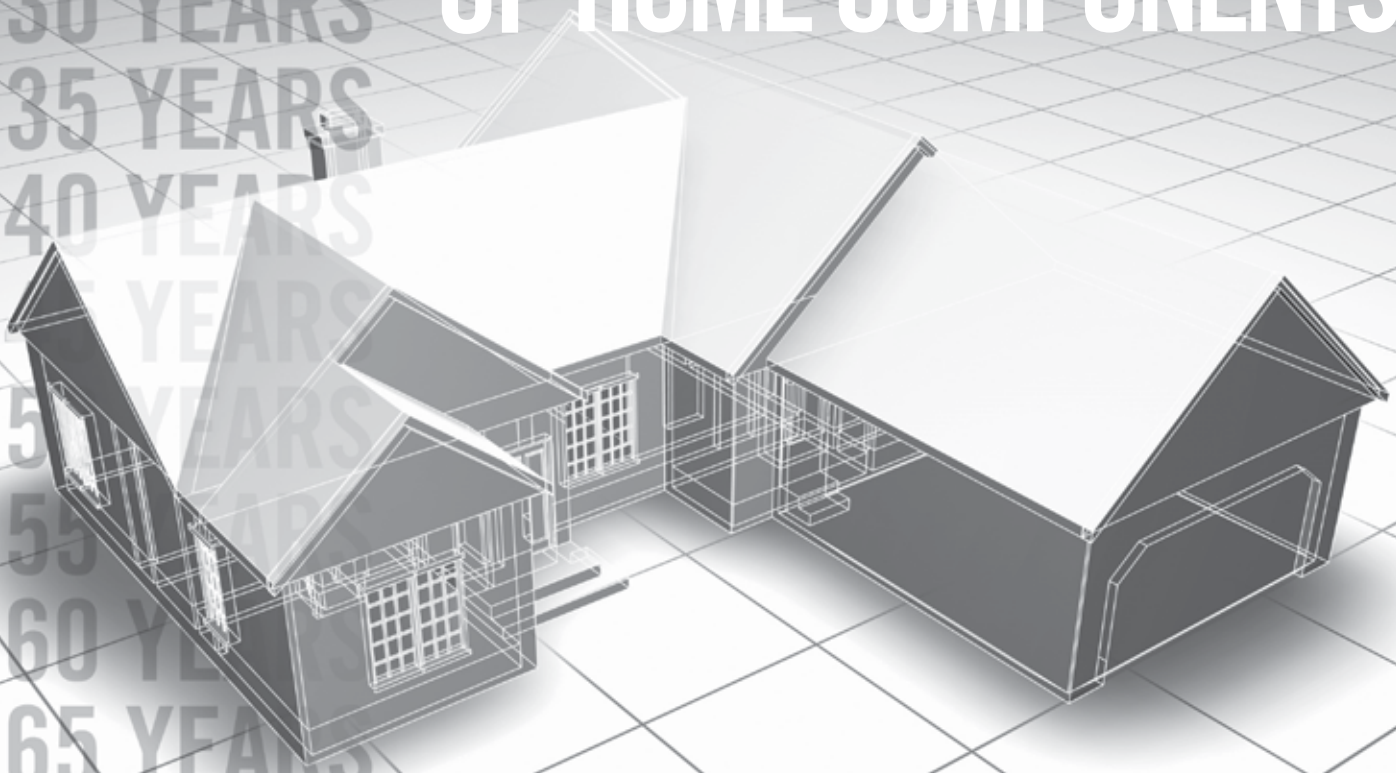
5 YEARS
10 YEARS
15 YEARS
20 YEARS
25 YEARS
30 YEARS
35 YEARS
40 YEARS
50 YEARS
55 YEARS
60 YEARS
65 YEARS
70 YEARS
75 YEARS
80 YEARS
85 YEARS
90 YEARS
95 YEARS
100 YEARS

National Association of Home Builders /
Bank of America Home Equity

STUDY OF LIFE EXPECTANCY OF HOME COMPONENTS



NAHB
National Association of Home Builders

Bank of America

FEBRUARY 2007

National Association of Home Builders/ Bank of America Home Equity Study of Life Expectancy of Home Components

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Study of Life Expectancy of Housing Components

INTRODUCTION

The life expectancies of the components of a home depend on the quality of installation, the level of maintenance, weather and climate conditions, and the intensity of use. Some components may remain functional but become obsolete due to changing styles and preferences or improvements in newer products while others may have a short life expectancy due to intensive use.

