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|  | ACCREDITATION DOCUMENT | F-06/02 Issue Date: 18/08/2020 Rev. No: 09 LAB 082 |
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Accreditation No: LAB 082

Awarded to

SGS Pakistan (Private) Limited
Oil, Gas & Chemicals Testing Lab
H-3/3, Sector 5, Korangi Industrial Area, Karachi 74900
Karachi, Pakistan

The scope of accreditation is in accordance with the standard specifications outlined in the following page(s) of this document. The accredited scope shall be visible and legible in areas such as customer service, sample-receiving section etc and shall not mislead its users.

The accreditation was first time granted on **14-05-2015** by Pakistan National Accreditation Council.

The laboratory complies with the requirements of **ISO/IEC 17025:2017**.

The accreditation requires regular surveillance and is valid until **25-02-2024**.

The decision of accreditation made by Pakistan National Accreditation Council implies that the organization has been found to fulfill the requirements for accreditation within the scope.

The organization however, itself is responsible for the results of performed measurements/tests.

PAKISTAN NATIONAL ACCREDITATION COUNCIL

24-11-2023
 Date

SD
 Director General

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Testing Laboratory.

Accreditation Scope of Oil, Gas and Chemicals Testing Lab. Karachi, Pakistan.

Permanent laboratory premises ☒

| Materials/Products tested | Testing field (e.g. environmental testing or mechanical testing) | Types of test/ Properties measured | Reference to standardized method (e.g. ISO 14577-1:2003)/ Internal method reference |
|---------------------------|--|------------------------------------|---|
| Ethanol | Oil, Gas & Chemicals | Esters as Ethyl Acetate | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | Aldehyde as Acetaldehyde | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | *Total Higher Alcohols | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | Methanol | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | Furfural | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | Benzene | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | Crotonaldehyde | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | ISO-Propanol (IPA) | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | N Propanol | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | Iso-Butanol | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | N-Butanol | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | Iso-Amyl Alcohol | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | N-Amyl Alcohol | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | Sec Butanol | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | Tert Butanol | OGC/SGS ETOH 0001-10 |

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| Ethanol | Oil, Gas & Chemicals | Acetal | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | Cyclohexane | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | Acetone | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | 2 methyl-1-butanol | OGC/SGS ETOH 0001-10 |
| Ethanol | Oil, Gas & Chemicals | Volatile impurity in ethanol by GC include Methanol, aldehydes, other alcohols, aromatics, glycols & miscellaneous) | OGC TG ETOH-02 (2017) |
| Ethanol | Oil, Gas & Chemicals | Strength by volume at 20°C | OIML |
| Ethanol | Oil, Gas & Chemicals | Acidity as Acetic Acid | ASTM D-1613- 06(2012) |
| Ethanol | Oil, Gas & Chemicals | Water Content | ASTM E-203-16 |
| Ethanol | Oil, Gas & Chemicals | Permanganate Time Test | ASTM D-1363- 19 |
| Ethanol | Oil, Gas & Chemicals | Curve | UV-SGS-CORP-13.001 |
| Ethanol | Oil, Gas & Chemicals | Copper as Cu | ASTM D1688-17 |
| Ethanol | Oil, Gas & Chemicals | Total Sulphur | ASTM D-5453-19 |
| Ethanol | Oil, Gas & Chemicals | Lead as Pb | ASTM D3559-15 |
| Ethanol | Oil, Gas & Chemicals | Color | ASTM D-1209 -19 |
| Ethanol | Oil, Gas & Chemicals | pH | ASTM D-6423-19 |
| Ethanol | Oil, Gas & Chemicals | Density | ASTM D-4052-18 |
| Ethanol | Oil, Gas & Chemicals | Dry Matter | ASTM D-1353-13 |
| Ethanol | Oil, Gas & Chemicals | Absorbance @ 270nm | UV-SGS-CORP-13.001 |
| Ethanol | Oil, Gas & Chemicals | Absorbance @ 240nm | UV-SGS-CORP-13.001 |

