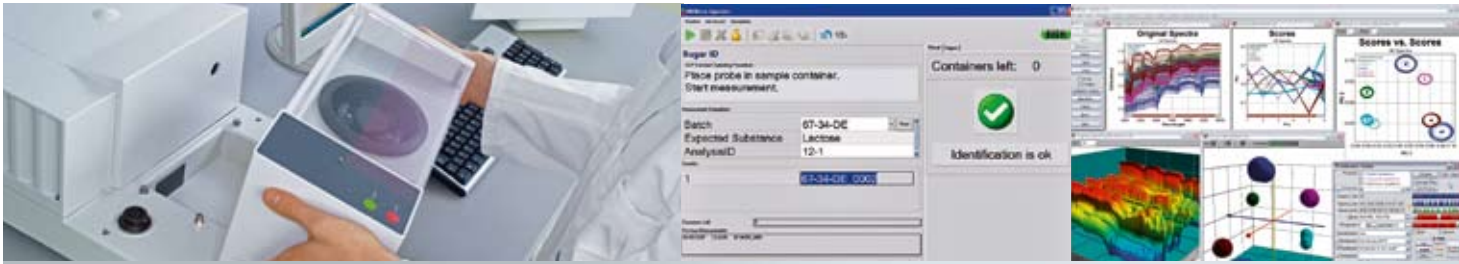


NIR Solutions







NIRSolutions® – An integral concept

NIRSolutions offer you – on the basis of a careful analysis of your individual requirements – analytical solutions for your entire production chain, from goods reception and materials qualification to product release. At the heart of this service is the FT-NIR spectrometer NIRFlex® N-500. The associated measurement options will be matched to your specific needs, as well as the relevant NIRWare® software modules and the NIRCal® chemometric software. Our offer is completed by a range of comprehensive services – from feasibility studies at the outset and application support during implementation to qualification, training and continuing education, after-sales service and maintenance support in routine operation. Our global network of NIR experts supports you at every step integrating Buchi NIRSolutions – from feasibility till routine operation.

The basic elements of Buchi NIRSolutions®

- **Unique polarization interferometer platform**

Buchi FT-NIR instruments are designed to meet the specific requirements of our customers' applications from the QC laboratory to at-line and on-line installations.

- **Dedicated measurement cells**

With a variety of measurement cells the NIRFlex N-500 can be customized to give the optimal configuration for all kinds of samples and purposes, from R&D, raw material control to process control.

- **Comprehensive software products**

Buchi software packages meet the requirements of all our customers – ranging from the high regulatory demands in the pharmaceutical industry to easy routine use in a production environment.

- **Specialized services and solutions**

Our products are supported by highly trained and committed service and global network of application specialists ready to assist you wherever you are.

Applications and solutions for food and feed industries – Buchi NIRsolutions® covers your demands

Whether fat, protein, water, salt, pH, or fiber and more: The Buchi NIRFlex® N-500 spectrometer allows all these and additional core parameters encountered in foods and feeds to be analyzed simultaneously and in a matter of a few seconds.

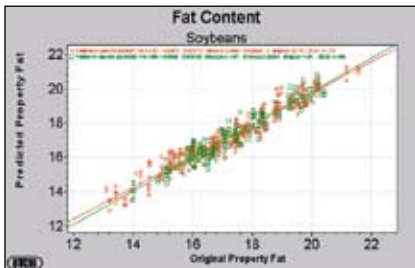


Buchi pre-calibrated applications

In the field of food and feed production, Buchi offers a number of quantitative applications with ready-to-use calibrations, for instance for meat and sausage products, feed and feed ingredients, various dairy products, cereal grains and many more. Thanks to the high sample variance obtained from different countries and companies, the Buchi pre-calibrated applications are extremely robust.

Comprehensive INGOT® calibrations

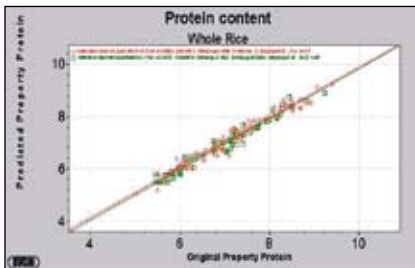
INGOT® is a set of universal NIR calibrations for the analysis of raw materials and finished products for feed, flour and milling industry. They have been developed by using decades of experience in NIR spectroscopy and chemometrics. These pre-calibrations are a part of our solutions helping you to analyze your samples from the very first day.