The average life expectancy for some components has increased during the past 35 years because of new products and the introduction of new technologies, while the average life of others has declined. NAHB's last such study on the life expectancy of housing components was published in *Housing Economics* in August 1993.

U.S. HOUSING STOCK

The 2005 American Housing Survey by the U.S. Census Bureau shows that there are more than 124 million homes in the housing stock, with a median age of 32 years. About one-third of the housing stock was built in 1960 or earlier. About 10 percent was built in the 1960s, and another 20 percent was built in the 1970s. Of the remainder, 13 percent was built in the 1980s, another 13 percent was built in the 1990s, and 8 percent in the first years of the 21st century.

Of the total stock of 124.3 million housing units, about 109 million are occupied housing units, 11.6 million are vacant and about 4 million are seasonal. Two-thirds of all units in the nation's housing stock are single-family detached or attached, 8 percent are in buildings with 2 to 4 units, and about 17 percent are in buildings with 5 or more units. The remaining 7 percent of the stock is in HUD-code homes.

About 18 percent of the occupied housing stock is in the Northeast, 23 percent is in the Midwest, 37 percent is in the South, and 21 percent is in the West.

THE STUDY

In the summer of 2006, NAHB conducted a comprehensive telephone survey of manufacturers, trade associations and researchers to develop information about the longevity of housing components.

Many of the people interviewed emphasized that the life expectancy of housing components is greatly affected by the quality of maintenance. They also noted that changing consumer preferences can result in products being replaced long before -- or after -- the end of their practical life expectancy.

This article provides a synopsis of the survey results (Table 1).

[Note: This report should be used as a general guideline only. None of the information in this report should be interpreted as a representation, warranty or guarantee regarding the life expectancy or performance of any individual product or product line. Readers should not make buying decisions and/or product selections based solely on the information contained in this report.]

Findings

Appliances

The life expectancy of a typical appliance depends to a great extent on the use it receives. Moreover, appliances are often replaced long before they are worn out because changes in styling, technology and consumer preferences make newer products more desirable. Of the major appliances in a home, gas ranges have the longest life expectancy: 15 years. Dryers and refrigerators last about 13 years. Some of the appliances with the shortest lifespan are: compactors (6 years), dishwashers (9 years) and microwave ovens (9 years).

Cabinetry and Storage

Kitchens are becoming larger and more elaborate, and together with the family room, modern kitchens now form the "great room." Great rooms are not only a place to cook, but also a space where people gather to read, eat, do homework, surf the Internet and pay bills. Kitchen cabinets are expected to last up to 50 years, medicine cabinets for 20+ years, and garage/laundry cabinets for 100+ years. Closet shelves are expected to last for a lifetime.

Concrete and Masonry

Masonry is one of the most durable components of a home. Chimneys, fireplaces, and brick veneers can last a lifetime, and brick walls have an average life expectancy of more than 100 years.

Countertops

Natural stone countertops, which are less expensive than a few years ago, are gaining in popularity and are expected to last a lifetime. Cultured marble countertops have a life expectancy of about 20 years.

Decks

Because they are subject to a wide range of conditions in different climates, the life expectancy of wooden decks can vary significantly. Under ideal conditions, they have a life expectancy of about 20 years.

Doors

Exterior fiberglass, steel and wood doors will last as long as the house exists, while vinyl and screen doors have a life expectancy of 20 and 40 years, respectively. Closet doors are expected to last a lifetime, and French doors have an average life of 30 to 50 years.

