



## SCHEDULE OF ACCREDITATION

Testing Laboratory Number: **LAS-002**

<p><b><u>Permanent Address of Laboratory:</u></b>  <b>Angostura Limited</b>          Corner Eastern Main Road &amp; Trinity Avenue          Laventille          Trinidad and Tobago. W.I.</p> <p><b><u>Postal Address</u></b>          Corner Eastern Main Road &amp; Trinity Avenue          Laventille          Trinidad and Tobago. W.I.</p> <p>Tel : 868-623-1841          Fax : 868-623-1847/624-8531          e-mail: cghomer@angostura.com</p>		<p><b><u>Management Signatories:</u></b>          Carol Homer-Caesar</p> <p><b><u>Technical Signatories:</u></b>          Marlon Assue          Malika Crichton</p> <p><b><u>Nominated Representative:</u></b>          Carol Homer-Caesar</p> <p><b><u>Certificate of Accreditation</u></b>          Issue No. : 5          Date of issue : 6<sup>th</sup> January 2015</p>
Materials/Products Tested	Types of Tests/Properties Measured, Range of Measurement	Standard Specifications, Equipment/Techniques Used
<p><b><u>CHEMICAL</u></b>          Alcoholic beverages – Rum, bitters, flavoured alcoholic products, wines, carbonated beverages</p>	<p>1) Determination of ethanol content (%) by Macro Distillation method using OIML system</p>	<p>Reference – AOAC 18<sup>th</sup> Ed. 26.1.08 &amp; 26.2.04 (Alcohol by volume in Distilled Liquors – Hydrometer method)   <b>Method No. LA-TM-DIST-01</b></p>
<p>Alcoholic beverages – Rum, bitters, flavoured alcoholic products, wines, carbonated beverages</p>	<p>2) Determination of ethanol content (%) by Micro Distillation using Dee Distillation and Density Meter Analyser</p>	<p>Reference – DMA 4500/5000 Manual; Dee Distillation – Instruction Manual 60.50.131 5<sup>th</sup> issue   <b>Method No. LA-TM-DEE-01 and LA-TM-DMA-01</b></p>
<p>Alcoholic beverages – Rum, bitters, flavoured alcoholic products, wines, carbonated beverages</p>	<p>3) Determination of Total Solids by Evaporation method   <b>Units: g/100 mL</b></p>	<p>Reference – AOAC 16<sup>th</sup> Ed. 33.2.09   <b>Method No. LA-TM-TS-01</b></p>
<p>Alcoholic beverages – Rum, bitters, flavoured alcoholic products, wines, carbonated beverages</p>	<p>4) Determination of Total Acids by Titrimetric method   <b>Units: mg/100 mL</b></p>	<p>Reference – AOAC 18<sup>th</sup> Ed. Official method 945.08 (Part A)   <b>Method No. LA-TM-TITR-03</b></p>

