ARO SCIENTIFIC

PRODUCT INFORMATION

CERTIFIED REFERENCE MATERIALS AND CONSUMABLES

Precision. Accuracy. Measurement Certainty

CONTENTS

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OUR ACCREDITATIONS

Accreditation

ARO Scientific Ltd holds dual accreditation status under The United Kingdom Accreditation Service (UKAS) to international standards ISO/IEC 17025 and ISO 17034, CAB No. 27393. The United Kingdom Accreditation Service (UKAS) is the sole national accreditation body recognised by the UK Government for certification and conformity to internationally agreed standards for testing, calibration and inspection.

ISO 17034

ISO 17034 provides the highest level of Quality Assurance, confirms the expertise of the manufacturer, the integrity of the production systems and the reliability of the Certified Reference Materials that it produces. Combined with our ISO 17025 accreditation, the highest level of quality assurance is achieved through ISO 17025 / ISO 17034 accreditations. This is commonly referred to as 'The Gold Standard' in the production of Certified Reference Materials.

ISO/IEC 17025

ISO 17025 s a recognised international standard for competence to carry out testing and calibrations to the standard indicated by international test method protocol or calibration procedures. This requires accredited facilities to comply with all the requirements detailed within the varied sections of the standard. These include: assuring quality of test and calibration results, technical competence of staff employed, environmental conditions and procurement. ISO/IEC 17025 is applicable to laboratories that operate in a multitude of business sectors

International Recognition

UKAS is a signatory to International Laboratory Accreditation Cooperation (ILAC) which is the international body for promoting cooperation between the various inspection body accreditation schemes that operate throughout the world. Other signatories include, but are not limited to, A2LA (USA), COFRAC (France), Dakks (Germany) and JAB (Japan). ISO 17025 / ISO 17034 accreditation denotes competence for customers to make an informed and confident choice in the procurement process.

The UKAS mark ensures buyers have peace of mind. ILAC also bridges international barriers, making trade easier, especially in new growth markets. Our Combined UKAS and ILAC-MRA Mark demonstrates that the accreditation we hold is recognised under the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition

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ACID NUMBER / TOTAL ACID NUMBER

ISO/IEC 17025 and ISO 17034 Acid Number (AN) / Total Acid Number (TAN)
Certified Reference Materials intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes applicable for the test method ASTM D664, or test methods IP 177, ISO 6619, where applicable.

UKAS REFERENCE MATERIALS 27393
UKAS TESTING 27393

New and used petroleum products are measured to confirm the Acid Number of the product under test. The Acid Number is an important quality control test for new and used products. The product under test may contain acidic constituents that are present as additives or from oxidation, contamination or degradation of products formed during use and service. These acidic constituents may indicate the presence of harmful acidic compounds that can accelerate the degradation of oil and lead to equipment failure. Regular monitoring of Acid Number can identify potential issues so that preventative measures can be taken to prevent costly breakdowns and extend the lifespan of machinery. This proactive approach helps in optimising maintenance schedules, reducing downtime, and maximizing operational efficiency.

Acid number - The quantity of base, expressed in milligrams of potassium hydroxide per gram of sample, required to titrate a sample in the solvent from its initial meter reading to a meter reading corresponding to a freshly prepared aqueous basic buffer solution or a well-defined inflection point as specified in the test method.

Our Acid Number (AN) / Total Acid Number (TAN) Certified Reference Materials have been characterised in accordance with ASTM D664, Method A. Manufacture and characterisation has been performed in accordance with our accreditation to ISO/IEC 17025 and ISO 17034, UKAS CAB No. 27393.

Part No.	Certification	Matrix	Nominal Value	Pack Size
TAN001	ISO 17025 / ISO 17034	Mineral Oil	0.1 mg KOH/g	125 g
TAN001/3	ISO 17025 / ISO 17034	Mineral Oil	0.1 mg KOH/g	3 x 125 g
TAN005	ISO 17025 / ISO 17034	Mineral Oil	0.5 mg KOH/g	125 g
TAN005/3	ISO 17025 / ISO 17034	Mineral Oil	0.5 mg KOH/g	3 x 125 g
TAN010	ISO 17025 / ISO 17034	Mineral Oil	1.0 mg KOH/g	125 g
TAN010/3	ISO 17025 / ISO 17034	Mineral Oil	1.0 mg KOH/g	3 x 125 g
TAN015	ISO 17025 / ISO 17034	Mineral Oil	1.5 mg KOH/g	125 g
TAN015/3	ISO 17025 / ISO 17034	Mineral Oil	1.5 mg KOH/g	3 x 125 g
TAN020	ISO 17025 / ISO 17034	Mineral Oil	2.0 mg KOH/g	50 g
TAN020/3	ISO 17025 / ISO 17034	Mineral Oil	2.0 mg KOH/g	3 x 50 g
TAN025	ISO 17025 / ISO 17034	Mineral Oil	2.5 mg KOH/g	50 g
TAN025/3	ISO 17025 / ISO 17034	Mineral Oil	2.5 mg KOH/g	3 x 50 g
TAN030	ISO 17025 / ISO 17034	Mineral Oil	3.0 mg KOH/g	50 g
TAN030/3	ISO 17025 / ISO 17034	Mineral Oil	3.0 mg KOH/g	3 x 50 g
TAN050	ISO 17025 / ISO 17034	Mineral Oil	5.0 mg KOH/g	50 g
TAN050/3	ISO 17025 / ISO 17034	Mineral Oil	5.0 mg KOH/g	3 x 50 g

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AROMATICS CONTENT

Aromatics Certified Reference Material (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes applicable for the test method ASTM D5580 for the determination of Aromatics in finished gasoline by Gas Chromatography (GC).

