Maintenance & Service Manual

IMPRESSIONS

TEXTILE PRINTING BLANKETS

Mahalaxmi Rubtech Limited

507, Chanakya, Near Dinesh Hall, Ashram Road, Ahmedabad-380 009. INDIA.

Tel.: +91-79-6582552, 6585864. Fax: +91-79-6583552, 2138725. E-mail: mrt@icenet.net

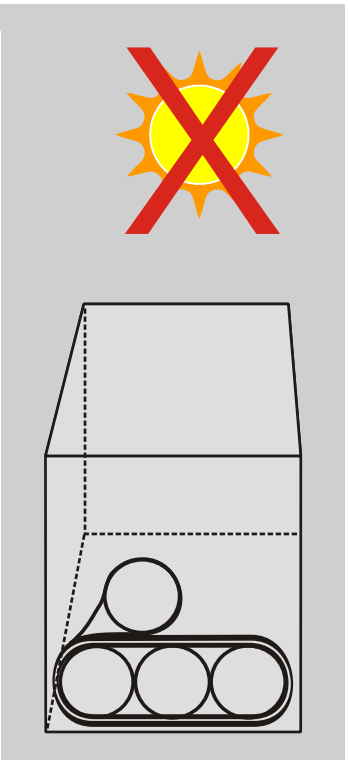
Website: www.mrtglobal.com

CONTENTS

The **Impressions** range of Textile Printing Blankets, manufactured by **Mahalaxmi Rubtech Limited,** are products of high value prepared by a precision combination of selected materials of high quality and processing technology of high level, taking the uniformity of elongation, strength and thickness and resistance of chemicals, solvents and abrasion in to consideration. This manual contains all necessary precautions to be exercised for prolongation of the service life of this expensive blanket while maintaining its excellent properties.

Each user of the blanket is expected to understand the contents of this manual thoroughly for the right use of blanket

NECESSARY PRECAUTIONS FOR STORING THE BLANKET



The Impressions range of Textile Printing Blankets are manufactured and delivered endless. They are rolled up with great care on solid tubes of cardboard and packed in a wooden case. To prevent any unnecessary damage during transit and storing, they are protected with sheets of foam, bubble wrap, plastic sheet, jute cloth and other necessary packing materials. When a blanket is required to be stored for long durations please adhere to the following instructions carefully:

1. Upon the arrival of the wooden case containing the blanket make sure it is in good condition and the blanket within it lies flat at the bottom of the case. Further ensure that no nails, broken parts or any other kind of devices have damaged the blanket due to improper handling during the transit.
2. It is advisable not to store the blanket for more than one year.
3. **The box must be stored in cool and dry place where it is not exposed to steam pipes or direct sunlight or violent temperature variations.** Make sure that the wooden case lies flat to ensure that the blanket sits on the larger base.
4. The blanket needs certain amount of maturing and stabilization and hence should not be used immediately after manufacture. We strongly recommend to leave the blanket unused for at least one month to impart proper seasoning.

NECESSARY PRECAUTIONS FOR FITTING OF THE BLANKET

The fitting operation requires utmost care and should not be executed too hastily. Never forget that it is most important to achieve impeccable fitting rather than save a little time. Whatever techniques are employed make sure that the below mentioned instructions are carried out with greatest calm and care.

1. To take out the blanket of its box, it is essential to use suitable handling equipment. While taking the blanket out of the wooden box proper precautions should be taken to ensure that the blanket is not damaged due to nails or broken parts on the edges of the box by using a piece of thick cloth/paper and cardboard tube. Do not use pointed or sharp instruments such as hooks, knifes, etc that may hurt the surface and even tear the blanket.

2. Before installing the blanket on the machine, check the blanket for any damage caused to it in transit and also confirm whether its size is in conformity with the purchase order.

3. Spread a thick piece of cloth on the entire printing table or on the tidy even floor. After removing the blanket from the box, unroll it on the cloth on a table or clean floor to avoid any contact with hard and foreign substances, harmful matters or spilled solvent, oil, grease etc. These may harm the blanket or get embedded in the top rubber surface of the blanket causing permanent dent/damage. Make sure to unroll the blanket by handling it with the cardboard tubes on which the blanket is rolled.

4. **While handling and at the time of mounting of the blanket, formation of crease and folds must be avoided.** This may cause permanent damage to the carcass fabric and the cracking of the rubber. Once such a crease or fold is formed on the surface of the blanket it would not be smothered out even under high tension and pressure. Hence it must be strictly observed not to bend the blanket less than the diameter of the cardboard tube.

