

Comparative Test

Spread The Warmth!

Brands	Rank
Bajaj	1
Powerpack	2
Maharaja	3
Usha	4
Orpat	5
Metro	6
Remson	7
Thermoking	8
Nova	9
Sunflame	10
Kenwood	Not Rated



For the approaching winter, Consumer VOICE decided to conduct a Comparative Test of Heat convectors/ Room Heaters. Room heaters, if maintained well, last for many years. We conducted the test on 11 brands of heat convectors of which 4 heaters are of plastic bodies and good contemporary looks.

"O wind, if Winter comes, can spring be far behind" - P. B. Shelly

In high rise concrete urban spaces keeping warm becomes a problem. Even though electricity has sporadic availability. Consumers turn to the markets for products, to keep away cold nights. During winter chills, there are a number of options available in the market out of which Heat Convectors is a viable and cost effective option. In a heat convector a built-in miniature fan blows out the hot air, installed behind the heating elements.

It is said that "As soon as the spring will follow winter, prosperity and economic growth will follow recession," so while the world suffers the winter chills of a fast approaching

recession, Consumer VOICE helps consumer find solution for the approaching winter.

How we Tested?

Comparative Testing was carried out in an independent and NABL accredited laboratory based on a carefully finalized test program Based on BIS specifications IS: 4283 and IS: 302-2-30:2007 (mandatory for safety). 5 parameters were adopted from Indian Standard under revision which will supersede IS:4283. The test results were shared with their manufacturers.

Heating range of heat Convectors

Room heaters were tested for hot air output at grill and outer areas

around their vicinity. Temperature of hot air was tested, Usha topped in performance followed by Bajaj and Nova. And in terms of rated Input Power, Orpat was the most accurate when operated at the rated input power, followed by Thermoking, Bajaj and Kenwood.

In addition time taken for the heater to attain 90 percent of the temperature rise under stable conditions was also measured. Warming time of Room heater should be low. Brands Orpat, Powerpack and Kenwood performed well in this requirement. Remson and Nova took the maximum time.

User-friendliness

Hot air fans (heat convectors) are known for their portability, ease

of use, aesthetics and convenience. Bajaj scored the highest followed by Nova. Heaters having air intake on the top of body (air traps) were rated lower as against heaters having air intake in the sides or rear. Many brands had choices of input wattage selection that is 50% and 100% of rated capacity depending upon the choices on coldness in the room or of hot air. Some brands also had thermostats to regulate input power.

Durability

Room heaters are also expected to be quite robust and durable for their long life operations. Usha was the heaviest and the strongest followed by Thermoking and Sunflame. But Orpat was the lightest thus least durable for longer life.

In addition, the appliance shall have adequate mechanical strength and be so constructed as to withstand such rough handling as may be expected in normal use. All the brands pass this test thus getting full score.

The appliance should also be resistant to rusting. Ferrous parts, the rusting of which might cause the appliance to fail to comply with this standard, shall be adequately protected against rusting. All the brands were found satisfactory.

Power Inputs

The appliance shall not deviate from the rated power input by +5% or 20W (whichever is the greater) and -10% i.e. 900W to 1050 W for 1000W and 1800 W to 2100 W for 2000W. Although all the brands passed in this test the input values are deviating from the claimed 1000/2000 Watts.

Safety of Room Heaters

BIS requirements for safety (IS:302-2-30) are mandatory for room heaters and most of the brands meet the minimum specification. **Sunflame, Kenwood, Usha,**

What's in a name?

*"What's in a name? That which we call a rose
By any other name would smell as sweet." - Shakespeare*

Consumer VOICE Technical Team buys a shortlisted product in the market as a decoy consumer, lines it up for testing, and the test result rates the bought product as number one. As a routine follow-up procedure, we write to the manufacturer and lo and behold, the manufacturer, Kenwood in this case, says they have suspended marketing this product category in India for the past 3 years! Their India Head Operations Mr. Kishore K.K. met our COO to confirm this.

We all know the range and extent of the spurious product grey market in India and are forever educating/warning consumers about it. As our COO said, this is a rarest of rare cases of its kind and Kenwood will take action against the unauthorized dealers 'Ultimax', but that's another story.

