To many households, a toaster is a necessity to beat the morning rush. Slide the slices in, switch the toaster on and wait for it to pop them out. Every time a pair of hot, brown, crisp toasts.

It’s so quick and easy. But would you look at a toaster in the same light if we said that none of them conformed to the safety parameters? That is our conclusion, based on our test findings.

Brands Tested
We tested 10 brands of 2-slice automatic pop-up toasters — Bajaj, Birla, Black & Decker, Inalsa, Kenstar, Morphy Richards, Orpat, Philips, Spherehot and Usha Lexus. As pop-up toasters are covered under the Quality Control Order, 1981, they have to conform to the standards of the Bureau of Indian Standards (BIS). The order states that “No person shall himself or by any person acting on his behalf manufacture, store for sale, sell or distribute any household appliances which do not conform to the specific standard.” The regulating authority for the Quality Control Order for each state is the Chief Electrical Inspector.

Standards
We tested the brands for safety parameters as per IS 302-2-9 (1993), IS302-1 (1979), performance tests as per IS 1287 (1993) and energy consumption as per IEC 60442.

Safety Tests
The safety of an electrical appliance is of paramount importance. Hence, it is best to remain careful during the operation of toasters as they did not conform to some of the safety tests.

10 brands tested toaster
It’s so quick and easy on an automatic pop-up toaster. But did all or any of the 10 brands conform to the safety parameters?
Temperature Rise
If the toaster is not well-designed, it may heat up. As per the standards, various parts like the grip, knob, power cord, etc., should not heat beyond the limits given in the standards. The temperature rise of the metal grip or body shall not exceed 20°C. Spherehot did not conform to this parameter. The temperature rise of its grip or body rose to 70°C while the temperature rise in all the other brands remained less than 27.2°C. (The limit is 45°C for moulded material. Except Spherehot, the body of all the other toasters was of moulded material.) Spherehot’s temperature rise may cause burns on the hand.

Abnormal Operation
If for any reason the ejector mechanism (plunger) does not work and the toaster continues working, it may result in fire and the toaster may deform. So to prevent this, additional safety devices like fuses, thermal cut-outs, non-self resetting thermal cut-outs shall be provided.

We operated the toasters with two slices of bread inside at the rated input and ensured that the ejector mechanism (plunger) was prevented from releasing as per the standard.

At the end of this test, the ejector mechanism did not work in Bajaj and Philips. Also, in Philips, the crumb tray — the tray that collects crumbs, making it easy to clean — got stuck and could not be slid out. Bajaj was distorted and the outer body of Inalsa was deformed slightly although it was in working condition.

Also, the BIS has written to us that toasters shall be provided with a non-self resetting thermal cut-out. This would ensure safety by automatically switching off the toaster. None of the brands provided it.

Construction
The current carrying parts as well as the metal parts should not corrode as corrosion can be hazardous. We saw that the terminals where the supply cord was connected were corroded in Spherehot. This may lead to sparks. Also current may not flow properly, affecting