The test method is also applicable to gasolines containing oxygenates, such as alcohols and ethers as additives, because it has been found that they do not interfere with the analysis of benzene and other aromatics.

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-ACGA01	Round Robin	Gasoline	28.2 % Volume	250 mL

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BASE NUMBER / TOTAL BASE NUMBER

ISO/IEC 17025 and ISO 17034 Base Number (BN) / Total Base Number (TBN) Certified Reference Materials intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes applicable for the test method ASTM D2896, or test methods IP 276, ISO 3771, where applicable.

UKAS REFERENCE MATERIALS 27393

UKAS TESTING 27393

New and used petroleum products may contain basic constituents that are present as additives. The relative amounts of these materials can be determined by titrating with acids. The neutralisation number, which is expressed as base number, is a measure of this amount of basic substance in the oil always under the conditions of the test. The neutralisation number is used as a guide in the quality control of lubricating oil formulations. It sometimes is used as a measure of lubricant degradation in service.

base *number*, n—the quantity of a specified acid, expressed in terms of the equivalent number of milligrams of potassium hydroxide per gram of sample, required to titrate a sample in a specified solvent to a specified endpoint using a specified detection system.

Our Base Number (BN) / Total Base Number (TBN) Certified Reference Materials have been characterised in accordance with ASTM D2896, Procedure A. Manufacture and characterisation has been performed in accordance with ARO's accreditation to ISO/IEC 17025 and ISO 17034, UKAS CAB No. 27393.

Part No.	Certification	Matrix	Nominal Value	Pack Size
TBN1	ISO 17025 / ISO 17034	Mineral Oil	1.0 mg KOH/g	125 g
TBN1/3	ISO 17025 / ISO 17034	Mineral Oil	1.0 mg KOH/g	3 x 125 g
TBN3	ISO 17025 / ISO 17034	Mineral Oil	3.0 mg KOH/g	50 g
TBN3/3	ISO 17025 / ISO 17034	Mineral Oil	3.0 mg KOH/g	3 x 50 g
TBN6	ISO 17025 / ISO 17034	Mineral Oil	6.0 mg KOH/g	50 g
TBN6/3	ISO 17025 / ISO 17034	Mineral Oil	6.0 mg KOH/g	3 x 50 g
TBN10	ISO 17025 / ISO 17034	Mineral Oil	10.0 mg KOH/g	50 g
TBN10/3	ISO 17025 / ISO 17034	Mineral Oil	10.0 mg KOH/g	3 x 50 g
TBN15	ISO 17025 / ISO 17034	Mineral Oil	15.0 mg KOH/g	50 g
TBN15/3	ISO 17025 / ISO 17034	Mineral Oil	15.0 mg KOH/g	3 x 50 g
TBN30	ISO 17025 / ISO 17034	Mineral Oil	30.0 mg KOH/g	50 g
TBN30/3	ISO 17025 / ISO 17034	Mineral Oil	30.0 mg KOH/g	3 x 50 g
TBN40	ISO 17025 / ISO 17034	Mineral Oil	40.0 mg KOH/g	50 g
TBN40/3	ISO 17025 / ISO 17034	Mineral Oil	40.0 mg KOH/g	3 x 50 g
TBN70	ISO 17025 / ISO 17034	Mineral Oil	70.0 mg KOH/g	50 g
TBN70/3	ISO 17025 / ISO 17034	Mineral Oil	70.0 mg KOH/g	3 x 50 g

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BENZENE CONTENT

Benzene Content Certified Reference Material (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes applicable for the test method ISO 22854, EN 238, ASTM D 6839, ASTM D 4053 for the determination of Benzene Content in engine fuels.

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-BEGA01	Round Robin	Gasoline	0.75 % Volume	250 mL

CLOUD POINT

ISO 17034 Cloud Point Certified Reference Material (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used to determine cloud point, applicable for the test method IP 219, or test methods ASTM D2500, ISO 3015, or other applicable methods.

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Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-CPGO01	ISO 17034	Diesel	-5.0 °C	250 mL

COLD FILTER PLUGGING POINT (CFPP)

ISO 17034 Cold Filter Plugging Point (CFPP) Certified Reference Material (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used to determine cold filter plugging point, applicable for the test method IP 309, or test methods ASTM D6371, ISO 116, where applicable.

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Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-CFGO01	ISO 17034	Diesel	-10.0 °C	250 mL

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COLOUR REFERENCE STANDARDS

These colour reference standards are ideal for routine calibration of colour measuring instruments, verification of test data and ensuring good inter-laboratory or inter-instrument correlation. The range of liquid standards includes AOCS-Tintometer, ASTM, Gardner, Lovibond RYBN, Pt-Co and Saybolt Colour, the key colour scales for many products. They are supplied with full traceability to the internationally recognised standards of ISO/IEC 17025 & ISO 17034, accredited by UKAS (ASTM, Gardner & Saybolt Colour) or the ISO 9001 quality system (AOCS-Tintometer, Lovibond RYBN & Pt-Co Colour) under the control of Tintometer's ISO 9001 Quality Management System.

AOCS Tintometer Colour Reference Standards

AOCS-Tintometer colour reference standards are manufactured and certified by The Tintometer Limited. These colour standards have been manufactured and tested under the control of Tintometer's ISO 9001 Quality Management System. AOCS-Tintometer colour scale used as a standard by oil and fats refineries, rendering plants, and companies trading or associated with the American edible oils and fats industry. These colour reference standards intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used to determine colour, applicable for methods AOCS Cc 13b-45, AOCS Cc 8d-55, AOCS Cc 13j-97, or other applicable test methods.

