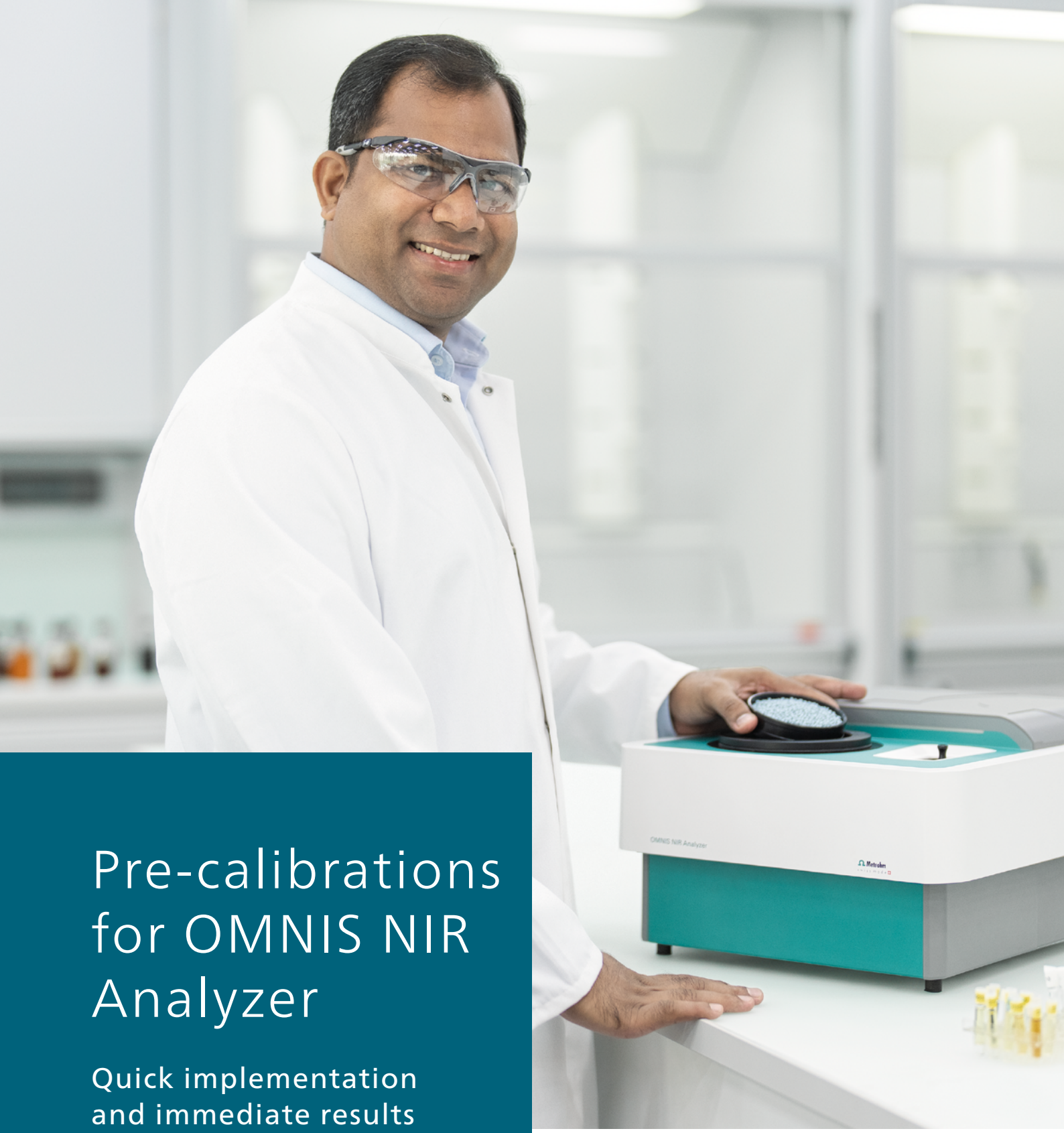

Pre-calibrations for OMNIS NIR Analyzer

Quick implementation and immediate results

- A wide variety of applications
- Chemical and physical parameters
- Based on real product spectra
- Can be used by non-specialists

PEOPLE YOU CAN TRUST

Metrohm

Overview Metrohm Pre-calibrations for OMNIS NIR

Metrohm Pre-Calibrations

Metrohm offers pre-configured solutions for determining various quality parameters using near-infrared spectroscopy, based on pre-calibrations. These are NIR prediction models created from a large number of real product spectra.

