Anton Paar

Density Meter for the Petroleum Industry

DMA 4200 M

The all-rounder for all samples

At last there is a density meter which can measure all of your petroleum samples, including crude oil, intermediate products, asphalt, liquefied petroleum gas and high-viscosity liquids: the new DMA 4200 M. This new instrument extends the renowned DMA M range of density meters from Anton Paar and builds on almost 50 years of experience in density measurement.

Savings

Less solvent - Less time and cost

Using DMA 4200 M means that tedious, manual and time-intensive measurement with pycnometers or hydrometers is a thing of the past. Filling of even viscous samples is simplified and only 2 mL of sample is needed. After measurement, instead of laborious, solvent-intensive cleaning routines with pycnometers and hydrometers, you just quickly clean the DMA 4200 M sample cell with only a small amount of solvent.

All calculations are done for you, there is no need to look up API tables and work out the temperature compensation. This enhances lab productivity while minimizing human error and environmental influences.

Everywhere

Many tasks at many locations

DMA 4200 M is a versatile instrument that can be used for a multitude of tasks at multiple locations throughout the petroleum-refining process. Application areas include offshore laboratories, refineries and research and development establishments.

DMA 4200 M is a must-have tool for laboratories at petroleum refineries. It improves, accelerates and simplifies density measurements on incoming crude oil, on intermediate samples to give quick feedback to the refining process and for QC of samples like asphalt, bitumen and LPG.

Expanded

Expanded limits = Extended performance

DMA 4200 M extends the measurement limits for digital density measurement in petroleum applications. The measurement temperature can be set at the touch of a button in a wide range from -10 °C up to 200 °C. Measurement at elevated temperatures in combination with accessories even allows you to measure samples which are solid at room temperature. The density values are automatically calculated for the required reporting temperature. Samples can also be measured under pressures of up to 500 bar.

Strong

A heart stronger than steel

The heart of DMA 4200 M is an innovatively designed and precisely engineered U-tube made of Hastelloy. Hastelloy is a high-performance material. It has a much higher chemical resistance to hydrochloric acid and sour gas than stainless steel. You can rely on this robust instrument for a long life with no risk of breakages or corrosion.

Connectors for a water bath

DMA 4200 M is not only designed for measurements at high temperatures, but also at temperatures below 0 °C. If the measurement is performed at low temperatures, a water bath is connected.

Numerous interfaces

DMA 4200 M has 4 USB interfaces, one RS 232 interface and one Ethernet interface. This allows you to connect an external keyboard and a mouse.

Excerpt of specifications:

Density	0 g/cm^3 to 3 g/cm^3
Density accuracy	0.0001 g/cm^3
Temperature range	-10 °C to 200 °C
Temperature accuracy	0.03 °C

Pressure range	0 bar to 500 bar
Sample amount	2 mL
Footprint	33 cm x 51 cm
U-tube resistance	H_2S, HCl, HF, NaOH

Hastelloy U-tube

The U-tube is made of Hastelloy C276, a very robust alloy which is designed for the petroleum industry. Hastelloy is highly resistant to corrosion from e.g. sour gas, hydrochloric acid, hydrofluoric acid, etc.

Connectable pressure transducer

When a pressure transducer is connected to DMA 4200 M the pressure reading is displayed on the main screen and used for calculations.

Strong Peltier elements

The Peltier temperature control system of DMA 4200 M only consumes a fraction of the power compared to heating equipment such as oil baths which are conventionally used with hydrometers and pycnometers.

Versatile sample introduction

A wide range of samples can be inserted into DMA 4200 M. The LPG is injected by connecting the LPG vessel to the LPG adapter. Asphalt/ bitumen or other heavy samples are heated up in the external heating block and the sample is measured at elevated temperatures.

Big touchscreen: 10.4” PCT/PCAP

The very large touchscreen uses projected capacitive technology (PCT/PCAP). It is easy to operate even when wearing gloves. The slightest contact with your finger activates the touchscreen, which shows up to 12 results in easy-to-read font size.

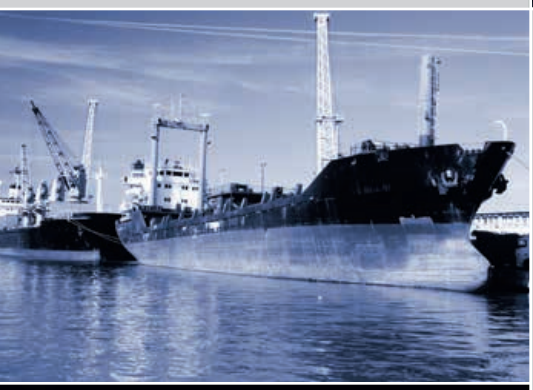
DMA 4200 M is the all-rounder …

…for all types of petroleum samples.

Density measurement of **intermediate samples and process samples.**

Density measurement of **end products.**

Density measurement of the incoming **crude oil and live crude oil.**



LPG asphalt bitumen marine fuel oil No. 6 fuel oil No. 5 fuel oil, bunker fuel bunker C heavy fuel oil (HFO) medium fuel oil (MFO) furnace fuel oil (FFO) navy special fuel oil (NSFO) residual fuel oil crude oil live crude oil RMH 380 RMK 380 RMH 700

Will DMA 4200 M be corroded by the sour gas and hydrochloric acid in the petroleum sample?

The U-tube of DMA 4200 M is made out of Hastelloy C276. This alloy is resistant to sour gas and hydrochloric acid and therefore ideal for all petrochemical applications.

I have very hard, heavy and highly viscous samples. Do I have to worry about breaking the U-tube?

The U-tube is made of metal (Hastelloy C276) and withstands pressures up to 500 bar. It is practically unbreakable.

What can I do to measure the density of my bitumen/asphalt, which has a melting point above 130 °C?

With the external heating block you can melt the bitumen/asphalt and measure the density at 130 °C or higher, if needed.

I need a high sample throughput of heavy samples, can I use DMA 4200 M?

DMA 4200 M measures your heavy samples 4 times faster than a hydrometer and 10 times faster than a pyknometer.

What is the benefit of using DMA 4200 M compared to a hydrometer?

DMA 4200 M needs only 1 to 2 mL of sample. This makes the pre-heating of the sample and cleaning of the instrument much faster than with hydrometers. The cleaning routine needs much less solvent.

I want to measure my LPG, can I use DMA 4200 M?

DMA 4200 M has a special accessory for measuring the density of LPG: the LPG adapter. This adapter is the connection between the LPG pressure vessel and the density meter and ensures proper filling of DMA 4200 M.

Are the density results from DMA 4200 M viscosity-corrected?

The DMA 4200 M density reading is the true density. The viscosity influence is compensated by a new patented method (patent: AT 515552 B1).

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