluctuation in temperature significantly hastens deterioration. Concentrated extreme high temperatures, typically resulting from untended candles or hot cookware, can result in the localized melting and burning of melamine and kraft paper layers.\textsuperscript{101}

Another common deterioration mechanism which is particularly pervasive in horizontal kitchen or bathroom applications is the infiltration of moisture.\textsuperscript{102} While the surface of plastic laminate is moisture-resistant, improperly concealed or bonded edges can absorb water, resulting in dimensional change. The relative humidity of the air can also have detrimental effects on plastic laminate. Depending on the moisture content of the kraft paper and base surface, plastic laminate can swell in high humidity and become brittle in low humidity. Exposure to a cycle of extreme high and low humidity can result in surface crazing or small cracks.

The most common deterioration mechanism that affects the decorative pattern of plastic laminate is sustained exposure to ultraviolet light.\textsuperscript{103} While

\textsuperscript{101} Ibid, 130.
\textsuperscript{102} Ibid, 131.
\textsuperscript{103} Ibid, 131.
sunlight at any level can cause discoloration, ultraviolet light proves to be most
damaging. Light reacts with the surface dyes and plastic in the decorative layer,
resulting color change and fading. Furthermore, light can turn the phenolic resins
found in older plastic laminates dark yellow or opaque. Sunlight exposure can also
damage the glossy surface, resulting in a matte finish.\textsuperscript{104}

Plastic laminate is also vulnerable to the direct impact of outside forces.
Deformation resulting from direct impact disturbs the internal structure of the
material. Damage sustained from direct impact is subject to the direction and
strength of the outside force. Typical damage includes surface fracturing and
separation of layers.

Accidental exposure to household chemicals in a bathroom or kitchen
application of plastic laminate result in the rapid deterioration of plastic
compounds. Common offenders that can damage plastic laminate include
hydrogen peroxide, acetone, and both hydrochloric and sulfuric acid. Exposure to
these harsh chemicals cause dimension change, warping, delamination, and
discoloration.\textsuperscript{105}

Often times, deterioration occurs not in the plastic laminate itself, but
rather its adhesion to the base material, usually plywood or medium density

\textsuperscript{104} Ibid, 131.
\textsuperscript{105} Ibid, 130.
fiberboard. While the adhesive is resistant to reasonable levels of moisture and heat, improper initial installation can cause eventual adhesion failure. Factors that affect the failure of adhesive include improper mixing, initial assembly conditions, curing time, pressure application, and temperature.

CONSERVATION OF PLASTIC LAMINATE

Prior to proceeding with conservation efforts, condition assessment of the plastic laminate is paramount in order to determine the ideal method of treatment. Examine plastic laminate surfaces in raking light to identify instances of cracking, crazing, delamination, loss of gloss, and change in color. Test treatments on small portions of non-visible laminate or comparable laminate samples before applying treatment to large, visible areas.

Plastic laminate should maintain limited exposure to direct sunlight and high temperature and humidity. Ideal conditions sustain an average of seventy degrees Fahrenheit and twenty to eight percent relative humidity. On both horizontal and vertical applications of plastic laminate, dirt and grease tend to accumulate. In order to remove accumulated grime, first wash the surface with a soft brush and tepid water and a small amount of gentle detergent. Rinse the laminate with plain water to remove any leftover detergent, and wipe dry.

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106 This is an ideal not maintained in most domestic settings. Ibid, 131.
Proprietary cleaning products recommended by Formica to restore the gloss of faded laminate include Countertop Magic, Hope’s Perfect Counter Polish, and lemon oil. Avoid abrasive cleaning products, which may scratch the glossy melamine coat. Damaged areas of plastic laminate can be filled in with a translucent cellulose resin, which can be painted to match the surrounding laminate. Color matching is easier when the laminate is a solid color rather than a decorative pattern.

**REPLACEMENT OF PLASTIC LAMINATE**

When the condition of the plastic laminate is beyond repair, replacement is a viable option, however, conservation is preferable to complete replacement. Unlike enameled steel, plastic laminate is still manufactured by companies such as Formica and WilsonArt International. While it may be challenging to find “new old stock” plastic laminate, there are several options which offer a reasonable compromise.

Due to the recent interest in, and the popularity of, mid-century design aesthetics, both Formica and WilsonArt have reintroduced a line of “retro”

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109 New old stock, often abbreviated N.O.S., is an item which was never sold or used, often found in the forgotten corner of a warehouse or backroom.
Boomerang\textsuperscript{110} laminate. These new lines lack the high gloss and the color spectrum of their mid-century equivalent, which was an arbitrary design decision by the companies. However, these reproductions can serve as suitable replacements. Additionally, Pionite decorative surfaces offers a line of linen-pattern laminates reminiscent of the linen laminates produced by WilsonArt, Formica, and GE Textolite at mid-century. Furthermore, Pionite has reintroduced a line of reproduction “cracked ice” pattern laminate exclusively for the online retailer BarsAndBooths.com. While this laminate is intended for commercial diners and bars, it is the most historically-accurate laminate currently available, featuring not only the correct color scheme, but also pattern and gloss. Other laminate patterns appropriate for historic applications are butcher block, marble, and solid colors. Most of these patterns and colors have been continuously manufactured by Formica and WilsonArt since mid-century. The oldest continuously-produced laminate pattern is Formica’s White Onyx, which was first introduced in 1969, although some solid colors predate it.\textsuperscript{111}

\textsuperscript{110} Historically called “Skylark”.

Formica and WilsonArt both offer custom plastic laminate services, through which customers can create patterns and commission a sheet of laminate. This option allows for the recreation of mid-century patterns, although discerning eyes can distinguish between authentic and reproduction laminate. Notably, custom reproduction laminate is printed using a laser printer, resulting in a low resolution, and only available in matte finish. Several mid-century patterns incorporated gold flecks or other foreign materials in the design. Because these materials were suspended and embedded in a separate layer, and not part of the printed decorative layer, they are impossible to recreate using today’s custom laminate.

Laminate sheets are available in 3’x8’, 3’x10’, 3’x12’, 4’x8’, 4’x10’, and 4’x12’. These patterns were alternatively called Lamé, Glitter, and Spungold, depending on the manufacturer.
“THE HOUSE AMERICA HAS BEEN WAITING FOR”

As World War II ended, the Servicemen’s Readjustment Act, also known as the G.I. Bill, passed in 1944. The G.I. Bill, among many other benefits, provided returning servicemen with readily-available access to low-cost mortgages and low-interest loans. The availability of financing, combined with the abundance of building materials and a sudden rise in young, newly-forming families, resulted in an enormous demand for housing.\textsuperscript{114} After returning from the war, men dreamed of moving their new families out of dying city centers, and into the rural suburban areas of major cities, where land was available and inexpensive. However, instead of finding idyllic suburban life, they were met with a sobering housing crisis. Immediately following World War II, soldiers were returning home at a rate faster than housing production permitted. Contemporaneously, manufacturing facilities which had devoted the previous five years to the war efforts found themselves vacant.\textsuperscript{115} Prefabricated, factory-built housing seemed the natural solution to both problems.

While mail-order, mass-produced housing was not a new concept, the post-war crisis saw a demand for it on a scale never seen before. During the early

\textsuperscript{114} Steven Harris et. al., \textit{Architecture of the Everyday} (New York: Princeton Architectural Press, 1997), 56.

Twentieth century, companies such as Sears and Roebuck, Aladdin Homes, Montgomery Ward, and Lincoln Homes, published catalogues containing wood-frame house plans to prospective home-owners. During the 1930s, options for design and materials diversified, however, the advent of World War II brought housing production of any kind to a virtual halt. During the war, prefabricated construction technology was used on the warfront to erect structures without the use of highly-skilled labor.\textsuperscript{116} With the war won and the demand for housing increasing, entrepreneur Carl Strandlund founded the Lustron Corporation to combat the housing crisis with prefabricated, factory-built homes constructed of modern porcelain-enameled steel.\textsuperscript{117}

\textbf{THE LIFE OF CARL STRANDLUND}

Carl Gunnar Strandlund was born in 1899 in Sunsvall, Sweden, and moved to Moline, Illinois when he was four years old. Both Strandlund’s father and grandfather were prominent engineers, the former working for John Deere and registering over three hundred patents.\textsuperscript{118} Following in their footsteps, Strandlund took correspondence classes in engineering and soon became a production

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\textsuperscript{116} “The Factory-built House Is Here, but Not the Answer to the $33 Million Question: How to Get It to Market?,” \textit{Architectural Forum} 90 (May 1949): 107-114.
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engineer at the Minneapolis Moline Power Implement Company, were he registered nearly one hundred and fifty patents. After twelve years, Strandlund moved to the Oliver Farm Equipment Company, where in only five years he became president and increased overall revenue from twenty million to nearly one hundred and twenty million.\textsuperscript{119} In 1942, Strandlund was hired by the Chicago Vitreous Enamel Product Company in order to aid in shifting production to wartime defense. After orchestrating a successful and profitable transformation, Strandlund became vice president and general manager of Chicago Vitreous in 1943.\textsuperscript{120} When the war ended, Strandlund, in conjunction with Chicago Vitreous, developed and patented an architectural porcelain-enameled steel panel for use in gasoline service stations. According to the patent, “the present invention relates generally to architectural porcelain enamel panels, but more particularly to a novel and improved construction and an arrangement of interlocking and sealing adjacent porcelain enamel panels, units, or adjoining connecting parts of the exterior or interior walls of a building or structure of any type or design.”\textsuperscript{121} Because steel was a commodity under government control, Strandlund was required to travel to Washington, D.C. to request a rationed allotment. Although

\textsuperscript{119} “Meet Carl Strandlund.”
\textsuperscript{120} Ibid.
the government squelched his gas station request, Strandlund learned of the dire need for housing, and developed the Lustron Corporation.