Examples of quantitative applications

Determination of fat content of soybeans

Soybeans are one of the major raw materials for food and feed production. It is therefore extremely important to ensure quality checking. As an example, we show the possibility to determine the fat content of soybeans.



Determination of protein content of rice

Rice is a necessary food for nearly half of the world's population. In food and drink industries, rice is also gaining importance in being ingredient of infant foods, snack, fermented products, beer, and rice wine. Important quality aspects of rice are protein, moisture, fat and ash content. Here we show the calibration of protein content in whole rice, this calibration was done without grinding and sample preparation.



Example of a qualitative application

Identification of vitamins

Reliable identification of raw materials is important in the food and feed industries as well. In the production of babyfoods, this is a highly significant quality assurance aspect. In this example, different vitamins are distinguished accurately on the basis of a cluster model. Also, mixed samples are identified as such; they are clearly outside the individual clusters.



From raw material control to final release testing – In you NIRsolutions

Your quality control procedures demand accurate, traceable and reproducible results – and this within seconds. NIR spectroscopy suggests itself for such applications as an efficient and cost-effective analytical method. Thanks to the reproducibility of the measurement results, NIR spectroscopy is the ideal choice for solutions in numerous processes, for example identity checks or quantitative examinations of powders, granular materials, liquids, tablets and capsules.

Identity control of raw materials

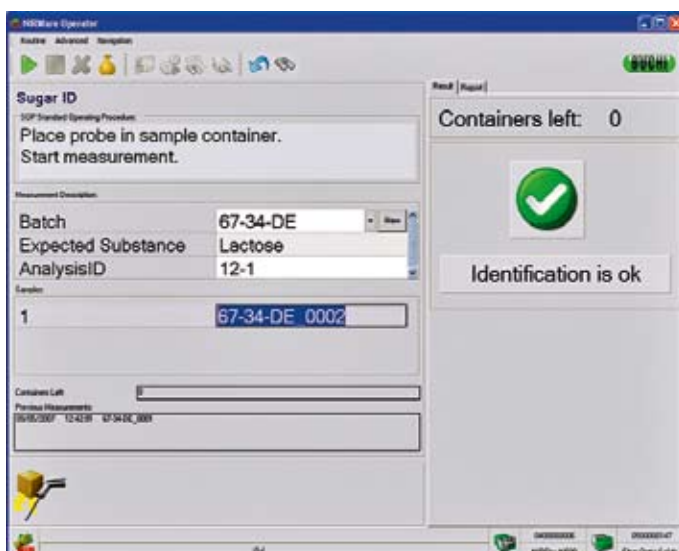
The safety requirements in the pharmaceutical industry are rigorously high. As a result, various directives demand that the content of each individual raw material container be verified beyond any doubt. With the FDA's process analytical technology (PAT) initiative non destructive real-time testing becomes even more important. NIR spectroscopy has proven to be the fastest and most reliable method for raw material acceptance and qualification.

Buchi offers a range of tools to enable you to apply NIR in routine use reducing *implementation time and costs*.

- The *Buchi NIR Spectral Library* with spectra of actives and excipients.
- The *Buchi-Fluka NIR Spectral Library* comprises more than 4000 spectra of predominantly organic chemicals.
- *ChromaDex™ ITS Library* – Collection of spectra of certified botanical reference materials from ChromaDex™ Corporation.

- *The RapiRelease™** program, developed in partnership with Mallinckrodt Baker, is a fully validated method based on multiple lots of biopharm, organic and inorganic compounds that are traceable to compendial test data.

* Trademark of Mallinckrodt Baker, Inc.



the Pharmaceutical industry Buchi provides

Quantitative analyses

Determination of assay and Content Uniformity Test of tablets using the Buchi NIRFlex N-500 spectrometer delivers you effectively and non-destructively results with an accuracy and reliability equal to HPLC.

Example: Tablet production

Numerous parameters influence the end product's quality in the end and thus the production yield. The integration of the NIRFlex[®] N-500 spectrometer with the Solids Transmittance measuring cell into the well established Checkmaster[®] from Fette Compacting in Germany now enables you to determine all important parameters such as weight, hardness, diameter, thickness and active ingredient content of individual tablets during the production process. Thus, online process control and production release in real time becomes possible.