Our story, meanwhile is, that not only have we ended up buying and testing a spurious brand, but that it has also performed the best amongst all the tested brands! We are also familiar with the Indian USP 'jugaad' and how good we are at copying stuff, and how most times the copy turns out to be not only as good as the original, but sometimes even better. Here is a case, right in front of all of us, proving that point.

But jokes apart, what are its implications for the consumer and for organizations like ours?

For us, it is that we have sound and time-tested testing procedures in place (Thank the dear Lord!), and hence were able to catch ourselves on the wrong foot - but what about consumers, especially those who are brand conscious and pick an orphan costly brand without any post purchase recourse, because of its familiar brand image or profile?

We would appreciate feed back on this point from our readers.



Remson and Maharaja, do not comply with '*abnormal operation safety tests' therefore **they can be unsafetouse**. All the brands are fitted with temperature and air controlling device to control temperature and air as per the required comfort. In the **quality, performance and safety tests, Bajaj topped the safety test followed by Powerpack and Orpat.** (*Under abnormal situations like fan blockage, in which case it can be a case of fire hazards.)

Leakage current and electric strength: A possible shock hazard exists if the grounding connection is interrupted. All brands of Heat Convector fulfilled the basic requirements of leakage current thus passing the test. However Sunflame failed in this test.

Moisture resistance: Moisture is harmful for any insulating material, because it lowers its long-term insulating effectiveness. The enclosure of appliance should provide a degree of protection against moisture in accordance with classification of the appliance. **All brands of Heat Convector met the requirements.**

Heat and Fire Resistance: The body of appliance should be of such a quality that it can resist getting heated up or catching fire due to any kind of short circuit inside the appliance. The Glow wire test is carried out on enclosures at a temperature of 650°C. All brands of Heat Convector met the requirements for Resistance of heating and fire. All brands were assigned full score.

Radiation, toxicity and Similar hazards: Appliances

Key findings

- Bajaj performed higher in overall performance followed by Powerpack and Maharaja.
- In the performance test Powerpack followed by Maharaja performed higher among the brands tested.
- **Kenwood**, Maharaja, Usha, Remson and Sunflame failed in abnormal operation test.
- Metro & Remson were ISI marked for quality & safety however Bajaj, **Kenwood**, Nova and Orpat did not have ISI mark for safety which is mandatory.
- **Kenwood** Maharaj, Nova and Orpat were made of plastic body thus lighter in weight.

Comparative Test

Consumer Advice

Value for money

Powerpack at Rs1200, with metal body, is Value for money.

should not emit harmful radiation or present a toxic or similar hazard. All brands of Heat Convector were meet the requirement.

All Brands Withstood High Voltage: After conducting thermostat and thermal cutout test electrical connection should not have worked loose and thermostat should have withstood the high voltage test. All brands of Heat Convector, except sunflame, met the requirement and passed this test. Brands Bajaj, Kenwood, Maharaja, Nova and Usha had provided thermostat to control temperature.

General Test Results at a Glance

Net weight of appliance:

Considering robustness and durability on long use we measured the weight of the appliances considering higher weight durability. Kenwood, Maharaja, Nova and Orpat had a plastic body while all others had a metal body. Usha followed by Thermoking and Sunflame were heaviest while Orpat and Nova were the lightest, thus getting the lowest scoring in our rating scheme.

Power supply chord:

Insulation of power supply chord, cross section area and insulation should withstand the load of heat convector while running and not burn out. All passed this test.

Protection against access to live parts: Appliances shall be so constructed and enclosed that there is adequate protection against accidental contact with live parts. All brands of Heat Convector met



the requirement for Protection Against electric shock.

Stability and Mechanical Hazards: The portable heaters should have adequate stability, which means that the appliance should not overturn or topple. All brands passed this test.

Inrush Current: The maximum current value reached until stabilization is reported rounded to the nearest ampere. Metro, Nova, Remson and Usha scored full marks.