5. A label with an arrow sign is printed on the blanket which would be clearly visible once the blanket is unrolled. **Make sure the blanket is installed on the machine is such a way so that it runs in the direction of the arrow when the machine is in operation.**

6. For mounting the blanket on the machine, the take-up roller is shifted forward. Check carefully that both the ends of the roller are shifted equally so that the roller will strictly make a right angel with both frames of the machine. The imbalanced fixation of the roller will give an uneven tension to the blanket. This will result in malfunctioning and deformation of the blanket. Take care all the other rollers, doctor blade, etc. are in good condition and are properly adjusted to be parallel to each other and make a right angel with the frames of the machine. Further ensure that all the bearing of the machine, main rollers and guide rollers are checked thoroughly.

7. All the demountable devices (i.e. devices for washing, sizing and sticking the fabric, guide rollers, and other accessories) and parts that would possibly damage the blanket at the time of installation should be taken off the machine. Special precaution should be taken to check the inside of the machine for sharp metal pieces or foreign substances and then spread a piece of thick cloth over it. All the projecting points, bolt heads, frames, rollers etc. must be wrapped up with a tape or cloth.

8. **After installation on the machine, the blanket should rotate idle on the machine for a minimum of 4-5 days non-stop for thoroughly stabilizing the blanket.** During this period the tracking of the blanket should be balanced perfectly by adjusting the rollers and the guides. For stabilizing the blanket initially, the tension should be increased very gradually and even on both sides simultaneously. We recommend the tightening of the blanket by 5mm only each time and the same process should be repeated till the blanket is stabilized.

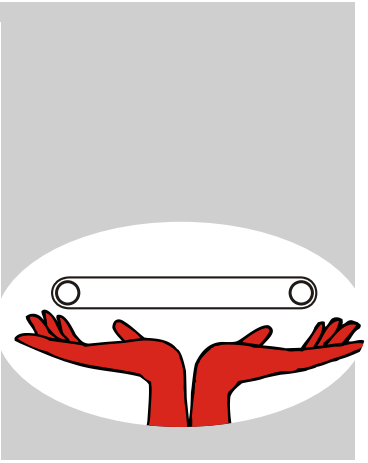
9. Once the blanket is made to run properly and is stabilized, both the edges of the blanket are to be trimmed off while letting the blanket run. Please note that the blanket sometimes requires minor additional trimming after it has run under tension following the installation on a printing machine.

10. Visual press lines (we call "Press Mark" which are un-avoidable) found approximately in one meter distance on the surface of the blanket and round folds formed on the blanket resulting from the winding on the cardboard tubes are cause of no concern and will not affect the printing quality in any way. **These apparent lines, round folds or other defects such as the waviness will disappear after certain period of working or by applying extra little tension.** Also spot touching marks if observed on the surface of the blanket will not harm or affect the blanket life and quality of printing.

11. It is advisable to use woolen lapping instead of cotton lapping on the main cylinder of the printing machine (in case of roller printing machine) to achieve effective cushioning while printing under tension.

12. Before starting the machine, check to see that tool and machine parts are all removed from the blanket and that bolts and nuts are fastened tightly.

PREVENTIVE ACTION AGAINST DAMAGING THE BLANKET DUE TO MISHANDLING



1. **When oil/grease spills upon the blanket, quickly wipe the spilt oil with a cloth soaked with alcohol or aliphatic solvent. Be careful not to use aromatic solvent for removing the oil.** If oil spills repeatedly or in large quantities, especially on the edges or on their reverse sides, and is left unclean, the strength and stability of the blanket will decrease at the edges and ultimately result in separation of the layers.

2. Uneven pressure and improper functioning of advancing clamps and malfunctioning of the blanket guide rollers will damage the face and reverse sides of the edges, lead to separation of layers and further damage the blanket.

3. Periodically inspect both the front and rear drums, washing brushes, blanket guide rollers, clamps and doctor blade, etc. carefully for dry and hardened foreign material such as waste thread, chemicals, dyes, starch, etc. Deposits of this kind should be cleaned immediately or else they would abrade and damage both surfaces of the blanket and finally develop an uneven surface on the blanket.

4. **When the blanket is in stationery condition, running of the washing unit should not be continued, otherwise it may cause damage to the blanket.** Washing equipment or brushes and the blanket must run simultaneously when the machine is in operation.

