



Toilet Soaps

Most make the grade (but leave the skin high and dry)

This boiled version of sodium salts of fatty acids is certainly one of the most essential toiletries that ensure healthy hygiene. Not only does it remove dirt from the grimy body, and claims to keep bacteria at bay, its fragrant properties helps one feel fresher, cleaner and better as well. (Any Jack-of-a-few-trades person, or a jugari as we would say in Hindi slang, would also know about its ability to fix and fasten loose zippers, tighten screws, kill pests or slip in tight bangles...) Come, let's read more on what lies inside your soap.

A Consumer Voice Report

Although the first recorded evidence of the manufacturing of soap-like materials dates back to around 2800 BC in ancient Babylon, commercial soap production began in England around the end of the 12th century. There, because of the heavy taxes, soap remained an expensive item until 1853, when the tax was repealed. In the 19th century, soap gained popularity throughout Europe and across British-occupied regions.

Today, in India, more than 700 registered companies manufacture bar/cake and liquid soaps of various kinds

with combined annual revenue of over Rs 1,700 crore. Various researches online indicate that the soap market in India increased at a compound annual growth rate of 9 per cent to 12 per cent between 2004 and 2009. The bar soap segment led the soap market in India in 2009, with a share of nearly 99 per cent.

Against this background, we decided to test popular brands of 'toilet soap' (not bathing bar, see box to know the difference) and see if they all comply with the set standard, what all they are made of, and if they really have what they claim to be their unique selling propositions.

Comparative Test

The CV research team bought 12 bar soaps of different grades (see 'grades' in the box) from various organized retail stores across the country and tested them at an NABL-accredited laboratory. The test programme was based on national standard IS: 2888-2004 (with amendments) as well as IS: 286 and IS: 13498 (to test

mushiness and synthetic surface-active agent).

We also conducted sensory tests at a reputed clinical research organization. While parameters for sensory tests are not defined under Indian Standards, these are relevant for this study since most of the purchase decisions are made based on these parameters.



WHAT IS SOAP?

It is a product formed by the process of 'saponification', which includes a reaction between alkali and oil (fatty substance). When this reaction takes place, glycerine is formed as a by-product and is present in the soap itself and gives the soap its moisturizing property. So, the ultimate product called 'soap' is actually a salt.

TOILET SOAP AND BATHING BAR

According to the BIS, there are two types of soaps in the market: toilet soaps and bathing bars.

Primary quality of soap depends on total fatty matter (TFM), which lends soaps their soapy feel.

It is the TFM and insoluble matter in the soap that largely distinguishes toilet soaps from bathing bars. Toilet soap often contains a higher quantity of fatty material, varying from 60 per cent to 80 per cent (depending upon the grade of toilet soap, being highest in Grade 1), whereas bathing bars have lesser fatty substance (generally around 40 per cent).

The bathing bar contains acceptable surface-active agents that can be used for bathing purposes. In addition to surfactants and perfume, the bathing bar may also contain other ingredients such as processing aids, colouring matter, permitted antioxidants, preservatives, permissible germicides, super fatting agents, humectants and such additional substances that are declared on the label.

CV Recommendations (top performers on the basis of overall performance)

Grade 1
Mysore Sandal

Grade 2
Vivel

Grade 3
Hamam

Scored Highest in Sensory Tests

Grade 1
Cinthol

Grade 2
Margo

Grade 3
Hamam

Brand→	Weightage %	Grade 1					
		Mysore Sandal	Cinthol	Superia Silk	Godrej Fair Glow	Park Avenue	Godrej No.1
MRP (Rs)/weight (gm)		30/75	32/100	16/100	21/100	40/125	20/100
Cost per 10 gm (Rs)		4	3.2	1.6	2.1	3.2	2.0

Value for Money

Superia Silk (Grade 1) (found less in weight by 8 per cent)

Vivel (Grade 2)

- Interestingly, at Rs 16 for 100 grams, Superia Silk is a Grade 1 soap that is cheaper than all Grade 2 and Grade 3 brands that we tested.
- Superia Silk secured 3rd rank among Grade 1

brands with a score of 82 points.

- Superia Silk ranked third in sensory tests among Grade 1 brands.
- Net weight of Superia Silk was found to be less – at 91.98 gm against the declared 100 gm.
- In Grade 2 category, Vivel proves to be value for money in terms of performance and cost.

