

Near Infrared Spectroscopy

DA 7250 Calibration Package
for Dairy Industry

The PerkinElmer DA 7250™ is used extensively in the dairy industry. Its accuracy, speed and flexibility makes it especially suited for analysis of a large spectrum of products in the dairy industry. This calibration package includes calibrations for a range of products in the dairy industry, based on advanced algorithms such as ANN and PerkinElmer proprietary Honigs Regression™ HR.

DAIRY PRODUCT CALIBRATIONS

Product	Parameter	Unit	Samples	R	Range
CHEESE					
Hard, semi-hard, soft, cream and processed	Moisture	%	8400+	0.99	8.16 - 77.7
	Fat	%	4500+	0.99	10.0 - 41.0
	Salt	%	490+	0.97	0.2 - 5.68
	Protein	%	800+	1.00	6.46 - 29.9
	pH	%	900+	0.94	4.6 - 6.15
DAIRY POWDERS					
Skimmed and whole milk powders	Moisture	%	2500+	0.95	1.3 - 5.3
	Protein	%	2500+	0.99	3.8 - 38.7
	Fat	%	2700+	0.99	0.01 - 37.6
	Ash	%	1500+	0.98	4.8 - 10.2
	Lactose	%	100+	0.98	36.8 - 79
	Alkalinity	mg/l CaCO ₃	200+	0.83	1 - 320
BUTTER					
Salted	Moisture	%	800+	0.97	11.7 - 21.2
	Fat	%	600+	0.96	75.8 - 86.3
	Salt	%	800+	0.97	0.12 - 2.42
UnSalted	Moisture	%	300+	0.99	14.9 - 22.1
	Fat	%	300+	0.99	75.7 - 83.9
YOGHURT					
Natural, greek, quark, fruit and crème fraîche	Dry Matter	%	900+	0.98	12.4-37.7
	Fat	%	800+	0.98	0.1-21.6

DAIRY PRODUCT CALIBRATIONS *cont.*

Product	Parameter	Unit	Samples	R	Range
WHEY POWDER					
	Fat	%	600+	0.99	0.5- 3.3
	Protein	%	700+	0.90	10.6 - 15.9
	Alkalinity	mg/l CaCO ₃	600+	0.81	0.1 - 265.5
	Ash	%	600+	0.92	7.5 - 10.0
	Solids	%	<100	0.93	34.9 - 55.7
WHEY PROTEIN CONCENTRATE					
	Protein	%	300+	0.79	27.8 - 40.7
	Fat	%	300+	0.97	2.5 - 10.8
	Alkalinity	mg/l CaCO ₃	300+	0.76	29.2 - 220.7
	Ash	%	300+	0.83	4.1 - 7.9
MILK					
Raw	Fat	g/l	500+	0.98	12.3-93.1
	Protein	g/l	500+	0.97	20.7-65.5
	Lactose	g/l	400+	0.81	3.2-5.8
	Solid non fat	%	100+	0.98	4.4-8.8
Homogenized	Fat	g/l	100+	0.99	0.1-40.6
CREAM					
	Fat	%	700+	0.99	5.5-51.0
SOUR CREAM					
	Total solids	%	<100	0.99	16.30 - 29.26
	Fat	%	<100	0.99	0.05 - 18.73
SWEETEND CONDENSED MILK					
	Total solids	%	500+	0.81	70.5-76.5
	Fat	%	500+	0.94	7.14-9.4
CHEESE POWDERS					
	Moisture	%	<100	0.99	1.8 - 3.3
	Salt	%	100+	0.99	1 - 8.4
	pH	-	100+	0.99	4.9 - 6.7
	L	-	100+	0.99	62.9 - 95.4
	a	-	100+	0.99	-2.8 - 42.9
	b	-	100+	0.98	8.3 - 42

Homogenous products such as powders, creams, spreads, butter or milk are typically analyzed in small sample dish or disposable cup.

Inhomogeneous products such as cheese are typically analyzed grated in large half depth sample dish.

NIR is an indirect method and the actual accuracy will depend on the accuracy of the reference method which is used for comparison with the DA 7250 Dairy Analyzer. For most products and parameters a typical accuracy would be 1-1.5 times the accuracy of the reference method.