5. Sizing rollers, starch mangle, doctor blade and main rollers should not be imbalanced while in operation, resulting in abnormal or too strong pressure on the blanket. This imbalanced functioning of the moving mechanical parts often causes damage to the surface rubber layer or the fabric on the reverse side of the blanket and can also separate the layers at edges of the blanket, thus reducing performance accuracy and life of the blanket.

6. Ensure that the blanket is properly balanced/tracked on the machine or else during the operation the blanket edges will get abraded with the guide rollers, guides and collars causing permanent damage.

7. Screws of the screen stencil frame and squeegee holders, bolts, nuts, and other removable metal parts often become loose and fall on the top rubber surface or on reverse side of the blanket. When these parts are caught between the cylinder and the blanket, they damage the blanket. Hence periodically inspect the demountable parts and see they are tightened firmly

8. **Precautions must be taken to prevent washing water from soaking the trimmed edges and the reverse side of the blanket.** Further note, deposits especially of dry and hardened dyes, remaining starch, solvent residue, etc. formed on the edges of the blanket accelerates the wear of the rubber surface. To prevent the formation of such deposits continual cleaning is essential.

9. While using hot water for temporary washing of the blanket, ensure the temperature of the water is below 40°C.

10. If separation between the layers at the edge is left unrepaired, it would quickly expand both lengthwise and crosswise and the blanket will disintegrate under the pressure of the starch mangle, guide rollers, sizing roller, and the doctor blade. The upper layer may delaminate from the lower layer. The separation of the layers should therefore be discovered early and repaired immediately.

11. **Do not subject the blanket to excessive heating through use of gas burner, infrared burner or intermediate dryers.** The use of hot air higher than 70°C will result into ageing and eventually lead to cracking of the rubber surface. The thermal expansion of the rubber and the carcass fabric of the blanket due to excessive heating may disturb the functional activity of the blanket and cause irregular movement, improper tension, vibration and side drifting. Such disturbances vary depending upon the kind of heat source, temperature, number of heaters, drying time, position of the heaters and the speed of machine.

NECESSARY PRECAUTIONS TO BE FOLLOWED IN CASE OF A STOPPAGE OF TH E MACHINE

1. **The heating equipment should never be left switched on when the machine is not in operation**. Otherwise this will cause localized shifting of the blanket. Before stopping the machine the blanket should run for a little after dryer is switched off and cooled down completely.
2. Remove the sizing vat and make sure to clean the sizing doctor, and lift it so that it is no longer in contact with the blanket
3. Thoroughly wash the blanket if it is coated with a soluble adhesive, as well as other parts of the machine that are smeared with the same adhesive. If the machine is to remain unused for a certain time, it is essential to wash the blanket at least one hour with the normal washing equipment.
4. Completely dry the blanket by stopping the outlets of water and continue to rotate the blanket without any water until it is entirely dry.
5. Check the cleanliness of the rollers, especially it they are not coated with PVC or Teflon.
6. **A machine shutdown for a long time may create a tight bond between the adhesive applied to the surface of the blanket and the sizing roller, starch mangle, doctor blade, flow or taking up roller and the rubber surface of the blanket. The rubber surface can be severely damaged when its contact with the machine parts is broken at the time of starting the operation again.** To prevent such damage a releasing paper must be placed between the blanket and the respective contacting parts, or such parts must be kept away from the blanket, prior to stopping the machine for a long time.

NECESSARY PRECAUTIONS FOR CLEANING THE PERMANENT ADHESIVE WITH A SOLVENT

Damages resulting from the unauthorized and careless use of solvents and chemicals are the most dangerous of all damages occurring to the blanket. When such damages are found, it is generally too late for most of them to be repaired. The intensity of these damages varies widely depending on the conditions including the kind, concentration and temperature of the solvent, the time of contact with the solvent and the method of handling. Hence we strongly recommend to always put more emphasis on the safety of the solvent with respect to the blanket than on the speed of cleaning. In order to achieve the maximum and effective life of the blanket, users are requested to study the following instructions carefully and implement the same very strictly:

1. **No aromatic solvents like Ethyl Acetate, Butyl Acetate, Toluene, etc. should be used while cleaning the blanket.**

2. The rubber surface is resistant to alcohol, gasoline, etc. but using any aggressive solvents like Acetone, Methyl Ethyl Ketone (MEK), Trichloroethylene, Thinner, etc will affect on the rubber coating. Swelling is the first sign of the affect. Subsequently on prolonged use the surface will form blisters and result in de-lamination of the plies of fabric carcass with the rubber. These solvents as mentioned above therefore should not be used for leaning the blanket surface and for cleaning the adhesive.

