

LED's for your Model Railroad

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Palmetto Division Meeting

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LED's for your Model Railroad

Objective:

- .Principal of an LED
- .Understanding of electrical resistance
- .Guidelines for applying LED's
- .Types of LED's available

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Principal of an LED:

https://www.youtube.com/watch?v=Yo6JI_bzUzo

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Principal of an LED:

https://www.youtube.com/watch?v=Yo6JI_bzUzo

.Goal is to not let the smoke out!

.In 1962, Nick Holonyak, Jr. (the “Father of the Light-Emitting Diode”) invented the first LED that produced visible, red light while working at General Electric

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Resistance:

<https://www.youtube.com/watch?v=NfcgA1axPLo>

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Recommendations:

•Use either a 9 volt battery or a 12 volt DC power supply for powering your LED's.



A screenshot of an Amazon product page for a 12V 2A Power Supply AC Adapter. The page shows two black power supply units with cables, and two green barrel connectors. The product title is "12V 2A Power Supply AC Adapter, AC 100-240V to DC 12 Volt Transformers, 2.1mm X 5.5mm Wall Plug (12 Volt - 2amp) - 2pack". The price is \$12.99 (\$6.50 / Count), with a 28% discount from a list price of \$17.99. The page also shows a "prime One-Day" badge, "FREE Returns", and "FREE delivery Tomorrow, February 22". The seller is "SmoTecQ" and the product is "In Stock". The page includes an "Add to Cart" button and a "Buy Now" button. The browser's address bar shows the Amazon URL, and the taskbar at the bottom shows the Windows search bar and system tray.

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Recommendations:

- For resistors use only 1000 ohm or larger resistors with a $\frac{1}{4}$ watt power rating in series with the LED.
- In electronics, abbreviations are used:
 - K comes from the Greek word kilo which means a thousand. Thus a 1000 ohm resistor is the same as a 1K resistor.
 - The Greeks would likewise show million as M, short for Mega.

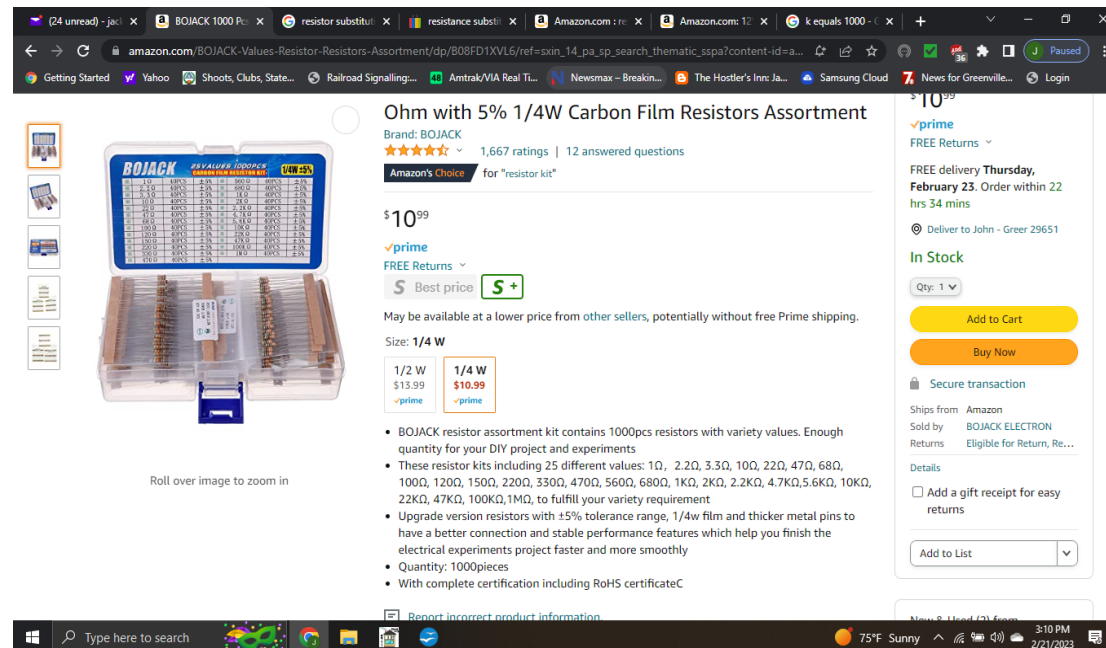
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Reasons for the recommendations:

