

IN-PROCESS / AT-LINE ANALYSIS



EMPOWERING  
TRUE PROCESS AND  
QUALITY CONTROL  
TODAY AND BEYOND



A NEW ERA IN GAUGING FOR  
INDUSTRIAL APPLICATIONS

# NDC – Maximizing Process Performance and KPIs

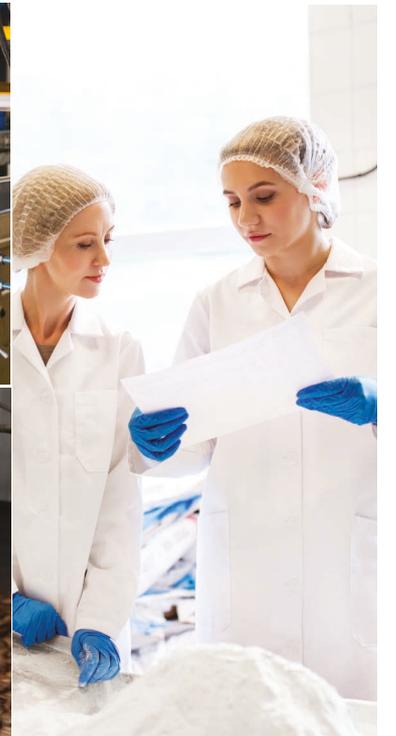
## Through Moisture Measurement

For more than 50 years, NDC has designed and built measurement solutions specifically developed to meet the manufacturing challenges faced by the bulk material, mineral, chemical and pharmaceutical industries.

Our leading position in process measurement has been achieved by working closely with our customers and developing solutions that meet their needs – for better process insight and quality control. We set the bar in the industry for best-in-class performance with our CM710e and PH710e on-line industrial gauges and InfraLab e-Series at-line analyzer. Our legacy of innovation continues with the Series 9 gauge.

By solving process-specific application challenges, we play a dominant role in supporting industry and forging successful relationships with the leading manufacturers.

Today, tens of thousands of NDC gauges are in service around the globe. That's because we are trusted not just to meet process needs, but to uncover new efficiencies, ensure quality and add value wherever our products are installed.



# Stay Ahead with the Series 9 On-Line Gauge

Process demands keep changing, but our Series 9 on-line industrial gauge is your **next-generation process optimization solution** for measuring moisture. It is specially engineered for 24/7 duty, helping you to meet product quality demands and efficiency goals.

With **25 times more processing power** than its predecessor, the Series 9 delivers unparalleled measurement performance while maintaining simplicity and versatility in design and operation.

The **flexible, future-proof platform** harnesses the full power of infrared spectroscopy. The user-friendly format requires no special operator skills or expert knowledge, yet it allows expert users to access the enhanced interaction capabilities as desired.

The Series 9 keeps you ahead with:

- ▶ Evolutionary technology that is flexible, adaptable and scalable to meet your changing needs
- ▶ Enterprise-level intelligence compatible with Industry 4.0
- ▶ Easier operation and maintenance
- ▶ Lower cost of ownership over a long lifetime of operation

Driven by our industry-leading expertise and unrivalled applications knowledge, the Series 9 delivers the performance and productivity you need – now, and for the challenges yet to come.



## Leverage the Power of At-Line Analysis

The InfraLab e-Series – there is simply no better at-line analysis solution on the market today. This powerful, at-line analyzer is designed to be used anywhere in the process as part of your quality assurance system. Benefit from rapid, accurate measurements for a wide variety of industrial applications. Learn more about this powerful analyzer inside.



# Advance Your Process. Realize Immediate and Long-Term Value.

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## We understand your process challenges



### Automated process control

Automated process control using real-time, on-line moisture measurement is a primary objective for many processes in order to achieve consistently optimal product quality, meet required product flow or compression characteristics or ensure the product can be correctly stored or transported prior to end use.



### Tighter control of moisture

In addition to great quality, moisture content greatly impacts process efficiency and yield. Whether you're achieving the correct end-point moisture prior to forming a product, monitoring moisture in a slurry before the spray dryer or using feedback control at the dryer exit to optimize moisture levels, these and many other processes can benefit from tighter control of moisture levels within your product.