Part No.	Certification	Matrix	Nominal Value	Pack Size
134240	ISO 9001	Aqueous Solution	0.4R 2.0Y (5¼")	500 mL
134250	ISO 9001	Aqueous Solution	1.6R 9.0Y (5¼")	500 mL
134260	ISO 9001	Aqueous Solution	1.9R 12Y (5¼")	500 mL
134270	ISO 9001	Aqueous Solution	2.5R 20Y (5¼")	500 mL
134280	ISO 9001	Aqueous Solution	3.0R 28Y (5¼")	500 mL

ASTM (ASTM D6045, D1500) Colour Reference Standards

ISO/IEC 17025 and ISO 17034 ASTM Colour Reference Standard intended to be used for calibration and / or verification of measuring equipment, method validation, method verification, or other quality control processes applicable for colour measuring instruments. Applicable for test method ASTM D6045, ASTM D1500, or other applicable test methods.

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UKAS REFERENCE MATERIALS 27393

The manufacturing, testing and certification of ARO's ASTM Colour Reference Standards has been performed in accordance with ARO's accreditation to ISO 17034, UKAS CAB No. 27393 and Tintometer's accreditation to ISO/IEC 17025, UKAS CAB No. 0630.

Part No.	Certification	Matrix	Nominal Value	Pack Size
134290	ISO 17025 / ISO 17034	Mineral Oil	< 0.5	500 mL
134000	ISO 17025 / ISO 17034	Mineral Oil	1	500 mL
134010	ISO 17025 / ISO 17034	Mineral Oil	3	500 mL
134020	ISO 17025 / ISO 17034	Mineral Oil	5	500 mL
134030	ISO 17025 / ISO 17034	Mineral Oil	7	500 mL

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GARDNER (ASTM D1544, D6166) COLOUR REFERENCE STANDARDS

Gardner (ASTM D1544, D6166) Colour Reference Standards are for routine calibration of colour measuring instruments and verification of test data. These colour standards are dual UKAS certified to the International Standards ISO/IEC 17025 and ISO 17034. Gardner (ASTM D1544, D6166) Colour Reference Standards are typically used in, but not limited to, the analysis of drying oils, varnishes, fatty acids, polymerized fatty acids, and resin solutions.

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UKAS REFERENCE MATERIALS
27393

The manufacturing, testing and certification of ARO's ASTM Colour Reference Standards has been performed in accordance with ARO's accreditation to ISO 17034, UKAS CAB No. 27393 and Tintometer's accreditation to ISO/IEC 17025, UKAS CAB No. 0630.

Part No.	Certification	Matrix	Nominal Value	Pack Size
134200	ISO 17025 / ISO 17034	Mineral Oil	2	500 mL
134210	ISO 17025 / ISO 17034	Mineral Oil	5	500 mL
134220	ISO 17025 / ISO 17034	Mineral Oil	8	500 mL

Lovibond RYBN Colour Reference Standards

Lovibond RYBN colour reference standards are manufactured and certified by The Tintometer Limited. These colour standards have been manufactured and tested under the control of Tintometer's ISO 9001 Quality Management System.

The Lovibond® Scale is based on 84 calibrated glass colour standards of different densities of magenta (red), yellow, blue and neutral, graduating from desaturated to fully saturated. Sample colours are matched by a suitable combination of the three primary colours together with neutral filters, resulting in a set of Lovibond® RYBN units that define the colour.

Since several million combinations are available, it is possible to match the colour of almost any sample; it is particularly popular for measuring the colour of oils and fats, chemicals, pharmaceuticals and syrups. Typically used in, but not limited to, AOCS Cc 13e, AOCS Cc 13j-97, ISO 15305, ISO 27608, MS 252 : Part 16, MS 817 : Part 12, IP17 Method A.

Part No.	Certification	Matrix	Nominal Value	Pack Size
134080	ISO 9001	Aqueous Solution	0.8R 2.0Y 0.1N (5¼")	500 mL
134090	ISO 9001	Aqueous Solution	1.4R 4.0Y 0.5N (5¼")	500 mL
134100	ISO 9001	Aqueous Solution	2.0R 7.0Y 0.5N (5¼")	500 mL
134110	ISO 9001	Aqueous Solution	2.1R 11.0Y 0.5N (5¼")	500 mL
134120	ISO 9001	Aqueous Solution	2.5R 14.0Y 0.7N (5¼")	500 mL
134130	ISO 9001	Aqueous Solution	3.1R 22.0Y 085N (5¼")	500 mL
134230	ISO 9001	Aqueous Solution	3.4R 30.0Y 0.9N (5¼")	500 mL

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SAYBOLT (ASTM D6045, D156) COLOUR REFERENCE STANDARDS

Saybolt (ASTM D6045, D156) Colour Reference Standards are for routine calibration of colour measuring instruments and verification of test data. These colour standards are dual UKAS certified to the International Standards ISO/IEC 17025 and ISO 17034.