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| Ethanol | Oil, Gas & Chemicals | Absorbance @ 230nm | UV-SGS-CORP-13.001 |
| Ethanol | Oil, Gas & Chemicals | Absorbance @ 220nm | UV-SGS-CORP-13.001 |
| Gas Oil | Oil, Gas & Chemicals | Acid number | ASTM D664-18 |
| Gas Oil | Oil, Gas & Chemicals | Ash content | ASTM D482-19 |
| Gas Oil | Oil, Gas & Chemicals | Cetane Index | ASTM D976-16 |
| Gas Oil | Oil, Gas & Chemicals | CFPP | ASTM D6371-17 |
| Gas Oil | Oil, Gas & Chemicals | Cloud Point | ASTM D2500-17 |
| Gas Oil | Oil, Gas & Chemicals | Color ASTM | ASTM D1500-17 |
| Gas Oil | Oil, Gas & Chemicals | Conradson Carbon Residue on 10% distillation residue | ASTM D189- 19 |
| Gas Oil | Oil, Gas & Chemicals | Copper corrosion 3hrs@50 °C | ASTM D130-19 |
| Gas Oil | Oil, Gas & Chemicals | Density @ 15°C | ASTM D4052-18 |
| Gas Oil | Oil, Gas & Chemicals | IBP | ASTM D86-20 |
| Gas Oil | Oil, Gas & Chemicals | 10 % Recovery | ASTM D86-20 |
| Gas Oil | Oil, Gas & Chemicals | 50 % Recovery | ASTM D86-20 |
| Gas Oil | Oil, Gas & Chemicals | 90 % Recovery | ASTM D86-20 |
| Gas Oil | Oil, Gas & Chemicals | 95 % Recovery | ASTM D86-20 |
| Gas Oil | Oil, Gas & Chemicals | FBP | ASTM D86-20 |
| Gas Oil | Oil, Gas & Chemicals | Flash Point PMcc | ASTM D93-20 |
| Gas Oil | Oil, Gas & Chemicals | Kinematic viscosity at 40 °C | ASTM D445-19 |
| Gas Oil | Oil, Gas & Chemicals | Viscosity Stabinger at 40 °C | ASTM D7042-20 |

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| Gas Oil | Oil, Gas & Chemicals | Nitrogen | ASTM D 4629-17 |
| Gas Oil | Oil, Gas & Chemicals | Pour Point | ASTM D 97-17 |
| Gas Oil | Oil, Gas & Chemicals | Sulphur content | ASTM D 5453-19 |
| Gas Oil | Oil, Gas & Chemicals | Water content | ASTM D 6304-16 |
| Gas Oil | Oil, Gas & Chemicals | Aromatics | ASTM D1319-20 |
| Gas Oil | Oil, Gas & Chemicals | FAME content | EN 14078-14 |
| Gas Oil | Oil, Gas & Chemicals | Water and sediment | ASTM D1796-16 |
| Fuel Oil | Oil, Gas & Chemicals | Acid Number | ASTM D664-18 |
| Fuel Oil | Oil, Gas & Chemicals | API Gravity | ASTM D1298-17 |
| Fuel Oil | Oil, Gas & Chemicals | Ash Content | ASTM D482-19 |
| Fuel Oil | Oil, Gas & Chemicals | Conradson Carbon Residue | ASTM D189-19 |
| Fuel Oil | Oil, Gas & Chemicals | Density at 15°C | ASTM D4052-18 |
| Fuel Oil | Oil, Gas & Chemicals | Flash Point PMcc | ASTM D93-20 |
| Fuel Oil | Oil, Gas & Chemicals | Heat of Combustion | ASTM D240-19 |
| Fuel Oil | Oil, Gas & Chemicals | Kinematic viscosity | ASTM D445-19 |
| Fuel Oil | Oil, Gas & Chemicals | Pour Point | ASTM D97-17 |
| Fuel Oil | Oil, Gas & Chemicals | Sediments by extraction | ASTM D473-17 |
| Fuel Oil | Oil, Gas & Chemicals | Total Sulphur Content | ASTM D5453-19 |
| Fuel Oil | Oil, Gas & Chemicals | Sodium | IP 501/05 |
| Fuel Oil | Oil, Gas & Chemicals | Calcium | IP 501/05 |
| Fuel Oil | Oil, Gas & Chemicals | Phosphorous | IP 501/05 |

