

# Our Daily Bread: White OR Brown



In almost every country around the world Bread is a staple food. There are different types of Breads available around the world, like tortillas, chapattis, baguettes, ciabatta. The history of sliced Bread goes back to the 60's when Britannia set up its own semi-automatic Bread plant in Mumbai city to initiate a huge Sliced Bread industry in the country. Following its footsteps, number of organized players like Aryan, Modern Bread, WIBS Bread (Western India Bakers Pvt. Ltd.) entered this industry in the country. Bread being a cheap and basic instant food available for consumption; its sale has increased over the years and made it almost a staple. Thus you might see, in many households, bread and butter for breakfast, sandwiches for lunch, bread pakoras as a snack and burgers for dinner!. But in India it is still a secondary staple food when compared to chapatti, poori or rice. As per the Food Safety and Standards (Packaging & Labeling) Regulations, 2011 " Food with shelf life of not more than

## Key Findings

- None of the brands marked date of packing.
- Brand Perfect Premium in both white and brown category was found underweight but within the maximum permissible limit of Legal Metrology (Packaged Commodities) Rules, 2011.
- All the brands of white bread were conforming to the requirement for Potassium Bromate and Potassium Iodate. Bonn high fibre (52.76mg/kg) in brown bread was found with higher potassium iodate content, however Harvest Gold Harty Brown (31.46mg/kg) had lowest.
- Golden Taza Premium (173 cfu/g) had lowest count of total microbes, which indicate better hygienic condition during manufacturing and processing. Brand Perfect Premium (323cfu/g) had higher total plate count among all. All the brands of white and brown bread complied in yeast & mould count as found less than 10cfu/g.
- Among the brands of white bread, Golden Taza Premium was most liked by the panelist followed by Harvest Gold Premium and Perfect Premium. Brand Bonn Prime Time scored least among all. In brown bread, Harvest Gold Harty Brown was most acceptable followed by Perfect Premium and Bonn High Fibre, however Gopala was least acceptable.

# Comparative Test

7 days, the date of manufacture may not be required to be mentioned on the label of packaged food articles, but the 'Use by date' shall be mentioned on the label by the manufacturer or packer. So most of the breads declare 'use by date' on the label/wrapper. For this reason, once the Bread is baked and packed, any baker makes it a point that it reaches the market at the earliest.

Brown bread spells the color of bread only, may be made of Atta (whole wheat flour), or Maida (Refined wheat flour), or combination of both. Also may have natural caramel color.

Test programme of comparative testing of bread was based on the IS: 1483-1988, FSSA and other relevant standards. There is not any Indian Standard for brown bread; hence the test programme of brown bread was based on other relevant standards as well as manufacturer claims.

## Nutrition Comparison of White and Brown Bread

Parameter	White	Brown
Crude-Fibre%	0.25-0.30	0.87-0.93
Protein%	5.90-7.96	8.31-9.20
Carbohydrate%	47.38-56.94	48.90-54.51

### Nutritional Value: Protein

Proteins are an essential nutrient in diet. They play an important role in the cellular maintenance, growth, and functioning of the human body. In Indian Standards there is no specified requirement for protein content in breads but the higher, the better.

**Protein content in both the categories was ranging from 5.90% - 9.20% .Perfect premium in white bread was found with least protein content 5.90 %**

## Brands Tested

Consumer VOICE tested 10 popular brands of white and brown bread. Name of the brands we tested are given below:

Brand/ White Bread	Rank	Protein%	Carbohydrates %	Crude Fibre%	Sensory Test Score
Britannia	2	7.46	52.62	0.26	21.81
Bonn Prime Time	5	7.96	52.13	0.25	19.05
Harvest Gold Premium	3	7.06	52.83	0.28	23.85
Golden Taza Premium	1	6.46	53.16	0.35	25.11
Perfect Premium	4	5.90	56.94	0.30	22.95
Brand/Brown Bread	Rank	Protein %	Carbohydrates %	Crude Fibre%	Sensory Test Score
Perfect Premium	1	8.47	54.51	0.87	22.20
Bonn High Fibre	2	9.20	49.68	0.93	22.05
Harvest Gold Harty Brown	1	8.31	50.54	0.88	23.16
Gopala	3	8.58	51.08	0.94	18.75
English Oven	2	9.03	50.96	0.90	21.06

## Carbohydrate

Carbohydrates are an ideal source of energy for the body because they get converted more readily into glucose. This is the form of sugar that is transported and used by the body and therefore expected to be high in breads.