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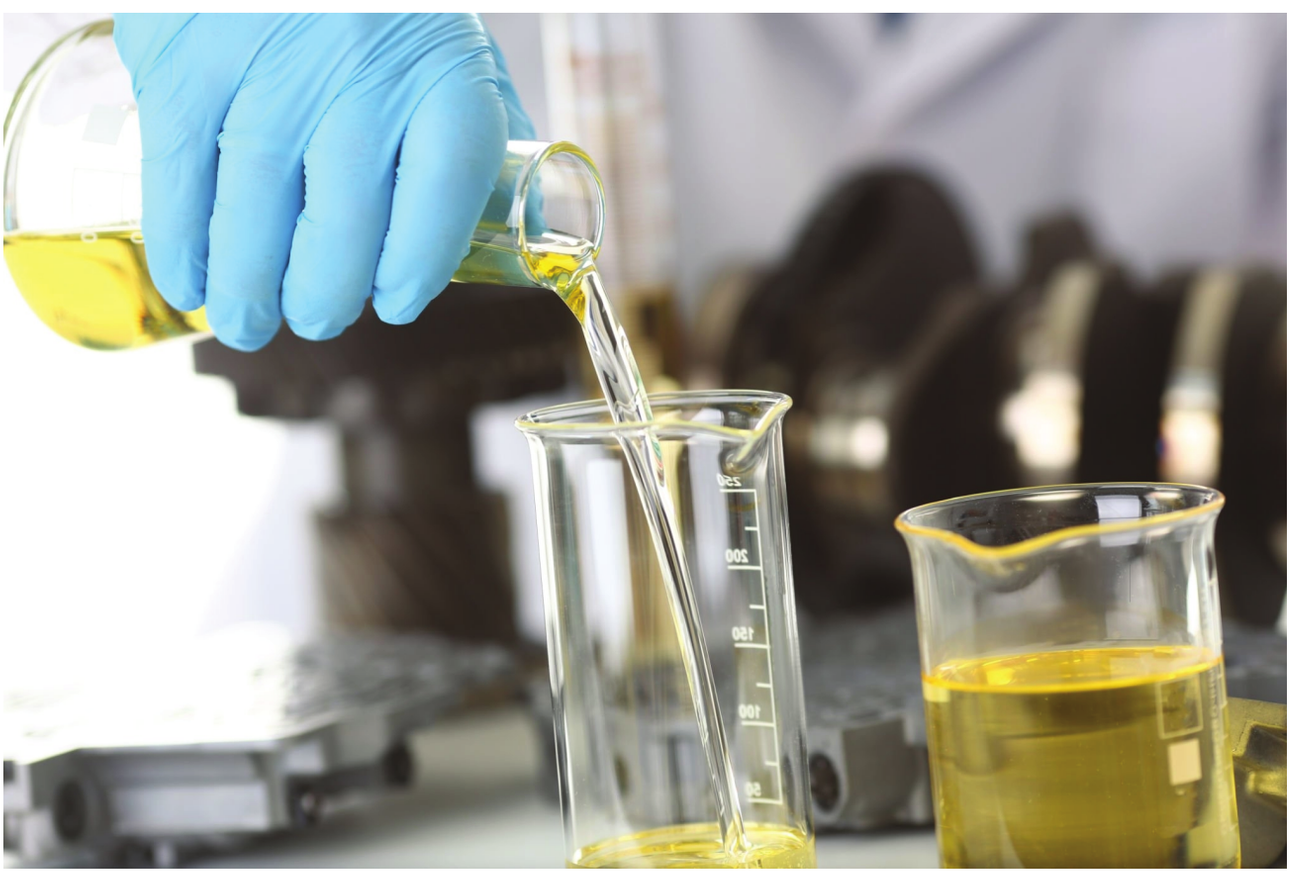
Saybolt (ASTM D6045, D156) Colour Reference Standards are typically used in, but not limited to, the analysis of a wide variety of petroleum products such as undyed motor and aviation gasoline, aviation turbine fuels, naphtha's, kerosine, pharmaceutical white oils, diesel fuel oils, heating oils, and lubricating oils by the automatic tristimulus method.

The manufacturing, testing and certification of ARO's Saybolt Colour Reference Standards has been performed in accordance with ARO's accreditation to ISO 17034, UKAS CAB No. 27393 and Tintometer's accreditation to ISO/IEC are 17025, UKAS CAB No. 0630.

Part No.	Certification	Matrix	Nominal Value	Pack Size
134040	ISO 17025 / ISO 17034	Mineral Oil	-10	500 mL
134050	ISO 17025 / ISO 17034	Mineral Oil	0	500 mL
134060	ISO 17025 / ISO 17034	Mineral Oil	+12	500 mL
134070	ISO 17025 / ISO 17034	Mineral Oil	+25	500 mL



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DENSITY (DIGITAL DENSITY METER)

ISO/IEC 17025 and ISO 17034 Density Certified Reference Material (CRM) intended to be used for calibration or verification of measuring equipment, method validation, method verification, or other quality control processes applicable for the test method ASTM D4052, or test methods IP 365, ISO 12185, or other applicable methods.

ARO's Density Certified Reference Material has been characterised at 15 °C in accordance with ASTM D4052, or equivalent methodology. Manufacture and characterisation has been performed in accordance with ARO's accreditation to ISO/IEC 17025 and ISO 17034, UKAS CAB No. 27393.

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-DEGA01	ISO 17025 / ISO 17034	Gasoline	0.7496 g/mL	250 mL
CRM-DELU01	ISO 17025 / ISO 17034	Lubricant	0.8650 g/mL	250 mL
CRM-DEKR01	ISO 17025 / ISO 17034	Jet Fuel	0.8014 g/mL	250 mL
CRM-DEGO01	ISO 17025 / ISO 17034	Diesel	0.8288 g/mL	250 mL

DISTILLATION

ISO 17034 Distillation Certified Reference Material (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used to determine distillation, applicable for the test method ASTM D86, or test methods IP 123, ISO 3405, or other applicable methods.

ARO's Distillation Certified Reference Materials have been characterised in accordance with ASTM D86 or equivalent test method. Manufacturing, testing and certification has been performed in accordance with ARO's accreditation to ISO 17034, UKAS CAB No. 27393.

