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Residential Electrical Wiring Types

Wiring type	Concerns
To 1950	
<p>“Knob and tube” wiring</p> <ul style="list-style-type: none"> • Two separate conductors held in place by ceramic knobs. 	<p>No ground protection.</p> <ul style="list-style-type: none"> • 2-prong receptacles swapped for 3-prong. <p>Limited number of receptacles for today’s demand.</p> <p>As a result, commonly found:</p> <ul style="list-style-type: none"> • Dangerous “handyman add-on” circuits. <p>Insulation deterioration</p> <ul style="list-style-type: none"> • Due to overloading of circuits and over heating of conductors.
1950 – 1962	
<p>Ungrounded twin-conductor cable (called “NMD-1”, for “Non-Metallic sheathed cable for Dry locations”)</p> <ul style="list-style-type: none"> • New method of wiring introduced. Contained the two conductors in one jacket. • NMD-1 contained no ground wire (Ground wire was not required in code until 1962). • Replaced K& T wiring, due to ease of installation • Often incorrectly identified as “modern grounded cable”. 	<p>Had the same concerns as that of knob-tube:</p> <p>No ground protection</p> <p>Limited number of receptacles</p> <p>Insulation deterioration</p>
1962 to 1984	
<p>NMD 3 & 6</p> <ul style="list-style-type: none"> • The predominant cables used during this period. • The insulation temperature ratings of these cables are 60° C and 75° C respectively. • Worked fine for most circuits, but not for recessed ceiling lighting. 	<p>Fires from Recessed Lighting</p> <p>In the 1970s and 1980s recessed lighting became popular. However a number of fires resulted from these fixtures due to inability of conductors to handle the heat. Electrical code now requires that all conductors feeding ceiling lighting boxes have rating of 90° C.</p>
1984 to present	
<p>Modern cable (NMD 7 & NMD-90)</p> <ul style="list-style-type: none"> • Modern house wire. Jacket of PVC. • Approved for use with ceiling fixtures. • Rated at 90° C. 	<p>Inappropriate application</p> <p>Designed for use indoor dry locations, and away from the weather. Not for underground.</p>
1965 – 1974	
<p>Aluminum wiring (Al)</p> <ul style="list-style-type: none"> • Installed in the vast majority of houses during period coinciding with Vietnam War. An inexpensive solution to escalated price of copper. • Can be extremely dangerous if not checked and maintained regularly by a licensed electrical contractor. • NFPA reports homes wired with Al, over 50 times more likely to lead to structure fires than copperwired homes. 	<p>Connections become lose over time, leading to fire.</p> <ul style="list-style-type: none"> • <i>Mechanical process:</i> • Due to the unequal expansion and contraction rate of two different metals. • <i>Chemical process:</i> “Oxidation”, Aluminum oxide, is an insulator, and is formed at the connection. This further decreases the quality of the connection, creating additional heat.
1984 to present	
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