



Decorative Series Lamps

Think of Buying Them?
Look for Safety and Savings

As you approach the *vivah mandap*, you see the horizons aglow with rows and rows of tiny lamps, blinking at you. You look at the riot of colours, red, blue, green, yellow... You gaze at the little, blinking stars. You wonder, why not go for them for home decor?



If you are serious, we have some important facts and figures to share with you. We just tested them at our in-house electrical laboratory. The first finding: none of the series lamp purchased by us has a brand name. These are sold as different varieties like: LED series, Rice lights, Rope lights

(also known as Drum lights), Neon series, Net lights, etc. tested by us and are all made in China except the local Bulb series. Besides such findings, know how much electricity these series lamps consume and how much they will add to your energy bill.

We tested these decorative series lamps, popularly known as 'series' for their performance. The tests included physical verification of the series, dimensions, power consumption, energy cost and their working efficiency. The safety of these series during operation was also tested.

Safety Concern

It was startling to find that none of the samples in the China made series was provided with plug-pins which can directly match the standard sockets fitted in Indian

households. These plug-pins also did not meet the Standards laid down by the BIS. Only the locally assembled series met the Standards with regard to the diameter of the pins.

This poses high safety risks to the consumers. During festive occasions when the series are generally used, children may come in contact with the loose plug-pins and may be electrified or even electrocuted.

Loose pins may lead to heating of the plug causing fire or short-circuit. The series may also get damaged permanently. Hence there is a need for serious quality check before importing them.

Physical Verification

This test revealed that some of the series of decorative lamps do not

have the number of lamps as mentioned on their carton. Net light had only 140 lamps as against 160 (mentioned on the carton).

The plug-pins provided with the series did not meet the Standards. Only the locally assembled variety did. This posed a serious question : who regulates the manufacture of decorative lamp series in India? What



are the safety measures taken by them?

Surprisingly, our market survey revealed that lamp series popular in India are imported from countries like China. They did not carry the names and addresses of the manufacturers or importers on the packets purchased by us. The Neon series did not even have a specially made carton. They were available in sealed plastic packs. The Bulb series

Key findings

- * There was no uniformity in the number of lamps in different samples of the Neon series, also the number of lamps didn't match the claim/information on the carton.
- * Additional lamps for replacements, even if mentioned on the carton, were not provided with the series, except the Neon and the Net series.
- * The plugs of Chinese series samples were of poor quality. The two pins of the plugs were found to be of uneven lengths, and their diameter were less than the standard, causing difficulty in plugging and finally loose contact. This may cause heating and fire.
- * None of the lamp series was "zero-watt series" (a common belief). All the lamp series consume a considerable amount of power thus adding to your energy bill.
- * LED series consumed the least power (12.16W at 220 Volts and 13.44W at 230 Volts in 'continuous ON' mode), while locally made Bulb series (10 bulbs) were

found to consume maximum power (127.26 W at 230 Volts in 'continuous ON' mode).

- * Power consumed by Net lights with 140 lamps (84.53W) at 230V in 'continuous ON' mode was more than that of ceiling fans normally used in homes at full speed.
- * Energy costs were less (approximately half) in combination mode than in continuous ON mode for all series.
- * Among all the 5 series of Chinese origin, LED series was the costliest to purchase (Rs. 250/- for series with 100 LEDs), and Rice light series the cheapest (Rs. 65/- for series with 100 lamps). Locally made bulb series comprising 10 bulbs cost Rs. 160/-.
- * The energy cost for a LED series was the lowest among all the six varieties tested. Hence it is profitable to use LED series. Though the purchasing cost is high, it can be recovered (paid back) within 2 months (approx.), even if one is using a Rice light series which is the cheapest to purchase.
- * Considering both the purchasing and the

energy cost, LED series the better one. The pay-back period is 1 month 11 days in the case of a switch-over from Net series to a LED series, 2 months 8 days in the case of Rice lights to LED series. So for the rest of the life of LED series one can save a lot on the energy bills.

