



Silicone LED Flex Neon

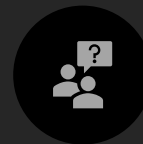


Properties of Silicone



Manufacturing process

Silicone = Thermoset
PVC = Thermoplastic



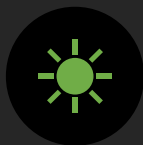
Offers many advantages over other materials



Improved operating and installation temperatures compared to PVC and others



Better UV-Resistant Performance, limited Discoloration Over 5 Years



Better UV-Resistant Performance, limited Discoloration Over 5+ Years



Flame, Solvent and Saltwater Resistant



Development History

2014

Market Research and
Development

2015

Sourcing Reliable Supplier of
Silicone Extrusion Machines

2016

Customized a Silicone Extrusion
Machine and an Injection Mold
Machine

Implement and test all the
equipment for silicone flex neon
production

2017

Open Mold and Trial Production
Samples Available

2018

Applying CE and UL Certificate

Advantages of Silicone Neon Flex

Matt-looking and
Self-cleaning
Light Surface

Extra Cooper
Belt Attached
with PCB Circuit
Board

Seamless
Injection
Connector

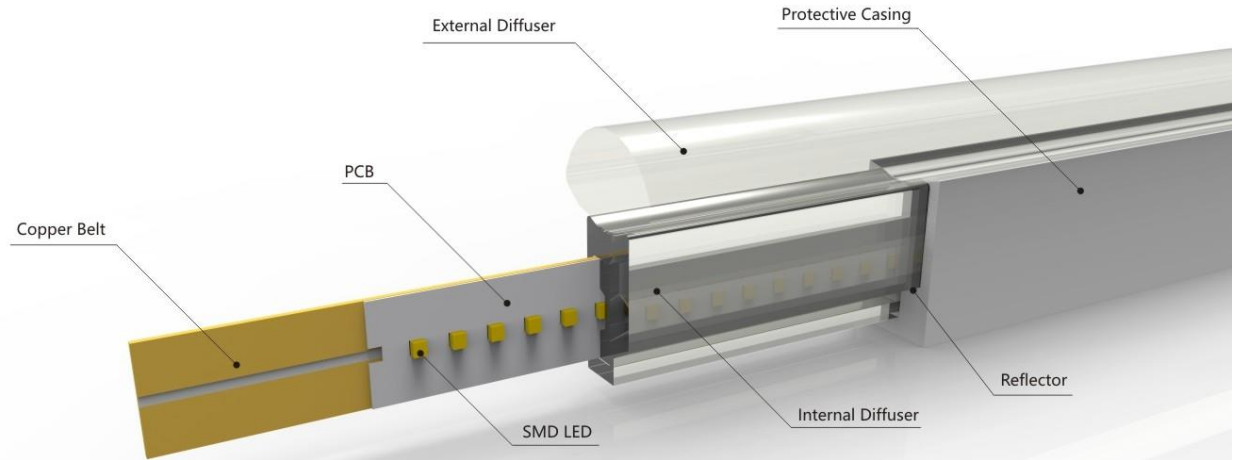
5 Year Warranty

Operating
Temperature
from -40C to
55C

Compatible with
Existing
Connectors



Internal Structure



Patent Design: Tinned Copper Belt (note – not actual SMD displayed)