Electrical and Lighting

Copper plated wiring, copper clad aluminum, and bare copper wiring are expected to last a lifetime, whereas electrical accessories and lighting controls are expected to last 10+ years.

Engineered Lumber

Floor and roof trusses and laminated strand lumber are expected to last a lifetime, and engineered trim is expected to last 30 years.

Faucets and Fixtures

Kitchen sinks made of modified acrylic will last 50 years, while kitchen faucets will work properly for about 15 years. The average life of bathroom shower enclosures is 50 years. Showerheads last a lifetime, while shower doors will last about 20 years. Bath cabinets and toilets have an unlimited lifespan, but the components inside the toilet tank do require some maintenance. Whirlpool tubs will function properly for 20 to 50 years, depending on use.

Flooring

All natural wood floorings have a life expectancy of 100 years or more. Marble, slate, and granite are also expected to last for about 100 years, but can last less due to a lack of maintenance. Vinyl floors last up to 50 years, linoleum about 25 years, and carpet between 8 and 10 years (with appropriate maintenance and normal traffic).

Footings and Foundations

Poured as well as concrete block footings and foundations last a lifetime, assuming they were properly built. Termite proofing of foundations will last about 12 years if the chemical barriers put in place during construction are left intact. Waterproofing with bituminous coating lasts 10 years, but if it cracks it is immediately damaged. Concrete or cast iron waste pipes are expected to last 100 years or more.

Framing and Other Structural Systems

Framing and structural systems have extended longevities: poured-concrete systems, timber frame houses and structural insulated panels will all last a lifetime. Wall panels and roof and floor trusses will similarly last a lifetime. Softwood, hardboard, and plywood last an average of 30 years, while OSB and particleboard are expected to function properly for 60 years.

Garages

Garage door openers are expected to last 10 to 15 years, and light inserts for 20 years.

Home Technology

Home technology systems have various life expectancies. While a built-in audio system will last 20 years, security systems and heat/smoke detectors have life expectancies of 5 to 10 years. Wireless home networks and home automation systems are expected to work properly for more than 50 years.

Heating, Ventilation, and Air Conditioning (HVAC)

Heating, ventilation, and air conditioning systems require proper and regular maintenance in order to work efficiently, but even in the best case scenarios most components of such systems only last 15 to 25 years. Furnaces on average last 15-20 years, heat pumps 16 years, and air conditioning units 10-15 years. Tankless water heaters last more than 20 years, while an electric or gas water heater has a life expectancy of about 10 years. Thermostats usually are replaced before the end of their 35-year lifespan due to technological improvements.

Insulation and Infiltration Barriers

As long as they are not punctured, cut, or burned and are kept dry and away from UV rays, the cellulose, fiberglass, and foam used in insulation materials will last a lifetime. This is true whether the insulation was applied as loose fill, house wrap, or batts/rolls.

Jobsite Equipment

Ladders are expected to last a lifetime, and life expectancy of lifts is about 8 to 10 years.

Molding and Millwork

Custom millwork will last a lifetime, and all stairs – circular and spiral stairs, prebuilt stairs and attic stairs – are expected to last a lifetime.

Paint, Caulks and Adhesives

Both interior and exterior points can last for 15 years or longer, however home owners often paint more frequently.

Panels

Hardboard panels and softwood panels are expected to last 30 years, while oriented strand board and particleboard have a life expectancy of 25-30 years. Wall panels are expected to last a lifetime.

Roofing

The life of a roof depends on local weather conditions, proper building and design, material quality, and adequate maintenance. Slate, copper, and clay/concrete roofs have the longest life expectancy – over 50 years. Roofs made of asphalt shingles last for about 20 years while roofs made of fiber cement shingles have a life expectancy of about 25 years, and roofs made of wood shakes can be expected to last for about 30 years.

Siding and Accessories

Outside materials typically last a lifetime. Brick, vinyl, engineered wood, stone (both natural and manufactured), and fiber cement will last as long the house exists. Exterior wood shutters are expected to last 20 years, depending on weather conditions. Gutters have a life expectancy of more than 50 years if made of copper and for 20 years if made of aluminum. Copper downspouts last 100 years or more, while aluminum ones will last 30 years.

