

## TESTING OF ECOFRIENDLY DETERGENT POWDER AND LIQUID DETERGENT

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### ABSTRACT

A Detergent is a cleansing agent in that sense soap is also a detergent but a detergent is a synthetic substance other than soap. A detergent contains an active agent (called surface active agent of surfactant) that wets the fabric emulsifies oily metal soubise grime and keeps the soil in suspension. India is one of the largest producers of soap and detergent in the world. These detergent is well knitted in our daily life. According to this we have develop some formulation which have been used in detergent powder and liquid detergent the performance characteristic like foam height surface tension cleaning capacity alcohol soluble and insoluble percent, percentage moisture have been evaluated. The care will be taken that the economics and technical properties will not be adversely affected in some chosen selective formulation.

**Keywords:** Surface Active Agent, Percentage Moisture.

### INTRODUCTION

Maleic vinyl ether was the first polymer used in detergent formulation as anti redeposition agent in 1975. In last 30 years their in a systematic efforts to produce low and zero phosphate detergent using various acrylic polymer and co-polymer. The use of polymers has been expanded in many countries worldwide and in many applications.

The present consumption pattern indicated about 65% detergents which has increase to 75% detergents and 85% detergent from 2001-2008. The share of synthetic detergent in total production of washing material is estimated to 48%. The share of small scale in the detergent production is about 65% the production of detergent is estimated to be 14:28 turns.

We can summarized the testing the data of

testing carried out for detergent powder and liquid detergent they are

- 1) Percentage moisture
- 2) % of alcohol soluble
- 3) % of alcohol insoluble
- 4) % solid
- 5) Foam height
- 6) Surface tension
- 7) Cleaning efficiency

### Preparation of Powder Detergent Samples

The various detergent ingredients and the composition of various detergent powders are shown in the table no. 1. the ingredients in the powder form are weighted and mixed through in a tray. Then liquid ingredient like AOS and foam buster were added. Whole mass is then stirred thoroughly. This mixture is then poured in to a mixing pot of a mixer. After

mixing the homogeneous mass thus obtain is taken out in a tray and kept out in open air for drying after complete drying the solid mass thus formed ground again a mixer to get homogeneous detergent powder.

#### Preparation of Liquid Detergents

The composition of selected liquid detergent are given in table no. 2 require amount of novel resin and other ingredient like sodium

lauryl sulphate sorbitol foam booster sodium sulphate and urea were taken in 500 ml beaker and homogenized by running the stirrer for about half an hour . a clear solution of liquid detergent was obtained after 1 hr. this solution was obtain clear this clear liquid solution was filtered and packed in superior grade air tight container.

**Table 1: Formulation of Powder Detergent**

COMPONENTS	A	1	2	3	4	5	6
ACID SLURRY	10	11	12	13	14	12	12
SODIUM CARBONATE	35	35	35	35	35	30	35
SODIUM SULPHATE	10	10	10	10	10	10	10
SALT	5	5	5	5	5	5	5
SODIUM TRI POLY PHOSPHATE	10	10	10	10	10	5	15
SODIUM LAURYL ETHER SULPHATE	5	5	5	5	5	3	3
DOLOMITE	25	24	25	22	21	20	10
E.D.T.A.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
OPTICAL BRIGHTENER	2	2	2	2	2	2	2
SODIUM SILLICATE	5	5	5	5	5	5	5
SODIUM LAURYL SULPHATE	5	5	5	5	5	5	7.5
PERFUME	2	2	2	2	2	2	2
BOOSTER	3	3	3	3	3	3	3

**Table 2: Formulation of Liquid Detergent**

COMPONENT	LD1	LD2	LD3	LD4
ACID SLURRY	5	5	5	5
SODIUM LAURYL ETHER SULPHATE	25	25	5	5
SODIUM LAURYL SULPHATE	10	5	-	-
ALPHA OLEPHNIC SULPHATE	5	5	-	-
SORBITOL	10	10	15	15
SODIUM SULPHATE	5	5	-	-
E.D.T.A.	0.1	0.1	-	-
UREA	-	-	5	5
WATER	38	44	66.73	64.34
SODIUM HYDROXIDE	1.89	0.9	1.44	1.47
NEUTRALISE POLYMER				

**Table 3: Analysis of Detergent Powder**

SAMPLE NAME	DATE OF MANU.	% MOISTURE	ALC. SOLUBLE %	ALC. IN SOLUBLE %	FOAM HEIGT	SURFACE TENTION
SAMPLE A	27/11/08	9.44	2	89	500	74.34
SAMPLE 1	05/12/08	7.08	4	88	600	57.61
SAMPLE2	05/12/08	8.2	5	92	600	55.25
SAMPLE3	05/12/08	5.8	5	83	600	62.98
SAMPLE4	15/12/08	5.6	3	87	600	77.01
SAMPLE5	16/12/08	9.6	3	88	600	76.35
SAMPLE6	19/12/08	3.0	6	77	500	72.21