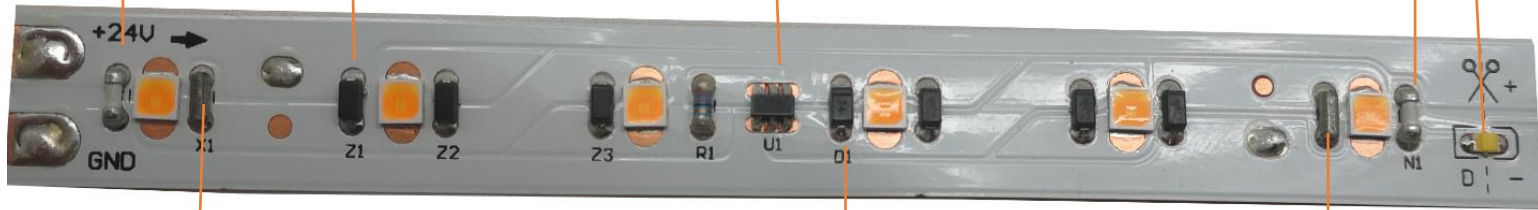
Cylinder Shaped Resistor

Electrical Protective Diode

Constant Current IC

Cylinder Shaped Resistor

Polarity Reverse LED



GLLS S 160 STATIC PCB

Copper Cylinder

Polarity Reverse Protective Diode

Copper Cylinder

PCB Circuit Design





Tinned Copper Belt Advantages



Physically Stronger
and More Robust



Electrical
Functionally as
Main Cable



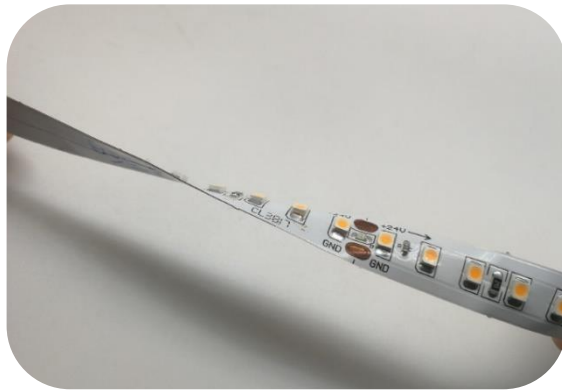
Better Heat
Dissipation



Better Conductivity
and Less Voltage
Drop



GLLS – S 160 Static



Company A



Company C

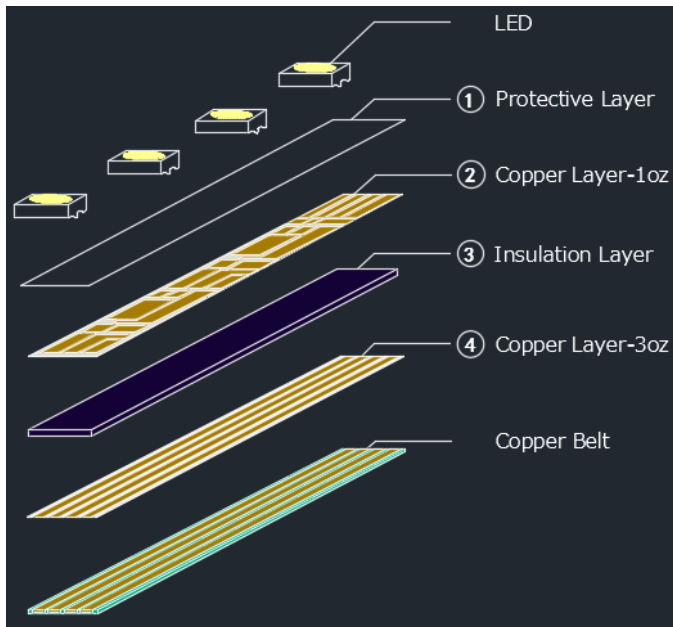


PCB Circuit Design





PCB Structure



Company	PCB Thickness	PCB Width
Chinese Company A	1oz+2oz	12mm
Chinese Company B	1oz+2oz	12mm
Chinese Company C	1oz+3oz	12mm
Chinese Company D	1+2.5oz	10mm
German Company E	1+3oz	8mm
GLSS S 160 - Static	1oz+3oz 8oz (Copper Belt)	12mm

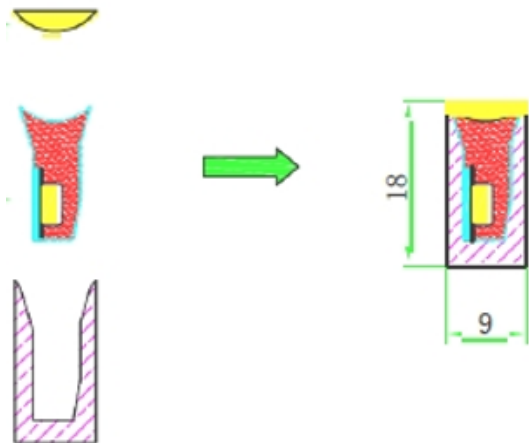
*Copper Belt only available for silicone LED Neon



