# Hellenic Accreditation System

Annex F1/22 to the Certificate No. **65**-8

# SCOPE of ACCREDITATION

of the

## Analytical Testing Laboratories

of

## SPECTRUMLABS S.A.

| Materials / Products to be tested | Types of test / Properties to be measured | Applied methods / Techniques to be used |
|---|---|---|
| | **Chemical tests** | |
| 1. Petroleum products | Determination of sulfur content by EDXRF (% mass) | ASTM D4294-24<br>ISO 8754:2025 |
| | Determination of kinematic viscosity and calculation of dynamic viscosity ($mm^2/s$, cSt) | ASTM D445-24<br>ISO 3104:2023 |
| | Determination of total sediment by hot filtration, TSE (% mass) | ISO 10307-1:2009 (2019)<br>ASTM D4870-22 |
| | Determination of total sediment by thermal ageing, TSP (Procedure A) and chemical ageing, TSA (Procedure B) (% mass) | ISO 10307-2:2009 (2019)<br>ASTM D4870-22<br>IP 390:2011 (2017) |
| | Determination of flash point ($^0C$) | ASTM D93-25<br>ISO 2719: 2016 & Amd1: 2021 |
| | Determination of CCAI (Calculated Carbon Aromaticity Index) for petroleum products | ISO 8217:2024 |
| | Determination of Density by Digital Density Meter - Oscillating U-tube method | ASTM D4052-22<br>ISO 12185:2024 |
| | Determination of water content by distillation (% mass) | ASTM D95-23 E1<br>ISO 3733:1999 (2021) |
| | Determination of pour point ($^0C$) | ASTM D97-17b (2022)<br>ISO 3016:2019 (2024) |
| | Determination of Al, Si, V, Ni, Fe, Na, Ca, Zn, P in residual fuel oil (mg/kg) | IP 501:2005 (2019) |

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| 1. Petroleum products | Determination of ash (% mass) | ISO 6245:2001 (2023)<br>ASTM D482-19el |
| | Determination of cold filter plugging point (CFPP) ($^0$C) | EN 116:2015<br>ASTM D6371-24<br>IP 309:2016 |
| | Determination of hydrogen sulfide in liquid phase ($H_2S$) (mg/kg) | IP 570:2015 (2021) Procedure A<br>ASTM D7621-16 (2021) |
| | Determination of carbon residue – method (MCR) (% m/m) | ASTM D4530-25<br>ISO 10370:2014 (2020) |
| | Distillation of Petroleum Products at Reduced Pressure (%vol, ˚C) | ASTM D1160-24 |
| | Determination of Bromine Number ($grBr_2$/100 g) | ASTM D1159-23 |
| | Determination of Acid Number by Potentiometric Titration (mgKOH/g) | ASTM D664-24 |
| | Determination of water by coulometric Karl Fischer titration | ASTM D6304-25<br>ISO 12937:2000 |
| | Determination of aromatic hydrocarbon types | ASTM D6591-19<br>EN 12916:2024 |
| | Distillation of petroleum products at atmospheric pressure | ASTM D86-23ae2<br>ISO 3405:2019 |
| 2a. Low-alloy steel | Determination of C, Si, Mn, P, S, Cr, Ni, Mo, Cu | ASTM E415-21 |
| 2b. Aluminum and aluminum alloys | Determination of Cd, Cr, Cu, Fe, Mg, Mn, Ni, Pb, Si, Sn, Zn, Ti, V | ASTM E1251-24 |
| 2c. Copper and copper alloys | Determination of Al, As, Co, Cr, Fe, Mn, Ni, P, Pb, S, Sb, Si, Sn, Zn, Ag, Bi | EN 15079:2015 |
| 3a. Potable water | Determination of pH | ISO 10523:2008 (2023) |
| | Determination of conductivity (μS/cm) | ISO 7888:1985 (2023) |
| | Determination of nitrate (mg/L) | In house method T.M. 42 based on ISO 23696-1:2023 |
| | Determination of turbidity (NTU) | ISO 7027-1:2016 (2021) |
| | Determination of Chloride as $CI^-$ (mg/L) | ISO 9297:1989 (2021) |
| | Determination of Chlorite & Chlorate Concentration (μg/L) | EPA METHOD 300.1 Rev.1 (1999) |
| | Determination of fluoride ($F^-$), chloride ($Cl^-$), nitrate ($NO_3^-$), nitrite ($NO_2^-$), bromide ($Br^-$), ortho-phosphate ($PO_4^{3-}$) and sulfate ($SO_4^{2-}$) (mg/L) | ISO 10304-1:2007 |
| | Determination of ammonium ions ($NH_4^+$) (mg/L) | ISO 14911:1998 |
| | Determination of heavy metals As, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Se, Zn (μg/L) | ISO 17294-1:2024<br>ISO 17294-2:2023 |
| | Determination of the sum of calcium and magnesium – EDTA titrimetric method | ISO 6059:1984 |