- * When the samples were subjected to 168 hours burning test in continuous ON mode, all the bulbs/lamps of Rice lights, LED series, Rope lights and Decorative Bulb series worked satisfactorily. One lamp of the Neon series (out of 80) stopped working at 161 hrs. while two lamps of the Net series (out of 140) stopped working at 161 hrs. In 'combination' mode all lamps of all series worked satisfactorily for 168 hrs except one lamp of Neon series that stopped working at 22 hours.
- * The length of different varieties of Chinese series lights purchased by us varied in a range of 4.0 metres to 8.0 metres. Rope lights had the least length (4.0 to 4.15 m) while Neon series were the longest (7.7 to 8.0 m). Locally made Decorative Bulb series with 10 bulbs purchased through order by us were 2.2 to 2.9 metres long.

Standards

Since there are no standards available for these products in India, we conducted the tests to inform the consumers about these products, with a focus on energy consumed by different varieties.

The diameter of 2-pin plugs used in these series lights were checked as per Indian Standard, IS:1293:2005 for 3-pin plugs, which is also applicable to 2-pin plugs.

As per the Standards, the diameter of the pins in the 2-pin plugs should be ideally 5.08mm. A deviation of +0.025mm to -0.050 mm is allowed.

Result : Decorative Series Lamps

Variety of Series	PRICE ^X (in Rs)	At 220 V				At 230 V				Plug-pin diameter [@] (in mm)
		Energy Consumed [§] in (Wh) A	Energy Cost ⁺ (in Rs.) A	Energy Consumed [§] in (Wh) B	Energy Cost ⁺ (in Rs.) B	Energy Consumed [§] in (Wh) A	Energy Cost ⁺ (in Rs.) A	Energy Consumed [§] in (Wh) B	Energy Cost ⁺ (in Rs.) B	
LED	250.00	12.22	35.19	5.65	16.27	13.47	38.79	6.02	17.34	3.90 to 4.01
Neon	94.00	35.30	101.66	14.21#	40.92	37.26	107.31	9.66#	27.82	3.75 to 3.93
Rope*	207.00	41.34	119.06	19.11	55.04	44.28	127.53	20.24	58.29	3.94 to 4.02
Rice	65.00	41.68	120.04	18.60	53.57	44.23	127.38	19.90	57.31	3.73 to 3.80
Net	64.00	57.30	165.02	26.61	76.64	60.89	175.36	27.54	79.31	3.73 to 3.81
Decorative [^] Bulb	1600.00	NA1	-	NA2	-	1273.80	3668.54	NA2	-	5.06 to 5.10

§ In terms of both energy consumed and energy cost, obviously the less, the better.

* Rope Light series are also known as Drum light series as these are sometimes available wound around the look-alike of a drum.

^ Decorative Bulb series are actually of Indian make but they are not readily available and need to be assembled.

+ Monthly Energy Cost has been calculated considering tariff of Rs.4 / unit for 100 lamps in the series, if used for 24 hours.

In Neon series 'combination' mode was not available. The Watt-hour consumption was based on the 'ON-OFF (twinkle)' mode available in the series.

NA1 As normal supply in India is 230V Energy consumption test for the Decorative Bulb series assembled in India was done only at 230V.

NA2 'Combination' mode operation was not possible in these series.

X As the series were available with different numbers of Lamps 80,90,100,140 etc., for comparison, the price stated is of 100 lamps in a series and have been rounded-off to the nearest rupee

@ Minimum value of the plug-pin diameter among the samples tested.

As per IS:1293, diameter of 2 pin-plug should be 5.08 mm. A deviation of +0.025 mm and - 0.050 mm is allowed

are generally assembled by dealers and are not supplied with cartons. Samples of Rope lights too, purchased by us, did not have cartons.

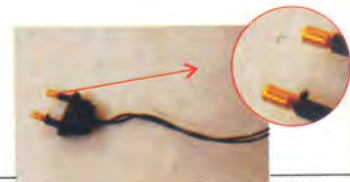
We observed that the information about number of lamps/bulbs, replacement of bulbs, etc. on the product cartons did not match the product packed inside. The packs of LED series and Rice Light series mentioned the directions for use and the method of replacing the lamps in the series. But replacement was not possible in either of the series.

The Packaged Commodity (Amendment) Rules that mandate the mention of manufacturing date, lot number, names and addresses of the manufacturers were found grossly violated.

Diameters of Plug-Pins

The diameters of plug-pins used in the series lights were checked as per the applicable Standards. The diameter of the pins should ideally be 5.08mm. Allowing deviation as per the Standards, the diameters of pins should be between 5.03mm and

5.105mm. On physical verification, it was observed that none of the Chinese series conformed to the Standards. The diameter of the pins in all the Chinese series was less. The least diameter range was found in Rice lights (3.73mm to 3.80mm). The diameter of the plug-pins in the locally assembled Bulb series was found to meet the Standards (5.06mm to 5.10mm).