With the help of Metrohm pre-calibrations you can start using the OMNIS NIR Analyzer for your analysis needs immediately. This means the OMNIS NIR solutions makes your quality control faster, easier, and more efficient right from the start.

EASY TO USE

- Ready-to-use solution
- Results at the push of a button
- No expertise required

FAST

- No sample preparation
- Analysis results within 30 seconds
- More than 15 minutes time saving compared to reference methods

COST-MINIMIZING

- No solvents, no reagents
- No waste disposal

CLEAN

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

TRUST IN OUR EXPERTISE

Pre-calibrations are prediction models based on numerous real product spectra. By using these solutions, you can benefit from Metrohm's experience with these applications.

METROHM SUPPORT

Metrohm offers customization of the pre-calibrations to adapt them to your specific concentration range. Furthermore, pre-calibrations can be augmented with your specific sample spectra to fine-tune the accuracy of the method or to extend it with additional quality parameters. Our application specialists are nearby to support you. Contact your local Metrohm subsidiary or distributor for detailed information.

METROHM QUALITY

Quality is key! The OMNIS NIR analyzers are standardized, allowing seamless data transfer between units. You can use the same pre-calibration on multiple devices thanks to standardization and the high robustness of the IP54-certified OMNIS NIR Analyzers. Of course, you benefit from the unparalleled Metrohm quality philosophy:

- 3-year instrument warranty
- 5-year software support guaranteed
- 10-year guaranteed availability of spare parts after discontinuation of the instrument

Polyols and Isocyanates

Pre-calibration information for polyols and isocyanates, important starting materials for e.g. polyurethanes.

PRE-CALIBRATION INFORMATION ISOCYANATE

Article Number: 6.06008.005
Article Name: Pre-calibration, isocyanates, liquid

Parameter	Range	SECV	R^2
NCO	1.03 – 50.00%	0.57%	0.998

PRE-CALIBRATION INFORMATION POLYOL

Article Number: 6.06008.006
Article Name: Pre-calibration, polyol, liquid

Parameter	Range	SECV	R^2
OH	21.00 – 1109.00 mg/g	11.48 mg/g	0.993

RECOMMENDED CONFIGURATION

Article Number	Article Name
2.1070.0010	OMNIS NIR Analyzer Liquid
6.06008.005	Pre-calibration, isocyanate, liquid
6.06008.006	Pre-calibration, polyol, liquid
6.07401.070	Holder OMNIS NIR, vial, 8 mm
6.7402.240	Disposable vial, 8 mm, transmission, qty. 100
6.06003.010	OMNIS Stand-Alone license

APPLICATION INFORMATION

Polyol and isocyanate samples are to be measured in disposable 8mm vials in transmission at 30 °C. Viscous polyol samples should be added carefully to the vial with a pipette and care must be taken to avoid air bubbles.

Palm Oil

Pre-calibration information for crude palm oil (CPO), for refined, bleached, and deodorized palm oil (RBD palm oil) and for crude palm kernel oil (CPKO).

PRE-CALIBRATION INFORMATION CRUDE PALM OIL

Article Number: 6.06008.007
Article Name: Pre-calibration, CPO, liquid

Parameter	Range	SECV	R^2
Iodine value	49.01 – 56.2 mg/100g	0.44 mg/100g	0.776
Moisture	0.04 – 0.58 %	0.044%	0.714
FFA	1.67 – 8.39 %	0.21%	0.946

PRE-CALIBRATION INFORMATION RBD PALM OIL

Article Number: 6.06008.011
Article Name: Pre-calibration, RBD palm oil, liquid

Parameter	Range	SECV	R^2
FFA	0.020 – 0.198%	0.013%	0.782
Iodine value	12.51 – 71.20 mg/100g	0.57 mg/100g	0.998
Moisture	0.010 – 0.095%	0.010%	0.836
Peroxide value	0.10 – 6.07 meq/kg	0.35 meq/kg	0.956