**THE BIRTH AND DEATH OF THE LUSTRON CORPORATION**

Formed as a subsidiary of Chicago Vitreous in 1947, the Lustron Corporation soon became an independent company when Chicago Vitreous felt uneasy about entering the housing market. Certain a prefabricated house of enameled steel would prove successful, Strandlund not only invested one thousand dollars in the company but also became personally liable for a fifteen and a half million dollar loan from the federal Reconstruction Finance Corporation.\(^{122}\) Strandlund’s undeniable confidence is evident in his description of the first prefabricated enameled steel house: “We believe that our technology has advanced to the point where a basic commodity as necessary as a home no longer should be handmade. We think it has advanced to the rank of the automobile—that it can be mass-produced, handled by local dealers, transported to a new locality if desired, even traded in on a larger model. The Lustron home isn’t a cheap house by any means. It isn’t a substitute for a house similar to those we are used to now. What Lustron offers is a new way of life.”\(^{123}\)

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The Lustron Corporation received an additional thirty seven and half million dollar loan from the Reconstruction Finance Corporation, which aided in the procurement of a former airplane manufacturing facility in Columbus, Ohio, containing nearly fifteen million dollars-worth of machinery. Strandlund selected architect Morris Beckman of the Chicago firm Beckman and Bass to design four model homes (see Figure 15). By 1949, over one hundred demonstration model Lustron homes were on display in nearly all major cities in the United States. Between 1948 and 1950, there were nearly two hundred and thirty Lustron builder-dealers across thirty five states. Builder-dealers were responsible for site preparations, including the pouring of the required concrete.
foundation slab. Once the components of the Lustron house were delivered on site, construction was completed by the dealer-builder in two weeks on average.

Economic factors, unfulfilled promises, and political intrigue soon brought Strandlund’s dream of the mass-produced prefabricated enameled steel home to an abrupt end. Building inspectors, unfamiliar and suspicious of an all-steel home, prevented the construction of Lustron homes in many major cities. Furthermore, the loans made by the Reconstruction Finance Corporation were recalled after an investigation by the United States Senate. By May of 1950, both the Lustron Corporation and Carl Strandlund were bankrupt, and Lustron production ceased. Over two and half thousand Lustron homes were constructed between 1948 and 1950, and an estimated two thousand survive today. After financial ruin, Strandlund quietly moved around between Chicago, New York, and Florida, before passing away in Minnesota in 1974.

MECHANICS AND SPECIFICATIONS OF THE LUSTRON HOME

Lustron houses were designed to be highly customizable, yet mass-producible, based on the owner’s personal preferences. Lustron homes offered four distinct models: the Esquire, the Westchester, the Newport, and the

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Meadowbrook (see Figure 16). Each model was available in either two or three bedroom versions. In addition to size, bedroom number, and layout, owners could select one of four exterior semi-matte-finish paint options: dove gray,
desert tan, surf blue, and maize yellow. Additional accessories available to Lustron homeowners included screen doors, storm windows and doors, steel Venetian blinds, picture hanging kits, and an attic fan.

Lustron houses were assembled from over thirty thousand parts, which once manufactured in Columbus, were shipped to the job site by truck. The most notable architectural feature of the Lustron home is its use of exterior enameled steel panels. Exterior panels hung on clips, and were systematically installed from top to bottom, and left to right. Similar to the exterior construction, the interiors were composed of a kit of parts. Interiors featured a range of built-in enameled steel features, including bookcases, vanities, closets, shelving, a China cabinet, and kitchen cabinetry. Period literature claimed the only requirements to complete a Lustron home was “a Range, Refrigerator and Furnishings.”128 Also included in all Lustron models was a Thor brand combination dish and clothes-washer, with interchangeable drum.

Although kit homes were at the height of their popularity following the war, the Lustron home’s modern amenities, built-in components, and material usage classified it as a symbol of innovation, prosperity, and modernity in post-war America.

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128 Ibid.
PRESERVATION OF THE LUSTRON HOME

The significance of the Lustron legacy was first recognized in 1992 when approximately thirty unaltered homes were individually listed on the National Register of Historic Places. Approximately two thousand Lustron homes survive, although many have been significantly altered.\(^{129}\) The largest loss of Lustron homes occurred in 2006, when twenty three Westchester model homes, originally built for the United States Marine Corps base in Quantico, Virginia, were demolished. In 2007, Lustron Preservation was founded as an initiative of the "Lustron Registry," accessed March 15, 2009, http://www.lustronregistry.org.

![Image: View of Arlington Lustron home with all exterior panels and insulation removed.](image_url)

Figure 17: View of Arlington Lustron home with all exterior panels and insulation removed. Liccese-Toress and O’Connell, The Illustrious Lustron, 25.

Midwest Office of the Ohio Historical Society. LustronPreservation.org was soon developed under a grant from the National Parks Service and the National Center for Preservation Technology and Training.

Soon after, the Museum of Modern Art in Manhattan purchased a Winchester Deluxe model Lustron home which was originally owned by Dr. Clifford M. Krowne and located in Arlington, Virginia. After being documented in situ by the Historic American Building Survey (HABS), the home was disassembled and shipped to Manhattan (see Figure 17), where it was partially reassembled.

Figure 18: 1950s: Building the American Dream exhibit in the Ohio History Center. Author’s photograph.
inside of the museum for a short period of time. In 2013, the home was acquired by the Ohio Historical Society and shipped to the Ohio History Center in Columbus, Ohio. The house was once again disassembled and reassembled inside the museum (see Figure 18).

Before the reassembly process began, the home was restored and conserved by a team lead by Cameron Wood, the history curator at the Ohio History Center. Most of the damage to the porcelain enameled panels occurred in the numerous disassembly and reassembly process, as well as during storage and shipping. Typical damage to the panels included spalling of the enamel coating.

Figure 19: Repairs made at the Ohio History Center Lustron home. Author’s photograph.

130 Cameron Wood, interview by author, personal interview, Columbus, Ohio, October 12, 2013.
131 Ibid.
near edges, and indentations resulting from direct impact (see Figure 19). Another area of significant damage due to corrosion was around the bathtub rim. According to Wood, the Lustron home exhibited little damage on the whole.\textsuperscript{132}

Spalling near the edges was repaired using automobile-grade paint, color matched to the existing panels. Indentations were rectified by carefully bending the panels into the desired shape. Specialists from automobile and porcelain plumbing fixture restoration backgrounds performed the work. Previous repairs around the bathtub rim, consisting of fibrous patching, were not rectified at the time of the restoration. Restoration, conservation, and reassembly lasted approximately one year.\textsuperscript{133} Once restored and reassembled, the Ohio History Center outfitted the Lustron home with period 1950s furnishings and ephemera as part of the ongoing exhibit \textit{1950s: Building the American Dream}. The detailed museum exhibit allows visitors to enter the house, explore, and handle objects, yielding a successful and immersive museum experience, indicative of everyday life in 1950s America.

\begin{flushleft}
\textsuperscript{132} Ibid. \hfill \textsuperscript{133} Ibid.
\end{flushleft}
THE RALPH SR., AND SUNNY WILSON HOUSE

The Ralph, Sr. and Sunny Wilson House in Temple, Texas provides an outstanding example of typical and atypical applications of high-pressure decorative plastic laminate. Completed in the summer of 1959, the Wilson house, located at 1714 South 61st Street in the Woodlawn Park neighborhood of Temple, Texas, served as the residence to Ralph Wilson Sr., an innovator in the field of plastic laminates and founder of WilsonArt International.

THE LIFE OF RALPH WILSON, SR.

In order to fully understand the concept behind the house, it is important to place the house in the context of the life and career of Ralph Wilson Sr. Ralph Wilson was born on April 10, 1901 in Putnam County, Indiana.\(^\text{134}\) Wilson married his first wife, Mildred Young Wilson, in the early 1920s, and their first son, Ralph Wilson Jr. was born in 1924.\(^\text{135}\) Equipped with nothing more than a high school diploma, Wilson moved his burgeoning family to Los Angeles, California, where he gained experience as a building sub-contractor. Wilson soon established his own business, operating what was known as a “staff and stone” company, which produced decorative plaster work for Fox movie houses in Hollywood.\(^\text{136}\)

\(^{134}\) U.S. Census of Population and Housing, 1940.
\(^{135}\) Ibid.
\(^{136}\) National Register of Historic Places, Wilson, Ralph, Sr. and Sunny, House.
Furthermore, his company sold building supplies, including prefabricated architectural ornament and plastic laminate.