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| Fuel Oil | Oil, Gas & Chemicals | Vanadium | IP 501/05 |
| Fuel Oil | Oil, Gas & Chemicals | Aluminum | IP 501/05 |
| Fuel Oil | Oil, Gas & Chemicals | Silicon | IP 501/05 |
| Fuel Oil | Oil, Gas & Chemicals | Nickel | IP 501/05 |
| Fuel Oil | Oil, Gas & Chemicals | Iron | IP 501/05 |
| Jet Fuel | Oil, Gas & Chemicals | Thermal Oxidation Stability of Aviation Turbine Fuels (ASTM D3241-20) | ASTM D3241-20 |
| Jet Fuel | Oil, Gas & Chemicals | MSEP | ASTM D3948-20 |
| Jet Fuel | Oil, Gas & Chemicals | Sulphur content | ASTM D4294-16 |
| Jet Fuel | Oil, Gas & Chemicals | Smoke point | ASTM D1322-19 |
| Jet Fuel | Oil, Gas & Chemicals | Density at 15°C | ASTM D4052-18 |
| Jet Fuel | Oil, Gas & Chemicals | Saybolt color | ASTM D156-15 |
| Jet Fuel | Oil, Gas & Chemicals | Flash Point (Abel Cup) | IP 170-15 |
| Jet Fuel | Oil, Gas & Chemicals | Freezing Point | ASTM D2386-19 |
| Jet Fuel | Oil, Gas & Chemicals | IBP | ASTM D86-20 |
| Jet Fuel | Oil, Gas & Chemicals | 10 % Recovery | ASTM D86-20 |
| Jet Fuel | Oil, Gas & Chemicals | 50 % Recovery | ASTM D86-20 |
| Jet Fuel | Oil, Gas & Chemicals | 90 % Recovery | ASTM D86-20 |
| Jet Fuel | Oil, Gas & Chemicals | 95 % Recovery | ASTM D86-20 |
| Jet Fuel | Oil, Gas & Chemicals | FBP | ASTM D86-20 |
| Jet Fuel | Oil, Gas & Chemicals | Aromatics | ASTM D1319-20 |
| Jet Fuel | Oil, Gas & Chemicals | Kin. Viscosity at -20 C | ASTM D445-21 |

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| Jet Fuel | Oil, Gas & Chemicals | Existent Gum | ASTM D381-19 |
| Jet Fuel | Oil, Gas & Chemicals | Mercaptan | ASTM D3227-16 |
| Jet Fuel | Oil, Gas & Chemicals | Specific energy | ASTM D3338-20 |
| LPG | Oil, Gas & Chemicals | Ethane | ASTM D2163-19 |
| LPG | Oil, Gas & Chemicals | Ethylene | ASTM D2163-19 |
| LPG | Oil, Gas & Chemicals | Propane | ASTM D2163-19 |
| LPG | Oil, Gas & Chemicals | Propylene | ASTM D2163-19 |
| LPG | Oil, Gas & Chemicals | Iso-butane | ASTM D2163-19 |
| LPG | Oil, Gas & Chemicals | n-butane | ASTM D2163-19 |
| LPG | Oil, Gas & Chemicals | Trans-2-butene | ASTM D2163-19 |
| LPG | Oil, Gas & Chemicals | 1-butene | ASTM D2163-19 |
| LPG | Oil, Gas & Chemicals | Iso-butene | ASTM D2163-19 |
| LPG | Oil, Gas & Chemicals | Cis-2-butene | ASTM D2163-19 |
| LPG | Oil, Gas & Chemicals | Iso-pentane | ASTM D2163-19 |
| LPG | Oil, Gas & Chemicals | n-pentane | ASTM D2163-19 |
| LPG | Oil, Gas & Chemicals | 1,3 butadiene | ASTM D2163-19 |
| LPG | Oil, Gas & Chemicals | Hexane | ASTM D2163-19 |
| Natural Gas / Liquefied Natural Gas | Oil, Gas & Chemicals | Methane | GPA 2261-20 / ASTM D1945-19 |
| Natural Gas / Liquefied Natural Gas | Oil, Gas & Chemicals | Ethane | GPA 2261-20 / ASTM D1945-19 |
| Natural Gas / Liquefied Natural Gas | Oil, Gas & Chemicals | Propane | GPA 2261-20 / ASTM D1945-19 |
| Natural Gas / Liquefied Natural Gas | Oil, Gas & Chemicals | Iso-butane | GPA 2261-20 / ASTM D1945-19 |