KEY

- The least energy consumption
- A = In 'Continuous ON' Mode
- B = In 'Combination' Mode
- Wh = Watt-hour



Our readers are used to finding the Best Buys from the brands tested by us. Since there are no branded series lamps in the market it has not been rated and ranked. So, no best buys this time.

So, if you eventually do purchase a series of lamps for decoration, remember to bargain on the cost and verify the safety of the plugs. Do consider the energy cost also as a vital parameter.

Before the test

We conducted a market survey for the brands to be tested. The various series lamps available in the market are either of the Chinese origin, or are locally assembled and are marketed without any brand name.

We decided to test these varieties to know about the safety in their use and their individual energy cost. Six varieties were purchased by us from the market.

Price

There was no uniformity in the price of the series.

The price of the series, the number of bulbs in each series and the modes of operation varied according to the area or region of purchase, dealers and the bargaining capacity of the consumers. The sellers of Chinese brands hesitated to give cash memos or bills for the purchase with the name of Chinese series on them. No guarantee/warranty cards were provided and after purchase, neither replacement nor refund is provided for if the series malfunctions. Repairs are also not possible in most cases.

Energy Consumption

The voltage marked on the cartons of Chinese series was 220V. Hence we tested these at 220V. As the supply voltage in India is 230V, we also tested them at 230V. The energy consumption test for Neon series was carried out in 'continuous ON' and 'ON/OFF (twinkle)' modes at 220V and 230V. Locally assembled Bulb series was tested only for 'continuous ON' mode at 230V. Other four varieties were tested for 'continuous ON' and 'combination' modes both at 220V and 230V.

The energy consumption of LED series was found to be the least.

Energy Cost

For easy and quick comparison, the energy cost for each variety of series with an equal number of bulbs (100) in each sample was calculated.

At 220V, the energy cost in the 'continuous ON' mode was the least for LED series (Rs.35.19) and maximum for the Net lights (Rs.165.02). In the 'combination' mode, the pattern was followed. LED lights had the minimum energy cost (Rs.16.27) and Net lights, the maximum (Rs.76.64).

At 230V, the energy cost in the 'continuous ON' mode was the least for LED series (Rs.38.79) and maximum for the decorative Bulb series (Rs.3668.54). In the 'combination' mode, the energy cost per month for LED lights was Rs. 17.34. Net lights cost the maximum energy at Rs.79.31.

Burning Capability

We tested all varieties for a duration of 168 hours.

In 'continuous ON' mode, one lamp out of 80 in Neon series stopped working at 161 hours and two lamps

of Net lights out of 140 stopped working at 161 hours. All lamps of Rice lights, LED series, Rope lights and locally made Bulb series worked satisfactorily for 168 hours.

In the 'combination (twinkle/ON-OFF)' mode, all lamps of all series worked satisfactorily for 168 hours except in Neon series in which one out of 80 stopped working at 22 hours.

Locally assembled decorative lamps were subjected only to the 'continuous ON' mode tests as this series did not have the facility to be used in 'combination' or 'twinkle (ON/OFF)' mode. Neon lights were tested at the 'twinkle (on/off)' mode.

Pay-back Period

A smart consumer would always want the optimum utility of the money spent by him/her. Though the price of the LED series was found to be the maximum (Rs.250) among the China-made varieties, its energy cost per month was found to be the minimum among all the decorative lamp series tested by us. So, we suggest that to save on your electricity bill for series lamps, prefer LED to other varieties. The following table shows the period within which you can recover the additional cost that you will have incurred in purchasing LED or by switching to LED from any other series:

Type of Series (with 100 lamps)	Additional Cost for LED series (in Rs.)	Saving in energy cost (in Rs.)	Pay-back period compared With LED
LED	-	-	-
Neon	156.00	68.52	2 m 8 days
Rope	43.00	88.73	-
Rice	185.00	88.59	2 m 3 days
Net	186.00	136.57	1 m 11 days
D. Bulb	1530.00	3629.75	-

In the case of Rope lights, the pay-back period is not mentioned as the additional amount (Rs.43) spent on switching from Rope Lights (Rs.207) to LED series (Rs.250) is recovered in

Claims* vs. Facts

Net lights

Claim: 160 lamps in series.