Wilson’s experience as a supplier of construction materials cultivated his interest in architectural design. Based not only on his new-found interest, but also his physical proximity, Wilson soon became well-acquainted with the California Case Study House program. Sponsored by *Arts & Architecture* magazine in 1945, the California Case Study House program gave prominent architects, such as Charles and Ray Eames, Eero Saarinen, and Richard Neutra, the opportunity to design and construct a series of model homes for better living.137

Groundbreaking for their time, the Case Study Houses melded newly available building materials with modern design concepts. The houses were available for viewing by the general public, which offered Wilson the opportunity to experience the houses first-hand. Although Wilson was not interested in a career as an architect, he was undoubtedly inspired by the way in which new designs and materials could aid in better living.

Embracing his entrepreneurial spirit, Wilson saw an opportunity in the burgeoning field of plastic laminate for use in construction, product design, and

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other applications.\textsuperscript{138} In the mid-1940s, Wilson established his second company, Laminart, which was originally incorporated to manufacture phenolic dental bowls and bazooka shells.\textsuperscript{139} After World War II, Wilson experimented with pressing laminate sheets in order to service Virtue Brothers, the largest manufacturer of dinette tables in the nation at the time. Laminart also supplied simulated wood grain laminate sheets to California automobile manufacturers, who applied the durable plastic panels to automobile exteriors. During his time at Laminart, Wilson became well-acquainted with the versatile nature of plastic laminate.\textsuperscript{140}

Ralph Wilson suffered a heart-attack in 1955 and sold Laminart to Fischer Body, which is currently a subsidiary of Ford Motors. At age 54, with his children grown and free of business constraints, Wilson relocated to Temple, Texas to work with a friend who owned the American Desk Corporation, a major desk manufacturer, and to continue experimenting with plastic laminate applications. Wilson is quoted as saying that he moved to Texas to “fish for bass and press a little bit of plastic.”\textsuperscript{141} By 1959, Wilson decided to transform his interest in

\textsuperscript{138} NRHP.
\textsuperscript{140} NRHP.
\textsuperscript{141} Ibid.
laminate into a lucrative business, establishing Ralph Wilson Plastics, which would eventually turn into WilsonArt International.\textsuperscript{142}

**THE LAMINATE HOUSE**

Inspired by the modern home design he experienced in California, Wilson speculated about the prospect of building his own modern home. Driven not only by his passion for laminate but also by his business sense, Wilson conceptualized his new home. The role of Wilson’s house would be tripartite: Firstly, he and his wife, Mildred, would live there. In order to attest to the quality and versatility of laminate to prospective clients, Wilson would live in a laminate house himself. Secondly, the house would be a laboratory: a space in which Wilson could experiment with the application of plastic laminate in a variety of unconventional ways.\textsuperscript{143} Curious about the durability of laminate, Wilson would use his own home to test the material. Third, the house would be a model: a place where Wilson could show prospective clients a variety of plastic laminate applications. The house would also serve as a symbol for WilsonArt, as well as a space for corporate or private parties.\textsuperscript{144} With the parameters of his concept firmly in place, Wilson enlisted the help of a variety of family members and friends to realize his vision.

\textsuperscript{142} “The Wilson House.” \textsuperscript{143} Ibid. \textsuperscript{144} Ibid.
Figure 20: Floor plan of the Wilson house

Figure 21: Archival photograph from c.1960 showing interior wall featuring geometric shapes.
Archival photograph from personal collection.
Ralph Wilson’s daughter, Bonnie McIninich, an amateur architect, drafted plans for the house (see Figure 20). Nathan S. Draughon served as contractor, and local construction worker, Lee Froebel, finalized the interior space. Wilson would later hire Froebel to build his factory.\textsuperscript{145}

Construction of the Wilson house began in 1958 and was complete by the summer of 1959, at which point Ralph, and his wife Mildred, moved in. The extensive use of plastic laminate in residential applications was indeed a radical choice for the time, and nothing comparable would be seen for at least ten years.

While gypsum wallboard on wood stud framing was standard in residential applications.

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\textsuperscript{145}NRHP.

Figure 22: Post-formed counter edge. 
Author’s photograph.
construction during this period, the Wilson house used laminate sheets applied to plywood, then attached to the wood stud framing system. Additionally, Wilson developed a system of post-forming the laminate sheets to fit around countertop edges (see Figure 22).\textsuperscript{146} During this period, WilsonArt’s main competition, Formica, partnered with St. Charles Steel Kitchens, to develop a steel die-cast edging that would be applied to the countertop edge in order to protect and obscure the laminate edge. However, Wilson developed a system of bending the laminate so that the steel edging was unnecessary.\textsuperscript{147} In the Wilson house, this application is apparent in the kitchen and bathroom countertops, and is the earliest known use in the United States.

The layout of the house, heavily inspired by the designs for the California Case Study houses that Wilson had seen several years before, presents an open floor plan. The main living space, divided only by a central fireplace shaft, is organized in a “U” shape, with a private courtyard in the center. In keeping with the modern design guidelines, the private spaces, including the bedrooms and bathrooms, separate the public and private spaces.\textsuperscript{148} Wilson, and his daughter Bonnie, applied and adapted the design concepts of the Case Study Houses for

\begin{footnotesize}
\footnotesize
\begin{enumerate}
\item[146] Ibid.
\item[147] Ibid.
\item[148] “The Wilson House.”
\end{enumerate}
\end{footnotesize}
the rural Temple context, yielding in an excellent example of vernacular mid-century modern design with innovative interior treatments and finishes.

For kitchen, bathroom, any room in the house, WILSON-ART decorative, high pressure plastic laminates offer lasting richness and beauty.

Fabricators “in the know” are daily increasing their business AND their profits by suggesting applications of durable, practical (and sellable) WILSON-ART wall paneling.

WILSON-ART has one of the widest ranges of sheet sizes in the industry. The 12-foot sheet is the perfect answer to the fabrication of large areas.

With East and West Coast warehouses, WILSON-ART assures 7-DAY DELIVERY to its distributors’ customers.

Choose from over 90 colors and patterns in three different thicknesses... standard, post-forming or the Wonderboard for walls.

Figure 24: Advertisement for WilsonArt featuring the living room and bathroom of the Wilson House.

The house, successful among the WilsonArt circle, served as the setting for many corporate events. Period WilsonArt advertisements, as well as an entire 1950 issue of the plastics periodical *Bakelite Review*, featured the interior of the house (see Figures 23 and 24).\textsuperscript{149} These advertisements, as well as one set of 1960 archival photographs, provide excellent insight into Ralph and Mildred’s furnishings for their new modern home. While the house did indeed serve as a corporate symbol, Wilson and his wife lived in the house full-time. However, the modern design of the house did not dictate the style in which Ralph and Mildred furnished the house. In fact, the Wilsons furnished their home with a variety of styles of furniture, ranging from modern to traditional. After living in the house for several years, Ralph and Mildred divorced and Ralph remarried a woman named Sunny. Ralph Wilson Sr. passed away on January 31, 1971, however Sunny continued to live in the house.

Sunny Wilson was not a fan of the laminate installations, and perhaps purely as a matter of taste, or because of an association with Wilson’s first wife, covered many of the laminate walls in joint compound and Victorian-inspired wallpaper in the 1970s and 1980s. Fortunately, many of the changes Sunny made

\textsuperscript{149} Ibid.
were purely cosmetic and reversible, attesting to the durability of plastic laminate.\textsuperscript{150}

\textbf{RESTORATION AND CONSERVATION}

In 1999, WilsonArt International, eager to celebrate their fiftieth anniversary, hired a publicist and marketing expert in order to tell the history of their product. WilsonArt selected design historian Grace Jeffers for her experience with Formica laminates. While visiting the production plant in Temple, WilsonArt executives brought Jeffers to the Wilson house.\textsuperscript{151} At the time, the house was still owned by Sunny Wilson, who was in the process of selling the property. Ignorant of its historical and cultural value, a real estate agent advised Mrs. Wilson to remove and replace the original kitchen cabinetry and countertop with contemporary white fixtures. On the day Jeffers toured the house, the cabinets were being removed.\textsuperscript{152} Awestruck by the design and superb condition of the materials, Jeffers convinced the WilsonArt executives to terminate the removal process. Having written her graduate thesis on the history of Formica, Jeffers was amazed by early date of many laminate features, such as post-formed countertop edges, which predated her research by nearly five years. Jeffers managed to

\textsuperscript{150} Grace Jeffers, interview by author, personal interview, Temple, Texas, September 21, 2013.
\textsuperscript{151} Ibid.
\textsuperscript{152} Ibid.
persuade WilsonArt to purchase the house and allow her to perform research and restoration work. As a stipulation to her plan, she would convert the guest bedroom into an archival space, which would house WilsonArt’s comprehensive collection. In addition to housing the archives, the house would once again serve as a corporate symbol, as well as a museum dedicated not only WilsonArt plastic laminate, but also mid-century design.