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| Natural Gas / Liquefied Natural Gas | Oil, Gas & Chemicals | n-butane | GPA 2261-20 / ASTM D1945-19 |
| Natural Gas / Liquefied Natural Gas | Oil, Gas & Chemicals | Iso-pentane | GPA 2261-20 / ASTM D1945-19 |
| Natural Gas / Liquefied Natural Gas | Oil, Gas & Chemicals | n-pentane | GPA 2261-20 / ASTM D1945-19 |
| Natural Gas / Liquefied Natural Gas | Oil, Gas & Chemicals | Hexane | GPA 2261-20 / ASTM D1945-19 |
| Natural Gas / Liquefied Natural Gas | Oil, Gas & Chemicals | Nitrogen | GPA 2261-20 / ASTM D1945-19 |
| Natural Gas / Liquefied Natural Gas | Oil, Gas & Chemicals | Carbon dioxide | GPA 2261-20 / ASTM D1945-19 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Total acid number (TAN) | ASTM D664-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Pour Point | ASTM D97-17 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Kin viscosity at 40 °C | ASTM D445-19 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Kin viscosity at 100 °C | ASTM D445-19 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Viscosity Index | ASTM D2270-16 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Flash point | ASTM D93-20 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Density | ASTM D4052-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Water content | ASTM D6304-16 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Total Base number (TBN) | ASTM D2896-16 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Aluminum | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Chromium | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Cadmium | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Copper | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Iron | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Magnesium | ASTM D5185-18 |

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| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Manganese | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Molybdenum | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Nickel | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Sodium | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Tin | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Titanium | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Vanadium | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Calcium | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Phosphorous | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Zinc | ASTM D5185-18 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Carbon residue | ASTM D189- 19 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Color | ASTM D1500-17 |
| Engine Oil (Fresh/unused) | Oil, Gas & Chemicals | Flash point COC | ASTM D92-18 |
| Gasoline / Naphtha | Oil, Gas & Chemicals | Density at 15 C | ASTM D4052-18 |
| Gasoline / Naphtha | Oil, Gas & Chemicals | Benzene | ASTM D6277-17 |
| Gasoline / Naphtha | Oil, Gas & Chemicals | Manganese | ASTM D3831-17 |
| Gasoline / Naphtha | Oil, Gas & Chemicals | Lead | ASTM D3237-17 |
| Gasoline / Naphtha | Oil, Gas & Chemicals | Aromatics | ASTM D1319-20 |
| Gasoline / Naphtha | Oil, Gas & Chemicals | Olefins | ASTM D1319-20 |
| Gasoline / Naphtha | Oil, Gas & Chemicals | Saturates | ASTM D1319-20 |
| Gasoline / Naphtha | Oil, Gas & Chemicals | Sulfur | ASTM D-5453-19 |

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| Gasoline / Naphtha | Oil, Gas & Chemicals | Ether/Oxygenates | ASTM D4815-19 |
| Gasoline / Naphtha | Oil, Gas & Chemicals | Existent Gum | ASTM D381-19 |
| Gasoline / Naphtha | Oil, Gas & Chemicals | Mercaptan | ASTM D3227-19 |
| Crude/Condensate | Oil, Gas & Chemicals | Density at 15 C / Relative Density /API | ASTM D4052-18 |
| Crude/Condensate | Oil, Gas & Chemicals | Salt Content | ASTM D3230-19 |
| Crude/Condensate | Oil, Gas & Chemicals | Water | ASTM D4928-18 |
| Crude/Condensate | Oil, Gas & Chemicals | Sediment | ASTM D473-17 |

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