

DATASHEET

Residual oil content measurement by sampling and evaluation by an accredited laboratory in accordance with ISO 8573-5:2001

QUALITÄTSANALYSEN



ÖDAMPFMESSUNG

zur Qualitätsbestimmung der Druckluft und Kohlenwasserstoffbestimmung gemäß **DIN ISO 8573-5** Methode durch Probenahme und anschließende Auswertung durch akkreditiertes Labor



MASSENSPEKTROSKOPISCHE BESTIMMUNG

(MS-Screening) der Teilkomponenten inklusive Öldampfmessung nach **ISO 8573-5:2001** durch Probenahme und anschließende Auswertung durch akkreditiertes Labor



KONDENSATANALYSE

zur Qualitätsbestimmung des Druckluftkondensats nach **DIN EN ISO** durch massenspektroskopische Bestimmung der Teilkomponenten (MS-Screening) oder gaschromatographische Untersuchung mittels Probenahme und anschließende Auswertung durch akkreditiertes Labor



ELEKTRONENMIKROSKOPISCHE ANALYSE

zur Qualitätsbestimmung der Druckluft durch **DIN ISO 8573-8** Partikelanalyse und Anzahlbestimmung mittels Elektronenrastermikroskop durch Probenahme und anschließende Auswertung durch akkreditiertes Labor



KEIMZAHLBESTIMMUNG

(Bestimmung der Gesamtzahl an Mikroorganismen) zur Qualitätsbestimmung der Druckluft durch Probenahme und anschließende Auswertung durch akkreditiertes Labor - Analyse gemäß **DIN ISO 8573-7**



DRÜCKTAUPUNKTBESTIMMUNG

zur Qualitätsbestimmung der Druckluft mittels **DIN ISO 8573-3** kalibriertem Drucktaupunkttransmitter



DRUCKLUFTQUALITÄTSMESSUNG

gemäß **ISO 8573-1** und **EN 12021** durch Probenahme und anschließende Auswertung durch akkreditiertes Labor



ÖLANALYSE

durch ein **DIN EN ISO 9001** und **DIN EN ISO 14001** zertifiziertes und nach **DIN EN ISO/IEC 17025:2005** akkreditiertes Labor



PARTIKELANZAHLBESTIMMUNG

DIN ISO 8573-4 Partikelanzahlbestimmung zur Qualitätsbestimmung der Druckluft mittels Partikelzähler



KÜHLWASSERANALYSE

durch Probenahme und anschließende Auswertung durch akkreditiertes Labor



LEGIONELLENANALYSE

in Kühl- oder Trinkwasser durch akkreditiertes Labor



SAUERSTOFFANALYSE

zur Qualitätsbestimmung des Sauerstoffs auf Sauerstoff



STICKSTOFFANALYSE

zur Qualitätsbestimmung des Stickstoffs auf Stickstoff



Residual oil content measurement by sampling and evaluation by an accredited laboratory in accordance with ISO 8573-5:2001

All measurements can be carried out directly by you as a specialist company. We will provide you with the necessary measuring equipment and informative operating instructions.

The measurement results are evaluated accordingly by our affiliated certified chemical laboratory and sent to you in a summarized report.

These results can be used by you or your customers at any time as the basis for a corresponding quality audit.

Residual oil measurement in compressed air

Suspicion of residual oil? The measurement of residual oil in compressed air is an important basic requirement for ensuring compressed air quality in accordance with ISO 8573-5:2001.

The sampling kit for hire from Pro Air GmbH enables compressed air users to carry out residual oil sampling themselves. The individual sampling steps are explained in detail. All the components required for a precise and safe measurement are included in the rental set: the specially developed, pressure-stable tube holder, a test tube, all connections and hoses, a measuring device for determining the ambient parameters and even gloves and safety goggles.

After connection to the pipe network, the test tube is flowed through with predefined parameters and any residual oil accumulates in the carrier gas in the sorbents of the test tube. Pro Air GmbH sends the sample to our affiliated, accredited laboratory with the enclosed return envelope. A newly developed GC-FID measuring method, analogous to the H-53 method, ensures the detection of hydrocarbons in the range from C6 to C40.

