

**TECHNICAL SPECIFICATIONS OF CHEMICALS (EMULSION PLANT I)****Lauryl Sodium Sulphate (K<sub>12</sub>)**

S.N.	PARAMETERS	INDEX
1	Appearance	White crystal powder without visual mechanical impurities
2	Total alcohol (as dry power), % $\geq$	59.0
3	Identification test	Pass
4	Water dissolve test	Pass
5	Alkalinity	Pass
6	Chloride % $\leq$	10.0
7	Free Sulphate $\leq$	10.0
8	Free alcohol % $\leq$	4.0

**Microcrystalline wax**

S.N.	PARAMETERS	INDEX	
1	Drop melting point $^{\circ}\text{C}$	Not less than	72
		Not more than	77
2	Penetration degree (25 $^{\circ}\text{C}$ , 100g), 1/10 mm $\leq$	30	
3	Oil content % $\leq$	5	
4	Color no $\geq$	2.5	
5	Viscosity (100 $^{\circ}\text{C}$ ), mm <sup>2</sup> /S	Actual Measurement as per sample	
6	Water solubility acid & base	Nil	

**Industrial Vaseline**

S.N.	PARAMETERS	INDEX
1	Appearance	Light or dark homogeneous paste without piece
2	Drop melting point $^{\circ}\text{C}$	45 to 80
3	Acidity (mg KOH/g) $\leq$	0.1
4	Corrosion (steel sheet 100 $^{\circ}\text{C}$ , 3h)	Pass
5	Water soluble acid & base	Nil
6	Kinematic Viscosity (100 $^{\circ}\text{C}$ ), mm <sup>2</sup> /S	10 to 20
7	Penetration degree (150g, 25 $^{\circ}\text{C}$ ) 0.1mm	140 to 210
8	Mechanical impurities % $\leq$	0.03
9	Moisture %	Nil
10	Flash point $^{\circ}\text{C} \geq$	190

**Lecithin**

S.N.	PARAMETERS	INDEX
1	Appearance	Flow, brown
2	Acidity (mg KOH/g) $\leq$	40

3	Moisture % $\leq$	2
4	Acetone insoluble matters % $\geq$	55
5	Ether insoluble matters % $\leq$	3

**Emulsifier (Span80 or Emulgent S-80)**

S.N.	PARAMETERS	INDEX
1	Appearance	Brown oily or thick liquid
2	Acidity (mg KOH/g)	$\leq 12$
3	Saponification Value (mg KOH/g)	130 to 160

**H-Foaming Agent**

S.N.	PARAMETERS	INDEX
1	Appearance	Light yellow powder
2	Content % $\geq$	95
3	Foaming gas, (ml/g, 200C, 760 mm Hg)	200 to 285
4	Ash % $\leq$	0.5
5	Decomposition temperature % $\geq$	130
6	Fineness (on 120 mesh sieve)% $\leq$	0

**Borax**

S.N.	PARAMETERS	INDEX
1	Appearance	White fine crystal
2	$\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ % $\geq$	99.5
3	$\text{Na}_2\text{CO}_3$ % $\leq$	0.20
4	Water insoluble matters % $\leq$	0.04
5	$\text{Na}_2\text{SO}_4$ % $\leq$	0.20
6	$\text{NaCl}$ % $\leq$	0.05
7	$\text{Fe}$ % $\leq$	0.002

**Industrial Urea**

S.N.	PARAMETERS	INDEX
1	Appearance	Granular or crystal, no visual mechanical impurities by macrograph
2	Color	White
3	Total Nitrogen Content (dry basis), % $\geq$	46.3
4	Biuret Content % $\leq$	0.9
5	Moisture % $\leq$	0.5
6	$\text{Fe}$ % $\leq$	0.0005
7	Alkalinity (as $\text{NH}_3$ ) % $\leq$	0.02
8	Sulphate ( $\text{SO}_4^{2-}$ ) % $\leq$	0.02
9	Water insoluble matters % $\leq$	0.005

*(Handwritten signatures and initials)*

S.N.	PARAMETERS	INDEX
10	Grain (Ø 0.85~ 2.80mm), % ≥	90

**Sodium Bicarbonate (NaHCO<sub>3</sub>)**

S.N.	PARAMETERS	INDEX
1	NaHCO <sub>3</sub> % ≥	98.2
2	Na <sub>2</sub> CO <sub>3</sub> % ≤	1.2
3	Moisture % ≤	0.3
4	Fe % ≤	0.002
5	Chloride (as CL), % ≤	0.20
6	Water insoluble matter, % ≤	0.05

**Mineral wax**

S.N.	PARAMETERS	INDEX
1	Melting point °C: Not less than Not more than	60
		62
2	Penetration degree (25 <sup>0</sup> C), 1/10 mm ≤	17
3	Oil content % ≤	0.8
4	No. of color ≥	+ 22
5	Kinematics Viscosity (100 <sup>0</sup> C), mm <sup>2</sup> /S	Report
6	No of light stability ≤	4
7	Water solubility acid & base	Nil
8	Sniff No. ≤	2
9	Mechanical impurities & water	Nil

**LLDPE**

S.N.	PARAMETERS	INDEX
1	Density, g/cm <sup>3</sup>	0.92
2	Surface hardness	SD48
3	Tensile strength, MPa	20
4	Elongation at break, %	500
5	Melting temperature range, °C	120 to 160

**Note:**

1. Lecithin, Emulsifier and H-Foaming Agent should be delivered within 4 months from the date of Manufacture.
2. All the Above items (Except Lecithin, Emulsifier and H-Foaming Agent) should be delivered within 6 months from the date of Manufacture.

*[Handwritten signatures and initials]*

**SPECIFICATION OF SHORT DELAY ELECTRIC DETONATOR**

S.N.	TEST PARAMETERS	UNIT	SPECIFICATION	REMARKS
<b>General Characteristics</b>				
1	Strength	No.	No. 8	
2	Shell/Tube Material		Aluminium	
3	Shell/Tube Length	Millimetre (mm)	56 to 77 mm	
5	Lead Wire Material	Millimetre (mm)	GI/Copper	
6	Lead Wire Diameter	Millimetre (mm)	0.487 ± 0.02	
7	Lead Wire Resistance	Ohms per Metre (Ohms/m)	0.7 to 0.8	
8	Standard Wire Length	Metre (m)	Min 5	
9	Nominal Delay Time	Series No./Delay Time	Series No.1,2,3,4,5,6,7,8,9 and 10 with Nominal Delay Time Interval: 25 Milliseconds	The demanded quantity for each time interval/series no. should be in equal quantity.
10	Explosives Used		Primary Charge : ASA/GTG or DDNP	
			Secondary/Base Charge : PETN or RDX	
<b>Fuse Head Characteristics</b>				
11	Fuse Head Resistance (Resistance of Legwire and Match Head)	Ohms	1.5 to 2.5	
12	No Fire Current (Safety Current)	Milli Amperes	180 mA for 300 Second	
13	All Fire Current	Amperes	Series: 1.2 to 1.5 A	
			Single: 0.8 to 0.9 A	
14	Firing Impulse	Milli Watt Second per Ohms (mWS/Ohms)	2.4 to 3.2	
<b>Other Characteristics</b>				
15	Shelf Life	Years	Minimum 2 Years	
16	Date of Manufacture	Months	Not less than 6 months at the time of delivery	
17	Packing		Outside : Wooden Box	
			Inside : Cartoon Box	
18	Standard		ISO or Equivelant	