**Table 4: Analysis of Liquid Detergent**

	LD1	LD2	LD3	LD4	CLD
VIS. IN SEC.	105	112	128	140	125
DENSITY IN GM/CC	1.002	1.024	1.037	1.057	1.104
%SOLID	23.69	24.12	24.87	25.15	33.74
PH	7.02	7.21	7.33	7.41	7.58

**Table 5: Foam in Centimeter at Different Concentration**

	LD	1	LD	2	LD	3	LD	4	C	LD
	0MIN	5MIN	0MIN	5MIN	0MIN	5MIN	0MIN	5MIN	0MIN	5MIN
0.5	500	450	800	750	900	850	750	700	650	500
1.0	800	800	950	820	890	830	950	920	780	730
1.5	830	800	910	860	890	840	790	750	940	890
2.0	900	800	950	930	940	920	960	940	900	880

**Table 6: Density and Surface Tension at Different Concentration**

DIFF.CON C.	LD	1	LD	2	LD	3	LD	4	C	LD
	DENSI TY GM/C C	SURFA CE TENTIO N	DENSI TY GM/C C	SURFA CE TENTIO N	DENSI TY GM/C C	SURFA CE TENTIO N	DENSI TY GM/C C	SURFA CE TENTIO N	DENSI TY GM/C C	SURFA CE TENTIO N
0.1%	0.99	43.74	0.93	66.75	0.95	63.97	0.97	50.62	0.95	56.57
0.25%	0.97	42.73	0.94	54.28	0.96	61.52	0.97	42.08	0.96	52.72
0.5%	0.98	41.51	0.94	52.94	0.96	59.79	0.97	30.76	0.96	44.63
1%	0.99	40.87	0.95	45.82	0.96	58.22	0.96	29.60	0.98	36.78

## RESULT AND DISCUSSION

The compositions of powder detergents are shown in table no.1. The compositions A, 1, 2, 3, 4, 5, and 6. All the compositions containing 5 to 7% Sodium laurel sulphate. The samples have foaming characteristics<sup>8</sup> equivalent to commercial sample the reduction in surface tension is also appreciable and Comparable to commercial sample the special features of formulation Are freedoms from petroleum based actives, very small amount of Sodium tripolyphosphate and use of special optical brightener.

### POWDER DETERGENTS

The special features of these formulations are

1. They are using very limited amount of STPP i.e. only 5.21% therefore problem of Polluting rivers and lakes is reduced considerably
2. The soil & Stain removing capacity is many times comparable % better than commercial product.
3. No special additives like enzyme or per borate have been used.
4. The cost is moderate and reasonable.

### LIQUID DETERGENT

The various ingredients and the composition of detergents powder are as shown in the formulations. The said ingredients in the powdered form are weighed and mixed thoroughly in a tray. Then add liquid ingredients like linear alkyl benzene sulphonate, Alpha olefin sulphonate and neutralized resin. Whole mass is then homogenized thoroughly. This mixture then poured in a homogenizer pot. After mixing, the homogeneous mass thus obtained is taken out in a tray and kept out in open air for drying. After complete drying, the solid mass thus formed is grind again in a mixer to get homogenized detergent powder.

### CONCLUSION

In formulation of detergent powder a various combination of alkyd with conventional surfactant like linear alkyl benzene sulphonate sodium lauryl ether

sulphate has been used we get moderate viscosity in formulation no. A and 6 and very high viscosity in formulation no.4 and 5 (table no.). The physiochemical properties of prepared were comparing with the commercial sample of detergent powder and liquid detergent. The foam height, stability of foam, and surface tension of the prepared sample is identical with commercial sample the special features of this formulation are

- 1) They are free from trisodium polyphosphate and trisodium pyrophosphate so these formulations are ecofriendly.
- 2) The concentration of active ingredient is maintain at 15-35% in all prepared composition.
- 3) The surface tension of the sample is lower than commercial liquid detergent use of 1% liquid detergent give a very low surface tension. Thus they are expected to have better cleaning.
- 4) Sorbitol in substantial quantity has been used which eliminate turbidity and transparent appearance and smooth feel to hands in washing preparation.
- 5) the additives can be used for low foaming detergent the alkyd additives reduces foam height yet the foam generated is quiet stable.
- 6) The cleaning capability of alkyd based powder detergent is better than commercial sample.

Further work in this is in progress in institutional laboratory.

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