How the test tubes work

The hydrocarbon content in compressed air is relatively low. It is therefore necessary to first enrich the oil present in the compressed air so that it can then be determined using an analyzer (gas chromatograph).

(gas chromatograph). This enrichment takes place by allowing a larger volume of air to flow through a test tube with activated carbon.

The test tubes contain a so-called "sorbent" through which the test gas flows at a certain measured volume. As the gas flows through, the sorbents absorb the hydrocarbons contained in the gas flow and store them in the pores. The volume flow and the length of the test gas sample can therefore be used to determine the volume of the carrier gas and thus the amount of substance stored in the sorbent. The hydrocarbons therefore accumulate in the sorbent over time.

Once a sufficient quantity of hydrocarbons is present, the sampling is completed. The tube is opened in the laboratory and extracted with a solvent. The hydrocarbons are now in the solvent, which is analyzed quantitatively using gas chromatography.

Residual oil content measurement by sampling and evaluation by an accredited laboratory in accordance with ISO 8573-5:2001

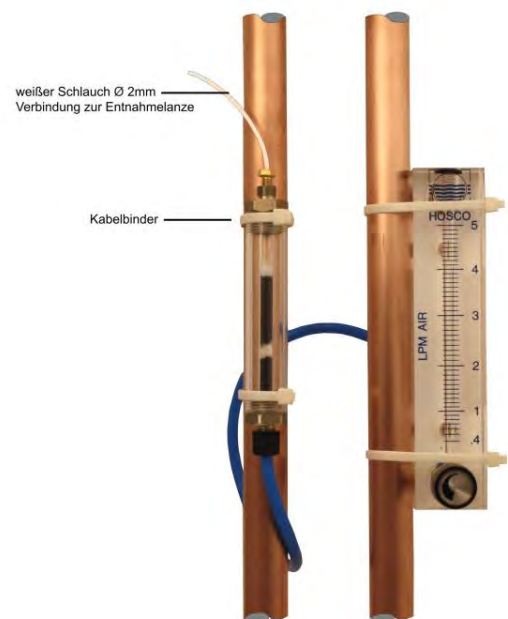
Residual oil measurement by sampling

The residual oil measurement to determine the quality of the compressed air analysis for hydrocarbon determination is carried out in accordance with the DIN ISO 9377-2 (H53) method.

Background information:

In 2001, this method replaced the previously valid standard (DIN 38409 H 18) for the determination of mineral oil hydrocarbons using IR spectroscopy. Since 2001, DIN ISO 9377-2 (formerly DIN 38409 H 53), which is now the only valid standard, has been used. The laboratory measurement conforms to standard 8573-5:2001.

IR spectroscopy is characterized by a are replaced using gas chromatography. Hydrocarbons of known chain length are added, which act as markers (e.g. C10 and C40). Finally, the entire area between the marker peaks is integrated. The quality analysis is carried out using a sample unit sent by us sampling unit with sample tube and precise instructions on how to connect it to the compressed air by the customer. After sending in the sample tube and our subsequent analysis, you will receive a complete test report. you will receive a complete test report.



ATTENTION: If the sampling system is used for several measuring points, it must be ensure that there is no contamination from one measuring point to another. We recommend using one measuring system per measuring point.

Standards

The following standards are relevant in the field of hydrocarbon determination:

ISO 8573-1:2001	compressed air - contaminants and purity classes
ISO 8573-2:2001	test methods for aerosol oil content
ISO 8573-5:2001	determination of oil vapour and organic solvent content

The original text of the standards mentioned can be obtained from Beuth Verlag in Berlin.

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How does the measurement work in practice?

The customer receives a complete sampling system.