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-DIGA01	ISO 17034	Gasoline	34 °C to 159 °C	250 mL
CRM-DIKR01	ISO 17034	Jet Fuel	148 °C to 259 °C	250 mL
CRM-DIGO01	ISO 17034	Diesel	169 °C to 355 °C	250 mL

Nominal values are for reference only. Please refer to our website, customer services or appointed distributors for certified values of current batches.

FLASH POINT
CERTIFIED REFERENCE MATERIALS

The flash point of a liquid is defined as the lowest temperature, corrected to a barometric pressure of 101.3 kPa, at which a substance generates enough vapor to form a vapor/air mixture that can be ignited with an ignition source. Flash point data is used for assessing the safety of liquid fuels, liquid lubricants, and their mixtures, for example, shipping and safety regulations to define “flammable” materials. Flash point data can also indicate the possible presence of highly volatile and flammable material in a relatively non-volatile or non-flammable material.

There are different international methods such as ASTM, IP, ISO, etc. for determining flash point. Test methods recommend flash point testing equipment is verified using Certified Reference Materials (CRM) and on-going performance monitoring is performed using Secondary Working Standards (SWS). We offer a range of certified reference materials and secondary working standards for use with flash point testing equipment.

Abel Closed-Cup Flash Point

ISO 17034 Abel Closed-Cup Flash Point Certified Reference Materials intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used to determine flash point, applicable for the test method IP 170, or test methods ISO 13736, and BS 2000 : Part 170, where applicable.

ilac-MRA UKAS REFERENCE MATERIALS 27393

ARO's Abel Closed-Cup Flash Point Certified Reference Materials have been characterised in accordance with IP 170 or equivalent test method. Manufacturing, testing and certification of Abel flash point has been performed in accordance with ARO's accreditation to ISO 17034, UKAS CAB No. 27393.

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-ABKR01	ISO 17034	Jet Aviation Fuel	40 °C	250 mL

Cleveland Open Cup (COC) Flash Point

ISO/IEC 17025 and ISO 17034 Cleveland Open Cup (COC) Flash Point Certified Reference Materials intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used to determine flash point, applicable for the test method ASTM D92, or test methods IP 36, ISO 2592, or other applicable test methods.

UKAS REFERENCE MATERIALS 27393 UKAS TESTING 27393

Our Cleveland Open Cup (COC) Flash Point Certified Reference Materials have been characterised in accordance with ASTM D92 or equivalent test method. Manufacturing, testing and certification for Cleveland Open Cup (COC) Flash Point has been performed in accordance with ARO's accreditation to ISO/IEC 17025 and ISO 17034, UKAS CAB No. 27393.

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-COC10	ISO 17025 / ISO 17034	Mineral Oil	85 °C	3 x 80 mL
CRM-COC20	ISO 17025 / ISO 17034	Mineral Oil	125 °C	3 x 80 mL
CRM-COC30	ISO 17025 / ISO 17034	Mineral Oil	160 °C	3 x 80 mL
CRM-COC40	ISO 17025 / ISO 17034	Mineral Oil	250 °C	3 x 80 mL
CRM-FCLU01	ISO 17025 / ISO 17034	Lubricant	260 °C	250 mL

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PENSKY-MARTENS CLOSED CUP (PMCC) FLASH POINT

ISO/IEC 17025 and ISO 17034 Pensky-Martens Closed Cup (PMCC) Flash Point Certified Reference Materials intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used to determine flash point, applicable for the test method ASTM D93, or test methods IP 34, ISO 2719, or other applicable test methods.

UKAS REFERENCE MATERIALS 27393 UKAS TESTING 27393

Our Pensky-Martens Closed Cup (PMCC) Flash Point Certified Reference Materials have been characterised in accordance with ASTM D93 Standard Test Method for Flash Point by Pensky Martens Closed Cup Tester, Procedure A, or equivalent test method. Manufacturing, testing and certification for Pensky-Martens Closed Cup (PMCC) Flash Point has been performed in accordance with ARO's accreditation to ISO/IEC 17025 and ISO 17034, UKAS CAB No. 27393

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-PMGO01	ISO 17025 / ISO 17034	Diesel	60 °C	250 mL
CRM-PMCC10	ISO 17025 / ISO 17034	Mineral Oil	80 °C	3 x 80 mL
CRM-PMCC20	ISO 17025 / ISO 17034	Mineral Oil	105 °C	3 x 80 mL
CRM-PMCC30	ISO 17025 / ISO 17034	Mineral Oil	140 °C	3 x 80 mL
CRM-PMCC40	ISO 17025 / ISO 17034	Mineral Oil	230 °C	3 x 80 mL

We can also supply Pensky-Martens Closed Cup (PMCC) Flash Point Certified Reference Material that have been characterised in accordance with ASTM D93 Standard Test Method for Flash Point by Pensky Martens Closed Cup Tester, Procedure B.

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-PMLU01	ISO 17025 / ISO 17034	Lubricant	100 °C	250 mL

Tag Closed Cup Flash Point

Tag Closed Cup Flash Point Certified Reference Materials (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used to determine flash point, applicable for the test method ASTM D56

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-TAKR01	Round Robin	Jet Aviation Fuel	40 °C	250 mL

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FLASH POINT
SECONDARY WORKING STANDARDS

Secondary Working Standards (SWS) are flash point standards manufactured and certified by ARO Scientific according to ISO/IEC 17025 and ISO 17034. These standards are designed to be used on a frequent basis in order to verify test equipment functionality on an on-going basis. These are secondary working standards, which have been characterised in accordance with ASTM D92 or ASTM D93 (Procedure A). They are suitable for monitoring the equipment between annual verification checks as specified in ASTM D92 or ASTM D93.