Alcoholic beverages – Rum, bitters, flavoured alcoholic products, wines, carbonated beverages	5) Determination of Fixed Acids by Titrimetric method <b>Units: mg/100 mL</b>	Reference – AOAC 18 <sup>th</sup> Ed. Official Method 945.08 (Part B) <b>Method No. LA-TM-TITR-04</b>
Alcoholic beverages – Rum, bitters, flavoured alcoholic products, wines, carbonated beverages	6) Determination of pH	Reference – AOAC 18 <sup>th</sup> Ed. 10.041 <b>Method No. LA-TM-pH-01ML</b>
Alcoholic beverages – Rum, bitters, flavoured alcoholic products, wines, carbonated beverages	7) Determination of pH	Reference – AOAC 18 <sup>th</sup> Ed. 973.41 <b>Method No. LA-TM-pH-03DL</b>
Alcoholic beverages – Rum, bitters, flavoured alcoholic products, wines, carbonated beverages	8) Determination of Acetaldehyde, Methanol, Acetone, Methyl acetate, Ethyl format, Ethyl acetate, <i>n</i> -Propanol, <i>s</i> -Butanol, <i>iso</i> -Butanol, <i>n</i> -Butanol, Acetal, active Amyl alcohol, <i>iso</i> -Amyl alcohol, <i>n</i> -Amyl alcohol and Furfuraldehyde by Gas Chromatography <b>Units: mg/100 mL</b> <i>Range: 0.6 – 5,000 mg/100 mL Esters (Methyl acetate, Ethyl formate and Ethyl acetate)</i> <i>Range: 0.2 – 18,500 mg/100 mL Fusel oils (High boiling point alcohols)</i>	All 15 components are analysed as one run by Gas Chromatography using Flame Ionisation detection. <b>Ref: Bacardi Method– BAP #275F – Agilent Technologies 6890N Operator’s Manual</b> <b>Method No. LA-TM-CON-02ML</b>
Alcoholic beverages – Rum, bitters, flavoured alcoholic products, wines, carbonated beverages	9) Determination of Acetaldehyde, Methanol, Acetone, Methyl acetate, Ethyl format, Ethyl acetate, <i>n</i> -Propanol, <i>s</i> -Butanol, <i>iso</i> -Butanol, <i>n</i> -Butanol, Acetal, active Amyl alcohol, <i>iso</i> -Amyl alcohol, <i>n</i> -Amyl alcohol and Furfuraldehyde by Gas Chromatography <b>Units: mg/100 mL</b> <i>Range: 0.6 – 5,000 mg/100 mL Esters (Methyl acetate, Ethyl formate and Ethyl acetate)</i> <i>Range: 0.2 – 18,500 mg/100 mL Fusel oils (High boiling point alcohols)</i>	All 15 components are analysed as one run by Gas Chromatography using Flame Ionisation detection. <b>Ref: Bacardi Method– BAP #275F; Hewlett Packard 5890 series II &amp; 5890A Operator’s Manual</b> <b>Method No. LA-IR-TM-CON-GC-02DL</b>
Metal Ions in Solution – aqueous solution by inductively coupled plasma-atomic emission spectroscopy (ICP-AES Spectroscopy)	10) Determination of: <ul style="list-style-type: none"> <li>• Iron: 0.003 – 3500 ppm</li> <li>• Magnesium: 0.002 - 3.500 ppm</li> <li>• Copper: 0.009 – 3.500 ppm</li> <li>• Potassium: 0.023 – 3.500 ppm</li> <li>• Sodium: 0.030 – 3.500 ppm</li> <li>• Calcium: 0.017 – 3.500 ppm</li> </ul>	Reference - Perkin Elmer Optima 2100 DV Online Operator’s Manual <b>Method No. LA-TM-IONS-02ML</b>

<p>Metal Ions in Solution – alcoholic solution (wine and distilled spirits) by inductively coupled plasma-atomic emission spectroscopy (ICP-AES Spectroscopy)</p>	<p>Determination of:</p> <ul style="list-style-type: none"> <li>• Calcium: 0.010 – 6.000 ppm</li> <li>• Magnesium: 0.003 – 6.000 ppm</li> <li>• Potassium: 0.004 – 6.000 ppm</li> <li>• Copper: 0.003 – 6.000 ppm</li> <li>• Iron: 0.026 – 6.000 ppm</li> <li>• Sodium: 0.024 – 6.000 ppm</li> </ul>	<p>Reference - Perkin Elmer Optima 2100 DV Online Operator's Manual</p> <p><b>Method No. LA-TM-IONS-02ML</b></p>
<p>Alcoholic beverages – Rum, bitters, flavoured alcoholic products, wines, carbonated beverages</p>	<p>11) Determination of ethanol content (%) by AlcoLyzer (Near Infra-Red technology)</p>	<p>Reference – Instruction Manual AlcoLyzer M Beer/Spirits/Wine/Sake</p> <p><b>Method No. LA-TM-LYZR-01</b></p>

Date of accreditation: 1<sup>st</sup> November, 2007

**Manager, TTLABS**