KEY FINDINGS

- Toasters are covered under Quality Control Order and the regulating authority is the office of the Commissioner of Electricity in each state and toasters should conform to the specific standard.
- We tested 10 brands of automatic pop-up toasters — Bajaj, Birla, Black & Decker, Inalsa, Kenstar, Morphy Richards, Orpat, Philips, Spherehot and Usha Lexus.
- We tested them for safety as per IS 302-2-9 (1993), and IS 302-1 (1979), performance tests as per IS 1287 (1993) and for energy consumption as per International Standard IEC 60442.
- All 10 brands failed in the abnormal operation test as none provided for the non-self resetting thermal cut-out, necessary to prevent fire and such other hazards.
- If for any reason the ejector mechanism (plunger) does not work and the toaster continues working, it may result in fire and the toaster may deform. Bajaj was distorted and the outer body of Inalsa deformed slightly. The plunger did not work in Bajaj and Philips after the test. None of the brands provided a non-self resetting thermal cut-out.
- The various parts like the grip, knob, power cord, etc. should not heat beyond the value given in the standard. Spherehot did not conform to this parameter.
- The current carrying parts as well as the metal parts should not corrode as corrosion can be hazardous. We saw that the terminals where the supply cord was connected were corroded in Spherehot.
- Internal wiring and electric connections were not adequately protected in Bajaj, Birla, Kenstar, Morphy Richards, Orpat, Philips and Spherehot.
- If the plugs are not of standard quality they may soften and lead to the risk of exposure of live parts and cause accidents. None of the brands conformed to this test except Philips and Spherehot.
- Power cords for toasters should be at least 2 metres long. Except Bajaj, Morphy Richards and Spherehot, the power cords of all the other brands tested were less than 2 metres.
- Spherehot consumed the maximum energy at 28.99 watt hour. Black & Decker consumed the least at 17.34 watt hour, while Bajaj consumed 23.51 watt hour.
- When converted into rupee-value the energy consumption of Black & Decker would cost the least at Rs 29.13 per month for a family of 4 with an average of 4 slices per member. With Spherehot, you would spend the highest at Rs 48.70.
- Weight of the toaster should match the printed weight. Except Bajaj, none of the brands declared the weight of the toaster. While Bajaj declared 1.8 kg as the weight, the actual weight was just 1.315 kg.
- When the bread carriage is released automatically, the damping system should work well. In Spherehot, the carriage did not come upwards softly and the bread slices popped out with a force that was not user-friendly.
- According to the standard, it should not be easy to remove the marking or the marking plate from the toaster. Except Spherehot, none of the brands conformed to this parameter.
- Except Spherehot, all the brands gave cautionary instruction.
- Orpat and Usha Lexus were not marked with information on the country of origin. In the case of Bajaj, Birla, Kenstar and Morphy Richards, it was not marked clearly.
- Birla scored the highest at 74, followed by Black & Decker with 71, Orpat and Usha stood third with a score of 70.
- With a good score and a reasonable price, Orpat was our best buy.
**Toaster Results**

<table>
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<tr>
<th>Brand Name</th>
<th>Score</th>
<th>Overall Price (in Rs.)</th>
<th>Price (in Rs.)</th>
<th>M.R.P.</th>
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**S P O R T S**

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**Weightage**

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<tr>
<td>Disabled Features</td>
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<tr>
<td>Safety Test</td>
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<tr>
<td>Provision of Non-self-resetting thermal cutout</td>
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**Insight**

- Birla scored the highest at 74, followed by Black & Decker with 71. Orpat and Usha stood third with a score of 70.

- Orpat was our best buy.

**Parameters included within the Safety test:**

- Temperature rise, construction, working of plunger after abnormal operation, internal wiring, plug (components) and power cord.

**Note:**

- Features include cancel/stop button, crumb tray, defrost button, dust cover, bun/roll warmer, hi-lift, etc.
- NMT: Not More Than
- NLT: Not Less Than
- Non conforming
- Conforming
- BEST BUY: Best Buy is based on the overall score and price. With a good score and a reasonable price, Orpat was our best buy.
Internal Wiring
The internal wiring as well as the electrical connections between different parts of the appliances should be adequately protected or enclosed. When the toaster does not function, and is opened for repairs, poor internal wiring may lead to electrocution. Electrical connections between different parts were not adequately protected in Bajaj, Birla, Kenstar, Morphy Richards, Orpat, Philips and Spherehot. In case these toasters malfunction, do not try to remove the outer cover. Black & Decker, Inalsa and Usha Lexus conformed to the test.

Performance Tests

Overall Dimensions
The standard does not specify on the size of a toaster, the actual dimensions should be the same as claimed by the manufacturer. While this was true of Orpat, none of the other brands declared the dimensions. Comparison was not possible since the dimensions were not declared.

Just as with the size, the weight of the toaster should match the printed weight. Except Bajaj, none of the brands declared the weight of the toaster. While Bajaj declared 1.8 kg as the weight, the actual weight was just 1.315 kg. Weights of the brands ranged from 1.002 kg of Orpat to 1.812 kg of Spherehot.