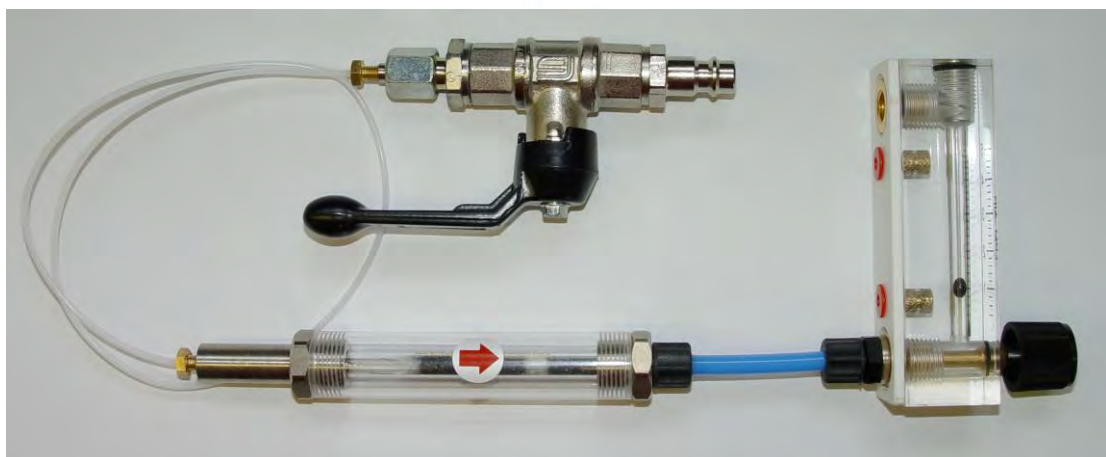
The compressed air is extracted (in accordance with the instructions) e.g. via a clean compressed air coupling or an oil-free ball valve.

When analyzing the intake air by means of a diaphragm pump directly from the atmosphere.

For aerosol measurement via an isokinetic sampling line.
The air to be measured is "sampled" in the integrated sample tube.

According to DIN, the "sampling time depends on the compressed air quality (preparation) and ranges from a few hours to 7 days, depending on the class. (exact instructions can be found in the enclosed manual).

The sample tube is then sent to our laboratory and analyzed.



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What does the evaluation look like?

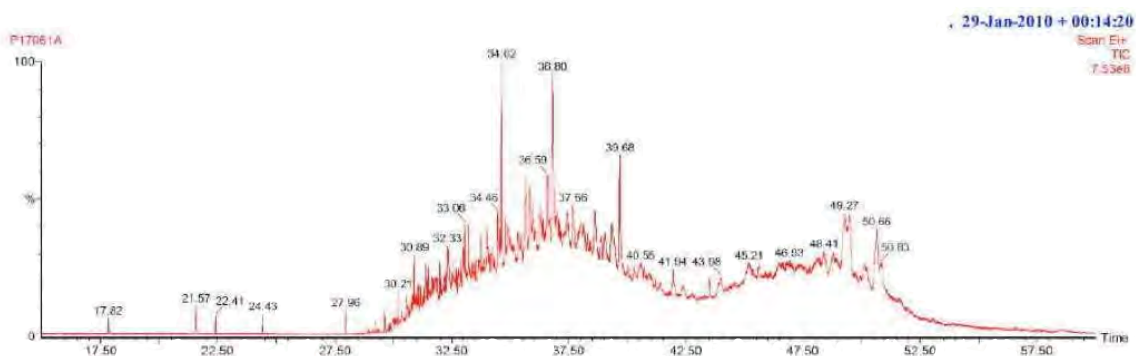
The customer receives a complete evaluation using a gas chromatograph.

The evaluation certifies and documents the exact traceability of the test results and the test equipment used.

Furthermore, the customer receives the chromatogram created for his air and a precise evaluation of the number of hydrocarbons determined as well as a clear classification of his compressed air in accordance with DIN ISO 8573.

Auswertungen

Chromatogramm GC-MS



Gesamt KW in der Probe 50 µg/ml
 KW in der Druckluft 1,27 mg/m³

Quantitatives Ergebnis

Gesamt KW in der Hauptzone (nach DEV 53 berechnet):	< 10 µg / Röhrchen
Gesamt KW in der Durchbruchzone:	< 10 µg / Röhrchen
Summe:	< 10 µg / Röhrchen
Sample Volumen:	40,0 m ³
KW in der Druckluft:	< 1 µg / m ³ < 0,0001 mg / m ³
Einstufung nach ISO 8573-1:2010:	Klasse 1