After successfully performing extensive archival research, Jeffers formulated a conservation plan for the Wilson house. Since little to no information on plastic laminate conservation was available at the time, much of the work was performed through trial and error. The first major task was carefully

![Figure 25: Removing wallpaper, glue, and joint compound from the laminate wall surfaces.](image)

*Photograph from Jeffers collection.*
removing the wallpaper and joint compound that covered approximately one half of the laminate walls in the house. Most of the walls consisted of plastic laminate paneling, spaced with one-eighth inch channels. After painstakingly removing the wallpaper with a gentle solvent, Jeffers scraped the joint compound out of the channels with a razor blade, careful not to mar the laminate surface (Figure 25).\textsuperscript{153} Archival photographs taken in the 1960s revealed that the far north living room wall originally featured brightly-colored inlaid geometric shapes (see Figure 21). As any loss of laminate would prove highly-visible on the north wall, Jeffers removed the wallpaper with added care and precision. Fortunately, the geometric shapes were revealed unscathed. Despite Mrs. Wilson’s attempt to obscure the wall surfaces, the laminate surfaces demonstrated remarkable resilience, a testament to the product’s lasting durability.

Although the kitchen cabinetry and countertops remained unaltered while Mrs. Wilson lived in the house, they were temporarily removed put into storage when the house was sold. Jeffers located the cabinetry and countertops and reinstalled them based on their original configuration. Minimal damage to the cabinetry and countertops occurred during the removal and reinstallation

\textsuperscript{153} Ibid.
process. The plastic laminate in all three bathrooms remained in excellent condition, and experienced little change since the house was built.\textsuperscript{154}

Once restored, the house was listed on the National Register of Historic Places in 1999. The Ralph Sr. and Sunny Wilson house was one of the youngest buildings to be listed at the time of its nomination. Additionally, it remains the only building listed exclusively for its use of a single material. The house continues to be owned by WilsonArt International and operates as a house museum and private event rental space. Rather than attempting to recreate the interior furnishings from archival photographs, Jeffers decided to let the laminate applications tell the house’s story.\textsuperscript{155} Therefore, the house is simply furnished with period furniture by well-known designers, such as Nelson, Risom, and Saarinen, in combination with donated reproduction Eames pieces from upscale furniture manufacturer Herman-Miller (See Figures 26 and 27). Furthermore, Jeffers furnished the house with designer furniture in order to attract the attention of mid-century modern design enthusiasts, an effort to stimulate interest in the history of plastic laminate.

\textsuperscript{154} Ibid. 
\textsuperscript{155} Ibid.
Figure 26: The restored living room of the Wilson house.  
Author’s photograph.

Figure 27: The restored living room and kitchen of the Wilson house.  
Author’s photograph.
CONCLUSION

The role of enameled steel and plastic laminate as culturally, historically, and technologically significant building materials has been largely ignored since their rise to popularity following the post-war housing boom and crisis. These now ubiquitous materials birthed out of American ingenuity and industry in the early 20th-century shaped the everyday interior of the mid-twentieth century. Their pervasive influence on the design of the contemporary built environment is still apparent. Buildings ranging from the high-Modern to the everyday vernacular utilized these materials in a variety of ingenious standardized and customized innovative applications, as evident in the Ralph Sr., and Sunny Wilson House and Lustron homes. Additionally, the versatility, durability, and design elements of plastic laminate and enameled steel facilitated the birth of the modern kitchen, a symbol of mid-century modernity, prosperity, and patriotism.

Building materials designed to be “maintenance-free” present an array of challenges when determining preservation and conservation values and approaches as there was no planning for their renewability in the future. Because of these challenges, such as the availability of suitable replacements, spalled coatings, and degraded color and finish, these misunderstood and under-valued materials are often lost or destroyed. Additionally, unlike traditional building
materials, such as wood or masonry, replacement in kind is difficult and typically not a consideration. This thesis provides a practical guide for evaluating and conserving these materials as well as options and recommendations for replacement and restoration. The preservation of the Ralph Sr., and Sunny Wilson House and the Lustron home in Columbus, Ohio for the public represent renewed understanding of and appreciation for these materials as well as the significance of their history, character, and conservation.

The story of plastic laminate and enameled steel has never progressed beyond a footnote in scholarly studies of mid-twentieth century America. This thesis has combed period advertisements, product catalogues, and archival documents to reveal the understandings and applications of these materials in mid-twentieth century America; and furthermore, how plastic laminate and enameled steel came to symbolize a realized achievement of the American dream.
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**Mid-Century Design**


**Mid-Century Materials: Plastic Laminate and Enameled Steel**


**Preservation of the Recent Past**


**Towards a Modern Home and Kitchen**


APPENDIX A: Plastic Laminate Survey

The following is a survey of decorative patterns from the largest three plastic laminate manufacturers at mid-century: Formica, WilsonArt, and GE Textolite. The following samples date from approximately 1953 through 1964 and while representative of popular available patterns, is not intended to be comprehensive.

FORMICA PATTERNS

**Capri**

- Charcoal Capri
- Cocoa Capri
- Gray Capri
- Primrose Capri
- Spruce Capri
- Red Capri

**Linen**

- Charcoal Linen
- French Blue Linen
- Gray Linen
- Green Linen
- Lipstick Red Linen
- Petal Pink Linen
- Tan Linen
- Yellow Linen
FORMICA PATTERNS

Marble
- Brown Marble
- Charcoal Marble
- Green Marble

Milano
- Antique Milano
- Gray Milano
- Pink Milano

Moonglo
- Gray Moonglo
- Green Moonglo
- Pink Moonglo
- Red Moonglo
- Yellow Moonglo
FORMICA PATTERNS

Nassau

Bronze Nassau  Calypso Red Nassau  Gull Gray Nassau  Sky Blue Nassau

Sunshine Yellow Nassau  Tropical Green Nassau

Pearl

Cardinal Pearl  Gray Pearl  Gulfstream Pearl  Primrose Pearl
FORMICA PATTERNS

Picwood

- Autumn Walnut
- Black Oak
- Brachen Maple
- Tawny Walnut
- Claret Mahogany
- Frost Maple
- Modern Walnut
- Natural Maple
- Natural Oak
- Wheat Oak
- Primavera
- Sahara Mahogany
- Shell Oak
- Cherokee Mahogany
- Platinum Mahogany
FORMICA PATTERNS

Skylark

Aqua Skylark  Blue Skylark  Charcoal Skylark  Coral Skylark

Gray Skylark  Pink Skylark  Primrose Skylark  White Skylark

WILSONART PATTERNS

Marble

Grey & Coral Marble  Light Pink Marble  Light Tan Marble  White Marble

Fine Linen

Grey Fine Linen  Tan Fine Linen
WILSONART PATTERNS

Glitter

Aqua Glitter  Beige Glitter  Charcoal Glitter  Cocoa Glitter

Coppertone Glitter  Flame Glitter  Frosty Glitter  Powder Blue Glitter

Pumpkin Glitter  Red Glitter  Wintergreen Glitter
WILSONART PATTERNS

Gold Satellite


Primrose Gold Satellite  White Gold Satellite

Irish Linen

Green Irish Linen  Grey Irish Linen  Red Irish Linen  Tan Irish Linen

Yellow Irish Linen
WILSONART PATTERNS

Pearl

Dark Grey Pearl
Green Pearl
Light Grey Pearl
Red Pearl

Yellow Pearl

Spinet

Blue Spinet
Charcoal Spinet
Coral Spinet
Grey Spinet

Light Green Spinet
Light Yellow Spinet
Pink Spinet
WILSONART PATTERNS

Woodgrain

American Walnut  Black Walnut  Tan Birch  Blonde Ash
Blonde Maple  Brown Pickled Birch  Flacked Limed Oak  Light Gray Ash
Maple  Oriental Walnut  Platinum Walnut  Rattan
Red Striped Mahogany  Spice Brown Walnut  Bleached Mahogany  Tan Limed Oak
GE TEXTOLITE PATTERNS

Camelot

Antique Camelot  Azure Camelot  Beige Camelot  Fern Camelot

White Camelot

Cross Current

Blue Cross Current  Gray Cross Current  Green Cross Current  Red Cross Current

Tan Cross Current  Yellow Cross Current
GE TEXTOLITE PATTERNS

DESK

Green Sage Desk
Shale Gray Sage Desk
Tan Sage Desk

Heyday

Charcoal Heyday
Copper White Heyday
Coral Heyday
Light Yellow Heyday

Pink White Heyday
Pink Heyday
Turquoise Heyday
Wood White Heyday

NUGGET

Champagne Nugget
Gold Nugget

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GE TEXTOLITE PATTERNS

**Medley**

- Acorn Medley
- Aqua Medley
- Charcoal Medley
- Cherry Medley
- Lemon Medley
- Lime Medley
- Pine Medley
- Sandalwood Medley
- Seafoam Blue Medley
- Tan Medley