### Accurate, robust measurements

Measurements must be robust enough for the process environment and accurate and reliable enough to be trusted for control. The process may also demand specifically-engineered solutions to gain access to the product to make an effective measurement.

While many products are transported on conveyors that provide convenient measurement access, pneumatic transport systems require automatic samplers, discontinuous product flows require product presence/absence detection and a measurement may also be required through a sight glass.



### We offer a range of well-engineered solutions

We offer a wide range of well-engineered solutions to ensure that the measurement can be made where and when you need it. NDC industrial moisture gauges have been installed and are in daily use around the world in demanding industrial processes, helping manufacturers to optimize quality and process performance. Our gauges will also help you to:

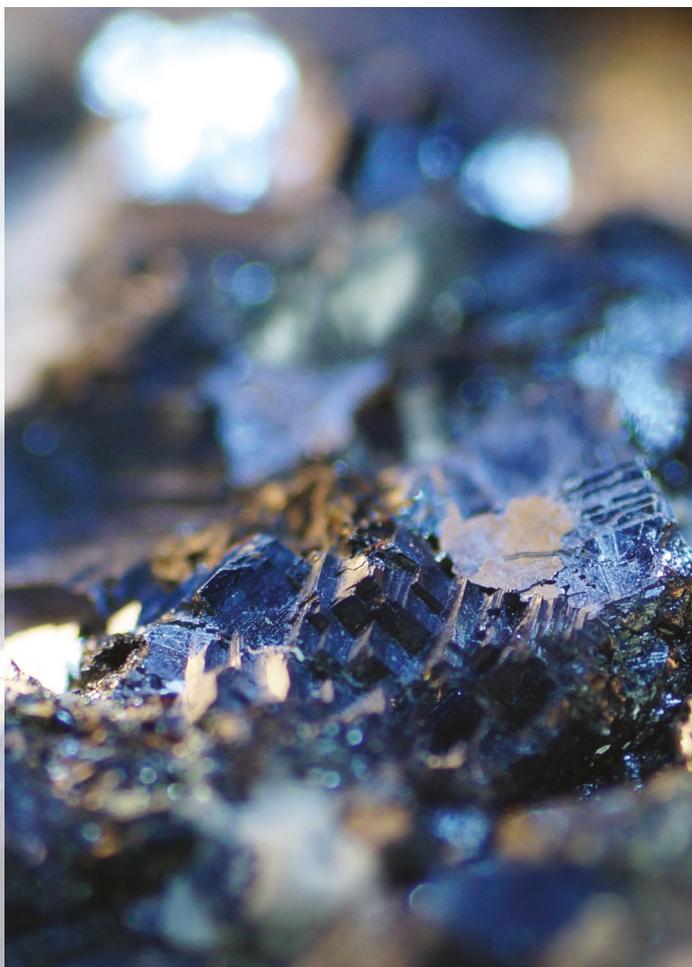
- ▶ Improve production efficiency
- ▶ Reduce fossil fuel consumption
- ▶ Achieve right-first-time batch drying



## Operate your process at peak performance with moisture measurements in applications, such as:

- ▶ Powders and Aggregates
- ▶ Flakes and Granules
- ▶ Slurries and Paste

*Refer to the list of applications later in this brochure to see how the Series 9 delivers value to your process.*



# Meeting Your Application Needs Today and Tomorrow to Fully Leverage Your Investment

## Greater processing power to perform more advanced measurements and gauge operations

- ▶ Powerful, dual-core processor with large on-board storage

## Unparalleled process vision

- ▶ 12 hours of measurement trending and embedded product calibration adjustment tools

## Expansive measurement database to meet your needs

- ▶ Every NDC application is fully documented

## Hygienic, seamless stainless-steel enclosure with sapphire window

- ▶ 316L stainless steel, sealed to IP67

## Integrated Air Purge Window shield to keep window clean from process environment

- ▶ Advanced window contamination monitoring with an optional air flow monitor



Simple slide-on sensor mounting



Integrated Air Purge Window



Removable service backplate



Status indicator light

### Innovative removable backplate for easy service and maintenance

- ▶ Remove gauge internals while leaving enclosure in place

### ATEX certification for safe use in dust hazardous environments

- ▶ DUST: II 1 D Ex Ta IIIC T288°C Da Ta  
-20°C to 50°C and II 2D Ex Tb III C T80°C Db