**Carbohydrate was found within the range of 49.68% to 56.94%. Perfect premium (56.94%) white bread had higher carbohydrate content; however Bonn high fibre (49.68%) white bread had least carbohydrate content.**

## Sensory Tests

This is very important parameter where subjective Panel tests were conducted based on critical examination and opinion. It was observed that the consumer is very critical during selection of product from re-

tail stores, making that brand most acceptable/least acceptable in respect of price. During this test, we determined the overall organoleptic (sensory) quality of the product in terms of consumption. We conducted the sensory tests for acceptability in Color & Appearance, Texture, Flavor, Taste and also Overall acceptability. These tests were conducted in the laboratory involving panel members under the supervision of trained experts.

Among the white breads, **Golden Taza Premium** was most liked by the panelists, followed by **Harvest Gold Premium** and **Perfect Premium**. **Bonn Prime Time** scored least among all. **In brown breads, Harvest Gold Harty Brown** was most acceptable followed by **Perfect Premium** and **Bonn High Fibre**, however **Gopala** was least acceptable

## Packaging

As per the Indian Standard, bread should be wrapped or packaged whole, or in sliced form in clean waxed paper or any other suitable food grade wrapper to preserve freshness. **All the tested samples of White bread brands scored 2.1 out of 3 whereas Brown Bread brands scored 3 out of 3.**

All the samples of both white and brown bread were packed in poly packs. But all white breads were sealed by the heat sealing process which could be tampered with, and which is supposedly not a fair practice from the consumer's point of view. However all brands of brown bread were packed in poly pack and sealed by the adhesive tape on the top with manufacturer's name and could not be resealed. Hence marks of the bread samples sealed by the heat sealing process were deducted and the other brands scored full.

## Marking

The following particulars shall be clearly and indelibly marked on each pack of Bread on outer side of the pack; printing, if any should be with non toxic and non transferable ink.

- Name of product;
- Name and address of the manufacturer;
- Trade name if any;
- Net weight of the loaf;
- Ingredient
- Any additional ingredients, for example nutrients like vitamins and minerals, preservatives, dough conditioners or emulsifying agents;
- Use by date;
- Standard mark; if any
- MRP in Rs.

**Most of the brands of white as well as brown bread passed the**

**test with similar score; scoring 4.5 out of 5.**

None of the brands of white or brown bread were marked with standard (IS). Mark. Date of packaging was also not there. Though requirement for date of packaging is not specified in Indian Standard for bread, but as per the consumer's point of view, date of packing ought to be marked on bread packages/labels

## Net Weight

As per the Legal Metrology (Packaged Commodities) Rules, 2011, maximum permissible errors on net quantity declared by weight is 3% for **300 to 500 pack and 15gm for 500 to 1000 g.**

**All brands of white and brown breads passed the test scoring 6 out of 6.**

Among the brands tested all were meeting the requirement of **Legal Metrology (Packaged Commodities) Rules, 2011.** Brand Perfect Premium in both white and brown category was found underweight but within the maximum permissible limit of **Legal Metrology (Packaged Commodities) Rules, 2011.**

## Crude Fibre

Crude Fibre is to measure the quantity of indigestible cellulose, pentosans, lignin, and other such components present in foods. Such components have little food value but provide the bulk necessary for proper peristaltic action in the intestinal tract. As per the Indian Standard, crude Fibre should not be more than 0.5% by mass in white bread.

All the brands of white bread were meeting the requirement for crude Fibre hence passing the test. Brand **Golden Taza Premium (0.35%) was found with highest crude Fibre content among**

**all followed by Perfect Premium (0.30%) and Harvest Gold Premium (0.28%). In brown bread, Gopala (0.94%) was found with higher crude Fibre content, however Perfect Premium (0.87%) had lowest.**

## Alcoholic Acidity

It determines the shelf life of bread. It is expected to be low, and 'lower the better' in bread.

Brand	Result, %	Score out of 3
<b>White Bread</b>		
Britannia	0.049	2.75
Bonn Prime Time	0.053	2.70
Golden Taza Premium	0.060	2.60
Harvest Gold Premium	0.062	2.57
Perfect Premium	0.070	2.46
<b>Brown Bread</b>		
English Oven	0.042	2.85
Harvest Gold Harty Brown	0.049	2.75
Bonn High Fiber	0.061	2.59
Gopala	0.074	2.41
Perfect premium	0.075	2.41

Among the tested white bread brands Perfect Premium (0.070%) had highest alcoholic acidity, however Britannia (0.049%) had lowest. In brown bread, Perfect Premium (0.075%) was found with higher alcoholic acidity, however English Oven (0.042) had lowest.