**Mosaic**

- Black White Mosaic
- Black Yellow Mosaic
GE TEXTOLITE PATTERNS

Ming

Black Ming  Blue Ming  Chocolate Ming  Green Ming

Red Ming

Twilight

Aqua Twilight  Dusty Pink Twilight  Golden Beige Twilight  Lavender Twilight

Primrose Twilight  Silver Gray Twilight
APPENDIX B: Significant Sites

The following is a comprehensive list of significant historic sites in the United States which feature either plastic laminate or enameled steel.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Location</th>
<th>Year</th>
<th>Architect/Designer</th>
<th>Features</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950s All Electric House, Johnson Co. Museum</td>
<td>Shawnee, KS</td>
<td>1954</td>
<td>Herbert E. Duncan</td>
<td>Pink Formica countertops</td>
<td>N/A</td>
</tr>
<tr>
<td>Alden B. Dow House &amp; Studio</td>
<td>Midland, MI</td>
<td>1936</td>
<td>Alden B. Dow</td>
<td>Geneva steel kitchen cabinetry &amp; plastic laminate countertops</td>
<td>NRHP; NHL</td>
</tr>
<tr>
<td>Carl Sandburg Home</td>
<td>Flat Rock, NC</td>
<td>1838/1945</td>
<td>Christopher Memminger</td>
<td>Steel kitchen cabinetry</td>
<td>NRHP; NHL; NHS</td>
</tr>
<tr>
<td>Clarence Sondern House</td>
<td>Kansas City, MO</td>
<td>1948</td>
<td>Frank Lloyd Wright</td>
<td>Steel kitchen cabinetry</td>
<td>N/A</td>
</tr>
<tr>
<td>Cliveden</td>
<td>Philadelphia, PA</td>
<td>1767/1955</td>
<td>William Peters</td>
<td>Plastic laminate countertops</td>
<td>NRHP; NHL</td>
</tr>
<tr>
<td>Corbett House</td>
<td>Cincinnati, OH</td>
<td>1960</td>
<td>John deKoven Hill</td>
<td>Formica cabinetry &amp; countertops</td>
<td>N/A</td>
</tr>
<tr>
<td>Darwin D. Martin House</td>
<td>Buffalo, NY</td>
<td>1905/1960</td>
<td>Frank Lloyd Wright</td>
<td>Plastic laminate countertops</td>
<td>NRHP; NHL</td>
</tr>
<tr>
<td>David &amp; Gladys Wright House</td>
<td>Phoenix, AZ</td>
<td>1952</td>
<td>Frank Lloyd Wright</td>
<td>Steel kitchen cabinetry &amp; plastic laminate countertops</td>
<td>N/A</td>
</tr>
<tr>
<td>Dynaxion House, Henry Ford Museum</td>
<td>Dearborn, MI</td>
<td>1946</td>
<td>Buckminster Fuller</td>
<td>Steel kitchen cabinetry</td>
<td>N/A</td>
</tr>
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<td>Eames House (Case Study House No. 8)</td>
<td>Los Angeles, CA</td>
<td>1949</td>
<td>Charles &amp; Ray Eames</td>
<td>Steel kitchen cabinetry</td>
<td>NRHP; NHL; LA HCM</td>
</tr>
<tr>
<td>Eisenhower National Historic Site</td>
<td>Cumberland Township, PA</td>
<td>1955</td>
<td>Unknown</td>
<td>Plastic laminate countertops</td>
<td>NRHP; NHL; NHS</td>
</tr>
<tr>
<td>Elvis' Honeymoon House</td>
<td>Palm Springs, CA</td>
<td>1960</td>
<td>Robert Alexander</td>
<td>Plastic laminate cabinetry</td>
<td>N/A</td>
</tr>
<tr>
<td>Fallingwater</td>
<td>Bear Run, PA</td>
<td>1939</td>
<td>Frank Lloyd Wright</td>
<td>St. Charles steel kitchen cabinets &amp; plastic laminate countertops</td>
<td>NRHP; NHL</td>
</tr>
<tr>
<td>Farnsworth House</td>
<td>Plano, IL</td>
<td>1933</td>
<td>Ludwig Mies van der Rohe</td>
<td>Steel kitchen cabinetry</td>
<td>NRHP; NHL</td>
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<tr>
<td>Georgia O'Keeffe Home &amp; Studio</td>
<td>Abiquiu, NM</td>
<td>1946</td>
<td>George O'Keeffe &amp; Maria Chabot</td>
<td>Steel kitchen cabinetry</td>
<td>NRHP; NHL</td>
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<td>Gordon House</td>
<td>Silverton, OR</td>
<td>1957/1964</td>
<td>Frank Lloyd Wright</td>
<td>Orange Formica countertops</td>
<td>NRHP</td>
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<td>Goumard House, Clark Co. Museum</td>
<td>Henderson, NV</td>
<td>1931</td>
<td>Unknown</td>
<td>Plastic laminate countertops</td>
<td>N/A</td>
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<tr>
<td>Graceland</td>
<td>Memphis, TN</td>
<td>1939</td>
<td>Furbringer &amp; Ehrman</td>
<td>Plastic laminate countertops</td>
<td>NRHP; NHL</td>
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<td>Gropius House</td>
<td>Lincoln, MA</td>
<td>1938</td>
<td>Walter Gropius</td>
<td>Steel kitchen cabinetry &amp; plastic laminate countertops</td>
<td>NRHP; NHL</td>
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<td>Hillwood Estate</td>
<td>Washington, DC</td>
<td>1920/1956</td>
<td>Alexander McIrvine</td>
<td>Geneva steel kitchen cabinetry &amp; plastic laminate countertops</td>
<td>N/A</td>
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<tr>
<td>Louis Armstrong House</td>
<td>Queens, NY</td>
<td>1910/1943</td>
<td>Robert W. Johnson</td>
<td>Kingsway steel kitchen cabinetry &amp; plastic laminate countertops</td>
<td>NRHP; NHL; NYC Landmark</td>
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<tr>
<td>Lyndon B. Johnson Ranch</td>
<td>Stonewall, TX</td>
<td>1951</td>
<td>Unknown</td>
<td>Plastic laminate countertops</td>
<td>N/A</td>
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<tr>
<td>Site Name</td>
<td>Location</td>
<td>Year</td>
<td>Architect/Designer</td>
<td>Features</td>
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<tr>
<td>Manitoga</td>
<td>Garrison, NY</td>
<td>1961</td>
<td>Russel &amp; Mary Wright; David L. Lawitt</td>
<td>Plastic laminate cabinetry &amp; countertops</td>
<td>NRHP, NHL</td>
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<tr>
<td>Miller House</td>
<td>Columbus, IN</td>
<td>1953</td>
<td>Eero Saarinen</td>
<td>Plastic laminate countertops</td>
<td>NRHP, NHL</td>
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<tr>
<td>Morell House</td>
<td>Las Vegas, NV</td>
<td>1959</td>
<td>Hugh E. Taylor</td>
<td>Plastic laminate countertops</td>
<td>NRHP</td>
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<tr>
<td>Neutra VDL Studio and Residences</td>
<td>Los Angeles, CA</td>
<td>1964</td>
<td>Richard &amp; Dion Neutra</td>
<td>Plastic laminate countertops</td>
<td>NRHP</td>
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<td>Pollock Krasner House &amp; Studio</td>
<td>East Hampton, NY</td>
<td>1956</td>
<td>Unknown</td>
<td>Steel kitchen cabinetry &amp; plastic laminate countertops</td>
<td>NRHP, NHL</td>
</tr>
<tr>
<td>Radio City Music Hall</td>
<td>New York City, NY</td>
<td>1932</td>
<td>Edward Durell Stone</td>
<td>Formica wall paneling</td>
<td>NRHP</td>
</tr>
<tr>
<td>Ralph Sr. and Sunny Wilson House</td>
<td>Temple, TX</td>
<td>1959</td>
<td>Bonnie McNinch</td>
<td>Wilsonart plastic laminate countertops, cabinetry, &amp; wall panels</td>
<td>NRHP, NHL, NRHP</td>
</tr>
<tr>
<td>RMS Queen Mary</td>
<td>Long Beach, CA</td>
<td>1934</td>
<td>John Brown &amp; Co.</td>
<td>Formica wall paneling</td>
<td>NRHP</td>
</tr>
<tr>
<td>Rosenbaum House</td>
<td>Florence, AL</td>
<td>1940</td>
<td>Frank Lloyd Wright</td>
<td>Steel kitchen cabinetry &amp; plastic laminate countertops</td>
<td>NRHP</td>
</tr>
<tr>
<td>Stahl House (Case Study House No. 22)</td>
<td>Los Angeles, CA</td>
<td>1960</td>
<td>Pierre Koenig</td>
<td>Plastic laminate countertops</td>
<td>NRHP, LA HCM</td>
</tr>
<tr>
<td>Sunnylands</td>
<td>Rancho Mirage, CA</td>
<td>1966</td>
<td>A. Quincy Jones</td>
<td>Plastic laminate cabinetry and countertops</td>
<td>N/A</td>
</tr>
<tr>
<td>Twin Palms Frank Sinatra Estate</td>
<td>Palm Springs, CA</td>
<td>1947</td>
<td>E. Stewart Williams</td>
<td>St. Charles steel kitchen cabinets</td>
<td>N/A</td>
</tr>
</tbody>
</table>
The following is a list of significant surviving Lustron houses in the United States.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Location</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5201 12th Street Lustron House</td>
<td>Arlington, VA</td>
<td>NRHP</td>
</tr>
<tr>
<td>Alfred &amp; Olive Thorpe Lustron</td>
<td>Fort Lauderdale, FL</td>
<td>NRHP</td>
</tr>
<tr>
<td>House</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bernice L. Wright Lustron House</td>
<td>Birmingham, AL</td>
<td>NRHP</td>
</tr>
<tr>
<td>Bishop Family Lustron House</td>
<td>Schenectady, NY</td>
<td>NRHP</td>
</tr>
<tr>
<td>Caldwell Lustron House</td>
<td>Union City, TN</td>
<td>NRHP</td>
</tr>
<tr>
<td>Casino Super Club Lustron House</td>
<td>Fall River, WI</td>
<td>N/A</td>
</tr>
<tr>
<td>Doit W. McClellan Lustron House</td>
<td>Jackson, AL</td>
<td>NRHP</td>
</tr>
<tr>
<td>E. H. Darby Lustron House</td>
<td>Florence, AL</td>
<td>NRHP</td>
</tr>
<tr>
<td>E.L. Newman Lustron House</td>
<td>Sheffield, AL</td>
<td>NRHP</td>
</tr>
<tr>
<td>Faye Bowden-Agnus Saunders House</td>
<td>Huron, SD</td>
<td>NRHP</td>
</tr>
<tr>
<td>Harold Hess Lustron House</td>
<td>Closter Borough, NJ</td>
<td>NRHP</td>
</tr>
<tr>
<td>J.P. McKee Lustron House</td>
<td>Jackson, AL</td>
<td>NRHP</td>
</tr>
<tr>
<td>Jack &amp; Helen Adams Lustron House</td>
<td>Atlanta, GA</td>
<td>NRHP</td>
</tr>
<tr>
<td>John D. &amp; Katherine Gleissner</td>
<td>Birmingham, AL</td>
<td>NRHP</td>
</tr>
<tr>
<td>Lustron House</td>
<td></td>
<td></td>
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<tr>
<td>Lustron House at 1200 Fifth Avenue</td>
<td>Albany, GA</td>
<td>NRHP</td>
</tr>
<tr>
<td>Lustron House at 3498 McKenzie Drive</td>
<td>Macon, GA</td>
<td>NRHP</td>
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<tr>
<td>Lustron House at 4940 St. Roch</td>
<td>New Orleans, LA</td>
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<tr>
<td>Lustron House at 547 Oak Avenue</td>
<td>Americus, GA</td>
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<tr>
<td>Lustron House at 711 Ninth Avenue</td>
<td>Albany, GA</td>
<td>NRHP</td>
</tr>
<tr>
<td>Lustron House No. 02102</td>
<td>Cedar Rapids, IO</td>
<td>N/A</td>
</tr>
<tr>
<td>Lustron House on Columbiana Road</td>
<td>Birmingham, AL</td>
<td>NRHP</td>
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<tr>
<td>Lustron Houses of Jermain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Street Historic District</td>
<td>Albany, NY</td>
<td>NRHP</td>
</tr>
<tr>
<td>Margaret &amp; Vernon Maxon House</td>
<td>Huron, SD</td>
<td>NRHP</td>
</tr>
</tbody>
</table>
### Site Name | Location | Designation
--- | --- | ---
Margaret Quayle Lustron House | Tuscaloosa, AL | NRHP
Mitchell Lustron Historic District | Mitchell, SD | NRHP
Neville & Halen Farmer Lustron House | Decatur, GA | NRHP
Norris & Harriet Coombs Lustron House | Chesterton, IN | NRHP
Peter Hansen House | Pierre, SD | NRHP
Rivas & Furlong Lustron House | Dayton, OH | NRHP
Roy & Iris Corbin Lustron House | Indianapolis, IN | NRHP
Russell & Nelle Pines Lustron House | Decatur, GA | NRHP
Thomas & Rae Epting Lustron House | Atlanta, GA | NRHP
William & Ruth Knight Lustron House | Atlanta, GA | NRHP
William A. Wittmer Lustron House | Alpine Borough, NJ | NRHP
William Bowen Lustron House | Florence, AL | NRHP