Fact: Number of lamps available in the series is 140.

Claim: Replace the bulb.

Fact: Lamps are replaceable and the carton has information with picture to replace the lamps.

Claim: Series has a removable twinkle lamp.

Fact: Twinkle lamp is provided.

Claim: When one lamp eventually goes out, the other remains lighted.

Fact: Other lamps remain lighted even if one lamp goes out.

Claim: Rating provided on the carton is 220 volts.

Fact: In India normally household supply voltage is 230 volts.

Neon Series

Neon lamp series purchased by us were packed in plastic bags.

Claim: (Generally) Neon series are available with 100 lamps.

Fact: The number of lamps in the series purchased by us varies from 76 to 80.

Claim: Rating provided on the packing (plastic bag) is 220 volts.

Fact: In India normally household supply voltage is 230 volts.

LED Series

Claim: This set is equipped with new push-in type lamp, not screw base.

Fact: LEDs used in the series are neither push-in type, nor replaceable.

that month itself through savings on the energy cost (Rs.88.73). The LED series are cheaper than the locally assembled Bulb series (with 100 bulbs) costing Rs.1600, hence no question of pay-back arises.

There can be a tremendous saving in energy costs. By replacing other series with LEDs, you can not only save on energy cost but also contribute to energy saving.

Varieties of Decorative lamp series

LED series LED, considered as the next generation lighting solution is a

light emitting semi-conductor diode having no filament and usually a small area source. In the LED series tested by us 100 LEDs of different colours glow in a variety of 8 combinations which can be selected by the controller switch provided with it.



Claim: Replace the burnt out bulb.

Fact: LEDs are neither replaceable nor push-in type.

Claim: 100 LED lights.

Fact: 100 LEDs are available in the series.

Claim: Shunt device is furnished.

Fact: Shunt device provided in the series which makes the set safe against current overload.

Claim: When one lamp eventually goes out, the other remains lighted.

Fact: If one LED in the series goes, others remain lighted.

Rice lights

Claim: Use spare bulb provided with the package.

Fact: No spare bulb is provided.

Claim: Push-in lamp, Replace the burnt out bulb.

Fact: Bulbs are neither push-in type nor replaceable.

Claim: Long life bulbs, over 10,000 hours.

Fact: The claim is confusing due to decimal point placed after two digits.

Claim: 100 rice lights.

Fact: 100 rice lights are provided in each series.

Claim: 220 -240 V (marked on the carton).

Fact: Generally, Indian households have 230 V supply voltage.

Rope lights and decorative Bulb series (locally made) available to us don't have cartons, hence no claims could be ascertained.

* All the claims mentioned above are as marked or indicated on the carton..

Rice lights These are ultra small multi-coloured bulbs (generally 100) with 8 function motion controller, giving an exiting lighting effect.



Net lights These are small coloured bulbs (generally 140) arranged in such a way that the series looks like a colourful glowing net. A controller switch is provided. All the operations take place one by one in sequence of colour. The bulbs of this series light are replaceable



Neon series A Neon series light comprises of small, gas discharge lamps (generally 80) containing primarily Neon gas at low pressure. Lamps of either same or different colours glow when it is switched on. Generally, it is available only in 'continuous ON' and 'twinkle (ON/OFF) mode. The lamps are replaceable.



Rope lights Also known as Drum lights.



In this lamp series, miniature bulbs (generally 100) are encased in a flexible PVC tubing. Different operations take place on all the coloured lamps simultaneously. Rope lights are versatile, affordable, easy to use and meet almost all decorative lighting purposes.

Decorative Bulb series These are incandescent lamps of various colours connected in a series.



The number of bulbs in each series depends on your need. It works well either on AC or DC power supply making it useful for domestic as well as commercial lighting for decorative and advertising purpose. It works only on 'continuous ON' mode. Generally, the wattage of each bulb ranges from 10 to 14 watts.

Rice lights, LED series, Rope lights and Net lights have 8 modes of operation (burning pattern). Locally made Bulb-series purchased by us operated in 'continuous ON' mode only, while the Neon series can be operated in 'continuous ON' and 'ON/OFF (twinkle)' mode. In the Net lights, all the operations take place one by one in sequence of colour of the lamps.

These series lamps are available in combination of 4 colours - red, green, blue and yellow/white. Except locally made Bulb series, all the series lamps are made in China and have 220 volts rating. The bulbs of the Bulb series have 230 volts rating.