### Versatile connectivity for flexible integration into production networks

- ▶ Ethernet and fieldbus networking with digital and analog connectivity

### Wireless communication option to remotely connect to mobile devices

- ▶ Remotely view gauge, process and sampling information

### Advanced diagnostics for maximum uptime

- ▶ Includes Status indicator light for at-a-glance confirmation with integrated Auto-Check feature for total piece of mind

**EASY TO INSTALL,  
INTEGRATE AND OPERATE**

# Connectivity and Interfacing to Enhance Process Insight and Control

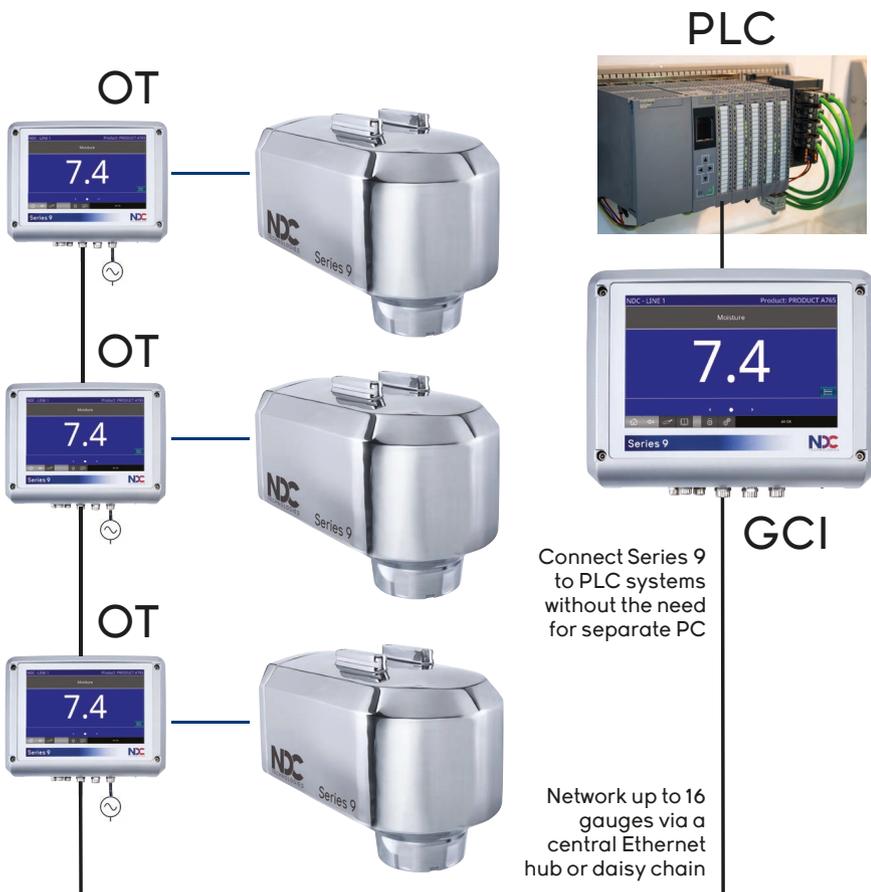
A flexible and scalable in-process gauging system for industrial applications



Gauge Control Interface (GCI)

## Series 9 gauge control interface

- ▶ 10-inch, touch-screen GCI
- ▶ Three Ethernet ports and RJ45 external port
- ▶ Interfaces up to 16 gauges
- ▶ Multi-lingual interface



## Portable interface

Accessing your Series 9 gauge is even easier with our portable operator terminal. It can be docked in the control room or operated near the gauge (wirelessly or via Ethernet cable) for sampling and configuration.

## Series 9 devices

Series 9 peripheral devices all run on 24V DC power and include:

- ▶ Operator Terminal
- ▶ Gauge Control Interface
- ▶ Gauge Control Port
- ▶ Power Hub



**OT**

### Operator Terminal

The OT provides 24V DC to a single gauge and operator-level interaction access to its measurement, data trending, sampling and diagnostic functions. Three (3) Ethernet ports are available for convenient networking configurations.