**APPENDIX C: Steel Kitchen Catalogues**

The following is a reproduction of a 1951 catalogue for St. Charles Kitchens, typical of mid-century steel cabinetry promotional pamphlets:
kitchens for living

CUSTOM-BUILT OF STEEL...BY

St. Charles

Copyright 1961
St. Charles Manufacturing Co.
How to have a kitchen you can live with!

So you are thinking about a new kitchen! Perhaps you are building a home; you may be thinking of doing over your present kitchen. In either case, you are going to have to get along with your new kitchen for quite some time. Why not have one that you can really live with and enjoy?

**How to PLAN it**

Planning, of course, comes first. If you are building, it is a good idea to plan the kitchen before the house plans are all settled. A few inches one way or another in a wall, a door or a window, may make all the difference in the world in the economy and efficiency of your kitchen. If you are remodeling, it is usually necessary to work with the room arrangement as it is. It may be worthwhile, however, to make some structural change.

But a word of caution! Do not try to plan it all by yourself. You will have the ideas, many of them. You may have been keeping a scrap book for years. Only you will have the answers to many questions that must be settled. But when the time comes to lay out the kitchen, call in an expert, just as you would call in an architect in planning your home. He will see the size of the room and its relation to the rest of the house. He will take necessary measurements, either from the plan or on the job.

From you he must learn how many in the family, how much entertaining you do, how often you shop for food. These things affect the amount and type of storage needed. Be sure that your plan takes into account the size of refrigerator you need and will ultimately have— not necessarily the one you now have. Should your range be built-in or free-standing? Would you prefer a conventional oven or a waist-high oven? Do you eat in the kitchen regularly or only occasionally? Are there small children who come in for snacks?

Locate work areas for smooth, functional flow of work—your work. Follow the triangle system if room layout permits. It is a good idea to keep the main work areas close together. Consider shelf area rather than cubic storage. Keep in mind that storage means placement of things on shelves and in drawers.

In decoration, your own personal color preferences will, of course, be the important consideration. Other factors that affect the color scheme are location of the room, the number and size of windows, the direction from which the light comes. Now that you can have the storage units of steel finished in color, as well as counter materials in many patterns and colors, the effects you can achieve are almost unlimited.

**How to CHOOSE it**

We all know it is important to have the right plan, but it is equally important to choose a kitchen that will enable you to realize that plan.

Naturally, you will want steel, the preferred material for kitchen use because of its strength without bulk, its easy-to-clean surface, its ability to withstand cold, heat and moisture. And you will favor the kitchen that gives you, in addition to the advantages of steel, the decorative opportunities of color.

To have your plan come true your kitchen should be custom-built. That means a kitchen made to the measurements of the room, after you approve the plan. It means counters made in one piece, to the exact dimensions. Consider the range of widths and heights in which the storage units are made. In a small room or where maximum storage is needed, it is a help to have those taller-than-ordinary wall units which provide one-third more shelf area. Consider especially the number of special purpose storage units and the accessories from which you can choose. The easy visibility and accessibility of items stored in these units will save you many steps and much work.

Is the kitchen made by a company whose sole business is to produce custom kitchens to order? Does the manufacturer stand back of the product with a written warranty against defects in material and workmanship?

Is the dealer a specialist in custom-built kitchens? Is he a trained expert who can lay out a kitchen especially for you, to meet your particular needs? Has he trained personnel to install the kitchen properly? Is he equipped to render a service that continues after installation to help keep your kitchen in good condition?

In this brief space we have been able to touch upon only the most important of the many things to consider in planning and choosing your kitchen. We hope they will prove helpful. With them in mind, turn to the following pages and see in greater detail how the selection of a St. Charles Kitchen, planned and installed by a St. Charles dealer, will assure the kind of kitchen you will enjoy living with.
One of the reasons why a St. Charles Kitchen can be so individual and so snugly fitted to the space is the large number of sizes in which the standard units are available. While sizes are standard, the units themselves are not prefabricated and stocked, but each one is made and finished as part of a particular kitchen. When required, units of special dimensions can be furnished.

