



## BUCHI NIR Applications Confectionery

You need fast and reliable information about your samples in order to make far-reaching decisions. We support you in overcoming your daily challenges, from incoming goods inspection to finished product release, with more than 15 years experience in supplying laboratory and at-line NIR analytical solutions for the confectionery industry.





## NIR Pre-calibrated applications Confectionery Industry

### Your most important benefits

#### Time savings

- Shorter time to routine use. Measure parameters such as dry matter, fat, lactose and much more from day one
- Measure all parameters simultaneously
- Control the value chain at each critical point, from incoming goods to finished product release

#### Reliability

- Deliver the same accuracy in production as in the laboratory
- Get accurate results from a robust spectral database spanning geographical and seasonal variations

#### Precision and accuracy

- Our NIR technology provides unparalleled measurement reproducibility and spectrometer performance
- Intimate knowledge and experience with reference methods like Kjeldahl, Dumas and Extraction have been implemented into applications development

### Your «NIRSolutions Laboratory»



#### Based on our NIRFlex® N-500 Spectrometer

- Flexible, with various measurement cells and add-ons to accommodate any sample matrix

### Your «NIRSolutions At-line»



#### Based on our NIRMaster™ Spectrometer

- Hygienic, representative sampling
- Practical, ingress-protected design
- Simple operator interface

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*“The BUCHI NIRFlex N-500 is easy to use. Even those not very skilled at it can operate it well. I can manage the authorities very easily with the different licenses supplied by BUCHI. Furthermore, we can achieve rapid and accurate measurement of every finished product. As a result, the number of analytical staff and the cost of chemical reagents can both be reduced.”*

Liu Lingli, Manager Analytical Testing - Xiwang Sugar Holdings Company Limited

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## Chocolate, creams and drinks

Pre-calibrated application	Chocolate N555-518	Ice-cream & milk drinks N555-508	Milk creams transflectance**
Moisture [%]	0.2 – 1.8*		
Dry matter [%]		10.2 – 52.8*	17.5 – 50.9
Fat [%]	27.3 – 90.7*	0.1 – 18.2*	7.5 – 46.0
Solid fat at 20 °C [%]	48.0 – 72.2**		
Protein [%]		2.4 – 4.6*	2.0 – 4.5
Lactose [%]	0.4 – 18.1*		
Sucrose [%]	11.5 – 53.3*		
Theobromine [mg/kg]	1'056 – 4'246**		
Sample compatibility	Milk and dark chocolate melted and measured with sample cup in diffuse reflectance mode	Ice cream melted, milk-shake, yogurt drink measured with sample cup in diffuse reflectance mode	Milk-based creams measured with sample cup in transflectance mode



## Cocoa & derivates

Product	Cocoa beans**	Cocoa mass**	Cocoa butter Transmission**	Cocoa powder**
Moisture [%]	3.7 – 9.2	1.1 – 2.2		1.4 – 3.03
Fat [%]	53.1 – 61.3	49.1 – 57.1		10.6 – 23.9
pH	4.63 – 6.52			
Acidity [mL/g]	2.0 – 6.2			
Temperature [°C]	19.5 – 26.5			
NH <sub>3</sub> [ppm]	252 – 916			
Free Fatty Acids [% oleic acid]			0.68 – 3.80	
Iodine value			34.49 – 36.83	
Sample compatibility	Cocoa beans measured with sample cup in diffuse reflectance mode	Ground cocoa mass measured with monouse plastic sample cup in diffuse reflectance mode	Cocoa butter melted and measured with mono-use glass vials in transmission mode. Requires NIRFlex® Liquids measurement cell	Cocoa powder measured with sample cup in diffuse reflectance mode

\* BUCHI Pre-calibrations; \*\* Pre-calibrations in development

If not indicated otherwise, the pre-calibrations listed are compatible with both the NIRFlex® Solids and the NIRMasteR™ spectrometers