**GCI**

### Gauge Control Interface

The GCI provides 24V DC power to a single gauge. It enables you to perform multi-gauge setup (up to 16 gauges), calibration adjustments and product management. Both the GCI and OT feature high-definition, multi-lingual, color touch-screen displays.

**GCP**

### Gauge Control Port

The GCP provides three (3) Ethernet ports, allowing multiple gauges to be networked (daisy chained). It also has additional options for analog outputs and digital I/O for any connected gauge.

**PH**

### Power Hub

The PH provides 24V DC power to a single gauge. It also enables convenient networked arrangements of multiple Series 9 gauges and devices via three (3) Ethernet ports.

Industry  
4.0

## Scalable solution to meet your plant configuration

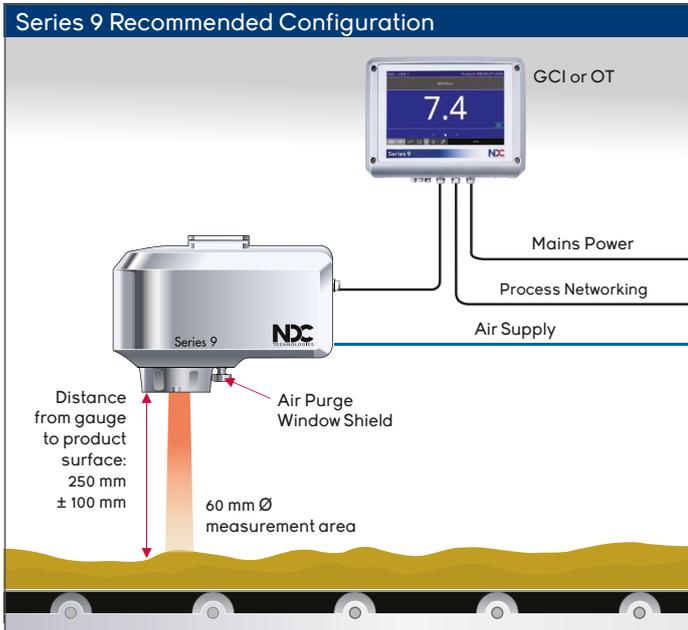
Series 9's flexible building-block architecture enables you to scale NDC's gauging system to meet current and future site requirements.

- ▶ Keep pace with changing demands
- ▶ Meet the needs of your plant
- ▶ Protect current investment while realizing additional benefits
- ▶ Maintain a competitive edge



# Fully Engineered for the Process to Deliver Accurate, Reliable Measurements

In continuous product flows...

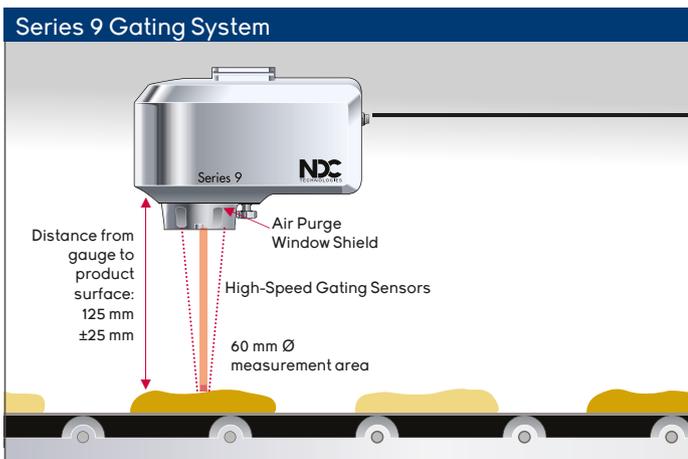


## Installation

The Series 9 measures over a 60 mm diameter area (optionally 25 mm or 10 mm) and is suspended over the process line at a distance of 250 mm from the mean product height to the Series 9 measurement window.

The gauge tolerates product height fluctuations of  $\pm 100$  mm without the measurement being affected.

Ambient lighting, temperature or relative humidity changes do not affect the Series 9 measurement.