Hot Air out Put: The air volume and temperature rise of hot air were measured. Maharaja followed by Powerpack and Kenwood performed well and scored well. However Thermoking followed by

Orpat and Nova performed the lowest. In the hot air out put test hot air velocity of the room heaters at the output terminal is measured. Test helps to decide the fan capability to throw the air from the outlet fins of room heaters. As more the speed of the air at output fins will be as much effective in distributing the hot air in larger area of the room. This test was performed by using anemometer to measure the velocity of air being thrown out by the room heater. The average temperature rise in air outside the heater fins is calculated. The average value of the temperature should be more than the claimed value from the manufacturer, the upper values shows the better performance of the heating element of room heater.

Brands	Weight in kg	Input , Watts	Input Watts	Warming-up time of heater
Bajaj	3.0	993.2	1951.4	48
Maharaja	1.2	980.8	1960.2	1 min 21 sec
Metro	2.8	905.8	1854	59
Nova	1.1	928.1	1854.6	2 min. 8 sec
Orpat	0.9	1006.4	1954.4	30
Powerpack	3.0	1034.4	2103.2	31
Remson	2.9	920.4	1839.2	3 min. 20 sec
Sunflame	3.1	(628/700) 1327/1400	1946.2	43
Thermoking	3.2	1003.6	1941.8	41
Usha	3.7	942.1	1890.6	1 min. 21 sec.
Kenwood	2.5	1012.2	1928.6	37

Some of the lab results of comparative testing at a glance

Comparative Performance Score of Heat Convector

Brands Parameters	% Wheitage	Kenwood K-Boyz (Not Rated)	Bajaj	Powerpack	Maharaja	Usha	Orpat	Metro	Remson	Thermoking	Nova	Sunflame
Model		KCH-1520	RX9	-	Thermo	FH 812T	OEH: 1220	Hot Air fan	-	Classic	NH-1201F	SF 916
Body (plastic/metal)		Plastic	Metal	Metal	Plastic	Metal	Plastic	Metal	Metal	Metal	Plastic	Metal
ISI Mark		-	-	IS:302	IS:302	IS:302	-	IS:4283	IS:4283	IS:302	-	IS:302
Warranty, years		NA	2	1	1	1	1	1	1	1	NA	1
Price /MRP, Rs		3200/-	1975/-	1200/1500	1590/1595	2225/2245	850/850	1850/2295	1450/1550	1100/1180	1650/-	1900/1990
I. Performance & Safety Tests	84	73.47	72.9	71.68	69.89	66.75	68.97	68	65.58	66.1	66.85	57.79
Hot Air Output	16	13.3	10.8	13.81	14.24	12.27	9.95	11.23	13.03	9.28	10.28	11.68
Warming up time of the heater	4	3.88	3.7	3.99	3	3.16	4	3.52	1.2	3.82	2.39	3.79
Temperature Rise	8	6.07	6.45	6.66	6.07	5.86	6.99	5.56	6.08	6.22	4.81	5.99
Regular safety Tests*	46	40.33	42	39.4	36.7	35.81	40.1	40.2	37.76	38.87	39.81	30.69
Performance of Thermostat & Thermal Cutout	4	4	4	2	4	4	2	2	2	2	4	0
Input Power	6	5.89	5.89	5.82	5.88	5.65	5.93	5.49	5.51	5.91	5.56	5.64
II. Physical Tests**	16	15	14.4	13.48	13.39	15.2	12.49	12.02	13.35	12.79	11.27	13.21
Overall score	100	88.47	87.26	85.16	83.28	81.95	81.47	80.02	78.93	78.89	78.12	71.00/95 (74.74/100)

Rating: ->90 – Excellent *****, 71-90- Very Good ****, 51-70- Good ***, 31-50- Average **, upto 30 – Poor *

*Regular safety tests includes Protection against access to live parts, Terminal for external conductor, Leakage current at operating temperature, Moisture Resistance, Provision of earthing conn., Resistance of Heat & Fire, Radiation toxicity & similar hazards, Mechanical Strength, Stability & Mechanical Hazards, Internal Wiring, Screws & Connection, Resistance to Rusting, Cord Grip Test, Supply connection & External Flexible chords, Leakage current & electric strength, Abnormal operation.

**Physical tests includes workmanship & finish, packing & marking, Mass of Appliance