Site and Landscaping

Most landscaping elements have a life expectancy of 15 to 25 years. Sprinklers and valves last about 20 years, while underground PVC piping has a lifespan of 25 years. Polyvinyl fences are designed to last a lifetime, and asphalt driveways should last between 15 and 20 years.

Tennis courts can last a lifetime if recoated; most coatings last 12 to 15 years. The concrete shell of a swimming pool is expected to last over 25 years, but the interior plaster and tile have life expectancies of about 10 to 25 years.

Walls, Ceilings and Finishes

Walls and ceilings last the full lifespan of the home.

Windows and Skylights

Aluminum windows are expected to last between 15 and 20 years while wooden windows should last upwards of 30 years.

Table 1: Life Expectancy of Different Products/Items/Materials in the Home

	Life in Years	Comments
1. APPLIANCES		
Exhaust Fan	10	
Compactors	6	
Dishwashers	9	
Disposers, Food Waste	12	
Dryers, Electric	13	
Dryers, Gas	13	
Freezers	11	
Microwave Ovens	9	
Ranges, Electric	13	
Ranges, Gas	15	
Range/Oven Hoods	14	
Refrigerators, Compact	9	
Refrigerators, Standard	13	
Washers	10	
Water Heaters, Electric	11	
Water Heaters, Gas	10	
Air-Conditioners, Room	10	
Air-Conditioners, Unitary	15	
Boilers, Electric	13	
Boilers, Gas	21	
Dehumidifiers	8	
Furnaces, Warm-Air, Electric	15	
Furnaces, Warm-Air, Gas	18	
Furnaces, Warm-Air, Oil	20	
Heat Pumps	16	
Humidifiers	8	
Note: Life expectancy is based on first-owner use.		
Source: Appliance Magazine, Sep 2005 issue, Grainger		
2. CABINETRY & STORAGE		
Cabinet Lines		
Bath Cabinets	Lifetime	
Entertainment Centers/Home Office	10	
Garage/Laundry Cabinets	100+	
Kitchen Cabinets	50	
Medicine Cabinets	20+	
Manufacturing Types		
Modular/Stock	50	
Closet systems		
Closet Shelves	Lifetime	
Source: Wellborn Cabinet, Zaca, Timberlake Cabinet Co., Wellborn Cabinet, Moduline, Canyon Creek Cabinet Co., Easyclosets.com, Wellborn Cabinet		

Table 1: Life Expectancy of Different Products/Items/Materials in the Home

	Life in Years	Comments
3. CONCRETE & MASONRY		
Brick	100+	
Veneer	Lifetime	
Caulking (for sealer)	2-20	
Source: General Shale Brick, NHACP and NCSG, Sashco Sealants		
4. COUNTERTOPS		
Cultured Marble	20	
Natural Stone	Lifetime	
Tile	Lifetime	
Wood	Lifetime	
Source: Rynone, Buffalo stone, Architectural Products by Outwater, Formica Corp, Gibco Services, Florida Tile Industries, United States Ceramic Tile Co., National Hardwood Flooring & Moulding		
5. DECKS		
Wood	20	Dry areas last 20-25, South 10-15, North 20-30.
Deck Planks	25	
Source: Decks.com, Timbertech		
6. DOORS		
Exterior Doors		
Fiberglass	Lifetime	
Screen	40	Pine 20 yrs, Cedar 40 yrs, Mahogany 60 yrs
Steel, Fire-Rated	Lifetime	
Vinyl	20	
Wood	Lifetime	
Interior Doors		
French	30 to 50	
Closet	Lifetime	
Source: Fiberframe, Neoporte, Timeline Vinyl Products/ Timeline Vinyl Windows, Victoriana East, Coppa Woodworking Inc., Marvin Windows and Doors, Kestrel		

