



CASPIAN INSPECTION COMPANY

Laboratory Capabilities

Independent Inspection. Testing. Certification.

Professional testing methods, qualified personnel and controlled reporting for petroleum products, dry bulk cargoes and industrial materials.



LABORATORY OVERVIEW

Independent analytical support

CIC Laboratory supports inspection and cargo-control operations with documented testing across petroleum products, gas, fertilizers, minerals and related materials.

- Laboratory personnel: 6 specialists
- Duty shift arrangement: 24/7 availability
- ASTM, IP, EN, ISO, GOST, UOP, DIN and TDS methods
- Internal calibration and controlled registration records

Core scope

- Crude oil, fuel oil, vacuum gasoil, gasoil and naphtha
- Natural gas, LPG and related products
- Petroleum coke, iron ore, manganese ore and sulphur
- Urea, ammonium nitrate and industrial materials
- GC, HPLC and AAS instrumental analysis

QUALIFIED LABORATORY TEAM

Six-person laboratory team

Experience, management control and specialist instrumentation capability.

Laboratory management

- Laboratory Manager: 25 years oil & petroleum experience
- National petrochemical university diploma
- Saybolt laboratory manager training
- Gas chromatography training
- PerkinElmer AAS analyst training at Inspectorate (Switzerland) Ltd.

Technical leadership

- Senior Chemist: 20 years oil & petroleum experience
- Four chemists with at least 17 years of sector experience
- Quality Manager for quality-management processes
- Competency supervision and analytical-result interpretation

Key responsibilities

- Sample preparation and quality testing
- Field-parameter analysis and registration records
- Equipment operation and internal calibration
- Final-report information support and process monitoring

ANALYTICAL EQUIPMENT

Specialist instrumentation

- Atomic Absorption Spectrometer - AAS PinAAcle 500 (IP 470)
- High-Performance Liquid Chromatograph - LC-40D (ASTM D6591)
- Gas Chromatograph - GC-2030 (ASTM D6730)
- Supporting equipment for physical and chemical tests

Controlled operation

- Senior Chemist and Chemists operate the principal instruments
- Internal calibration of relevant devices
- Controlled records and technical data interpretation
- Laboratory information supports CIC inspection reporting

CRUDE OIL TESTING

Applicable methods and reported quality parameters

Physical properties

- ASTM D1298 / D4052 - density at 20 C, density at 15 C and API gravity
- ASTM D4006 - water by distillation; ASTM D6304 - water by Karl Fischer
- ASTM D473 - sediment; ASTM D5853(A) - pour point
- ASTM D4294 - sulphur; UOP 163 - mercaptan sulphur
- ASTM D3230 - salt content

Additional indicators

- ASTM D482 - ash; ASTM D974 - acidity; ASTM D445 - viscosity
- IP 143 - asphaltenes; ASTM D323 - Reid vapour pressure
- ASTM D5863 - metals by AAS; ASTM D189 - carbon residue
- ASTM D86 - distillation; GOST 11851 - paraffin
- ASTM D4929 - organic chloride

SOLID CARGO AND FERTILIZER TESTING

Applicable methods and reported quality parameters

Petroleum coke / minerals

- ASTM D4391 - moisture; ASTM D3174 - ash
- ASTM D6374 / D4239 - sulphur
- ASTM D5056 - iron, silicon, sodium, vanadium, nickel, calcium, titanium and magnesium
- GOST 22898 - granulometry size

Fertilizers and sulphur

- Ammonium nitrate: GOST 20851.1 moisture; GOST 20851.4 nitrogen; GOST 21560.1 MgO
- Urea: TDS 2081-92 moisture, nitrogen and biuret; TDS 2081-2010 free ammonia
- Sulphur: GOST 127.2 moisture, purity, ash, organic compounds and acid content

FUEL OIL AND VACUUM GASOIL

Applicable methods and reported quality parameters

Routine tests

- ASTM D92 / D93 - flash and fire point; ASTM D97 - pour point
- ASTM D189 - carbon residue; UOP 163 - hydrogen sulphide
- ASTM D445 - viscosity; D473 - sediment; D482 - ash
- ASTM D974 / D664 - acid number; D1298 - density; D95 - water
- ASTM D4294 - sulphur by energy-dispersive XRF

Trace and composition

- ASTM D4740 / D4868 / D6304 / D5185; IP 501 / IP 470
- ASTM D5863 - metals; D3605 - calcium; IP 377 - silicon
- ASTM D5762 / D3228 - nitrogen; IP 143 - asphaltenes
- ASTM D4870a / D4870b; IP 510; Exxon 79-004; SMS 1600
- ASTM D1159 / D1600 - bromine number; ASTM D1160

GASOIL TESTING

Applicable methods and reported quality parameters

Performance and composition

- ASTM D86 - distillation; D93 - flash point; D97 - pour point
- ASTM D130 - copper corrosion; D189 - carbon residue; D381 - existent gum
- EN ISO 12205; EN 12916; ISO 12156-1
- ASTM D445 - viscosity; D482 - ash; D4294 - sulphur by XRF
- ASTM D1500, D3227, D4052, D4176, D5452, D6304; IP 309 - CFPP

Additional parameters

- ASTM D4737; EN ISO 5165 / DIN 51419 - cetane number
- GOST 2070 - iodine number; ASTM D95 - water
- GOST 6307 - water-soluble acids and alkalis

NAPHTHA AND GAS TESTING

Applicable methods and reported quality parameters

Naphtha

- ASTM D86, D130, D156, D3242, D3227, D4052, D4176 and D4294
- ASTM D6304 - water; D381 - existent gum; D323 - Reid vapour pressure
- IP 224; ASTM D5134 - PIONA; IP 501 - arsenic and mercury
- Chloride testing

Natural gas and LPG

- ASTM D2163 / D1945 / D1267; IP 432 - molar mass; ASTM D1657 - density
- ASTM D1838 / D3246 / D2158 / D2420 - hydrogen sulphide H₂S
- ISO 7941; ASTM D1837; D2504 - oxygen, carbon dioxide and carbon monoxide
- UOP 163; GOST 21443 free water; GOST 22388 smell; vapour pressure
- EN 12177 benzene; EN 14517; ASTM D974 and D3227

QUALITY ASSURANCE AND REPORTING

1. Sample control

Average-sample preparation, field parameters, sample registration and controlled retention.

2. Testing discipline

Applicable standard method selected to match the product and client requirement.

3. Equipment integrity

Internal calibration of measuring instruments and specialist analytical equipment.

4. Clear reporting

Results documented for CIC inspection workflows and client decision-making.

ANALYTICAL INSTRUMENTS

Gas chromatography, sulphur analysis, pour-point and automated petroleum testing equipment.



PETROLEUM TESTING EQUIPMENT

Distillation, titration, controlled-temperature and wet-chemistry testing equipment.



SAMPLE PREPARATION EQUIPMENT

Sample preparation, extraction, automated testing and controlled laboratory workstations.



HOW CIC SUPPORTS CLIENTS

From sampling to reliable laboratory information

1

Inspect

Field attendance and cargo or product sampling.

2

Test

Applicable laboratory methods and controlled analysis.

3

Verify

Technical review, records and calibration discipline.

4

Report

Clear findings for commercial and operational decisions.