GLLS Manufacturing vs Competition

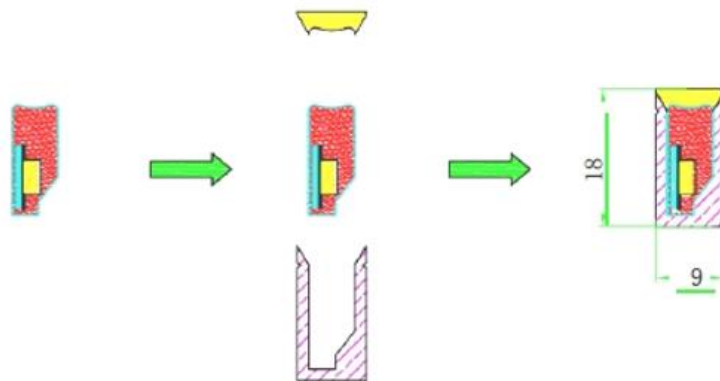
GLLS – Silicone Neon Flex Manufacturing Process

1-Step Extrusion = More Robust and Uniform



Competing Manufacturers Process

3+ Extrusion Process = More Gaps and Potential Failures





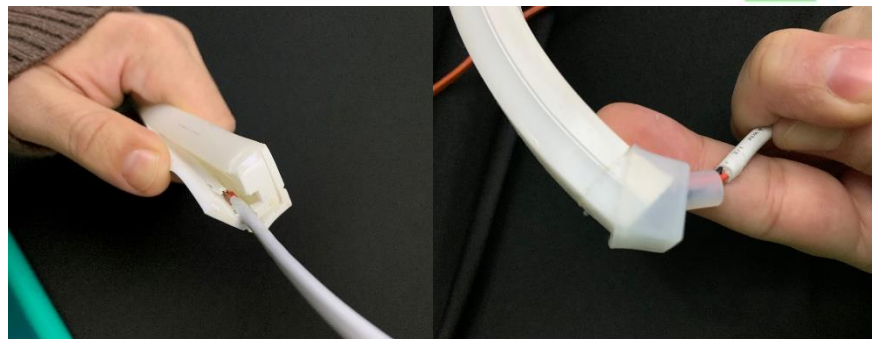
GLLS Manufacturing vs Competition

GLLS Silicone Vulcanization Process



Ensures Physical Durability of the Silicone

Competing PU Resin Plotting Manufacturing Process



Very weak and limited binding

ShinEtsu



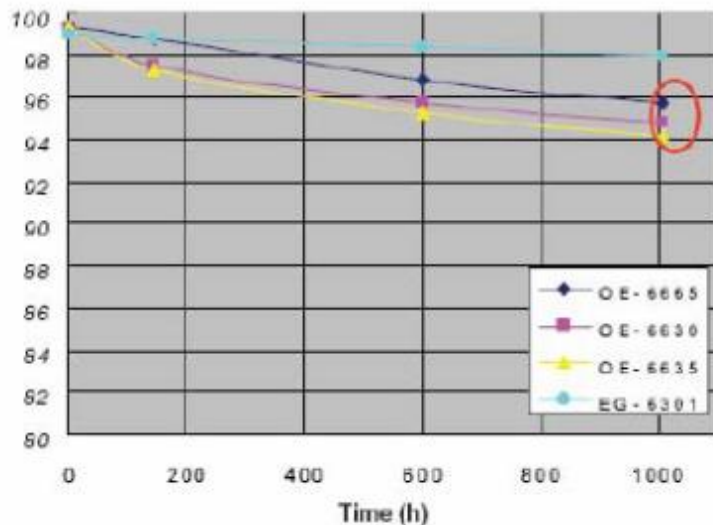
EPISTAR LED
CHIP

Industry-leading
Raw Materials





Transmittance (after thermal aging)