PRE-CALIBRATION INFORMATION CPKO

Article Number: 6.06008.012
Article rticle Name: Pre-calibration, CPKO, liquid

Parameter	Range	SECV	R^2
FFA	0.024 – 4.82%	0.012%	0.988
Iodine value	7.70 – 19.45 mg/100g	0.23 mg/100g	0.997
Moisture	0.063 – 0.270%	0.02%	0.732

NORMS USED FOR THE REFERENCE VALUES

Parameter	Norm
FFA (CPKO)	ISO 660
Iodine value (CPKO)	DGF C-V 11

RECOMMENDED CONFIGURATION

Article Number	Article Name
2.1070.0010	OMNIS NIR Analyzer Liquid
6.06008.007	Pre-calibration, CPO, liquid
6.06008.011	Pre-calibration, RBD palm oil, liquid
6.06008.012	Pre-calibration, CPKO, liquid
6.07401.070	Holder OMNIS NIR, vial, 8 mm
6.7402.240	Disposable vial, 8 mm, transmission, qty. 100
6.06003.010	OMNIS Stand-Alone license

APPLICATION INFORMATION

The samples are to be measured in disposable 8mm vials in transmission at 60 °C. Viscous or semi-solid palm oil samples should be added carefully to the vial. For reasons of convenience and time saving the vials can be pre-heated to 60°C, for example in a heating block or water bath. At the measurement temperature of 60 °C the samples will be liquid.

Fuels

Pre-calibration information for gasoline and diesel fuels.

PRE-CALIBRATION INFORMATION GASOLINE

Article Number: 6.06008.008
Article Name: Pre-calibration, gasoline, liquid

Parameter	Range	SECV	R^2
AKI	75.75 – 92.60	0.42	0.969
Aromatics	8.60 – 51.30%	1.18%	0.965
Benzene	0.23 – 0.70%	0.05%	0.856
Density	0.7250 – 0.7749 g/cm3	0.0008 g/cm3	0.992
MON	75.70 – 87.30	0.45	0.928
Olefins	0,15 – 24.49%	1.19	0.915
Oxygenates	0.2600 – 2.0100%	0.0534	0.989
RON	81.60 – 99.60	0.61	0.970

PRE-CALIBRATION INFORMATION DIESEL

Article Number: 6.06008.009
Article Name: Pre-calibration, diesel, liquid

Parameter	Range	SECV	R^2
Cetane Index	43.00 – 76.70	1.09	0.935
Cetane Number	45.60 – 67.00	0.83	0.901
Density	0.8216 – 0.8878 g/cm3	0.0009 g/cm3	0.994
Flash point	58.00 – 94.50 °C	2.27°C	0.935
T95	325 – 379 °C	5.22°C	0.791
Viscosity	2.22 – 5.52 cSt	0.13 cSt	0.937

RECOMMENDED CONFIGURATION

Article Number	Article Name
2.1070.0010	OMNIS NIR Analyzer Liquid
6.06008.008	Pre-calibration, gasoline, liquid
6.06008.009	Pre-calibration, diesel, liquid
6.07401.070	Holder OMNIS NIR, vial, 8 mm
6.7402.240	Disposable vial, 8 mm, transmission, qty. 100
6.06003.010	OMNIS Stand-Alone license

APPLICATION INFORMATION

Samples are to be measured in disposable 8mm vials in transmission at 30 °C for both gasoline and diesel.
Due to safety reasons it is recommended to always use vials closed with the vial cap.

Polymers

Pre-calibration information for Polyethylene terephthalate (PET), polyethylene (PE), polypropylene (PP), polyamide 6 (PA6).