Table 1: Life Expectancy of Different Products/Items/Materials in the Home

	Life in Years	Comments
7. ELECTRICAL & LIGHTING		
Accessories	10+	
Lighting Controls	10+	
Copper Wiring		
Copper Plated	Lifetime	If used in a non-corrosive environment.
Copper Clad Aluminum	Lifetime	
Bare Copper	Lifetime	
Source: Lutron Electronics, Lighting Controls Association, Copper Development Assoc.		
8. ENGINEERED LUMBER		
Engineered Trim	30	
Laminated Strand Lumber	Lifetime	
Laminated Veneer Lumber	30+	
Trusses, Floor	Lifetime	
Trusses, Roof	Lifetime	
Source: Engineered Wood Association, Georgia Pacific Corp., Georgia Pacific Corp., Lumber Specialties		
9. FAUCETS & FIXTURES		
Accessible/ADA Products	Lifetime	
Faucets, Bar/Hospitality	15	
Faucets , Kitchen Sinks	15	
Faucets, Lavatory	20+	
Faucets, Tub/Shower	20+	
Faucets, Toilets/Bidets	10	Wear issues depending on use, new cartridges or seals.
Saunas/Steam Rooms	15-20	
Shower Doors	20+	
Shower Enclosures/Modules	50	
Showerheads	Lifetime	
Toilets/Bidets	Lifetime	The components inside toilet tank and valves that operate bidet will require occasional maintenance.
Whirlpool Tubs	20-50	Lifespan of the rotating engine depends on the use made of the tub.
Sinks: Kitchen & others		
Enamel Steel	5-10	
Modified Acrylic	50	
Soapstone	100+	
Source: Delta Faucet Co., Grohe, Kohler Co., Moen, Plexicor (part of Karran), Toto USA, Acquinox, Alumax, Alsons, Karran, Green Mountain Soapstone Corp., Saunastore		

Table 1: Life Expectancy of Different Products/Items/Materials in the Home

	Life in Years	Comments
10. FLOORING		
All Wooden Floors	Lifetime	
Bamboo	Lifetime	
Brick Pavers	100+	
Carpet	8-10	
Concrete	50+	
Engineered Wood	50+	
Exotic Wood	Lifetime	
Granite	100+	
Laminate	15-25	
Linoleum	25	
Marble	100+	
Slate	100	
Tile	75-100	
Vinyl	50	
Other Domestic Wood	Lifetime	
Terrazo	75+	
Source:Marble Institute of America, Berg & Berg, Dal-Tile Corp, Floortec, National Wood Flooring Association, General Shale Brick, Masland Carpets, Beaulieu of America, Concrete Designs, Formica Corp, Linoleumstore.com, DePaoli Mosaic, Monarch Ceramic Tile		
11. FOOTINGS & FOUNDATIONS		
Poured Footings and Foundations	Lifetime	
Concrete Block	Lifetime	Properly built foundations last indefinitely.
Termite Proofing	12	"Pre-treatment during construction: longevity of treatment depends on disturbance or not of the chemical barriers in place."
Bituminous Coating Waterproofing	10	If it cracks, it is immediately damaged.
Pargeting with Ionite	20-30	It's not typical in a residential setting. Its downfall is when it cracks.
Baseboard System	50	
<u>Plumbing</u>		
Concrete Waste Pipe	100	
Cast Iron Waste Pipe	100	
Source: Dry Up Basement, Unexco, Cast Iron Soil Pipe Institute, American Concrete Pipe Association, National Ready Mixed Concrete Assoc, Quikrete		
12. FRAMING &OTHER STRUCTURAL SYSTEMS		
Poured-Concrete Systems	Lifetime	
Structural Insulated Panels	Lifetime	
Timber Frame Homes	Lifetime	
Source: ConForm Pacific, NGS Materials, Post & Beam Factory		