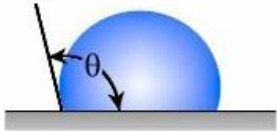


Less than
5% decrease
at 150°C for
1,000h

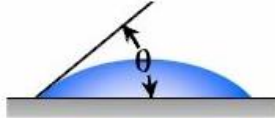
Thickness = 1 mm, Transmittance = 400 nm
Sample aging condition = 150°C, Air

Matt-looking and Self-cleaning Light Surface

Hydrophobic Surface



Hydrophilic Surface



high
poor
poor
low

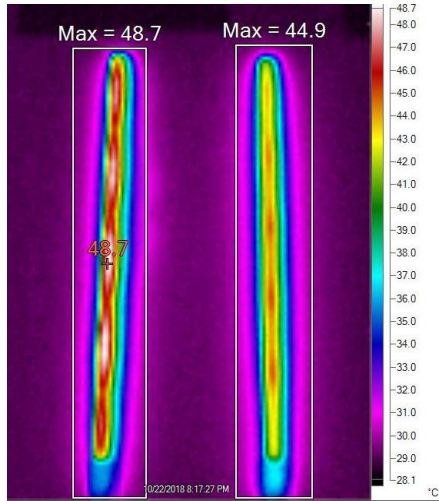
contact angle
adhesiveness
wettability
solid surface free
energy

low
good
good
high

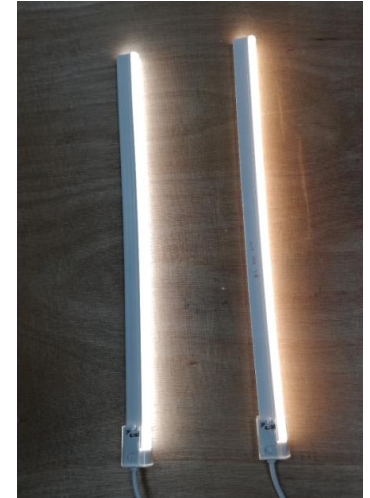


Testing Conditions:

0.5m Length of S 160 – Static energized for 5 Hours at 25C degree ambient temperature



	PVC S 160 WITHOUT Copper Belt	Silicone S 160 WITH Copper Belt
Maximum Temperature	48.7°C	44.9°C



Improved Heat Dissipation



Tensile Strength Test

Testing Conditions:
0.5m of powered LED Neon - stretched until PCB fractured

Item	Material	Maximum Tensile Force
S160 - Static	PVC	67.4 kg.f
S160 - Static	Silicone (Copper Belt)	79.06 kg.f
Company A	PVC	52.16 kg.f
Company B	PVC	65.22 kg.f
Company C	Silicone	40.72 kg.f
Company D	PU	20.8 kg.f
Company E	PU	Cracked before testing