Grades that many of you did not know

As per the national standards requirement, toilet soaps are classified into the following three categories.

Grade 1

This a high grade, thoroughly saponified, milled soap or homogenized soap or both, white or coloured, perfumed and compressed in the form of firm smooth cakes, and shall possess good cleaning and lathering properties.

Mandatory TFM requirement: 76 per cent minimum



Grade 2

This is a thoroughly saponified, plodded soap of firm and smooth texture. It shall be white or

coloured, perfumed, and shall possess good cleaning and lathering properties.

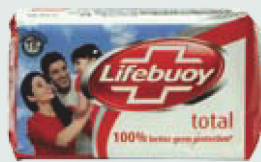
Mandatory TFM requirement: 70 per cent minimum



Grade 3

This is a saponified soap of firm and smooth texture. It shall be white or coloured, usually red if cresylic acid is added and shall possess good cleaning and lathering properties.

Mandatory TFM requirement: 60 per cent minimum



	Grade 2			Grade 3		
	Vivel	Margo	Lux	Hamam	Lifebuoy	Medimix
	22/100	20/100	19/100	22/100	21/125	29/125
	2.2	2.0	1.9	2.2	1.68	2.32

Comparative Test

BRANDS TESTED

	Rank	Total Score out of 100 (Rounded off)	Brand	Manufactured/Marketed by	MRP in Rs
Grade 1	1	87	Mysore Sandal	Karnataka Soaps & Detergents	30
	2	83	Cinthol	Godrej Consumer Products	32 (121 for pack of 4)
	3	82	Superia Silk	ITC	16 (64 of 4 pack size)
	4	78	Godrej Fair Glow	Godrej Consumer Products	27(63 for pack of 3))
	5	77	Park Avenue	Forever Body Care Industries	40
	5	77	Godrej No.1	Godrej Consumer Products	20 (60 for pack of 4)
Grade 2	1	84	Vivel	ITC	22 (70 for pack of 4)
	2	82	Margo	Jyothy Consumer Products	22 (40 for pack of 4)
	2	82	Lux	Hindustan Unilever	18.75 (75 for pack of 4)
Grade 3	1	82	Hamam	Hindustan Unilever	22
	2	80	Lifebuoy	Hindustan Unilever	20.5 (82 for pack of 4)
	3	76	Medimix	Cholayil Private limited	27 (81 for pack of 3)

Score Rating: >90: very good*****, 71-90: good****, 51-70: fair***, 31-50: average**, up to 30: poor*

TEST RESULTS

◆ Total Fatty Matter (% by Mass)

The most important factor to be considered in soap quality is its total fatty matter (TFM). Higher the TFM quantity in the soap, better is its quality. As per BIS, Grade 1 soaps should have 76 per cent minimum TFM, while Grade 2 and Grade 3 must have 70 per cent and 60 per cent minimum TFM, respectively.



Total Fatty Matter (% by mass)			
	Brand	TFM Declared (%)	TFM Found in Test Results (%)
Grade 1	Mysore Sandal	80	80.67
	Cinthol	79	80.15
	Superia Silk	76	76.21
	Park Avenue	76	76.17
	Godrej No.1	76	76.15
	Godrej Fair Glow	76	76.07
Grade 2	Vivel	73	74.10
	Margo	71	71.14
	Lux	70	70.10
Grade 3	Hamam	68	68.05
	Medimix	60	60.41
	Lifebuoy	60	60.14

- All the brands comply with the minimum requirement of total fatty matter as per their grades. Interestingly, all of them had more TFM than what they had declared.

◆ Lather; in Millilitre

Standard requirement: Grade 1: 280 ml | Grade 2: 240 ml | Grade 3: 200 ml

Lather is the foam or the froth created by soap when stirred in water or while bathing or washing hands. It is an important parameter for acceptability of soaps. To test the soap's ability to create lather, five grams of scrubbed and grated piece of each soap brand was thoroughly mixed in water and the lather generated was measured with the measuring cylinder.

- All the brands passed in the lather test.
- Higher scores were given on the basis of the higher lather generated.

◆ Moisture Content, % by Mass

There is no specific requirement of moisture content as per the national standard. It should not be too high or too low.