UKAS REFERENCE MATERIALS 27393 UKAS TESTING 27393

Cleveland Open Cup (COC) Flash Point

ISO/IEC 17025 / ISO 17034 certified Cleveland Open Cup (COC) Flash Point Standards are tested and certified in accordance with ASTM D92 'Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester.'

ARO's Secondary Working Cleveland Open Cup (COC) Flash Point Standards have been characterised in accordance with ASTM D92. Manufacturing, testing and certification has been performed in accordance with ARO's accreditation to ISO/IEC 17025 and ISO 17034, UKAS CAB No. 27393.

Part No.	Certification	Matrix	Nominal Value	Pack Size
SWS-COC10	ISO 17025 / ISO 17034	Mineral Oil	85 °C	3 x 80 mL
SWS-COC20	ISO 17025 / ISO 17034	Mineral Oil	125 °C	3 x 80 mL
SWS-COC30	ISO 17025 / ISO 17034	Mineral Oil	160 °C	3 x 80 mL
SWS-COC40	ISO 17025 / ISO 17034	Mineral Oil	200 °C	3 x 80 mL
SWS-COC50	ISO 17025 / ISO 17034	Mineral Oil	280 °C	3 x 80 mL

Pensky-Martens Closed Cup (PMCC) Flash Point

ISO/IEC 17025 / ISO 17034 certified Pensky-Martens Closed Cup (PMCC) Flash Point Standards are tested and certified in accordance with ASTM D93 'Standard Test Method for Flash Point by Pensky Martens Closed Cup Tester - Procedure A'.

UKAS REFERENCE MATERIALS 27393 UKAS TESTING 27393

ARO's Secondary Working Pensky-Martens Closed Cup (PMCC) Flash Point Standards have been characterised in accordance with ASTM D93, Procedure A. Manufacturing, testing and certification has been performed in accordance with ARO's accreditation to ISO/IEC 17025 and ISO 17034, UKAS CAB No. 27393.

Part No.	Certification	Matrix	Nominal Value	Pack Size
SWS-PMCC10	ISO 17025 / ISO 17034	Diesel	60 °C	3 x 80 mL
SWS-PMCC20	ISO 17025 / ISO 17034	Mineral Oil	80 °C	3 x 80 mL
SWS-PMCC30	ISO 17025 / ISO 17034	Mineral Oil	105 °C	3 x 80 mL
SWS-PMCC40	ISO 17025 / ISO 17034	Mineral Oil	140 °C	3 x 80 mL
SWS-PMCC50	ISO 17025 / ISO 17034	Mineral Oil	190 °C	3 x 80 mL
SWS-PMCC60	ISO 17025 / ISO 17034	Mineral Oil	230 °C	3 x 80 mL

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FREEZING POINT

ISO 17034 Freezing Point of Aviation Fuels Certified Reference Materials (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used to determine freezing point, applicable for the test method ASTM D2386, or test methods IP 16, ISO 3013, or other applicable methods.

ARO's Freezing Point of Aviation Fuels Certified Reference Materials have been characterised in accordance with ASTM D2386 or equivalent test method. Manufacturing, testing and certification has been performed in accordance with ARO's accreditation to ISO 17034, UKAS CAB No. 27393.

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-FRKR01	ISO 17034	Jet Fuel	-56 °C	250 mL

MOTOR OCTANE NUMBER (MON)

Motor Octane Number (MON) Certified Reference Material (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used in testing petroleum and derivative products for Octane Number (Motor Method) ASTM D2700.

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-OMGA02	Round Robin	Gasoline	86.3	1000 mL

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POUR POINT

ISO 17034 Pour Point Certified Reference Materials (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used to determine point point, applicable for the test method IP 15, or test methods ASTM D97, ISO 3016, or other applicable methods.

ARO's Pour Point Certified Reference Materials have been characterised in accordance with IP 15 or equivalent test method. Manufacturing, testing and certification has been performed in accordance with ARO's accreditation to ISO 17034, UKAS CAB No. 27393.

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-PPLU01	ISO 17034	Lubricant	-14.4 °C	250 mL
CRM-PPGO01	ISO 17034	Diesel	-24.8 °C	250 mL

RESEARCH OCTANE NUMBER (RON)

Research Octane Number (RON) Certified Reference Material (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used in testing petroleum and derivative products for Octane Number (Research Method) ASTM D2699.

Part No.	Certification	Matrix		Pack Size
CRM-ORGA02	Round Robin	Gasoline		1000 mL

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SALT IN CRUDE

High quality analytical Salt in Crude Materials Oil, Refined Neutral Oil and Salts, Mixed Solution (Diluted) manufactured in accordance with procedures compliant with ISO 17034.

Part No.	Certification	Matrix	Nominal Value	Pack Size
SIC-MCS	Not Accredited	Salt, Mixed (Dilute)	N/A	250 mL
SIC-OIL	Not Accredited	Refined Neutral Oil	N/A	250 mL

SMOKE POINT

ISO 17034 Smoke Point Certified Reference Materials (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used to determine smoke point, applicable for the test method ASTM D1322, or test methods IP 598, IP 57, ISO 3014, or other applicable methods.

ARO's Smoke Point Certified Reference Materials have been characterised in accordance with ASTM D1322 or equivalent test method. Manufacturing, testing and certification has been performed in accordance with ARO's accreditation to ISO 17034, UKAS CAB No. 27393.