WALL UNITS—These have flush bottoms and are made in four heights. The 36" height with three shelves provides the greatest lineal storage space. Where maximum use of wall space is not required, the 30" height with two shelves is suitable. The 18" and 24½" high units are usually used over refrigerators and ranges. All wall units are 12½" deep, which is ample for the largest dinner plate. Shelves are adjustable on 1½" centers.

BASE UNITS—These are made in two types—cupboard and drawer. The cupboard type has one shelf which is adjustable. Drawer units provide good visibility and make contents readily accessible. Cupboard cabinets may be fitted with sliding shelves, affording this same convenience.

SINK FRONT—This is joined to the units on each side of the sink so as to enclose the compartment in which the plumbing is installed and give a flush, unified appearance to the complete ensemble. The sink compartment is fitted with a bottom plate which provides ample storage for cleaning supplies.

FULL-HEIGHT UNITS—Where adapted to the kitchen design, these units have the advantage of making full use of wall space. They can be equipped for utility storage as shown here, having shelves spaced as needed, and for implement storage or utensil storage.
as
individual
as your
Signature

Whatever its arrangement, size or cost, your St. Charles Kitchen will be designed and built exclusively for you. Every St. Charles Kitchen is built to order, for a particular room. The illustrations in this book are from the many thousands of such kitchens built each year. Each is an actual installation, photographed in full color.

The kitchen above shows a unique treatment of a long, narrow room, with doors on one wall. While essentially a corridor arrangement, the units on one side in reality form a shallow U with the mixing area and built-in range on the outside wall. On the opposite wall, between doorways, is the sink, flanked by towel drier, dish-washer and vegetable storage unit, all topped by a one-piece counter with ends on a slight diagonal. Color is Shell Pink.

The picture on the cover shows part of a U arrangement, with the mixing area at the right. From here, work flows to the compact cooking and clean-up areas. The extension of the U in the foreground actually rests on wall units serving as base units, thus lowering the level of the serving counter to the dining area. This illustrates the great flexibility with which St. Charles units may be used. Upper units are Sea Green and lower units Pine Green, with interiors of the units in the foreground Sea Green to match upper units.
units designed for specific conditions

Also, standard, but designed to meet certain specific conditions encountered in laying out a custom-built kitchen, are the units illustrated on this page.

**Upper Corner Units**—Full use of the corner space in an L or U arrangement is gained by use of these units. The one with the front at an angle gives easy access to the entire corner, adds usable storage space and provides an attractive touch to the kitchen design, particularly when used with a glass door. The other, a rectangular type, provides access through the door on the section which is exposed. The other end fits snugly into the corner and is concealed by the units on the adjoining wall.

**Lower Corner Unit**—This is made in the same style as the rectangular upper unit with part of the cabinet extending into the corner. Access is through the door on the exposed portion. Unit has a shallow drawer above the door.

**Curved End Unit**—Decorative as well as practical. By rounding off the end of a series of base units it prevents bumps against projecting corners. Adds beauty to the kitchen design by use of the classic principle of the curved line, and provides good storage space.

**Divider Unit**—This is designed to separate the kitchen proper from the dining area. At the same time it provides handy storage for china and glassware, or for small appliances used in the dining area such as toaster, waffle iron, sandwich grille and electric coffee maker. Access from kitchen or alcove through the doors on each side.

**Recessed Sink Front**—The recess provides additional knee room while working at the sink either while sitting or standing.

**Base Unit with Full-Height Door**—By dispensing with the usual shallow drawer at the top of a cupboard unit, additional space is gained for storing extra tall articles such as an electric mixer. The single shelf may be raised or lowered as desired. Made with one door as shown and also with two doors.

**Refrigerator Ventilating Unit**—Provides adequate ventilation for refrigerator by means of 4" duct at rear of unit. Vapors are discharged through grilled panel at top. 8" front portion of unit available for storage.
In addition to the basic units illustrated on page three and the units designed to deal with conditions of location and design shown on page five, St. Charles offers a variety of complete units designed for greater accessibility, greaer convenience or to store certain articles of supplies. These are all base units and each is made in one size, which experience has shown to be best for the purpose for which it is designed.

SLIDING TABLE—A cupboard base unit with a shelf just below the drawer that pulls out at lap height for work while seated. The surface of the shelf may be linoleum or Vinyl to match the counter.

SWING SHELF CORNER UNIT—Unit is made like the lower corner unit on page five but instead of cupboard with shelf, has two semi-circular shelves, each attached to a hinged door. When door is opened, shelf rolls out, bringing front quarter entirely into open and rear quarter readily accessible. Shelves can be removed for cleaning.

TOWEL DRIER—A cupboard unit with two racks, each holding three aluminum rods which slide in and out, to hold towels or other articles. At bottom is a blower with 500-watt heating element. Timer may be set to turn off current at any interval up to one hour. Door is ventilated.

VEGETABLE STORAGE—A cupboard unit with lowered door. Has three sliding trays, grilled on the bottom for ventilation.

COMBINATION UNIT—A special unit incorporating four of the accessories shown on pages ten and eleven; pull-out cutting board, cutlery drawer, flour, meal and sugar bins, bread and cake receptacle.

HANDY UNIT—A cupboard unit without drawer at top but with full-height door. Inside is sliding shelf at top and tray storage panel below. These are also furnished separately as accessories as described on pages ten and eleven.

PLANNING DESK—Very convenient, where space permits, for writing, keeping accounts, planning meals and purchases. Deep drawer section provides storage for files or recipes. A convenient surface for working while seated.

LINEN STORAGE—Three shallow drawers and one deep drawer on roller bearings.
BOTTLE STORAGE—Two sliding shelves in a cupboard unit having full-height door, each fitted with a wooden egg crate insert containing compartments for bottles. Three compartments for holding bottle openers and other accessories. Door fitted with tumbler lock.

TILTING FLOUR BIN—For use where considerable baking is done. The bin is attached to tilting door. A removable tinned insert fits into the bin; holds up to 52 pounds of flour.

TRAY STORAGE—Cupboard is fitted with three rows of chrome plated rods, dividing it into four sections each wide enough to hold several trays. Bottom is lined with linoleum which is removable for cleaning.

SILVER STORAGE—Five especially constructed sliding shelves in cupboard unit with a full-height door. The two shallow shelves at top are fitted with inserts compartmented for flat silver with lining and cover of Pacific tarnish-proof silver cloth. The two shallow shelves and deep shelf below, for storage of larger pieces, are completely lined with Pacific tarnish-proof silver cloth with cover of same material.

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SPECIALLY EQUIPPED FULL-HEIGHT UNITS

The full-height unit illustrated on page three is fitted with shelves from top to bottom, for general utility storage. Made in two depths to match the depths of wall units and base units. The same basic unit may be fitted for other storage as follows:

SILVER STORAGE—To the sides of the space below the cross rail are attached six rows of sliding hooks—three rows on each side. Each row has four hooks on which may be hung pans and skillets.

IMPLEMENT STORAGE—The shelves at the cross rail and below are omitted and this lower space is left for storage of mops, brooms, and sweeper. Cleaning supplies may be stored on the upper shelves. Hooks and broom holders are fastened to the sides.
accessories for use

With the general design decided and the basic storage units selected, completion of the kitchen requires the addition of those details which make for greatest utility and efficiency. An important reason for choosing a St. Charles Custom-Built Kitchen is the large number of accessories available, as shown on these and the two following pages.

SLIDING FLOUR BIN—When being used or refilled, it pulls out on slides attached to bottom shelf. Equipped with sifter at convenient height for measuring. Holds approximately nine pounds.

WIRE CUP RACK—Cups slide in, handles down.

SLIDING SUGAR BIN—Similar to sliding flour bin except that it is fitted with a sugar dispenser. Holds approximately fourteen pounds of sugar.

WALL UNIT FILE—Movable file having two compartments for such things as tins, covers, trays, cook books, casseroles, and vegetable dishes.

PLATE RAIL—Stainless steel rail holds plates on edge at rear of shelf.

VENTILATING UNIT—Unit with exhaust fan for use in wall unit above range. Fumes are filtered and exhausted to outside.

COOK BOOK RACK—Book rests on ledge of stainless steel fastened so inside of door. Spring holds cook book open for following recipes.

CUP RACK—Inserted in back of wall unit in same manner as shelf. For storing glasses and cups, leaving space for
with wall units...

plates, saucers and other dishes below the rack.

HALF SHELF—Shelf half as deep as regular shelves. For use in wall units where it is desired to store small articles at back, leaving room for tall items on shelf below. Also where accessories requiring room are fastened to inside of door.

FLUORESCENT LIGHT—Tube is recessed in special bottom of wall unit. A clear, white light is diffused over the working surface. Electrical outlet at end. Includes transformer ready for attachment.

WAXED PAPER RACK—Holds any standard box of waxed paper.

CABINET MIRROR—Women will find this mirror convenient for a quick touch-up before answering the door. Fitted behind door of any wall unit. Makeup accessories may be kept in cabinet.