PRE-CALIBRATION INFORMATION PET

Article Number: 6.06008.013
Article Name: Pre-calibration, PET, solid

Parameter	Range	SECV	R^2
Diethylene glycol	1.32 – 1.91%	0.05%	0.900
Intrinsic viscosity	0.5530 – 1.0311 dL/g	0.0218 dL/g	0.869
Isophtalic acid	1.80 – 4.47%	0.12%	0.981

PRE-CALIBRATION INFORMATION PE

Article Number: 6.06008.014
Article Name: Pre-calibration, PE, solid

Parameter	Range	SECV	R^2
Density	0.8669 – 0.9640 g/cm3	0.0032 g/cm3	0.980
Intrinsic viscosity	1.0 – 3.5 dL/g	0.20 dL/g	0.962

PRE-CALIBRATION INFORMATION PP

Article Number: 6.06008.015
Article Name: Pre-calibration, PP, solid

Parameter	Range	SECV	R^2
MFR	0.24 – 20.90 g	3.95 g	0.707

PRE-CALIBRATION INFORMATION PA6

Article Number: 6.06008.016
Article Name: Pre-calibration, PA6, solid

Parameter	Range	SECV	R^2
Relative viscosity	2.25 – 3.60 dL/g	0.073 dL/g	0.965
Amine endgroup	8.23 – 52.73 meq/g	3.70 meq/g	0.762
Carboxyl endgroup	27.39 – 134.20 meq/g	13.90 meq/g	0.835

NORMS USED FOR THE REFERENCE VALUES

Parameter	Norm
Intrinsic Viscosity (PET)	ASTM D4603
Relative viscosity (PA6)	ASTM D789

RECOMMENDED CONFIGURATION

Article Number	Article Name
2.1071.0010	OMNIS NIR Analyzer Solid
6.06008.013	Pre-calibration, PET, solid
6.06008.014	Pre-calibration, PE, solid
6.06008.015	Pre-calibration, PP, solid
6.06008.016	Pre-calibration, PA6, solid
6.07402.100	Large holder OMNIS NIR, 100 mm
6.07402.110	Large cup OMNIS NIR, 100 mm
6.07402.120	Large lid black OMNIS NIR, 100 mm
6.06003.010	OMNIS Stand-Alone license

APPLICATION INFORMATION

The samples used were polymer pellets and they were measured in the large cup in rotating mode for multi-point measurement to compensate for inhomogeneity of the sample.

Coffee

Pre-calibration information coffee, for roasted coffee beans and grinded roasted coffee beans.

Article Number: 6.06008.017
Article Name: Pre-calibration, coffee, solid

WHOLE ROASTED COFFEE BEANS

Parameter	Range	SECV	R^2
Caffeine	1.17 – 2.58%	0.15%	0.808
Moisture	0.11 – 3.19%	0.31%	0.849

GRINDED ROASTED COFFEE BEANS

Parameter	Range	SECV	R^2
Caffeine	1.13 – 2.58%	0.09%	0.930
Moisture	0.12 – 3.19%	0.32%	0.839

METHOD AND CORRESPONDING NORM USED FOR REFERENCE MEASUREMENTS

Parameter	Method
Caffeine	ISO 20481
Moisture	AOAC 979.12

RECOMMENDED CONFIGURATION

Article Number	Article Name
2.1071.0010	OMNIS NIR Analyzer Solid
6.06008.017	Pre-calibration, coffee, solid
6.07402.200	Large holder OMNIS NIR, 100 mm
6.07402.110	Large cup OMNIS NIR, 100 mm
6.07402.120	Large lid OMNIS NIR, black, 100 mm
6.06003.010	OMNIS Stand-Alone license

APPLICATION INFORMATION

Samples are to be measured in the large cup in rotating mode for multi-point measurement to compensate for inhomogeneity of the sample. For grinded coffee the samples should be grinded to about 300 µm in a knife mill. The grinding time should not exceed 20 seconds.

Edible oil

Pre-calibration information for the global calibration containing the following oil types sunflower-, rapeseed, sesame, and soy oil*.