3. **In case printers are obliged to use aromatic solvents (which is always detrimental to rubber surface) the same should be diluted properly and sufficiently.** There is less danger if the K. B. value of diluted solvent is less than 40, but following caution is must while cleaning the blanket.

   a. For cleaning the surface of the blanket with a solvent, wipe the surface of the blanket with a cloth soaked with a solvent swiftly. The residue of solvents must be removed immediately and thoroughly by washing the surface with water. Care should be taken to ensure that the time of contact of the solvent with the rubber surface of the blanket is minimum.

   b. The appearance of a black stain on the white cloth, during the cleaning, indicates that the blanket is being attacked by the solvent. Immediately upon such visualization the cleaning operation should be stopped.

   c. Be careful not to pour so much solvent as to form a puddle on the blanket surface. Be careful not to brush the blanket surface if it has been swelled by solvent. Allowing the rubber surface to swell will lead to its deterioration including loss of strength, excessive wear, cracking, etc. Further this would also damage the dimensional and functional accuracy of the whole blanket resulting in uneven running speed, vibration, and side drifting.

d. Caution should be used not to allow the solvent to extend to the trimmed sides or even further to the reverse side of the edges. If solvent is spilled on the blanket, wipe it away with a dry cloth promptly. Negligence of such prompt action or repeated misuse of solvents will damage the blanket by gradually separating the layers at the edge.

e. When the blanket is used for a long time with a permanent adhesive applied repeatedly to form a multi-layer coating upon its surface, the user may be inclined to use a strong and corrosive solvent for a speedy and economical cleaning. This should be avoided considering its adverse affect on the blanket. It is advisable to shorten the service period of permanent adhesive to promote ease of cleaning and thus prolong the life of the blanket.

5. The position of the colouring paste, particularly in case of Pigments, which does not wash out when the blanket passes through the washing unit should be removed from the blanket surface manually, if necessary. Otherwise under prolong time span the Pigment will penetrate into the blanket surface causing damage. The hardened paste should be softened first with the help of aliphatic solvent or any other authorized chemical product. Once the paste is softened then it can be carefully removed with wooden However, it is always advisable to wash the blanket periodically with acetic acid (50% concentration).

6. **The rubber surface is resistant to aliphatic solvents such as gasoline, alcohol, etc. White spirits are most widely used as cleaning media for the blankets.**

NECESSARY PRECAUTIONS FOR CLEANING THE SURFACE OF THE NEW BLANKET

1. The surface of a new blanket is covered with a small amount of protective wax, which is incorporated in the blanket at the time of its production. Give enough time to the cleaning of the blanket by use of non-fatty soap and water or neutral detergent, (these may be mixed with scouring powder) and then repeat washing with water. **A permanent adhesive will not stay on the surface of the blanket satisfactorily if the washing is not carried out thoroughly.**

2. It is undesirable to sand the surface rubber of the blanket with a sandpaper or wipe with a sand paper or wipe with a strong organic solvent so that a permanent adhesive will bond firmly to the blanket. (If the sanding is required for good bonding, please use a fine mesh sandpaper with approximate 200 mesh)

3. Sometimes about one month of blanket usage is required for the permanent adhesive to become attached to the blanket surface depending upon the kind of permanent adhesive.

RESISTANCE OF THE BLANKET TO THE CHEMICALS

The rubber surface of the blanket is constantly in contact with various chemicals and dyestuff. Hence it is very important to note the resistance of Synthetic Blended Rubber Surface to the chemicals used for preparing the dyestuff paste and for cleaning the blanket. The effective resistance to such chemicals, solvents and spirits is specified in the chemical resistance chart.