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-SPKR01	ISO 17034	Jet Fuel	23.7 mm	250 mL

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SULFUR STANDARDS

These ISO/IEC 17025 and ISO 17034 Sulfur standards intended to be used for calibration or verification of measuring equipment, method validation, method verification, or other quality control processes applicable for analysing sulfur content in various petroleum products using X-ray fluorescence spectrometry (XRF) or other applicable techniques. These standards have been characterised by primary Gravimetric preparation. Manufacture and characterisation have been performed in accordance with ARO's accreditation to ISO/IEC 17025 and ISO 17034, UKAS CAB No. 27393. They are supplied with full traceability to National Physical Laboratory (NPL), National Institute of Standards and Technology (NIST) and other recognised National Metrology Institutes (NMIs).

Diesel (Synthetic) Sulfur Standards

ISO/IEC 17025 and ISO 17034 Sulfur Certified Reference Material (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes applicable for analysing sulfur content in petroleum products, typically used in, but not limited to test methods ASTM D2622, ASTM D4294, ASTM D7039, ASTM D7212, ASTM D7220, IP 336, IP 496, IP 497, ISO 8754, or other applicable test methods.

UKAS REFERENCE MATERIALS 27393 UKAS TESTING 27393

Part No.	Certification	Matrix	Nominal Value	Pack Size
SUSDBLANK	ISO 17025 / ISO 17034	Diesel (Synthetic)	0 mg/kg	100 mL
SUSD00005	ISO 17025 / ISO 17034	Diesel (Synthetic)	5 mg/kg	100 mL
SUSD00010	ISO 17025 / ISO 17034	Diesel (Synthetic)	10 mg/kg	100 mL
SUSD00025	ISO 17025 / ISO 17034	Diesel (Synthetic)	25 mg/kg	100 mL
SUSD00050	ISO 17025 / ISO 17034	Diesel (Synthetic)	50 mg/kg	100 mL
SUSF00100	ISO 17025 / ISO 17034	Diesel (Synthetic)	100 mg/kg	100 mL
SUSD00250	ISO 17025 / ISO 17034	Diesel (Synthetic)	250 mg/kg	100 mL
SUSD00300	ISO 17025 / ISO 17034	Diesel (Synthetic)	300 mg/kg	100 mL
SUSD00500	ISO 17025 / ISO 17034	Diesel (Synthetic)	500 mg/kg	100 mL
SUSD00700	ISO 17025 / ISO 17034	Diesel (Synthetic)	700 mg/kg	100 mL
SUSD00750	ISO 17025 / ISO 17034	Diesel (Synthetic)	750 mg/kg	100 mL
SUSD01000	ISO 17025 / ISO 17034	Diesel (Synthetic)	1000 mg/kg	100 mL
SUSD02500	ISO 17025 / ISO 17034	Diesel (Synthetic)	2500 mg/kg	100 mL
SUSD03000	ISO 17025 / ISO 17034	Diesel (Synthetic)	3000 mg/kg	100 mL
SUSD05000	ISO 17025 / ISO 17034	Diesel (Synthetic)	5000 mg/kg	100 mL
SUSD10000	ISO 17025 / ISO 17034	Diesel (Synthetic)	10000 mg/kg	100 mL
SUSD15000	ISO 17025 / ISO 17034	Diesel (Synthetic)	15000 mg/kg	100 mL
SUSD20000	ISO 17025 / ISO 17034	Diesel (Synthetic)	20000 mg/kg	100 mL
SUSD30000	ISO 17025 / ISO 17034	Diesel (Synthetic)	30000 mg/kg	100 mL
SUSD40000	ISO 17025 / ISO 17034	Diesel (Synthetic)	40000 mg/kg	100 mL
SUSD50000	ISO 17025 / ISO 17034	Diesel (Synthetic)	50000 mg/kg	100 mL

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SULFUR STANDARDS

Heavy Mineral Oil Sulfur Standards

ISO/IEC 17025 and ISO 17034 Sulfur Certified Reference Material (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes applicable for analysing sulfur content in petroleum products, typically used in, but not limited to test methods ASTM D2622, ASTM D4294, ASTM D7039, ASTM D7212, ASTM D7220, IP 336, IP 496, IP 497, ISO 8754, or other applicable test methods.

UKAS REFERENCE MATERIALS 27393
UKAS TESTING 27393

Part No.	Certification	Matrix	Nominal Value	Pack Size
SUHMBLANK	ISO 17025 / ISO 17034	Heavy Mineral Oil	0 mg/kg	100 mL
SUHM00005	ISO 17025 / ISO 17034	Heavy Mineral Oil	5 mg/kg	100 mL
SUHM00010	ISO 17025 / ISO 17034	Heavy Mineral Oil	10 mg/kg	100 mL
SUHM00025	ISO 17025 / ISO 17034	Heavy Mineral Oil	25 mg/kg	100 mL
SUHM00050	ISO 17025 / ISO 17034	Heavy Mineral Oil	50 mg/kg	100 mL
SUHM00100	ISO 17025 / ISO 17034	Heavy Mineral Oil	100 mg/kg	100 mL
SUHM00250	ISO 17025 / ISO 17034	Heavy Mineral Oil	250 mg/kg	100 mL
SUHM00300	ISO 17025 / ISO 17034	Heavy Mineral Oil	300 mg/kg	100 mL
SUHM00500	ISO 17025 / ISO 17034	Heavy Mineral Oil	500 mg/kg	100 mL
SUHM00700	ISO 17025 / ISO 17034	Heavy Mineral Oil	700 mg/kg	100 mL
SUHM00750	ISO 17025 / ISO 17034	Heavy Mineral Oil	750 mg/kg	100 mL
SUHM01000	ISO 17025 / ISO 17034	Heavy Mineral Oil	1000 mg/kg	100 mL
SUHM02500	ISO 17025 / ISO 17034	Heavy Mineral Oil	2500 mg/kg	100 mL
SUHM03000	ISO 17025 / ISO 17034	Heavy Mineral Oil	3000 mg/kg	100 mL
SUHM05000	ISO 17025 / ISO 17034	Heavy Mineral Oil	5000 mg/kg	100 mL
SUHM10000	ISO 17025 / ISO 17034	Heavy Mineral Oil	10000 mg/kg	100 mL
SUHM15000	ISO 17025 / ISO 17034	Heavy Mineral Oil	15000 mg/kg	100 mL
SUHM20000	ISO 17025 / ISO 17034	Heavy Mineral Oil	20000 mg/kg	100 mL
SUHM30000	ISO 17025 / ISO 17034	Heavy Mineral Oil	30000 mg/kg	100 mL
SUHM40000	ISO 17025 / ISO 17034	Heavy Mineral Oil	40000 mg/kg	100 mL
SUHM50000	ISO 17025 / ISO 17034	Heavy Mineral Oil	50000 mg/kg	100 mL