Article Number: 6.06008.018
Article Name: Pre-calibration, edible oil, liquid; figures of merit below are for the global calibrations*

PRE-CALIBRATION

Parameter	Range	SECV	R^2
FFA	0.01 – 2.24%	0.12%	0.951
Iodine value	81.57 – 139.60 mg/100g	0.48 mg/100g	0.999
C16:0	3.00 – 9.39%	0.27%	0.958
C18:0	1.59 – 6.15%	0.31%	0.849
C18:1	16.17 – 88.46%	0.67%	0.999
C18:2	2.86 – 72.02%	0.79%	0.998
C18:3	0.01 – 2.24%	0.36%	0.951
Refractive index	1.46120 – 1.47440	0.00013	0.998
Induction time	2.09 – 12.87 h	0.83 h	0.922
Peroxide value	0.10 – 4.90 meq/kg	0.58 meq/kg	0.781

* Calibrations of the individual oil types sunflower, soy, rapeseed and sesame are also available

RECOMMENDED CONFIGURATION

Article Number	Article Name
2.1070.0010	OMNIS NIR Analyzer Liquid
6.06008.018	Pre-calibration, edible oil, liquid
6.07401.070	Holder OMNIS NIR, vial, 8 mm
6.7402.240	Disposable vial, 8 mm, transmission, qty. 100
6.06003.010	OMNIS Stand-Alone license

NORMS USED FOR THE REFERENCE VALUES

Parameter	Norm
FFA	DGF V2 10
Iodine value	DGF C-V 11
C16:0	DGF C-VI 10
C18:0	DGF C-VI 10
C18:1	DGF C-VI 10
C18:2	DGF C-VI 10
C18:3	DGF C-VI 10
Refractive index	DGF C-IV 5
Induction time	DGF C-VI 6I
Peroxide value	DGF C-VI 6a

APPLICATION INFORMATION

The pre-calibration spans samples of cold-pressed unrefined oils as well as refined oils. Samples are to be measured in disposable 8mm vials in transmission at 40 °C, In the case of unrefined oils care must be taken to prevent that the samples in the vials contain solid particles.

Wheat flour

Pre-calibration information for wheat flour, finely milled.

PRE-CALIBRATION INFORMATION WHEAT FLOUR

Article Number: 6.06008.019
Article Name: Pre-calibration, wheat flour, solid

Parameter	Range	SECV	R^2
Moisture	7.46 – 14.48%	0.31%	0.908
Protein	6.18 – 16.92%	0.78%	0.740
Ash	0.170 – 1.940%	0.15%	0.892

RECOMMENDED CONFIGURATION

Article Number	Article Name
2.1071.0010	OMNIS NIR Analyzer Solid
6.06008.019	Pre-calibration, wheat flour, solid
6.07402.200	Large holder OMNIS NIR, 100 mm
6.07402.110	Large cup OMNIS NIR, 100 mm
6.07402.120	Large lid OMNIS NIR, black, 100 mm
6.06003.010	OMNIS Stand-Alone license

NORMS USED FOR THE REFERENCE VALUES

Parameter	Norm
Moisture	ISO 20483
Protein	AOAC 925.10
Ash	ISO 923.03

APPLICATION INFORMATION

Samples are to be measured in the large cup in rotating mode for multi-point measurement to compensate for inhomogeneity of the sample.

Cannabis

Pre-calibration information for cannabis in the form of dried cannabis buds.

PRE-CALIBRATION INFORMATION CANNABIS

Article Number: 6.06008.020
Article Name: Pre-calibration, cannabis, solid

Parameter	Range	SECV	R^2
THC	0.25– 22.78%	0.73%	0.977
CBD	0.04– 18.77%	0.80%	0.976
CBG	0.04 – 3.13 %	0.21%	0.748
Moisture	5.38 – 11.17%	0.37%	0.911

RECOMMENDED CONFIGURATION

Article Number	Article Name
2.1071.0010	OMNIS NIR Analyzer Solid
6.06008.020	Pre-calibration, cannabis, solid
6.07402.200	Small holder OMNIS NIR, 60 mm
6.06003.010	OMNIS Stand-Alone license

APPLICATION INFORMATION

Samples are to be measured grinded in reflection mode in multi-point mode. About 1g of material is required and it should be grinded with a hand grinder.

Milk powder

Pre-calibration information for milk powder.

