

## About the Author



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Teaching undergraduate and post graduate students in oils, fats and surfactants, paints, pigments and varnishes for last 35 years. Guided 50 students for M. Tech. and 20 students Ph. D in chemistry and chemical technology. Mainly interested in developing ecofriendly vegetable based products free from petroleum raw materials. Organized several seminars and workshops in Nagpur and Wardha on ecofriendly products. Life member of oil technologist association of India. Consultancy work for twelve small and medium scale industries and completed international research project as project coordinator for Jotun paints Norway on development of ecofriendly antifouling paints. At present working with cyan industries as consultant for sugar based polymers and teaching undergraduate and post graduate students in the institute.

# ECO FRIENDLY

## **CARBOHYDRATE POLYMERS AS SUBSTITUTES OF ACID SLURRY**

**By  
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**Retired Professor and project consultant for  
CIAN AGRO INDUSTRIES AND INFRASTRUCTURES NAGPUR**

Linear Alkyl Benzene Sulphonate and Alpha Olefin Sulphonate are major active ingredients used in powder cake & liquid detergents. Polymeric surfactants based on sugar, sorbitol, Liquid Glucose and Guar Gum can replace conventional actives to the extent of 50-80% some data is presented for formulation of powder and liquid detergents. Their performance characteristics are compared with commercial samples. At present we are getting good results by using 5 to 8%. Polymeric surfactants. Highly concentrated actives can be prepared by suitable change in composition of polymeric surfactants.

Table: 107 Liquid detergents based on polymer A<sub>32</sub>

Ingredients	LD-16	LD-17	LD-18	LD-19	LD-20
Acid Slurry	7.0	5.0	5.0	2.5	00
SLES (40%)	18.0	15	11	20	20
SLS (30%)	2.0	5.0	1.0	2.0	3
Sodium Carbonate	2.5	2.5	2.0	2.0	2.0
Sodium Sulphate	1.0	1.0	1.0	1.0	1.0
Polymer A <sub>32</sub>	8.0	8.0	10	10	10
Fragrance	0.25	0.25	0.25	0.25	0.25
Distilled Water	61.25	63.25	69.75	62.25	63.75

**Note:**

- 1) Sodium lauryl sulphate (S.L.S.)
- 2) Sodium Lauryl ether sulphate (S.L.E.S.)

**TABLE: 108**

**BASIC ANALYSIS OF LIQUID DETERGENTS BASED ON POLYMER A<sub>32</sub>**

Parameter	LD-16	LD-17	LD-18	LD-19	LD-20	CLD-1	CLD-2
Viscosity (30 <sup>0</sup> C) S	278	209	162	149	78	More than 300	More than 300
pH(digital pH meter)	8.0	8.1	8.3	8.8	9.4	11	11
Colour	Yellow	Yellow	Yellow	Yellow	Yellow	Pale Yellow	Colorless

TABLE: 110

REMOVAL OF SOIL STAIN FROM COTTON CLOTHS AT DIFFERENT  
CONCENTRATION BY LIQUID DETERGENTS BASED ON POLYMER A<sub>32</sub>

Ro = Reflectance measured on clean cloth = 100

Rs = Reflectance measured on stained cloth = 39

Sr. No.	Concentration	Sample	Rw ( by reflectance meter)	% Detergency
1	0.25%	LD16	87	78.7
2		LD17	88	80.3
3		LD18	88	80.3
4		LD19	86	77.0
5		LD20	85	75.4
6		CLD1	86	77.0
7		CLD2	88	80.3
8	0.5%	LD16	91	85.2
9		LD17	91	85.2
10		LD18	92	86.9
11		LD19	90	83.6
12		LD20	88	80.3
13		CD1	90	83.6
14		CD2	92	86.9
15	1.0%	LD16	97	95.1
16		LD17	97	95.1
17		LD18	97	95.1
18		LD19	95	91.8
19		LD20	94	90.2
20		CLD1	96	93.4
21		CLD2	97	95.1



TABLE: 53

**REMOVAL OF SOIL STAIN FROM COTTON CLOTHS AT DIFFERENT  
CONCENTRATION BY POWDER DETERGENT SAMPLES BASED ON  
POLYMER A<sub>10</sub>**

**R<sub>0</sub> = Reflectance measured on clean cloth = 100**

**R<sub>s</sub> = Reflectance measured on stained cloth = 39**

Sr. No.	Concentration	Sample	R <sub>w</sub> ( by reflectance meter)	% Detergency
1	0.25%	PD6	83	72.1
2		PD7	85	75.4
3		PD8	84	73.7
4		PD9	81	68.8
5		PD10	80	67.2
6		CD1	84	73.7
7		CD2	85	75.4
8	0.5%	PD6	88	80.3
9		PD7	90	83.6
10		PD8	89	82.0
11		PD9	87	78.7
12		PD10	85	75.4
13		CD1	90	83.6
14		CD2	91	85.2
15	1.0%	PD6	94	90.2
16		PD7	96	93.4
17		PD8	95	91.8
18		PD9	93	88.5
19		PD10	91	85.2
20		CD1	95	91.8
21		CD2	96	93.4



A decorative graphic on the left side of the slide. It features a solid green arrow pointing to the right, positioned in the lower half. Above and around the arrow are several thin, dark green curved lines that sweep upwards and to the right, creating a sense of movement or growth. The background of the slide is a light beige gradient.

**Thank you**