CHEMICAL RESISTANCE CHART

SR.	CHEMICAL	EXCELLENT	GOOD	FAIR	POOR
1	ACETIC ACID CONC. 25%				
2	ACETIC ACID CONC. 60%				
3.	ACETIC ACID CONC. 80%				
4	ACETIC ACID (HOT) T - 80°				
5	ACETONE				
6	ACETYLENE				
7	AMYL ACETATE				
8	BENZOIC ACID				
9	BUTYL ACETATE				
10	CARBONIC ACID				
11	CHLOROSULPHONIC ACID				
12	CELLOSOLVE ACID				
13	CHROMIC ACID				
14	CITRIC ACID				
15	COLD DILUTED HYDROFLUORIC ACID				
16	COLD HYDROCHLORIC ACID 30%				
17	COLD NITIRC ACID, LOW CONCENTRATION				
18	FORMIC ACID CONCENTRATION 30%				
19	FORMIC ACID CONCENTRATION 80%				
20	FUMING SULPHURIC ACID				
21	HOT AIR 96° C				
22	HOT CONC. HYDROCHLORIC ACID				
23	HOT SULPHURIC ACID 75-95%				

SR.	CHEMICAL	EXCELLENT	GOOD	FAIR	POOR
24	HYDROBHROMIC ACID SOLN. 10-50				
25	HYDROCYANIC ACID				
26	HYDROFLUOSILICIC ACID				
27	HYDROGEN SULPHIDE				
28	ISOAMYL ACETATE				
29	ISOPROPYL ACETATE				
30	LACTIC ACID				
31	OLEIC ACID				
32	BENZALDEHYDE				
33	BENZENE				
34	BENZYL BENZOATE				
35	BENZYL CHLORIDE				
36	BI SULPHIDE (WASHING) LIQUOR				
37	BROMO BENZENE				
38	BUTADIENE				
39	BUTANE				
40	BUTYL CELLOSOLVE				
41	BUTYL MERCAPTAN				
42	BUTYL STEARATE				
43	CALCIUM BI SULPHATE				
44	CALCIUM CARBONATE				
45	CALCIUM CHLORIDE				
46	CALCIUM HYDRO OXIDE				
47	CALCIUM HYPOCHLORITE				
48	CALCIUM SALTS				
49	CARBITOL				
50	CARBON DISULPHITE				
51	CARBON TETRA CHLORIDE				
52	CELLOSOLVE (ETHYL GLYCOL)				
53	CHLORINATED SOLVENTS				
54	CHLORINE 50% AT 20 °C				
55	CHLORIDE OF NICKEL				
56	CHLOROBENZENE				
57	CHOLOROFORM				
58	CHLORO NAPHTHALENE				
59	CHLORO NITRO ETHANE				
60	CHLORO PHENOL				
61	CHLORO TOLUENE				
62	CIRCO LIGHT PROCESS OIL				

SR.	CHEMICAL	EXCELLENT	GOOD	FAIR	POOR
63	COAL GAS				
64	COAL TAR				
65	COLD FORMALDEHYDE				
66	COLD SODIUM HYDROCHLORIDE				
67	COLD CARBON-DI-OXIDE				
68	COLD WATER 25 °C				
69	COLOUR ANILINE				
70	COPPER SULPHATE				
71	CRESOLS (CRESYLIC AIR)				
72	CRUDE PETROLEUM				
73	CUMENE				
74	CUPRIC CHLORIDE				
75	CYCLO HEXANE				
76	CYCLO HEXANOL				
77	CYCLO HEXANONE				
78	DECA HYDO NAPHTHALINE				
79	DIBUTYL ETHER				
80	DIBUTYL PHTHALATE				
81	DICHLORO BENZENE				
82	DICHLORO ETHANE				
83	DICHLORO ETHYLENE				
84	DICHLORO PHENYL BENZENE				
85	DIETHYL AMINE				
86	DIETHYL ETHER				
87	DI-ISOMETHYLANILINE				
88	DI-ISOPROPYL ACETONE				
89	DI-METHYL ANILINE (XYLIDIENE)				
90	DI-OCTYLPHTHALATE				
91	DI-OXANE (DI ETHYL OXIDE)				
92	DI PENTENE				
93	DI PHENYL BENZENE				
94	PHENYL BENZENE				
95	DI PHENYL OXIDE				
96	FUEL OIL				
97	ETHANOL				
98	ETHANOLAMINE				
99	ETHYL BENZENE				
100	ETHYL BUTANE				
101	ETHYL PENTA CHLORO BENZENE				