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| 3b. Ballast water | Determination of total residual oxidant (TRO) as TRC (mg/L) | ISO 7393-2: 2017 (2023) |
| | Determination of Chlorite & Chlorate Concentration (μg/L) | EPA METHOD 300.1 Rev.1 (1999) |
| 3c. Wastewater | Determination of total suspended solids (TSS) (mg/L) | APHA SM 2540D |
| 3d. Cooling and coolant water | Determination of pH in engine coolants | ASTM D1287-11 (2020) |
| | Determination of chloride ($Cl^-$), nitrate ($NO_3^-$), nitrite ($NO_2^-$), ortho-phosphate ($PO_4^{3-}$) and sulfate ($SO_4^{2-}$) (mg/L) | ASTM D5827-22 |
| 4. Firefighting foams | Determination of PFAS (PFOS, PFNA, PFOA, PFHxS) perfluoroalkyl and polyfluoroalkyl substances (μg/L) | In house method T.M. 118 based on ISO 21675:2019 |
| 5. Reinforced plastic composites | Determination of the textile glass and mineral fillet content | EN ISO 1172:2023 |
| 6. Materials and articles in contact with foodstuffs – Plastics | Determination of overall migration of substances in evaporable simulants by total immersion, article filling, or using a cell | EN 1186-1:2002<br>EN 1186-3:2022 |
| **Mechanical tests** | | |
| Welds, metallic materials | Tensile test<br>(Proof Strength not included) | EN ISO 6892-1:2019<br>EN ISO 15614-1:2017 & A1:2019<br>EN ISO 4136:2022<br>ASTM E8/E8M-25<br>ΕΛΟΤ 1421-3:2007<br>EN 10080:2005<br>EN ISO 15630-1:2019<br>ASME IX:2025 / QW 150<br>EN ISO 5178:2019 |
| | Hardness test according to the Vickers method | EN ISO 6507-1:2023 (HV-10, HV-30)<br>EN ISO 9015-1:2011<br>ASTM E92-23 |
| | Bend test | EN ISO 5173:2023<br>EN ISO 7438:2020<br>ΕΛΟΤ 934:1988<br>ASTM E290-22<br>ASME IX:2025 / QW 160<br>ΕΛΟΤ 1421-3:2007<br>EN 10080:2005<br>EN ISO 15630-1:2019 |
| | Impact test according to the Charpy method | EN ISO 9016:2022<br>EN ISO 148-1:2016 (2023)<br>ASME IX:2025 / QW 170 |
| | Drift-expanding test in metallic tubes | EN ISO 8493:2004<br>ASTM A370-24a |
| | Flattening test in metallic tubes | EN ISO 8492:2013<br>ASTM A370-24a |

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| Welds, metallic materials | Hydrostatic testing of metallic materials (tubes, valves, gate valves) | EN 12266-1:2012<br>EN 10255:2004+A1:2007<br>EN 1074-1:2000 |
| Welds, metallic and cast materials | Macroscopic and microscopic examination | EN ISO 17639:2022<br>EN ISO 6520-1:2007 (2021)<br>ASTM E1351-01 (2020)<br>ISO 15614-2:2025<br>ASME IX:2025 / QW 183 |
| Reinforced plastic composites | Determination of tensile properties | EN ISO 527-1:2019<br>EN ISO 527-4:2023 |
| | Determination of flexural properties | EN ISO 14125:1998 & A1:2011<br>EN ISO 178:2019 |

Site of assessment: **Laboratory permanent premises, Efplias 49, Piraeus, Greece.**
Approved Signatories: **N. Hatzopoulos, E. Mante, K. Berketis, M. Koukouli.**

This Scope of Accreditation replaces the previous one dated August 19th, 2024.
The Accreditation Certificate No. **65**-8, to ELOT EN ISO/IEC 17025:2017, is valid until 28.02.2031.

Athens, November 13th, 2025

Konstantinou Evangelos Apostolos
*CEO of ESYD*