8 modes of operation

* **Continuous ON** All the tiny lamps of all colours glow (stay ON) simultaneously when the series is switched on and keeps on burning in the same way till it is switched off.

* **Combination** Different modes of operation takes place one after



another in a sequence of In-waves, Sequential, Slow-glow, Chasing/flash, Slow-fade and Twinkle/flash.

*** In-waves** Tiny lamps of all colours flash fast for certain time and then flash slow for certain time. It is a combination of fast and slow flash (ON/OFF) operations.

*** Twinkle/flash** In this mode, tiny lamps of two colours glow at a time for two flash operations and then after little interval other two lamps of different colours glow for two flashes.

*** Slow-fade** All tiny lamps in the series glow very slowly from dimming mode to full glow and revert back to OFF position.

*** Slow-glow** Tiny lamps of two colours glow slowly (in progressive mode) and then lights-off slowly and smoothly. After these two colours goes off, other two colours start glowing slowly in the same way.

*** Chasing/Flash** Alternatively, lamps of two colours at a time flashes (ON/OFF operation) frequently in a fast mode.

*** Sequential** Lamps of two colours flash one after other in a group of two colours in a sequences of slow, medium and fast ON/OFF glow.

Safety Tips

* Avoid using a Neon series or a Net light inside your home, especially at lower level. Babies may take

out the tiny twinkling lamps and try to put it in their mouth as the lamps are push-in/ push-out type.

* Check for proper fitting of 'end caps' of the Rope lights, if they are continuously in use for longer period. If used for longer period and also due to wear and tear the caps may become loose and fall down. There may be chances of shock if somebody touches the open end.

* Check for proper fitting of the plug inside the electric socket. If they are loose, they may cause electric shock and fire.

* Replace the burnt out bulbs of the Net lights as they may cause the other bulbs to heat up and melt the reflectors.

How to buy

* Before making the payment count the number of lamps in the series, check for breakage of any lamp, plug, controller, lamp- holder, etc.

* Check the wiring of the series for any cut or breakage.

* Check the plug for any breakage or deformity, look for proper fitting in the socket type available at your home.

* Ask the dealer for a demonstration of the series. Make sure that all the lamps in the series are glowing properly in each mode of operation.

* While buying a Neon series, ask the dealer to provide the series having blinking mode (ON/OFF or twinkle). This consumes less power.

* Always use decorative series lamps in 'combination' mode or 'ON/OFF (twinkle)' mode. This

How We Tested

Physical Verification

First a physical verification of all the samples was carried out to ascertain the number of lamps in each series, the number of lamps broken, lamps not working, the size (diameters) of the plug-pins and the length and type of the wires used in the series.

Modes

The number of operations/modes for which each series can be used was also checked and noted.

Ageing

All the samples were allowed to age by burning them for one hour at 220V and 230V. Decorative Bulb series was aged at 230V (the rated voltage on the bulb).

Samples

Five samples per series were tested for the power (wattage) consumption and the energy consumption at 220V and 230V. Two samples from each series were tested for working efficiency (burning) in 'continuous ON' mode and in the 'combination mode' except for the Neon series which was tested at the 'twinkle mode' instead. The assembled Bulb series where the combination mode was not available was tested only for working efficiency in the 'continuous ON' mode.

Power Consumption

Test for wattage consumption has been conducted at 220V as the voltage marked on the carton of Chinese series was 220V. In India, the supply voltage is generally 230V, the series were tested for wattage consumption at 230V also. Locally assembled Bulb series were tested at 230V (the rated voltage on the bulb).

Energy Consumption

Test for energy consumption was conducted by operating each series for one hour and recording watt-hours (Wh). Monthly energy consumption was calculated on the basis of this recorded watt-hours.

Burning Test

One sample of each series was burnt continuously in the 'continuous ON' mode and another sample of each series was burnt continuously in the 'combination mode', where combination modes were applicable. This test was continued up to 168 hours in both modes to check the working ability of these varieties during festive occasions. 168 hours duration was selected considering the week-long celebration of Christmas. This also takes care of the five-day Deepawali celebrations. We tested all varieties for 168 hours (7 days X 24 hours) in both modes.

not only looks attractive but also saves in terms of energy cost.

* If you can afford, LED series can be a good option since it consumes the least energy. ■