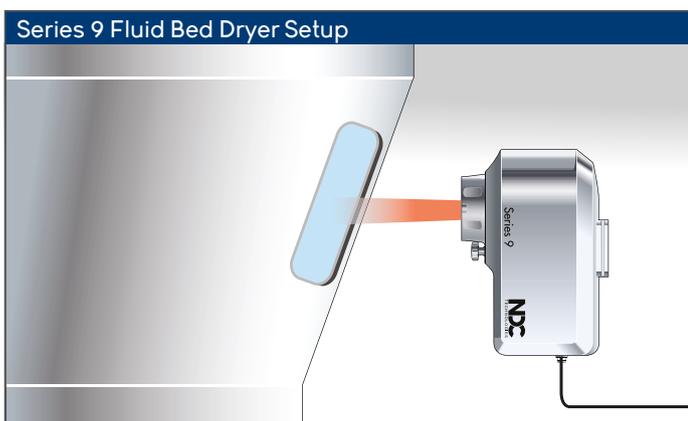


## Discontinuous product flows

The optional integrated "high-speed gating" system detects the product's presence or absence in discontinuous flows and avoids recording of data when nothing is passing across the measurement area.

High-speed gating can be used for processes which simply do not flow continuously.

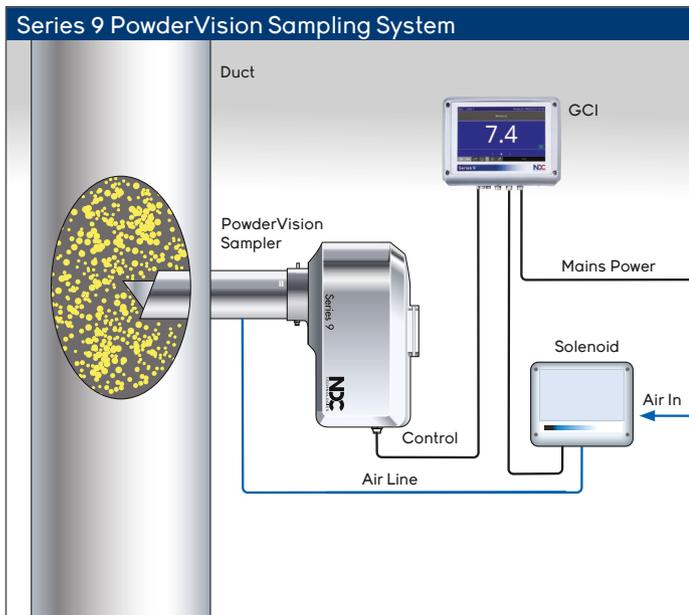
Beam patch sizes of 60 mm or 10 mm are available.



## Powders in fluid bed dryers

The Series 9 moisture gauge can be installed to measure moisture in powders in a fluid bed dryer through a sight glass, while ensuring that the measurement area is below the powder line. For powders that adhere to the sight glass, ask about NDC's unique cleanable fiber probe solution.

## Used with a PowderVision sampler in gravity-fed product flows



### Measuring powders in gravity-fed ducts

The pneumatic PowderVision sampler can be used with the Series 9 gauge for powders transported in enclosed ducts.

This device comprises of a tube fitting with window and a sample collection cup which fills with the falling product. Once a sample has been collected and measured, a jet of air ejects it and the cycle repeats.

#### Additional technical information sources

For additional technical information about installation, calibration, networking and process connectivity, and to learn more about the Series 9 gauge generally, please consult the product manuals.

## Ready for any process condition

The Series 9's stainless-steel hygienic housing is sealed to IP67 requirements and optionally ATEX certified. Its seamless hygienic design is a must for industrial applications and allows operation in ambient temperatures from 0-50°C without cooling.

For higher ambient temperatures, cooling options using a novel heat exchanger arrangement are available:

- ▶ **Vortec air cooling:** with an optional air control solenoid to optimize air consumption and reduce operating cost
- ▶ **Water cooling**



TEMPERATURE



DUST



AMBIENT LIGHT



HUMIDITY

# The InfraLab Moisture Analyzer

Fast, accurate and easy to operate, InfraLab is the viable alternative to laboratory methods

The InfraLab e-Series moisture analyzer, designed for both at-line and laboratory use, measures samples taken from the process in less than 10 seconds.