Plugs Components
Plugs are important components of electrical appliances.

The diameter of impression of ball on plug shall be less than 2 mm as per the IS. Their material should be sufficiently resistant to heat during normal use. If the plugs are not of standard quality they may soften and lead to the risk of exposures of live parts and cause accidents. None of the brands conformed to this test except Philips and Spherehot.

Energy Consumption
The BIS does not specify any test for energy consumption of pop-up toasters. But since the international standards have laid down the test method for energy consumption, we tested the toasters according to them. We took the average energy consumption of five toasting cycles. Spherehot consumed the maximum energy at 28.99 watt hour. Black & Decker consumed the least at 17.34 watt hour, while Bajaj consumed 23.51 watt hour.

toasting surfaces, the heating elements and the force needed to operate the bread carriage, we could not compare the actual values.

Damping System

Bread Carriage
When the bread carriage is released automatically, the damping system should work well. Otherwise the toaster will not eject well. In Spherehot the carriage did not come upwards softly and the bread slice popped out with a force that was not user-friendly. In the long run, this may damage the appliance too.

Marking
According to the standard, it should not be easy to remove the marking or the marking plate. Except Spherehot, none of the brands conformed to this parameter. Marking information on the others was printed on paper glued to the toaster and could be removed easily.

Chromium Flakes
We perform pilot tests before the actual testing to familiarise ourselves with the various types of tests as well as for validity of the test method. During these tests, we found chromium flakes coming out from the surface of the Philips toaster along with the bread. Also, in another sample of Philips, we found peeling of the chromium flakes during visual inspection at the time of purchase itself. These toasters belonged to a batch No. HD4620.

Philips agreed with our findings. Philips asked its dealers to replace any such toasters of this batch if a customer brings them for any purpose.
If you plan to leave the toaster unwatched, think twice. Manufacturers are supposed to caution you against it. Every toaster sold should carry an instruction sheet which gives the caution, “Bread may burn, therefore, toasters must not be used near or below curtains and other combustible material. They must be watched.” Except Spherehot, all the brands gave such an instruction.

The country of origin should also be marked on the toaster. Orpat and Usha Lexus did not carry this information. In the case of Bajaj, Birla, Kenstar and Morphy Richards, it was not marked clearly. In short, none of the brands conformed to the standards for marking.

**Price**

Bajaj was the most expensive at Rs. 1699. However, Bajaj was the only toaster which provided a disabled-friendly feature. Orpat was the least expensive at Rs. 695.

**Areas of Action**

• We have written to the Office of the Commissioner of Electricity, Gandhinagar, to take action against the manufacturers who did not conform to the standards for marking as all the brands are available in Gujarat. Incidentally, none of the brands carried the ISI mark. We also wrote to the BIS on the matter. It informed us that as no BIS licence had been granted, it was unable to enforce the standards on the manufacturers.

• We have also written to the BIS, stating that declaring the overall dimensions, etc. should be made mandatory under the marking clause or in the instruction manual.

• The length of the supply cord is mentioned in both safety and performance tests. We have asked the BIS to remove it from the performance tests.

• We have asked the BIS also to include energy consumption in the standards.

• The test for abnormal operation does not specify clearly the failures that are unacceptable with this test. We have asked the BIS to include the terms, “ejector mechanism should work properly after abnormal operation test, failing which it shall be considered as non-conforming to the standard,” “any type of mechanical damage,” and “after abnormal operation test, any part of the toaster should not be damaged mechanically and it should not be deformed and should retain its original shape and should function properly for further testing, failing which it will be considered as non-conforming to the standard.”

• Eco mark must cover toasters.

**Manufacturers’ Response:**

As a policy, we convey the test results to all the manufacturers, irrespective of whether their brands have passed or failed. The results are posted to their registered offices by Registered A.D./courier. All the manufacturers receive the results of their own products only and are given two weeks from the date of receipt to respond. The extracts from the companies’ replies and our responses (in colour) are given below.