- Superia Silk contained the lowest moisture followed by Margo and Hamam. They were rated higher.
- Medimix contained the maximum moisture and scored lowest.

◆ Mushiness (Loss In Mass Due To Mushiness); Gram/50 Cm²

Mushiness is the property of soap to absorb the water and get dissolved in it. This test was done for all the brands and the loss in mass in soap due to its mushiness property was measured.

- Superia Silk followed by Mysore Sandal were least in mushiness, indicating minimal loss of the soap in wet conditions.
- Park Avenue followed by Vivel had maximum mushiness among the tested lot and hence scored low.

◆ Matter Insoluble in Alcohol, % by Mass

IS requirement for Grade 1 is 2.5 per cent maximum.

IS requirement for Grade 2 and Grade 3 is 10 per cent maximum.

- All the brands were found well below the maximum permissible limit for matter insoluble in alcohol.

◆ Free Carbonated Alkali, % by Mass

Standard requirement is 1.50 per cent maximum.

The free alkali in soap is usually made of hydroxide and carbonate of sodium or potassium or of both. Alkalinity may also be due to the presence of sodium silicate or other alkaline compounds that are sometimes added in the soap. It is a usual practice to include such alkalinity as 'carbonated alkali'.

- All brands had less than 1 per cent of free carbonated alkali.

◆ Chloride (As NaCl), % by Mass

Standard requirement is 1.50 per cent maximum.

- No brand crossed the maximum permissible limit.

◆ Free Caustic Alkali (As NaOH), % by Mass

IS requirement is just 0.05 per cent maximum.

- All the brands contained lower than the maximum limit and hence got equal scores.

◆ Rosin Acid (% by Mass of Total Fatty Acid)

Standard requirement is just three per cent maximum.

- All the brands contained rosin acid between 0.54 per cent and 1.98 per cent – well within the maximum permissible limit.



Comparative Test

PHYSICOCHEMICAL

Parameter↓	Brand →	Weightage %	Grade 1						
			Mysore Sandal	Cinthol	Superia Silk	Godrej Fair Glow	Park Avenue		Godrej No.1
TFM		16	14.93	14.52	11.36	11.25	11.33	11.32	
Moisture		7	6.33	5.13	7.0	5.96	5.46	4.48	
Lather		10	10.0	8.42	8.42	8.68	9.21	7.89	
Mushiness		6	5.61	3.83	6	4.30	3.17	4.76	
Rosin acid		3	2.01	2.39	2.56	2.36	2.01	2.33	
Matter insoluble		5	4.74	4.75	4.71	4.75	4.77	4.74	
Free carbonated alkali		5	4.52	3.97	4.5	4.07	4.47	4.65	
Free caustic alkali		4	4	4	4	4	4	4	
Chloride		5	4.93	4.69	4.13	4.61	4.63	3.94	

CORNEOMETER MEASUREMENT

We included this test parameter as most soaps left the skin dry. The corneometer is a modern scientific instrument that measures hydration of skin. We used it to measure the skin hydration/dryness prior to the use of test sample (soap) and also after 1 hour and 2 hours of using sample soap on Day 1.

Soap was applied on subject's ventral left arm and then corneometer measurements were taken in triplicate. Thereon, the average of the three readings was taken for statistical analysis. The mean of all the readings and its difference from baseline reading was considered for evaluation of all the brands.

- Most tested brands left the skin dry after use. Only Superia Silk hydrated the skin with slight difference from baseline reading, followed by Cinthol and Lux.

Overall, it can be concluded that most of soaps leave the skin dry.



Parameter↓	Brand→	Weightage %	Grade 1						
			Superia Silk	Cinthol	Mysore Sandal	Godrej No.1	Godrej Fair Glow		Park Avenue
Skin hydration/dryness		8	8	7.21	5.9	4.93	4.11	3.82	

Parameter↓	Brand→	Weightage %	Grade 1						
			Cinthol	Mysore Sandal	Superia Silk	Park Avenue	Godrej No.1		Godrej Fair Glow
Sensory Tests		18	12.26	12.09	11.96	11.91	11.84	11.50	