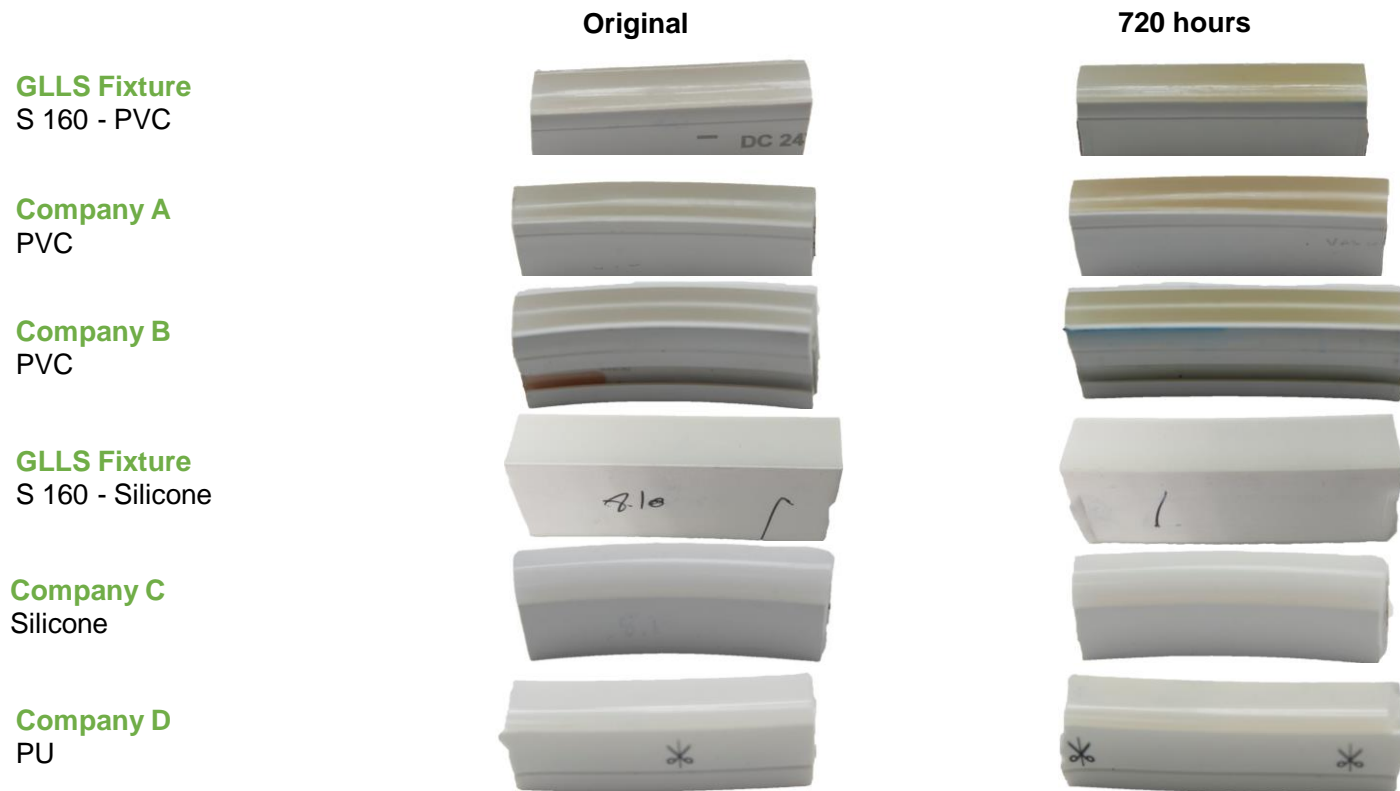


Better Conductivity and Less Voltage Drop

Item	Material	Maximum Continuous Length	Voltage at end of Maximum Length (0.3m cable)
S160 Static - White	PVC	10m	22.7V (10m)
S160 Static – White	Silicone (Copper Belt)	15m	22.9V (15m)
S160 Static – RGB	PVC	7m (Injection-moulded Connector)	22.6V (7m)
		10m (Assembly Connector)	21.6V (10m)
S160 Static – RGB	Silicone (Copper Belt)	10m (Injection-moulded Connector)	22.8V (10m)
		15m (Assembly Connector)	22.1V (15m)
S160 Static – RGBW	PVC	5m	22.8V (5m)
S160 Static – RGBW	Silicone (Copper Belt)	8m	23.2V (8m)



UV Accelerated Test Performance



Testing Conditions: @ 340nm & 55°C for 30 days

Constant High Temperature Test Performance

Testing Condition:
Constant Temperature 70°C for 30 days

	Original	720 hours
GLLS Fixture S 160 - PVC		
Company A PVC		
Company B PVC		
GLLS Fixture S 160 - Silicone		
Company C Silicone		
Company D PU		
Company E PU		

Summary



Best Neon Flex product on the Market



On Site and Remote Support available via GLLS



Improved operating and installation temperatures



Self-cleaning and minimal maintenance



Improved UV-Resistant Performance, limited Discoloration Over 5 Years



Flame, Solvent and Saltwater Resistant





THANKS!

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