**Non-self Resetting Thermal Cut-out**

* Bajaj Electricals Ltd., marketers of Bajaj and Morphy Richards, said that it is not explicitly specified in any of the clauses of IS 302-2-9 that the toaster shall be provided with a non-self resetting thermal cut-out. Besides, in the past 4-5 years they have assessed many international toasters with GS/CE/UL marks but did not come across any such toasters which had incorporated a non-self resetting thermal cut-out. They said that they conduct tests on toasters and other products under abuse conditions and have not found results which contravene any safety parameters. They asked for details of the failure in the test reported to the BIS.

“The use of thermal cut-out is not a mandatory requirement. Since you have made this observation, we will take it up with the ISI authorities and get their confirmation. On receiving the clarification and, if they indicate the thermal cut-out is mandatory, then we will take necessary action... Both the products in question have the relevant CE/GS/IEC or other international certifications, tested to relevant IEC standards, copies of certificates are being attached.”

**Endurance Test**

Endurance test has to be performed by operating an empty and covered toaster. When we tested a few samples we found that the toasters deformed immediately and were on fire. So we decided to stop the test and wrote to the BIS for clarification.

Incidentally, only the Philips manual explicitly carries the warning not to place the dust cover on top of the toaster when it is on or when it is still hot as this could lead to damage. The BIS test method goes against this warning.

When we approached the BIS on the matter, we were informed that pop-up toasters had not come to them for testing.
Bajaj said that when tested as per Clauses 19.101 and 19.102, no objectionable temperature rise as specified was found which would have impaired safety. 

Insight: The certificates sent by Bajaj refer to the EMC standards (for CE marking) which has no relevance with Indian Standards.

Abnormal test was done as per the above clauses. During the test, the ejector mechanism (plunger) became inoperative and the toaster was distorted slightly. Further, a non-self resetting thermal cut-out was not provided as required by the BIS.

*Philips India Ltd., manufacturers of Philips, said that since the BIS is not mandatory for toasters, they have not applied for it and are manufacturing toasters as per QC certificate No. GOA/DLM/02/10/2002/817 and that the toasters comply with the relevant test requirements. Further the company quotes the BIS itself stating “Fuses, thermal cut-outs, over current releases or the like, incorporated into the appliance, may be used......” implying that fuse is not mandatory.

Insight: After the abnormal operation test, the ejector mechanism did not work and the crumb tray could not be slid out. If the self resetting thermal cut-out was provided, this would not have happened.

*Kenstar stated that, as per the report of the RTC, Mumbai, which was tested as per IS : 1287 (1986), nowhere is it mentioned that it is necessary to incorporate non-self resetting thermal cut-out as an essential feature.

Insight: The standards have been revised and the new standards are performance standard IS:1287 (1993) and safety standard IS:302-2-9 (1993). We have tested as per the revised standards.

According to a letter from the BIS dated 30-6-2003, “as per clause 19.1 of IS 302-2-9, the toaster shall be provided with non-self resetting thermal cut-out.” As toasters are covered under the Household Electrical Appliances (Quality Control) Order 1981, they should conform to the specific standard published by the BIS as per the Quality Control Order.

*Philips Impex Pvt. Ltd., manufacturers of Black and Decker, said that the thermostat, thermal cut-out and breakdown diode discharge relays are provided in the electronic circuit plate to make the system off at various temperature stages.

Insight: While conducting the test we could not find thermal cut-out which can sense the temperature and disconnect the power.

*Usha Shriram (India), manufacturers of Usha, said that the BIS letter nowhere specifically mentions inclusion of thermal cut-out in the construction of pop-up toaster in “Endurance and abnormal operation test for pop-up toasters.” (Ref IS 1287-1993).


*Birla Electricals Ltd., manufacturers of the Birla pop-up toaster, have said, “We have not applied for ISI marking. However, we appreciate your concern that it falls under the safety of households. And so we are changing our design accordingly to incorporate additional safety devices.”