- Using a 9 or 12 volt dc power supply with a 1000 ohm series resistor insures the LED will never pass more than .01 amperes (or 10 milliamps). This is a safe current for virtually any LED!
- Modern LED's have become very efficient and for model railroading purposes you will normally use a series resistance higher than 1000 ohms.
- Some LED assemblies require 12 volts dc.

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An assortment of resistors is handy for determining the resistance needed for an application . Put all the resistors less than 1000 ohms in a separate location! (Maybe in the trash!)



The screenshot shows an Amazon product page for a BOJACK resistor assortment kit. The product is titled "Ohm with 5% 1/4W Carbon Film Resistors Assortment" and is priced at \$10.99. The kit contains 1000 pieces of resistors with 25 different values ranging from 1Ω to 100kΩ. The product is in stock and offers free delivery by Thursday, February 23. The page includes a detailed description of the kit's contents and benefits, such as its 45% tolerance range and RoHS certification.

Ohm with 5% 1/4W Carbon Film Resistors Assortment
Brand: BOJACK
★ ★ ★ ★ ★ 1,667 ratings | 12 answered questions
Amazon's Choice for "resistor kit"

\$10⁹⁹
✓prime
FREE Returns
S Best price S+

May be available at a lower price from other sellers, potentially without free Prime shipping.

Size: 1/4 W

1/2 W	1/4 W
\$13.99	\$10.99
✓prime	✓prime

- BOJACK resistor assortment kit contains 1000pcs resistors with variety values. Enough quantity for your DIY project and experiments
- These resistor kits including 25 different values: 1Ω, 2.2Ω, 3.3Ω, 10Ω, 22Ω, 47Ω, 68Ω, 100Ω, 120Ω, 150Ω, 220Ω, 330Ω, 470Ω, 560Ω, 680Ω, 1KΩ, 2KΩ, 2.2KΩ, 4.7KΩ, 5.6KΩ, 10KΩ, 22KΩ, 47KΩ, 100KΩ, 1MΩ, to fulfill your variety requirement
- Upgrade version resistors with 45% tolerance range, 1/4w film and thicker metal pins to have a better connection and stable performance features which help you finish the electrical experiments project faster and more smoothly
- Quantity: 1000pieces
- With complete certification including RoHS certificate

Report incorrect product information

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Recommendations:

- Purchase warm white prewired 0402 LED's.
 - 04 equals .040 inches
 - 02 equals .020 inches
- Use tints to color the LED's as needed.
- Purchased LED colors are never the same and we don't want all the LED's on our railroad to look the same.

LED's for your Model Railroad

amazon.com/EDGELEC-Emitting-Length-Soldered-Prewired/dp/B07DLCLQWR/ref=sr_1_3?crd=10MZ0IKBBD00R&keywords=0...

Unit: mm

EDGELEC 20pcs 0402 0603 0805 1206 Pre Wired SMD LED Light Emitting Diode Micro Litz Length 7.8in. Soldered White Red Green Yellow Blue Orange Pink UV (20pcs DC 3V 0402 Warm White Prewired Mini Lights)

Visit the EDGELEC Store

★★★★★ 535 ratings

Amazon's Choice for "0402 led warm white"

\$8.99 (\$0.45 / Count)

prime FREE Returns

Color: [2] Warm White

Style: 0402 Prewired

0402 Prewired 0603 Prewired 0805 Prewired 1206 Prewired 0402 Prewired1

\$8.99 (\$0.45 / Count)

prime FREE Returns

FREE delivery Thursday, February 23. Order within 8 hrs 41 mins

Deliver to John - Greer 29651

In Stock

Qty: 1

Add to Cart Buy Now

Secure transaction

Ships from Amazon Sold by EDGELEC Returns Eligible for Return, Re...