PRE-CALIBRATION INFORMATION MILK POWDER

Article Number: 6.06008.021
Article Name: Pre-calibration, milk powder, solid

Parameter	Range	SECV	R^2
Moisture	0.94 – 22.40%	0.43%	0.980
Protein	7.44 – 94.34%	0.83%	0.999
Fat	0.09 – 31.12%	1.05%	0.992
Lactose	0.08 – 8.56%	0.20%	0.989

NORMS USED FOR THE REFERENCE VALUES

Parameter	Norm
Moisture	AOAC 927.05
Protein	AOAC 930.29
Fat	AOAC 932.06

RECOMMENDED CONFIGURATION

Article Number	Article Name
2.1071.0010	OMNIS NIR Analyzer Solid
6.06008.021	Pre-calibration, milk powder, solid
6.07402.200	Large holder OMNIS NIR, 100 mm
6.07402.110	Large cup OMNIS NIR, 100 mm
6.07402.120	Large lid OMNIS NIR, black, 100 mm
6.06003.010	OMNIS Stand-Alone license

APPLICATION INFORMATION

Samples are to be measured in the large cup in rotating mode for multi-point measurement to compensate for inhomogeneity of the sample.

Hops

Pre-calibration information hops, for raw hops and hops pellets.

Article Number: 6.06008.022
Article Name: Pre-calibration, hops, solid

RAW HOPS

Parameter	Range	SECV	R^2
Co Humolon*	15.40 – 42.70%	3.28%	0.716
Alpha Acid 7_4*	2.87 – 22.55%	1.14%	0.964
Alpha Acid 7_5	2.50 – 19.50%	0.77%	0.957
Alpha Acid 7_7*	1.90 – 18.50%	0.71%	0.96
Moisture*	9.00 – 21.80%	0.68%	0.908

* samples were measured non-grinded

HOPS PELLET

Parameter	Range	SECV	R^2
Beta Acid	2.15 – 8.71%	0.37%	0.907
Alpha Acid 7_5	2.43 – 21.74%	0.35%	0.996
Moisture	7.35 – 10.14%	0.27%	0.793
HSI	0.24 – 0.410%	0.22%	0.64

RECOMMENDED CONFIGURATION

Article Number	Article Name
2.1071.0010	OMNIS NIR Analyzer Solid
6.06008.022	Pre-calibration, hops, solid
6.07402.200	Large holder OMNIS NIR, 100 mm
6.07402.110	Large cup OMNIS NIR, 100 mm
6.07402.120	Large lid OMNIS NIR, black, 100 mm
6.06003.010	OMNIS Stand-Alone license

APPLICATION INFORMATION

Samples are to be measured in the large cup in rotating mode for multi-point measurement to compensate for inhomogeneity of the sample. All samples were grinded to a fineness of grinding of about 300 µm, except for the samples marked with an * in the table for raw hops.

Pulp & paper

Pre-calibration information for pulp & paper in the form of sheets.

PRE-CALIBRATION INFORMATION PULP & PAPER

Article Number: 6.06008.025
Article Name: Pre-calibration, pulp & paper, solid

Parameter	Range	SECV	R^2
Kappa number	5.18 – 172.60	3.77	0.995
Applied density	0.23 – 0.64 g/gm3	0.04 g/gm3	0.828
Breaking strength	6.60 – 29.84 Mpa	2.94 MPa	0.742
Buckling strength	19.40 – 93.63 Mpa	8.64 MPa	0.703
Pulp freeness	131.16 – 755.82 mL	78.18 mL	0.714
Tensile strenght	7.85 – 67.34 MPa	5.90 MPa	0.839

RECOMMENDED CONFIGURATION

Article Number	Article Name
2.1071.0010	OMNIS NIR Analyzer Solid
6.06008.021	Pre-calibration, pulp & paper, solid
6.07402.120	Large lid OMNIS NIR, black, 100 mm
6.06003.010	OMNIS Stand-Alone license

APPLICATION INFORMATION

The samples are TAPPI handsheets and these are to be measured directly on the measuring window and the lid should be placed on top.

Olive oil

Pre-calibration information for olive oil.