*Ellora Time Ltd., manufacturers of Orpat, said that they have now started to provide the non-self resetting thermal cut-out.

Internal Wiring

*Bajaj said that the internal wiring is made with appropriate-sized, stiff lead wires of exact length required between the ends, duly protected with FR sleeves. The terminations are with firm receptacle couplers crimped to the leads. No wires are loose, hanging or unsupported to cause any non-conformity.

*Kenstar said that they had checked the mains cord inlet and other internal electric connections and found that there were no sharp edges in contact with internal wiring. Moreover, the enclosure was soft plastic and not metal, so there was no possibility of damage to the wire.

*Philips said that in their appliance, they had welded the rods between...
the two heating elements, which itself
gave very little room for their movement
and maintained creepage distance, thereby adequately protecting the
appliance.

Insight: In most brands, the internal
wiring and electrical connections
between different parts of the
appliance were not adequately
protected or enclosed. This may lead
to electrocution when opened for
repairs.

*Orpat* said that the wiring system had
been modified - it was now done in PVC
sleeve and ways of wiring are smooth
and free from sharp edge.

*Birla* said that Teflon wire with
additional insulation as protection was
being incorporated in the product to
meet the safety requirement.

**Plugs Components**

*Orpat* said that they had changed the
material of the plug so that the
impression made was within
specifications.

*Black & Decker* said that all their
products conformed to various
international standards and were
universally accepted in the international
as well as the Indian markets.

*Kenstar* said that according to the
RTC’s test report, the diameter of
impression of ball of the plug was 1.2
mm and fulfilled the specification
requirements.

Insight: *We stand by our results.*

*Orpat** said “the
construction of the plug was being
changed by us and we shall be using
‘filled polypropylene’ material for the
plugs to comply with the requirements
of this clause” *(No. 24 of IS 302-2-9
(1993)).*

**Supply Cord**

*Black & Decker* said that the length of
the cord was adequate for the normal
table-top placed toaster, that the model
had been in the market for the past 3
years without any negative feedback from
customers related to this.

*Kenstar* said that as per their RTC
test report, the cord length was found
to be 2m as per specification.

*Philips* said that for an international
product range, the length of the mains
cord varies between 1 and 1.2 m in case
of toaster, which is very logical, as the
toaster does not call for any movement
from its convenient location. And that
a longer cord normally becomes a
hindrance.

Insight: *The standard states that a
minimum of 2 m should be the cord
length.*

*Orpat* said that in the new lot a 2-
metre long cord is provided.

*Birla* said that “We are normally
providing a length of more than 2
metres in the cable being attached to
the pop-up toasters and fail to
understand how this length in this
particular piece is short. Strict quality
control measures are being introduced
by us to ensure that all pieces have a
length of at least 2 metres.”

**Weight**

*The weight of the Bajaj toaster is
1.315 kg, but the weight of 1.8 kg
printed on the carton is the gross
weight.*

Insight: *It was not specified as gross
weight on the carton.*

**Marking**

*Philips* said that a recess is provided
for securing the marking plate and
precaution is taken while sticking the
plate within the recess, making it difficult
to remove it and ensuring durability.

*Kenstar* said that the rating sticker is
made of self-adhesive polymer film
which is not easily removable and that
the material used is long lasting.

Insight: *We stand by our results.*

*Orpat* said that the marking shall be
engraved in the plastic mould itself so
that the marking plates cannot be
removed easily.

The manufacturers of *Inalsa* and
*Spherehot* did not respond till our
going to press.

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**Manufacturers’ Addresses**

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<thead>
<tr>
<th>Company</th>
<th>Address</th>
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<tbody>
<tr>
<td>Bajaj and Morphy Richards</td>
<td>Bajaj Electricals Ltd., 45/47 Veer Nariman Road, Mumbai</td>
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<td>Spherehot</td>
<td>Kandilal Chunjilal &amp; Sons Pvt. Ltd., 17 A-B, Govt. Indl. Estate, Charkop, Kandivali (W), Mumbai - 400 067</td>
</tr>
</tbody>
</table>

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