Table 1: Life Expectancy of Different Products/Items/Materials in the Home

	Life in Years	Comments
13. GARAGES		
Garage Door Openers	10-15	
Light Inserts	20	
Source: Wayne-Dalton Corp.		
14. HOME TECHNOLOGY		
Audio, Built-in	20	
Heat/Smoke Detectors	<10	National Fire Alarm Code requires that detectors be replaced every 10 years.
Home Automation Systems	Lifetime	
Home Networks, Wireless	50+	
Security Systems	5-10	
Source: LiteTouchHome Director, ADT and Slomin's Home Security, Home Director, Home Seer		
15. HVAC		
Air Conditioners	10-15	
Air Quality Systems	15	
Boilers	13-21	
Dehumidifiers	8	
Ducting	10	
Furnaces	15-20	
Heat Pumps	16	
Heat Recovery Ventilators	20+	
Thermostats	35	
Ventilators	7	
Water Heaters, Tankless	20+	
Electric Radiant Heater	40	
Hot Water or Steam Radiant Heater	15+	
Diffusers, Grilles, and Registers	25	
Induction and Fan-Coil Units	10-15	
Dampers	20+	
DX, Water, or Steam	20	
Electric	15	
Shell-and-Tube	20	
Molded Insulation	Lifetime	Not usually used residentially.
Burners	<10	Oil burners need more maintenance and don't last as long as gas burners.
Source: CenterPoint Energy and Trane Residential system Group, Smarter Way Inc., CenterPoint Energy, Air Quality Engineering, CenterPoint Energy and Luxaire Unitary Products Group, Association of Home Appliance Manufacturers, American Society of Heating, Refrigerating and Air-Conditioning Engineers, Econar, Lomanco, Honeywell, American Society of Heating, Refrigerating and Air-Conditioning Engineers, EWC Controls, Fantech, No. American Insulation Manufacturers Assoc.US Dept. of Energy, Radiant Electric Heat, Radiantec, Radiantec, American Society of Heating, Refrigerating and Air-Conditioning Engineers, Power Flame Inc., Appliance Magazine		

Table 1: Life Expectancy of Different Products/Items/Materials in the Home

	Life in Years	Comments
16. INSULATION & INFILTRATION BARRIERS		
Insulation Material		
Cellulose	100+	
Fiberglass	Lifetime	
Foam	Lifetime	
Insulation Type		
Batts/Rolls	Lifetime	
House Wrap	Lifetime	
Loose Fill	Lifetime	
Source: DuPont, National Fiber, Johns Manville, RHH Foam Systems, No. American Insulation Manufacturer Association		
17. JOBSITE EQUIPMENT		
Ladders	Lifetime	
Lifts	8-10	
Source: Putnam Rolling Ladder Co., Genie Industries		
18. MOLDING & MILLWORK		
Custom Millwork	Lifetime	
Stair Parts	Lifetime	
Stairs, Circular & Spiral	Lifetime	
Stairs, Prebuilt	Lifetime	
Stairs, Attic	Lifetime	
Source: York Spiral StairAzek, Authentic Pine Floors, Century Architectural Specialties, StairWorld, National Hardwood Flooring & Moulding		
19. PAINTS, CAULKS, & ADHESIVES		
Adhesives		
Roofing	7	
Paints & Stains		
Paint, Exterior	15+	
Paint, Interior	15+	Depends on whether or not it is washable paint.
Source: The Sherwin-Williams Co.,Slate Savers, Tamko Roofing Products, Dutch Boy Paints		

Table 1: Life Expectancy of Different Products/Items/Materials in the Home

	Life in Years	Comments
20. PANELS		
Hardboard	30	
Oriented-Strand Board	25-30	
Particleboard	60	
Plywood	60	
Softwood	30	
Underlayment, Flooring	25	
Wall Panels	Lifetime	
Source: Georgia Pacific Corp., NGS Materials, Weyerhaeuser, James Hardie Building Products		
21. ROOFING		
Material		
Aluminium Roof Coating	3-7	
Fiber Cement	25	
Asphalt	20	
Modified Bitumen	20	
Copper	Lifetime	
Simulated Slate	50	
Wood	30	
Clay/Concrete	Lifetime	
Slate	50+	
Coal and Tar	30	
Source: Gardner-Gibson, Maxitile, National Roofing Contractors Association, GAF Material Corp., Asphalt Roofing Manufacturer's Association, Johns Manville, Metal Roof Specialties, Nycore, Authentic roof, 208 Shake&Shingle, The Northern Roof Tile Sales Co., Universal Marble & Granite, Slate Savers, Koppers, Northern Elastomeric, EcoStar, Metals USA, GAF Material Corp.		