TEST SCORES

	Grade 2			Grade 3		
	Vivel	Margo	Lux	Hamam	Life Boy	Medimix
	14.48	12.11	11.28	15.06	11.26	11.39
	6.24	6.66	5.24	6.61	4.82	2.45
	9.02	10	9.47	9.92	10.0	9.66
	3.65	4.34	3.99	4.59	4.22	4.56
	2.47	2.36	2.72	2.65	2.0	2.46
	4.75	4.80	4.78	4.74	4.78	4.76
	4.85	4.67	4.55	4.32	4.4	4.47
	4	4	4	4	4	4
	4.63	4.28	4.64	3.91	4.76	4.74

SENSORY TESTS

Sensory user test was conducted in a clinical research laboratory to evaluate the quality as well as sensory attributes of toilet soaps. The soaps were used by 150 women volunteers and their responses on various parameters were taken through a self-assessment questionnaire on various parameters.

The following attributes were included in the questionnaire:

1. Fragrance of the toilet soap after washing (immediate)
2. Fragrance of the toilet soap after washing (30 minutes after)
3. Quality of lather while washing
4. After washing, your skin becomes...
5. The shape of the toilet soap is...

6. The feeling of refreshed and glowing skin after bathing...

7. The toilet soap has cleansing and dirt-removal quality.

8. The toilet soap produces a feeling of irritation or burning.

9. Convenience and easy use of packing of soap

10. The overall quality of the toilet soap, based on above attributes is...

- Based on overall sensory test results, almost all brands fell in 'good' and 'very good' categories.

Hamam and Cinthol were the most liked brands.



	Grade 2			Grade 3		
	Lux	Vivel	Margo	Lifebuoy	Hamam	Medimix
	6.78	5.42	5.23	5.36	4.65	3.5

	Grade 2			Grade 3		
	Margo	Lux	Vivel	Hamam	Medimix	Lifebuoy
	12.03	11.94	11.67	12.36	11.90	11.8

Comparative Test



GENERAL PARAMETERS

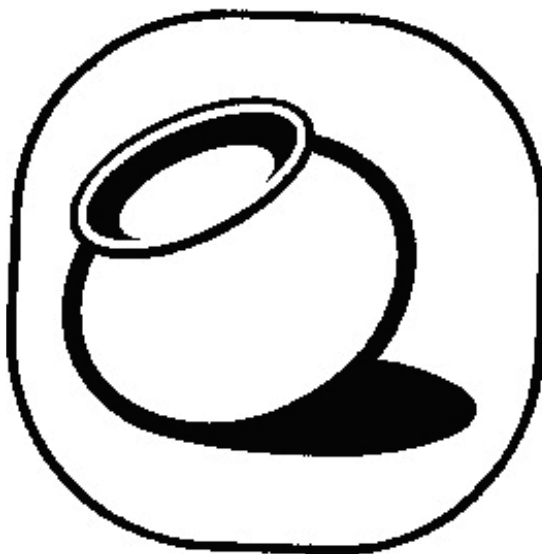
◆ Packaging | Marking | Net Weight

The toilet soap should have packing that protects it from moisture and deterioration due to atmospheric influences. For ECO mark requirements, the product should be packed with recyclable/reusable/biodegradable material.

- Park Avenue, Medimix, Mysore Sandal and Vivel are wrapped in a poly pack and packed in paper box as their outer covering, which protects the soap from acquiring atmospheric moisture or losing soap moisture.
- All the other brands are packed in laminated paper cover.

Soap packets should be marked with the following information:

- a) Name of manufacturer
- b) Brand name of the material and recognized trademark if any
- c) Grade of material
- d) Net mass when packed
- e) Month and year of manufacture
- f) Batch no./lot no. in code
- g) Total fatty matter
- h) Any other ingredients



- i) If with ECO Mark, quantity of TFM and water-insoluble matter
- j) MRP
- k) Standard mark if any

- All the brands were found to comply with the requirements except Medimix and Mysore Sandal, which did not mention their grade of soap.

Soaps were weighed and compared with their declared (mentioned on the pack) values. The maximum permissible error as per Legal Metrology Packaged Commodity Rules, 2011, is 4.5 grams for up to 100 grams and 4.5 per cent of declared values for soaps between 100 grams and 200 grams.

- Hamam weighed 9.46 grams lesser and Superia Silk weighed 8.02 grams lesser than their declared values. The difference was more than the permissible error. So they scored lowest in this test. Only Cinthol was found to be above the declared value.
- Rest all brands were within the permissible error limit.