Details

Add a gift receipt for easy returns

Add to List

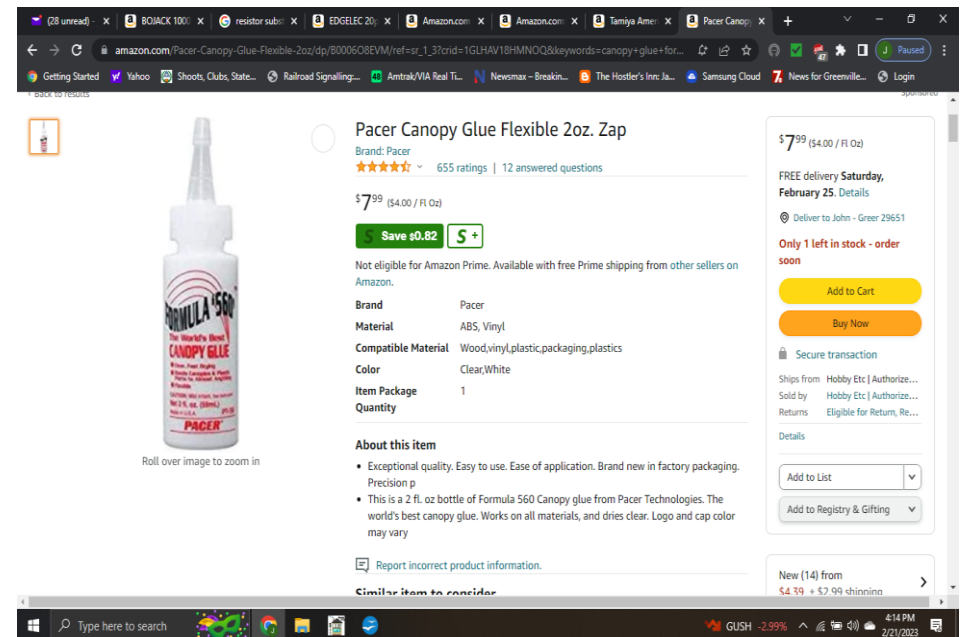
Type here to search BOIL -13.69% 3:19 PM 2/21/2023

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.LED colors:

-Tamiya Clear color paint

-Canopy glue



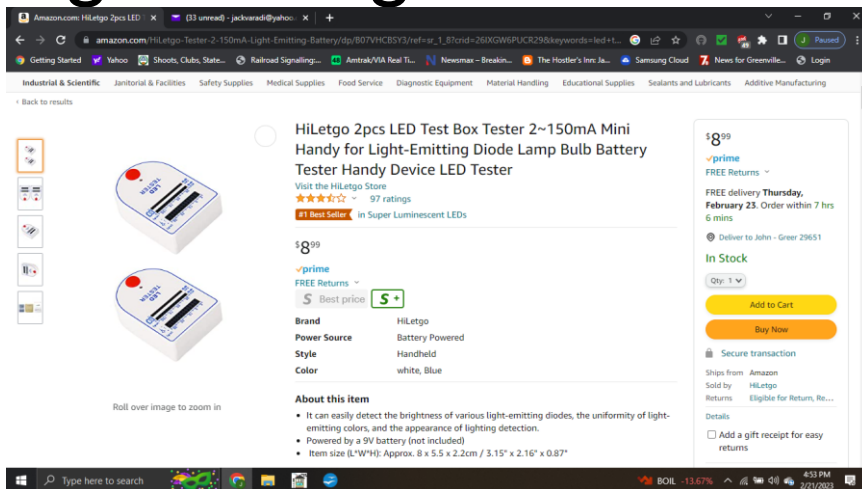
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•Optional accessories:

-LED Tester

•Generic

•Ngineering



LED's for your Model Railroad

- Types of LED's

LED's for your Model Railroad

- Questions?

- Links for products