SR.	CHEMICAL	EXCELLENT	GOOD	FAIR	POOR
102	ETHYL PHENYL PENTA CHLORO BENZENE				
103	ETHYL SILICATE				
104	ETHYLENE CHLORIDE				
105	ETHYLENE GLYCOL				
106	ETHYLENE OXIDE				
107	FERRIC CHLORIDE				
108	FERROUS SULPHATES				
109	FERROUS CHLORIDES				
110	FLUID HYDRAULIC OILS				
111	FLUORENE				
112	FLUOROBENZENE				
113	GLYCERINE				
114	GLYCOL				
115	HIGH AROMATIC CONTENT OILS				
116	HOT CARBON DI OXIDE				
117	HOT HYDROCHLORIC ACID 37%				
118	HOT CARBON MONOXIDE				
119	HUMID CHLORINE				
120	HYDROGEN PEROXIDE 80-85%				
121	HYDROGEN SULPHIDE				
122	ISOOCTANE				
123	ISOPROPYL CHLORIDE				
124	KAOLIN				
125	KAOLIN SILICATE				
126	KEROSENE				
127	LACQUERS (SOLVENTS)				
128	LIME				
129	LOW AROMATIC CONTENT OILS				
130	MAGNESIUM				
131	MAGNESIUM CHLORIDE				
132	MAGNESIUM HYDROXIDE				
133	MAGNESIUM SALTS				
134	METHYL CHLORIDE				
135	METHYL SALICYLATE				
136	METHYLENE CHLORIDE				
137	NORMAL HEXANE				
138	OXIDE ETHERS				
139	OZONE				
140	PARAFFIN				

SR.	CHEMICAL	EXCELLENT	GOOD	FAIR	POOR
141	PARAFFIN OIL				
142	PETROLEUM				
143	PER CHLORO ETHYLENE				
144	PHENOL				
145	PHENYL ACETIC ETHER				
146	PHENYL ETHER				
147	PHOSPHOROUS CHLORIDE				
148	PHOSPHOROUS TRI CHLORIDE				
149	PINE TAR				
150	POTASSIUM BI-CARBONATE				
151	POTTASIUM CARBONATE				
152	POTTASIUM CHLORIDE				
153	PURE BROMINE				
154	REFINED PETROLEUM				
155	SATURATED POTASH				
156	SEA WATER				
157	SILICATE OF SODA				
158	SOAPS SOLUTION				
159	SODA 3%				
160	SODA 10%				
161	SODA 20%				
162	SODA 50%				
163	SODIUM BI-CARBONATE				
164	SODIUM BI-SULPHATE				
165	SODIUM CARBONATE				
166	SODIUM CHLORIDE				
167	SODIUM PEROXIDE				
168	SODIUM PHOSPHATE				
169	SODIUM SULPHATE				
170	SODIUM SULPHITE				
171	SODIUM THIOSULPHATE				
172	STEAM WATER				
173	STYRENE				
174	OXALIC ACID				
175	PALMIC ACID				
176	PHOSPHORIC ACID 10%				
177	PHOSPHORIC ACID 70%				
178	STEARIC ACID				
179	SULPHONIC BENZENE ACID				

SR.	CHEMICAL	EXCELLENT	GOOD	FAIR	POOR
180	TARTARIC ACID				
181	TRI CHLORO ACETIC ACID 10%				
182	AMMONIA SOLUTION				
183	AMYL ALCOHOL				
184	AMYL NAPHTHALENE				
185	ANHYDROUS CARBONIC ACID				
186	BENZYL ALCOHOL				
187	BUTYL ALCOHOL				
188	COLD FORMALDEHYDE				
189	DRY SULPHURIC DI-OXIDE				
190	ETHYL ALCOHOL				
191	ISOBUTYL ALCOHOL				
192	ISOPROPYL ALCOHOL				
193	METHYL ALCOHOL				
194	PROPYL ALCOHOL				
195	STARCH				
196	ALIPHATIC MINERAL ESSENCE				
197	ALUMUNIUM CHLORIDE				
198	ALUMINIUM FLUORIDE				
199	AROMATIC ESSENCE				
200	ASTM I OILS				
201	ASTM II OILS				
202	SULPHUR				
203	SULPHUR DI OXIDE				
204	TERPINOL				
205	TERTRA ANILINE				
206	TOLUENE				
207	TRANSFORMER OIL				
208	TRIACETYNE				
209	TRIBUTYL PHOSPHATE				
210	TRICRESYL PHOSPHATE				
211	TRICHLORO ETHYLENE				
212	TRI ETHANOL AMINE				
213	WINES AND SPIRITS				
214	WHITE SPIRIT OF LOW AROMATIC CONTENT				
215	WHITE SPIRIT OF HIGH AROMATIC CONTENT				
216	XYLENE				
217	ZINC BI CARBONATE				
218	ZINC BI SULPHATE				
219	ZINC CARBONATE				
220	ZINC CHLORIDE				