PRE-CALIBRATION INFORMATION OLIVE OIL

Article Number: 6.06008.026
Article Name: Pre-calibration, edible oil, liquid

Parameter	Range	SECV	R^2
Iodine value	76.72 – 89.76 mg/100g	0.40 mg/100g	0.97
C16:0	8.50–19.36%	0.39%	0.974
C18:0	1.87 – 3.84%	0.26%	0.778
C18:1	55.38 – 78.90%	0.65%	0.98
C18:2	3.42 – 17.16%	0.38%	0.998
C18:3	0.58 – 0.97%	0.06%	0.505
FFA	0.07 – 0.37%	0.04%	0.758
Induction time	7.0 – 12.8 h	0.35 h	0.908
K232	1.573 – 2.466	0.0864	0.887
Peroxide value	0.21 – 7.13 meq/kg	0.80 meq/kg	0.614
Refractive index	1.4611 – 1.4629	0.0001	0.93

NORMS USED FOR THE REFERENCE VALUES

Parameter	Norm
Iodine value	DGF C-V 11
C16:0	DGF C-VI 10
C18:0	DGF C-VI 10
C18:1	DGF C-VI 10
C18:2	DGF C-VI 10
C18:3	DGF C-VI 10
FFA	DGF V2 10
Induction time	DGF C-VI 6I
K232	EEC 2568/91
Peroxide value	DGF C-VI 6a
Refractive index	DGF C-IV 5

RECOMMENDED CONFIGURATION

Article Number	Article Name
2.1070.0010	OMNIS NIR Analyzer Liquid
6.06008.026	Pre-calibration, olive oil, liquid
6.07401.070	Holder OMNIS NIR, vial, 8 mm
6.7402.240	Disposable vial, 8 mm, transmission, qty. 100
6.06003.010	OMNIS Stand-Alone license

APPLICATION INFORMATION

The samples are to be measured in disposable 8mm vials in transmission at 40 °C.

Dry pet food

Pre-calibration information for dry pet food, grinded and non-grinded.

Article Number: 6.06008.027
Article Name: Pre-calibration, dry pet food, solid

DRY PET FOOD, GRINDED

Parameter	Range	SECV	R^2
Moisture	5.01 – 9.93%	0.26%	0.937
Protein	10.80 – 37.72%	1.34%	0.85
Fat	3.94 – 21.72%	1.41%	0.851
Ash	1.16 – 9.92%	0.82%	0.644

DRY PET FOOD, NON-GRINDED

Parameter	Range	SECV	R^2
Moisture	4.70 – 11.17%	0.34%	0.954
Protein	10.39 – 40.02%	1.58%	0.928
Fat	3.25 – 21.72%	1.86%	0.756
Ash	1.16 – 10.86%	0.91%	0.597

NORMS USED FOR THE REFERENCE VALUES

Parameter	Norm
Moisture	ISO 6496
Protein	ISO 5983
Fat	ISO 6492
Ash	ISO 5984

RECOMMENDED CONFIGURATION

Article Number	Article Name
2.1071.0010	OMNIS NIR Analyzer Solid
6.06008.017	Pre-calibration, pet food, solid
6.07402.200	Large holder OMNIS NIR, 100 mm
6.07402.110	Large cup OMNIS NIR, 100 mm
6.07402.120	Large lid OMNIS NIR, black, 100 mm
6.06003.010	OMNIS Stand-Alone license

APPLICATION INFORMATION

Samples are to be measured in the large cup in rotating mode for multi-point measurement to compensate for inhomogeneity of the sample. For grinded samples the fineness of grinding should amount to about 300 µm.

Metrohm

FASTER EASIER MORE EFFICIENT

WITH OMNIS NIRS

The OMNIS NIR Analyzer series consists of modern, Swiss-made laboratory instruments for quality control of liquid, viscous, and solid samples in a few seconds

- **Fast analysis** of liquid samples and solid samples in less than 10 seconds
- **Automation options** available to measure more than 200 samples unattended
- **Minimal maintenance** effort thanks to robust components, reduced number of moving optical parts, and IP54-rating
- **Full compliance** with 21 CFR Part 11, USP 856, ASTM 8321, ASTM 6321, EP, and JP
- **Simplified model development** with the OMNIS Model Developer (OMD)

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