InfraLab is designed as a routine replacement for loss-on-drying, Karl Fischer titration or gravimetric moisture testing.

Once calibrated to your preferred reference methods, a process facilitated by the InfraLab Manager software, its key advantages are: speed, minimal sample preparation and the fact that it measures a larger, more representative sample than other techniques.

InfraLab is accessed via its intuitive, touch-screen interface and requires no special user skills in routine use.



## Key Features

- ▶ **Color VGA touch-screen** interface
- ▶ **InfraLab Manager software** for data management via PC
- ▶ **Ethernet and LIMS** connectivity for factory or laboratory network integration
- ▶ **On-board data storage** of up to 10,000 sample measurement files
- ▶ **Up to 200 users** with individual pass code and specific access permissions
- ▶ **Product database** for up to 200 products with specific settings for each
- ▶ **USB data port** for data download to spreadsheet programs
- ▶ **Barcode reader option** making log-in and product selection even easier
- ▶ **Reference standard** for routine stability checks and standardization after servicing
- ▶ **Choice of sample bowl size:** deep, shallow (rotating) or petri-dish (static)
- ▶ **Measurement speed** 5 seconds or 10 seconds (application dependent)
- ▶ **History Audit Log** of calibration records and Reference Standard values



Touch-screen display



Data download to USB memory stick



Reference standard (option)



Barcode reader (option)

# InfraLab Manager Software

## At-line in the process area or in the laboratory

### Secure data storage

In addition to its speed and precision, InfraLab benefits from substantial data storage and security features.

The time and date of every measurement are recorded along with the name of the operator who is logged in at the time.

### 5-year consumables warranty

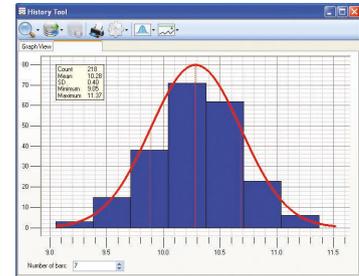
The source lamp and motor are guaranteed for 5 years and can be exchanged quickly and easily onsite without intervention from NDC.

### Ethernet connectivity

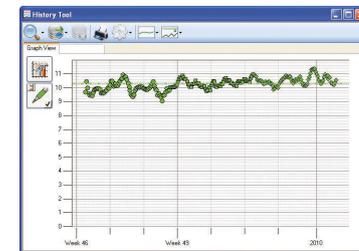
This capability enables InfraLab to be used either as a stand-alone analyzer or integrated into LIMS or factory networks, or simply connected to a PC when required to take advantage of the features offered by the InfraLab Manager software.

### InfraLab Manager software

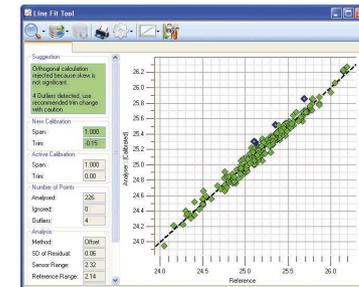
This tool provides user access to all measurement and calibration data and enables setup and remote access to data and key functions. It enables up to 16 networked analyzers to be controlled and viewed centrally from a PC.



Histogram



Data display



Calibration

## Network connectivity



PC running "InfraLab Manager" software



InfraLab's rapid analysis capability delivers substantial savings through reduction in costs of routine sample testing

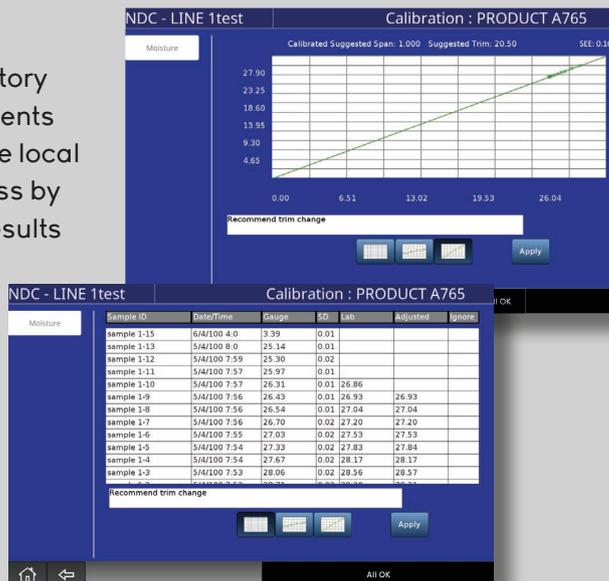
# Get Unparalleled Performance in the Following Industrial Applications