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SULFUR STANDARDS

Kerosene Sulfur Standards

ISO/IEC 17025 and ISO 17034 Sulfur Certified Reference Material (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes applicable for analysing sulfur content in petroleum products, typically used in, but not limited to test methods ASTM D2622, ASTM D4294, ASTM D7039, ASTM D7212, ASTM D7220, IP 336, IP 496, IP 497, ISO 8754, or other applicable test methods.

UKAS REFERENCE MATERIALS 27393 UKAS TESTING 27393

Part No.	Certification	Matrix	Nominal Value	Pack Size
SUKRBLANK	ISO 17025 / ISO 17034	Kerosene	0 mg/kg	100 mL
SUKR00010	ISO 17025 / ISO 17034	Kerosene	10 mg/kg	100 mL
SUKR00050	ISO 17025 / ISO 17034	Kerosene	50 mg/kg	100 mL
SUKR00100	ISO 17025 / ISO 17034	Kerosene	100 mg/kg	100 mL
SUKR00200	ISO 17025 / ISO 17034	Kerosene	200 mg/kg	100 mL
SUKR00300	ISO 17025 / ISO 17034	Kerosene	300 mg/kg	100 mL
SUKR00400	ISO 17025 / ISO 17034	Kerosene	400 mg/kg	100 mL
SUKR00500	ISO 17025 / ISO 17034	Kerosene	500 mg/kg	100 mL
SUKR00750	ISO 17025 / ISO 17034	Kerosene	750 mg/kg	100 mL
SUKR01000	ISO 17025 / ISO 17034	Kerosene	1000 mg/kg	100 mL
SUKR01500	ISO 17025 / ISO 17034	Kerosene	1500 mg/kg	100 mL
SUKR02000	ISO 17025 / ISO 17034	Kerosene	2000 mg/kg	100 mL
SUKR03000	ISO 17025 / ISO 17034	Kerosene	3000 mg/kg	100 mL

VAPOUR PRESSURE (REID)

Reid Vapour Pressure Certified Reference Material (CRM) intended to be used for verification of measuring equipment, method validation, method verification, or other quality control processes used in testing petroleum and derivative products for Reid Vapour Pressure, typically used in ATM D5191.

Part No.	Certification	Matrix	Nominal Value	Pack Size
CRM-VPGA01	Round Robin	Gasoline	74.0 kPa	250 mL

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FLUORESCENT INDICATOR ADSORPTION (FIA) REAGENTS

High quality analytical Fluorescent Indicator Adsorption (FIA) reagents manufactured and compliant for use in ASTM D1319 the Standard Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption.

Silica Gels

Silica Gels manufactured to conform to the specifications shown in Table 2 of ASTM D1319.

Part No.	Certification	Method	Pack Size
LBR-214477-50G	Not Accredited	ASTM D1319	50 g
LBR-214477-250G	Not Accredited	ASTM D1319	250 g
LBR-214477-1KGB	Not Accredited	ASTM D1319	1 kg

Fluorescent Indicator Dyed Gel

Fluorescent Indicator Dyed Gel - standard dyed gel, consisting of a mixture of recrystallized Petrol Red AB4 and purified portions of the olefin and aromatic dyes obtained by chromatographic adsorption, following a definite, uniform procedure, and deposited on silica gel manufactured to conform to the specifications of ASTM D1319.

Part No.	Certification	Method	Pack Size
LBR-250-DG	Not Accredited	ASTM D1319	40 g

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LITHIUM CHLORIDE ELECTROLYTE

High quality analytical 2M Lithium Chloride Electrolyte, Electrode Filling Solution manufactured and compliant for use in ASTM D664 / IP 177, the Standard Test Method for Acid Number of Petroleum products by Potentiometric Titration.

Part No.	Certification	Method	Pack Size
LBR-LCL30/3	Not Accredited	ASTM D664 / IP 177	3 x 30 mL
LBR-LCL30/5	Not Accredited	ASTM D664 / IP 177	5 x 30 mL
LBR-LCL30/10	Not Accredited	ASTM D664 / IP 177	10 x 30 mL

SYNTHETIC SEA WATER

High quality analytical reagents manufactured and compliant for use in ASTM D665 / IP 135 the Standard Test Method for Rust-Preventing Characteristics of Inhibited Mineral Oil in the Presence of Water.

Part No.	Certification	Method	Pack Size
LBR-SSWS-30	Not Accredited	ASTM D655/ IP 135	10 x 30 mL
LBR-SSWS-300	Not Accredited	ASTM D655/ IP 135	300 mL
LBR-SSWS-500	Not Accredited	ASTM D655/ IP 135	500 mL
LBR-SSWS-5L	Not Accredited	ASTM D655/ IP 135	5 L

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