














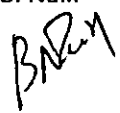

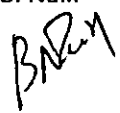

	<b>PLANT PURCHASE SPECIFICATION</b>  <b>JHANSI</b>		<b>PURCHASE SPECIFICATION</b> <b>No. JS 27197</b>							
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<p style="text-align: center;"><b><u>SILICONE INSULATING LIQUID</u></b></p> <p><b>1. GENERAL:</b></p> <p>This Standard covers the specifications and test methods for unused Silicone Type T-1 transformer liquid (polydimethyl siloxane, without additives) intended for use in transformers.</p> <p><b>2. APPLICATION:</b></p> <p>For use as dielectric and cooling medium in HVR transformers for ESP.</p> <p><b>3. COMPLIANCE WITH NATIONAL/INTERNATIONAL STANDARDS:</b></p> <p>IEC-60836: 2005 "Specifications for unused silicone insulating liquids for electro technical purposes" with additional requirement at Cl. no. 6.4.</p> <p><b>4. TEST METHOD:</b></p> <p>Unless otherwise specified, the tests shall be conducted in accordance with relevant method as per IEC-60836: 2005</p> <p><b>5. SAMPLE FOR TEST:</b></p> <p>Sampling for test shall be in line with IEC-60475. 5 liters liquid shall be supplied for testing and approval purpose.</p> <p><b>6. PROPERTIES:</b></p> <p><b>6.1 APPEARANCE</b></p> <p>Shall be clear and free from suspended matter &amp; sediment.</p> <p><b>6.2 DENSITY AT 20° C (Kg/dm<sup>3</sup>)</b></p> <p>0.955 - 0.970</p> <p><b>6.3 KINEMATIC VISCOSITY</b></p> <p>40 ± 4 mm<sup>2</sup>/s at 40° C or 50 ± 2.5 cSt at 25° C [as per ASTM D4652]</p>										
Revision: 05  Date: 30 <sup>th</sup> April, 2016		<table border="1"> <tr> <td colspan="2" data-bbox="774 1868 1264 1904">           Issued By: Standard Section, TRE Jhansi         </td> <td data-bbox="1264 1868 1469 1904"></td> </tr> <tr> <td data-bbox="774 1904 1091 2063">           Rev-05 issued to add kinematic viscosity at 25°C.         </td> <td data-bbox="1091 1904 1264 2063">           Prepared- N. Varshney  </td> <td data-bbox="1264 1904 1469 2063">           Approved- B. Naik  </td> </tr> </table>			Issued By: Standard Section, TRE Jhansi			Rev-05 issued to add kinematic viscosity at 25°C.	Prepared- N. Varshney 	Approved- B. Naik 
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<div style="margin-bottom: 10px;"> <b>6.4 FLASH POINT (° C)</b>            a) Pensky Martens Closed cup method : Min. 240            b) Cleveland Open cup method : Min. 300         </div> <div style="margin-bottom: 10px;"> <b>6.5 FIRE POINT (° C)</b>            Min. 340         </div> <div style="margin-bottom: 10px;"> <b>6.6 REFRACTIVE INDEX AT 20° C</b>            1.404 ± 0.002         </div> <div style="margin-bottom: 10px;"> <b>6.7 POUR POINT (° C)</b>            Minus 50 or below         </div> <div style="margin-bottom: 10px;"> <b>6.8 WATER CONTENT (mg/kg)</b> <span style="float: right;">(For untreated liquid, as received)</span>            Max 50         </div> <div style="margin-bottom: 10px;"> <b>6.9 NEUTRALIZATION VALUE (mg KOH/g)</b> <span style="float: right;">(For untreated liquid, as received)</span>            Max. 0.01         </div> <div style="margin-bottom: 10px;"> <b>6.10 BREAKDOWN VOLTAGE (kV)</b> <span style="float: right;">(For untreated liquid, as received)</span>            Min. 40         </div> <div style="margin-bottom: 10px;"> <b>6.11 DIELECTRIC DISSIPATION FACTOR (DDF) AT 90° C &amp; 50 Hz</b> <span style="float: right;">(For untreated liquid, as received)</span>            Max. 0.001         </div> <div style="margin-bottom: 10px;"> <b>6.12 PERMITTIVITY AT 90° C</b> <span style="float: right;">(For untreated liquid, as received)</span>            2.55 ± 0.05         </div> <div style="margin-bottom: 10px;"> <b>6.13 DC RESISTIVITY AT 90° C (GΩ x m)</b> <span style="float: right;">(For untreated liquid, as received)</span>            Min. 100         </div>					
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<p><b>7. <u>TEST REQUIREMENTS:</u></b></p> <p>Oil samples taken after delivery at any place shall meet all the test requirements stipulated in this specification.</p> <p><b>8. <u>TEST CERTIFICATE:</u></b></p> <p>Unless otherwise stated, three copies of test certificate shall be sent along with each consignment giving the following information :-</p> <p>JS-27197 – Silicone Insulating Liquid          BHEL P.O. no.          Manufacturer's / Supplier's name          Batch no. / Lot no.          Quantity in liters / number of drums          Test values / Certificate of analysis &amp; certificate of compliance for clause 6.</p> <p><b>9. <u>PACKING AND MARKING:</u></b></p> <p>Liquid shall be delivered in perfectly clean steel drums of 210 liters nominal capacity with flat or dished fixed ends conforming to Grade-A or Grade-B of IS-1783. Inside surface of the drum to be coated with a suitable coating (e.g. epoxy lacquer, phosphate etc) resistant to insulating oil. Outside surface of drum to be coated with suitable primer and finishing paint or be hot dip galvanized to IS-4759 for protection against atmospheric corrosion. Silicone liquid in 1050 liters IBC containers with steel cage is also acceptable. The drums/container used shall be especially reserved for the purpose. Immediately after filling with oil the drum/container shall be effectively sealed so as to exclude ingress of moisture.</p> <p>The drums / containers shall be indelibly marked with the following information:-</p> <p>JS-27197 – Silicone Insulating Liquid          BHEL P.O. no.          Manufacturer's / Supplier's name          Batch no. / Lot no.          Quantity in liters / number of drums/ number of containers</p> <p><b>10. <u>SHELF LIFE:</u></b></p> <p>Should be at least 36 months when stored in original sealed container/drum.</p>						
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