Minerals and Bulk Applications		
Industry Sector	Moisture	Application Areas
Ceramics and Clay	✓	ball clay, refractory clay, china clay (kaolin), spray dried ceramic powders, red clay spray dried ceramic powders, clay for roofing tiles
Fibers and Polymers	✓	cellulose acetate tow, yarn or chips, glass fiber chips, nylon granules, rubber crumb, PVC powder
Nitrocellulose	✓	nitrocellulose chips, nitrocellulose with nitroglycerine
Minerals – mining	✓	bauxite (aluminum oxide), calcium fluoride (fluorspar), copper concentrate, copper ore powder or granules, copper tailings, crushed dolomite (calcium magnesium carbonate), gold ore, gypsum (calcium sulphate), ilmenite, kaolin granules, molybdenum sulphide, peat, phosphates, refined potash, potassium fluoride, powdered talc
Minerals – industrial	✓	ash (power station and fly ash), coke breeze (powdered), crushed or powdered coal, milled furnace slag, raw sinter mix, sinter mix (mixture of iron ore + coke breeze + limestone) [not pure iron ore], Laponite, bentonite (Wilkinsonite)
Minerals – building and construction materials	✓	cement meal, concrete mixes, roofing tile chips, washed sand, sand for roofing tiles
Industrial Textiles	✓	cotton: Input – prebaling – pre-ginning, neoprene rope, rayon fiber, textile fibers, wool
Wood and Cellulose Products	✓	cellulose pulp sheet, cork chips and sheet, paper fiber pulp, particle board, fiber board, OSB, sawdust, wheat straw, wood veneers, woodchips (frozen or unfrozen), wood fiber
Organic Waste and Biofeed	✓	sewage sludge
Other	✓	lead acid battery paste
Chemical and Pharmaceutical Applications		
Industry sector	Moisture	Application Areas
Chemicals	✓	aluminum hydroxide, alumina/aluminum oxide, amino acid powder, ammonia oxide, ammonium/potassium chloride, boric acid, bromine, calcium carbonate, ferrite powder, sodium chloride (salt), sodium carbonate/bicarbonate, sodium sequicarbonate, sulphur, titanium dioxide paste/powder, uranium dioxide
Detergents	✓	detergent powders: zeolite, phosphate- or carbonate-based detergent slurries; phosphate or zeolite based
Fertilizers	✓	ammonium, phosphate or nitrate based
Pharmaceuticals and Nutraceuticals	✓	pharmaceutical and nutraceutical powders, sugar coatings in the pan coater

## Calibration software

The Series 9 and InfraLab are delivered with NDC's unique factory calibrations that are ready for use for the specified measurements and ranges. On installation, they are adjusted to agree with the local reference method. The software provided simplifies this process by enabling a comparison of instrument values with laboratory results and feature the following tools and functionality:

- ▶ Instrument setup and calibration
- ▶ Product management (product settings)
- ▶ Displays of measurement and other key parameters
- ▶ Data logging, data trending and export
- ▶ Diagnostic functions
- ▶ OPC server (optional)



# Notes



# Optimizing Your Investment with World-Class Service and Support

NDC's technical expertise comes from deep experience supporting thousands of products at the world's leading manufacturers. Our portfolio of support offerings leverages this expertise to assist you through the service lifecycle. We offer a complete range of cost-effective support solutions including commissioning, training, technical assistance and service agreements. Customers rely on our 24-7 availability via myNDC – the industry's most progressive service cloud portal. Whether it's configuring new equipment, training your technical staff or solving a technical problem, you can count on our experienced team to help maintain the health and performance of your NDC product.

Visit myNDC service cloud at [myndc.com](http://myndc.com).



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NDC Technologies is represented in over 60 countries worldwide. [www.ndc.com](http://www.ndc.com)

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