## Moisture

Moisture generally refers to the presence of water, often found in trace amounts in food particles. In Indian Standards there is no specified

## Improver (Potassium Bromate/Iodate)

Potassium Bromate and Potassium Iodate are dough improvers which are widely used in bread manufacturing. Though potassium bromate is used to improve the quality of bread and widely used in the bakery industry, it has carcinogenic effects on human. Use of potassium bromate in bread is banned in many countries. As per the Indian Standards, both Potassium Bromate and Potassium Iodate should not be more than 50mg/kg of the mass of the flour in white bread. As per the FSS rules Potassium Bromate and Potassium Iodate should not be more than 50mg/kg of the mass of the flour in any type of bread, therefore it is also applicable for brown bread.

Brand	Potassium Iodate		Score out of 7
	In Bread	In Flour*	
<b>White Bread</b>			
Britannia	21.5	16.53	6.94
Golden Taza premium	24.6	18.92	6.69
Harvest Gold Premium	36.6	28.15	5.74
Bonn Prime Time	40.0	30.76	5.48
Perfect Premium	40.7	31.30	5.42
<b>Brown Bread</b>			
Harvest Gold Harty Brown	40.9	31.46	5.40
English Oven	49.0	37.69	4.76
Gopala	54.1	41.61	4.36
Perfect premium	67.5	51.92	3.30
Bonn high fibre	68.6	52.76	3.21

\* Assuming that 100kg wheat flour will give 130kg Bread

All the brands of white bread were conforming to the requirement for Potassium Bromate and Potassium Iodate. In brown bread, brand Bonn high fibre (52.76mg/kg) and Perfect Premium (51.92mg/kg) did not meet the requirement of FSSA and were found to have a slightly higher potassium iodate content.

limit for the moisture content in breads. But the lower the better. **Moisture content in breads ranged from 37.54% to 39.61%.**

## Conclusion

Consumer VOICE tested 10 popular brands of white and brown bread. The test programme of comparative testing of white bread was mainly based on IS: 1483-1988, FSSA and other relevant standards. There is no Indian Standard for brown bread, hence the test programme of brown bread was based on other relevant standards as well as manufacturer claims. Testing of white and

brown bread was conducted in NABL accredited laboratory.

The key parameter for which, white and brown bread brands were tested are Microbiological Tests as bread is a highly perishable product with the shelf life of hardly five days. Therefore it is very important that it should have maintained its quality within consumption period. Though there is no requirement specified in Indian Standard for microbial contamination but we found Yeast & Mould below 10 cfu/g and Total Plate Count from the range of 173-323cfu/g, which is quite safe from health point of view. Test for addition of Improver (Potassium Bromate and Potassium Iodate) is also a very important test. If these are found beyond the maximum permissible limit then cause severe health effects. We have good news for consumers as all brands cleared this test. Organoleptic properties of bread also play very important role in the acceptance of it by consumer. We have observed the samples for Color & Appearance, Texture, Flavor & Taste and Overall acceptability. Among the brands of white bread, Golden Taza Premium was most liked by the panelist followed by Harvest Gold Premium and Perfect Premium. Brand Bonn Prime Time scored least among all. In brown bread, Harvest Gold Harty Brown was most acceptable followed by Perfect Premium and Bonn High Fibre, however Gopala was least acceptable.

Based on the analysis and evaluation of all test parameters and observations brand Golden Taza Premium scored top among all the brands in white brands we tested followed by Britannia. In brown breads Harvest Gold Harty Brown and Perfect Premium were the top scorers.

**The Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011.**

## Microbiological Tests

Microbiological contamination is a very serious issue for food products. Microorganisms are responsible for many foodborne diseases. We conducted this test for Total plate count and Yeast & Mould. But Indian Standard avoids completely microbiological requirements in bread.

Brand	Total Plate Count	Score out of 12
<b>White Bread</b>		
Golden Taza Premium	173	10.85
Britannia	220	10.12
Bonn Prime Time	232	9.93
Harvest Gold Premium	290	9.02
Perfect Premium	323	8.50
<b>Brown Bread</b>		
Gopala	186	10.65
Bonn High Fibre	218	10.15
Perfect Premium	245	9.72
Harvest Gold Harty Brown	264	9.58
English Oven	264	9.43

Golden Taza Premium (173 cfu/g) had lowest count of total microbes, which indicates better hygienic condition during manufacturing and processing. Brand Perfect Premium (323cfu/g) had higher total plate count amongst all. Both white and brown bread complied in yeast & mould count as these were found to be less than 10cfu/g. In brown bread the best buys are Perfect Premium and Harvest Gold Harty Brown and value for money based on unit price per 100 gm is Harvest gold Harty brown whereas in white bread the value for money is Britannia and the best buy is Golden Taza Premium.