STEP SHELF—Two levels for storing condiments and other small articles for easy visibility and accessibility. Space for additional row of articles on cupboard bottom.

GLASS DOORS—Any wall unit door or upper door of a full-height unit may be equipped, with glass panel. Illustration shows diagonal corner wall unit.

Not illustrated

UTILITY SHELF—An enameled steel shelf for use between wall units.

RANGE HOOD—Of stainless steel. Fits beneath wall unit above range. See illustration on page fifteen.
CUTLERY TRAY—Insert in top drawer with compartments for cutlery. Two sizes—one with compartment fitted with adjustable slotted blocks for carving, cake and bread knives. Smaller size does not have this compartment.

PASTRY BOARD—For use on counter for rolling out pastry or as cutting surface. Stored in top drawer on supports snapped on sides of drawer.

WIRE VEGETABLE BASKETS—Set of three baskets which fit into vegetable tray for segregated storage of fruits and vegetables.

SLIDING SHELF—Brings the articles out where you can see and easily lift out what you want.

FLOUR, MEAL, AND SUGAR BINS—Three tinned steel receptacles with tightly fitting covers, easily removed.

REFUSE RECEPTACLE—Galvanized container slips into slot on the inner side of door of sink compartment. Ten-quart capacity. Easily removed for disposal of contents. When door is closed, receptacle is automatically covered by lid which is attached to upper part of sink compartment.

BREAD AND CAKE RECEPTACLE—A deep tinned container with hinged cover. Sliding wire shelf for cake.

CUTLERY DRAWER—Lengthwise dividers welded into top drawer to provide separate compartments for kitchen cutlery and other small articles. Linoleum bottom lining.

MEAT GRINDER ATTACHMENT—Clamps to edge of counter, providing sturdy extension edge to which meat grinder may be attached.
with base units...

VEGETABLE TRAY—Sliding ventilated tray in cupboard unit for convenient storage of dry vegetables. Door louvered for ventilation.

SILVER STORAGE INSERT—Compartmented for storage of silverware and linens and covered with Pacific tarnish-proof silver cloth.

LID AND TIN FILE—Any deep drawer may be fitted with dividers for storage of pie and cake tins and lids up to 9” in diameter.

SLIDING TOWEL RACK—Three chrome rods on enameled steel bracket which slides in and out.

AUXILIARY STORAGE RACK—Shown in same illustration as Sliding Towel Rack. Holds cleansers and scouring materials.

SLIDING CUTTING BOARD—Fits space above shallow drawer. Slides out as needed. Non-warping construction.

Accessories Not Illustrated

BOTTLE STORAGE INSERT—Wooden eggcrate insert, as shown in Bottle Storage Unit on page seven, fits sliding shelf in cupboard unit.

TRAY STORAGE RODS—Row of rods, as used in Tray Storage Unit, inserted in any standard cupboard base unit.

LENGTHWISE DIVIDER—Metal divider, as in cutlery drawer, welded into drawer.

CROSSWISE DIVIDER—Metal divider welded crosswise into shallow drawer.

LID RACK—Attached inside door of Implement Unit, holds lids up to 10” in diameter.

TOWEL ROD—Rod attached to sink front door.

TRAY STORAGE PANEL—Steel panels fastened in bottom of cupboard unit for holding trays (See Handy Unit—page six).
If you want color in your kitchen—and today it's a must—you can have it, not only in the curtains, counters, wall coverings and accents, but in the finish of the storage units, too. Think of it! Stelich kitchens in color! Imagine what this can mean to the color beauty of your kitchen. Color is another first by St. Charles, made possible by custom-building every kitchen.

Below you see the nine colors—besides white—in which you can have your St. Charles Kitchen finished. Interesting two-tone combinations are possible, with interiors contrasting with exteriors, upper units in one color and lower units in another, units on one wall in a color different from those on another wall.

Whatever color you choose, the St. Charles finish, with proper care, will keep its lustre and beauty for many years. First, the prime coat is sprayed on and baked, then the finish coat—each baked at high temperature. The units for each kitchen go through the spray booths and ovens together, giving true color match and uniform film thickness. The result is a finish of superior texture, depth and gloss.

Color Plans to Help You With Your Color Scheme

Your St. Charles dealer can assist you in planning the color scheme of your kitchen. Ask him to show you the plans carefully worked out by our kitchen stylist to show wall coverings, floor coverings, accents and counter tops to go with the various St. Charles colors. You can see actual samples of fabrics and materials with manufacturers' pattern numbers. You may follow the scheme exactly or adapt it readily to fabrics, patterns or materials of your choosing.
plain or fancy
small or spacious
your kitchen can be custom-built
by St. Charles

Your St. Charles Kitchen will be fitted to the amount you wish to invest just as it is to the need and to the dimensions of the room. Space determines the number of basic units. You decide the type of units, the accessories that go with them and the style and type of counter. Thus the cost is extremely flexible.

A St. Charles Kitchen, whether simple or elaborate, has an appearance of quality. It is not uncommon, looking at a St. Charles Kitchen, to estimate its cost at considerably more than it actually is. Do not allow a misconception to prevent you from having something you really want, would thoroughly enjoy and can afford.

Your St. Charles dealer will plan a kitchen suited to your needs and your means and then tell you exactly what it will cost to make it for you. You owe it to yourself to have that information before you make any decision.

The kitchen illustrated here is of average size and is relatively simple in arrangement. Smaller and simpler kitchens are being built all the time. Each has the same basic quality as every St. Charles Kitchen and each is entirely custom-built.
SINK TOPS AND COUNTERS

More than any other single element, the continuous one-piece work surface marks the truly custom-built kitchen. It plays an important part in making the kitchen fit right and look right. Its smooth, continuous surface permits full freedom in its use with unobstructed flow of work and does away with the unsightly, dirt-catching cracks resulting where each base unit has a separate top.

LINOLEUM OR VINYL—A St. Charles linoleum or Vinyl sink top is built at the factory to the dimensions required. The foundation is a sturdy steel core, reinforced for strength and rigidity. To this the covering material, in the selected pattern and color, is bonded with waterproof cement. To the extent permitted by the room layout and shipping limitations, it is made to fit any shape and in one piece, including the sink bowl. If desired, it may extend over the range by means of a built-in stainless steel insert. Sink bowls may be porcelain enameled cast iron, porcelain enameled pressed steel, or stainless steel and are inserted in the top with a waterproof connection.

Vinyl is a flexible thermoplastic material of superior wear and stain-resistant qualities. Linoleum is a resilient, sanitary material highly favored for sink tops and counters. Each is available in a variety of colors and patterns.

The large central illustration on the opposite page shows a Vinyl top in U shape, including the sink in the corner on a diagonal, and ending in a gracefully rounded section.

STAINLESS STEEL INSERT—The illustration at lower left shows how a stainless steel insert, the same depth as the top, may be built into the top. These inserts are extremely useful next to a free-standing range on which hot cooking utensils may be placed after removing them from the range.

Stainless Steel Bowl with Drainboard—The bowl is welded to a rectangular sheet of heavy-gauge stainless steel to form a one-piece unit which is installed in linoleum or Vinyl sink top. See illustration at bottom center.

Stainless Steel—This is an excellent, long wearing working surface, as adaptable as linoleum or Vinyl to the kitchen design but higher in cost. At the upper right on the opposite page is a stainless steel top with double bowl welded into the top.

Maple—Because of its value as a cutting surface, there is a place in almost every kitchen for a maple top, even if only over a single base unit. It is formed by laminated strips, bonded together and may be made in desired length. See illustration at upper left.

Formica and Textolite—Sink tops and counters are also available in these colorful, plastic materials. Made on a wood core. (Not illustrated.)

Built-In Appliances

Built-In Ranges—Certain types of gas or electric ranges may be built into a St. Charles Kitchen by means of a stainless steel insert in the counter. Central illustration opposite shows a Roper 21" gas range. This comes with either large oven or large broiler. There is also a 40" Roper gas range. Monarch electric ranges are in two sizes—42" and 21". Universal and Thermador surface units and ovens may be built in by means of units especially designed to receive them.

Built-In Dishwasher—We do not furnish dishwasher, but most standard dishwashers may be incorporated in kitchen beneath continuous counter. Illustration shows type with opening at front. For use with kitchen in color, front may be shipped to factory for painting in desired color.
beauty and utility
artfully combined

Interesting use of the corners mark this charming and practical kitchen. The whole effect is inviting, with its Morning Blue finish, balanced nicely by the yellow interiors of the wall units in the corner over the sink, against a background of wood paneling finished in a soft white.

Your kitchen, of course, will be as different from any other, as each of the kitchens illustrated in this book are different. Large or small, it will be designed to save you minutes and steps in everything you do in the kitchen—preparing, cooking, serving, cleaning up. It will give you years of service at little or no upkeep cost.

Let your St. Charles dealer design a kitchen for you and submit an estimate. Then compare it with any other kitchen for what it gives you in convenience, in beauty and in intelligent planning.
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