# Cetane index and number, density, and flash point in diesel



Fast and straightforward determination
by near-infrared spectroscopy

Metrohm

# A dedicated solution for quality control of diesel

**Metrohm offers a turnkey solution for quality control of diesel by near-infrared spectroscopy (NIRS). Based on a dedicated spectral database and a pre-calibration model, this solution enables manufacturers of diesel to reduce the cost of their daily routine analysis while improving the quality of their product.**

Diesel is a widespread product in daily life. At the end of the production process, various quality parameters need to be determined before it can be sold on the market. Those parameters include **Cetane Index (CI or CETI), Cetane Number (CN or CETN), density, flash point, sulfur content, Cold Filter Plugging Point (CFPP) or boiling points (T95).** These parameters are still often determined in the laboratory by time consuming chemical and physical analysis involving complex sample preparation and sometimes expensive equipment.

NIRS on the other hand requires neither chemicals nor sample preparation, it can even be used by non-chemists, and provides results in less than a minute. Furthermore, multiple chemical and physical parameters can be determined simultaneously with a single measurement. **The combined benefits of this technology make NIRS the ideal solution for a large number of daily QA/QC measurements or continuous process analysis in the petrochemical industry.**

## Easy-to-use
- Turnkey solution
- Measure at the push of a button
- No expertise required

## Fast
- No sample preparation
- Analysis results within one minute
- More than 15 minutes time saving compared to reference methods

## Cost minimizing
- No solvents, no reagents
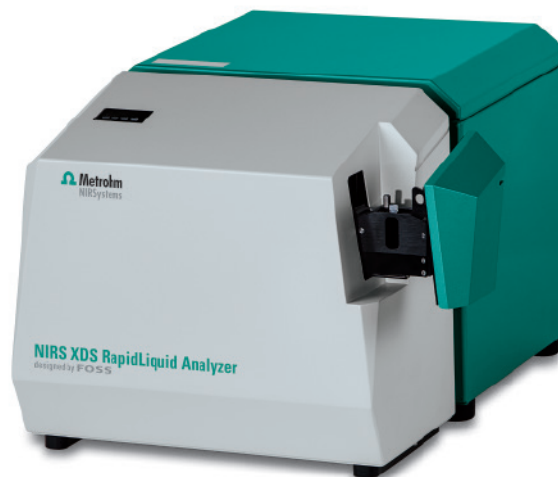- No waste disposal
- Instant results from first day

## Clean
- Non-destructive, chemical-free method
- Minimum of impact on health and environment

## Turnkey solution for diesel analysis

The Metrohm solution for diesel analysis comes with ready-to-use pre-calibration models for the determination of cetane index, cetane number, density, flash point, sulfur content, cold filter plugging point or boiling points. Thanks to these pre-calibrations, the Metrohm solution can be used as a starter model without any method development.

## Reliable results from day one

The robust pre-calibration model allows precise and accurate determination different physical and chemical quality parameters of diesel with excellent reproducibility. The performance of the pre-calibration can be improved even further, if a smaller calibration range is selected or if it is augmented with customer specific samples.

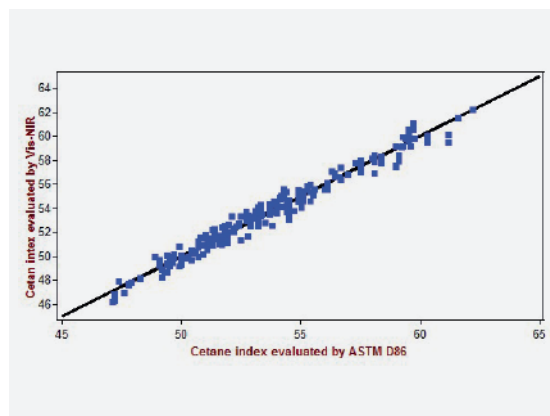| Parameter | Range | SECV | $R^2$ |
|---|---|---|---|
| Density in g/cm³ | 0.82–0.89 | 0.0021 | 0.968 |
| Cetane index | 46–77 | 0.62 | 0.987 |
| Cetane number | 45–60 | 0.68 | 0.942 |
| CFPP in °C | -22–(+19) | 2.8 | 0.963 |
| T95 in °C | 325–410 | 7.04 | 0.799 |
| Flash Point in °C | 56–120 | 2.7 | 0.970 |
| Viscosity in cSt | 2–5.5 | 0.15 | 0.910 |

## Straightforward and intuitive operation

Metrohm instruments for Vis-NIR are controlled by Vision Air software. Vision Air provides two environments tailored to users' needs: **Vision Air Routine** enables secure daily operation by routine users, while **Vision Air Manager** allows experienced and authorized users to control data and perform instrument configurations. For daily quality control of diesel, measurements can be performed with two simple clicks.

## Customized service and support

Metrohm supports users by updating the default pre-calibration on demand with customer specific samples. This improves the performance of the method and/or extends it to new applications. Such updates are easily performed in the Vision Air Manager network mode. When using Vision Air Network, all instruments within a global customer network can be synchronized at the push of button. Customer specific calibrations can be easily developed for the determination of additional quality parameters of diesel, e.g. **water content, API gravity, ethanol content, pour point and others.**

# Ordering information

| | |
|---|---|
| **6.6072.305** | **NIRS pre-calibration for diesel analysis** |

**Requires hardware**

| | |
|---|---|
| 2.921.1410 | NIRS XDS RapidLiquid Analyzer |

**Comprised of:**

| | |
|---|---|
| 1.921.0010 | NIRS XDS Monochromator |
| 1.921.0410 | NIRS XDS RapidLiquid Module |
| 6.7400.000 | NIRS XDS accessory kit |
| 8.921.8005EN | Manual for NIRS XDS RapidLiquid Analyzer |

**Requires software**

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|---|---|
| 6.607.2201 | Vision Air 2.0 |

**Optional software**

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|---|---|
| 6.607.2204 | Vision Air 2.0 Server |
| 6.607.2206 | Vision Air 2.0 Network |

**Requires certified standards**

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|---|---|
| 6.7450.040 | NIRS transmission wavelength calibration standard |

**Optional certified standards**

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|---|---|
| 6.7450.050 | NIRS transmission standard, set of 6 (for the regulated environment) |
| 6.7450.060 | NIRS transmission wavelength verification standard |

**Sampling accessories**

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|---|---|
| 6.7402.000 | NIRS disposable glass vials, 8 mm (250 pcs.) |
| 6.7403.000 | NIRS XDS spacer for disposable glass vials, 8 mm |

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