## Bread Specifications are as follows:

**BREAD** whether sold as white bread or wheat bread or fancy or fruity bread or bun or masala bread or milk bread or of any other name, shall mean the product prepared from a mixture of wheat atta, maida, water, salt, yeast or other fermentive medium containing one or more of the following ingredients, namely:—

Condensed milk, milk powder (whole or skimmed), whey, curd, gluten, sugar, gur or jaggery, khandsari, honey, liquid glucose, malt products, edible starches and flour, edible groundnut flour, edible soya flour, protein concentrates

and isolates, vanaspati, margarine or refined edible oil of suitable type or butter or ghee or their mixture, albumin, lime water, lysine, vitamins, spices and condiments or their extracts,

fruit and fruit product (Candied and crystallized or glazed), nuts, nut products, oligofructose (max 15%) and vinegar:

Provided that it may also contain food additives specified in these regulations including Appendix A:

Provided further that it may also contain artificial sweetener as provided in regulation 3.1.3 of this regulation and label declaration in Regulation 2.4.5 (24, 25, 26, 28 & 29) of Food Safety and Standards (Packaging and Labeling) Regulations, 2011.

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**Provided also that it shall conform to the following standards, namely:—**

- (a) Alcoholic acidity (with 90 per cent alcohol) Shall be not more than equivalent of 7.5 ml. N NaOH per 100 g of dried substances.
- (b) Ash insoluble in dilute HCL on dry weight basis —
  - (i) Bread except masala bread or fruit bread not more than 0.1 per cent
  - (ii) Masala bread or fruit bread not more than 0.2 per cent

Provided also that it shall be free from dirt, insect and insect fragments, larvae, rodent hairs and added coloring matter except any permitted food colours present as a carry over colour in accordance with the provision in regulation 3.1.17, in raw material used in the products. It may contain Oligofructose (dietary fibres) upto 15% maximum subject to label declaration under labeling regulation 2.4.5 (43) of Food Safety and Standards (Packaging and Labeling) Regulations, 2011.

## COMPARATIVE PERFORMANCE SCORE OF BREAD (WHITE & BROWN)

Brand → Parameter	WHITE BREADS					BROWN BREADS				
	Golden Taza Premium	Britannia	Harvest Gold Premium	Perfect Premium	Bonn Prime Time	Perfect Premium	Harvest Gold Harty Brown	Bonn High Fibre	English Oven	Gopala
MRP/Net Wt., Rs.	22/700	21/750	20/780	22/700	24/750	17/350	13/380	18/400	17/380	35/400
Unit Price per 100gm, Rs.	3.14	2.8	2.56	3.14	3.2	4.85	3.42	4.5	4.47	8.75
Packing	3	2.1	2.1	2.1	2.1	3.0	3.0	3.0	3.0	3.0
Marking	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0
Net Weight	6	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
<b>Physio-chemical Tests</b>										
Crude Fibre	4.2	3.12	3.36	3.6	3.0	4.83	4.92	5.37	5.1	5.46
Alcoholic Acidity	2.6	2.75	2.57	2.46	2.7	2.4	2.75	2.59	2.85	2.41
Improvers	6.69	6.94	5.74	5.42	5.48	3.30	5.40	3.21	4.76	4.36
Protein	6.46	7.46	7.06	5.9	7.96	8.47	8.31	9.2	9.03	8.58
Carbohydrate	8.71	8.53	8.6	9.97	8.37	9.16	7.84	7.55	7.98	8.02
Moisture	5.16	5.47	5.18	5.92	5.29	6.92	5.0	4.97	5.52	5.41
<b>Microbiological Tests</b>	12	10.85	9.02	8.5	9.93	9.72	9.58	10.15	9.43	10.65
<b>Sensory Tests</b>	30	25.11	23.85	22.95	19.05	22.2	23.16	22.05	21.06	18.75
<b>Overall Score</b>	100	82.0	78.0	77.0	74.0	81.0	81.0	79.0	79.0	77.0
										

Rating: >90 – Very good \*\*\*\*\*, 71-90- Good \*\*\*\*, 51-70- Average \*\*\*, 31-50- Poor \*\*, upto 30 – Very Poor \*  
Sensory Tests: Color & Appearance, Texture, Flavor & Taste and Overall acceptability