## Raw materials - Milk

Pre-calibrated application	Milk transfectance N555-509
Dry matter [%]	7.8 – 15.5*
Fat [%]	0.05 – 9.80*
Protein [%]	1.1 – 6.5*
Lactose [%]	0.08 – 5.50**
Saturated fatty acids [%]	0.03 – 4.68**
Mono+ Poly unsaturated fatty acids [%]	0.01 – 2.34**
Casein	
Sample compatibility	Homogenized milk measured with sample cup in transfectance mode



## Raw materials – Dairy

Pre-calibrated application	Yogurt and sour cream N555-505	Milk powder**
Moisture [%]	14.6 – 93.5*	1.4 – 7.9
Fat [%]	0.04 – 48.60*	0.1 – 33.0
Protein [%]	0.4 – 19.1*	1.7 – 91.2
Lactose [%]	0.03 – 4.30**	36.5 – 55.0
Total sugar [%]	0.6 – 54.9*	
Ash [%]	0.2 – 2.0*	2.0 – 8.5
pH	4.1 – 6.2*	
Salt [%]	0.04 – 1.99**	
Sample compatibility	Yoghurt, quark, sour cream, mascarpone measured with sample cup in diffuse reflectance mode	Full and skimmed milk powder, whey powder measured with sample cup in diffuse reflectance mode

\*BUCHI Pre-calibrations; \*\*Pre-calibrations in development

If not indicated otherwise, the pre-calibrations listed are compatible with both the NIRFlex® Solids and the NIRMaste™ spectrometers



## Raw materials – Fats & oils

Pre-calibrated application	Fats & oils cuvette**	Fats & oils vials**
Peroxide value	0.5 – 75.0	0.04 – 35.70
Anisidine value	0.6 – 204.0	
Polar fraction	0.7 – 60.4	
Triglycerides	0.2 – 33.8	
Acid number	0.1 – 8.8	
Free fatty acids [% oleic acid]		0.01 – 23.20
Iodine Number		0.8 – 135.2
Sample compatibility	Mixtures of different vegetable oils and animal fats measured with quartz cuvette in transmission mode. Requires NIRFlex® Liquids measurment cell	Mixtures of different vegetable oils and animal fats measured with mono-use glass vials in transmission mode. Requires NIRFlex® Liquids measurment cell



## Raw materials - Egg derivatives

Pre-calibrated application	Egg powder**	Liquid egg**
Dry matter [%]	94.3 – 96.0	
Protein [%]	40.1 – 50.7	
Total fat [%]	36.6 – 48.5	7.9 – 11.9
Sterols [%]		0.35 – 0.54
pH	6.43 – 9.55	
Sample compatibility	Whole egg powder	Homogenized whole liquid egg measured with sample cup in transfectance mode

\*BUCHI Pre-calibrations; \*\*Pre-calibrations in development

If not indicated otherwise, the pre-calibrations listed are compatible with both the NIRFlex® Solids and the NIRMaste<sup>TM</sup> spectrometers



## Raw materials – Flour

Pre-calibrated application

Soft wheat flour  
N555-515

Moisture [%]

3.6 – 16.1\*

Protein [%]

6.8 – 18.8\*

Ash [%]

0.3 – 2.6\*

Wet gluten

21.6 – 48.5\*\*

W (alveograph baking strength of dough)

95 – 456\*\*

L (alveograph extensibility of dough)

40 – 163\*\*

P (alveograph maximum pressure required)

31 – 131\*\*

Falling number

131 – 532\*\*

Baking absorption

50 – 72\*\*

Degree of softening

5 – 147\*\*

Granularity

33 – 56\*\*

Stability

1 – 31.3\*\*

Damaged starch

16 – 42\*\*

Dough development

1.2 – 15\*\*

Sample compatibility

Soft wheat flour measured with sample cup in diffuse reflectance mode

For more information please contact your local BUCHI representative.

[www.buchi.com/worldwide](http://www.buchi.com/worldwide)



**NIRFlex®  
N-500**

Versatile laboratory  
FT-NIR spectrometer



**NIRMasteR™  
IP54**

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