Table 1: Life Expectancy of Different Products/Items/Materials in the Home

	Life in Years	Comments
22. SIDING & ACCESSORIES		
<u>Material</u>		
Brick	Lifetime	
Engineered Wood	Lifetime	
Fiber Cement	Lifetime	
Manufactured Stone	Lifetime	
Stone	Lifetime	
Stucco	50-100	
Vinyl	Lifetime	
<u>Related Accessories</u>		
Soffits/Fascias	50	This time period applies for fascia in fiber-cement only.
Trim	25	
<u>Shutters</u>		
Wood/Exterior	20	
Wood/Interior	15+	
Aluminium/Interior	10+	Sun can cause the strings to break.
<u>Gutters and Downspouts</u>		
Copper	50+	
Aluminium	20	
Galvanized Steel	20	
Downspouts (Aluminum)	30	
Downspouts (Copper)	100	
Source: Boral Bricks, APA, GAF Material Corp., James Hardie Building Products, Boulder Creek Stone and Brick, Owens Corning, Genstone Enterprises, El Rey Stucco, Heartland Building Products, Azek, James Hardie Building Products, Blinds.com, Vixen Hill Mfg. Co., Yost Mfg. & Supply, Berger Building Products, Guttersupply.com, (Rain Trade Corp. division)		
23. SITE & LANDSCAPING		
Asphalt Driveway	15-20	
Polyvinyl Fences	Lifetime	
Clay Paving	Lifetime	
Underground PVC Piping	25	
Valves	20	
Sprinklers	20	Usually made obsolete by advances in technology.
Controllers	15	Lifespan given for areas not prone to lighting strikes.
<u>Tennis Court</u>		
Fast-Dry Green	Lifetime	

Table 1: Life Expectancy of Different Products/Items/Materials in the Home

	Life in Years	Comments
23. SITE & LANDSCAPING (Continued)		
Asphalt with Acrylic Coating	12-15	Age before requiring major work. Requires recoating every 5-7 years.
Asphalt with Acrylic Cushion Coating	12-15	Age before requiring major work. Requires recoating every 5-7 years.
American Red Clay	Lifetime	
Fast-Dry with Subsurface Irrigation Red or Green	Lifetime	Maintenance: average 10 minutes a day per court.
Swimming pool		
General	Lifetime	
Concrete Shell	25+	
Interior Finish/Plaster	10-15	
Interior Finish/Pebble-tec	25-35	
Interior Finish/Tile	15-25	
Cleaning Equipment	7-10	
Decking	15	
Waterline Tile	10	
Source: Paddock Pools, Patios & Spas, Boral Bricks, Accurate Tennis, Aquatic Technology, Huyser, Digger Specialties, Inc., Aquatech Pools - Society of Professional Builders, Inyo Pool Products, Omega Pool Structures, Inc.		
24. WALLS, CEILINGS, & FINISHES		
Accoustical Ceiling	Lifetime	Moisture or movement can affect lifespan.
Ceiling Suspension	Lifetime	
Ceramic Tile	Lifetime	
Standard Gypsum	Lifetime	
Source: Interceramicusa, United States Gypsum Co., Messmers Inc., DAP		
25. WINDOWS, SKYLIGHTS, & GLASS		
Glass & Glazing Materials		
Window Glazing	10+	
Windows		
Aluminum/Aluminus Clad	15-20	
Wood	30+	Some parts of the window may have to be replaced, so lifespan may vary.
Source: Polygal, Gallina USA, LLC, Allied Window		

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