Example: Final tablet release:

The official final release procedure includes all parameter mentioned above. To render the release check in the QC laboratory more efficient, Büchi and Sotax, Switzerland merge the results of their measurements. All physical parameters, measured with the tablet tester HT10[®] and the NIR results of the NIRFlex[®] N-500 with the Solids Transmittance measuring cell, are listed together in just one report.



Streamline compliance

Buchi software package and all Buchi systems comply with GAMP requirements and fulfil the provisions of 21 CFR Part 11.

The USP/EP Test Kit is available for regular instrument performance verification with certified, traceable standards in compliance with the *US Pharmacopeia* and the *European Pharmacopoeia*.

Buchi supports you with your equipment qualification. Our comprehensive and detailed IQ/OQ documentation is part of every NIRFlex[®] N-500 system.



NIR Solutions for Easy – Secured Spectra Acquisition and Powerful Data Evaluation

Buchi NIR Solutions not only offer leading hardware technology, but highest standard software to help you work effectively and efficiently.

The **NIRWare Software Suite**, consisting of the NIRWare Operator and the NIRWare Management Console has been designed to meet your needs. Whether you are working in an unregulated environment or in a highly regulated pharmaceutical production site our software solutions fully support all your processes and workflow.

NIRWare Operator is a user friendly software for data acquisition and routine measurements. Standard operating procedures guide you through your workflow. The measurement results are easily understood and can be displayed differently using customizable templates.

NIRWare Management Console is the central cockpit giving access to all configuration functions following a unique and logically structured design. It allows easy access to applications and sample management.

NIRWare helps you to administrate security policies, manage data and configurations and many more, resulting in a rapid and efficient workflow.

NIRWare 2Ex, a software extension module, extracts information of analyzed results from the NIRWare database and saves it to Microsoft Excel format. Individual filters can be set to retrieve specific data.

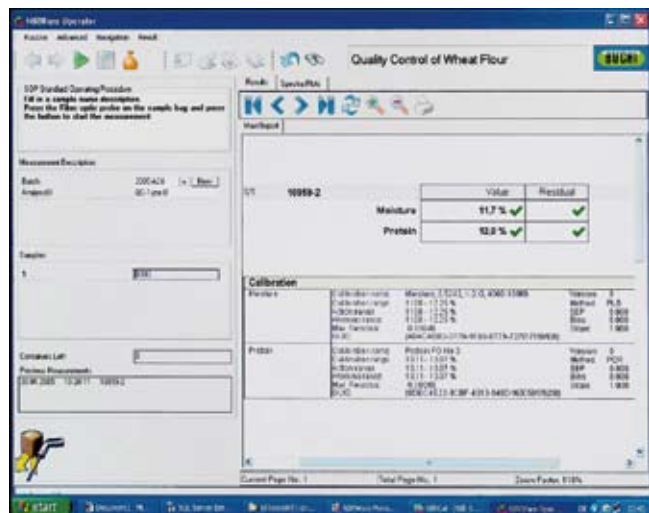
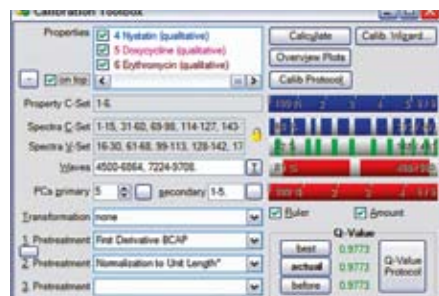
To improve the accuracy of your calibrations a powerful chemometric software is needed.

NIRCal® is the benchmark software package in chemometrics. NIRCal allows beginners and experts to fully evaluate data sets on the highest level.

Spectra from all kind of sources can be converted and imported easily. The graphical user interface enables you to make interactive synchronized data selections to easily find correlations and dependencies.

The patented Calibration Wizard, supports you to quickly calculate a set of easy to go calibrations for routine use.

The NIRCal Toolbox provides an interactive graphical cockpit. With this it is easy to adjust all necessary parameters to optimize your calibrations, switch between different settings and always keep an overview.



NIR Solutions for Global Networking from micro to macro networks

In a more and more connected world the link between users and software is of increasing importance. Connect your Buchi NIR to your laboratory management system or to a global application network and improve your efficiency – wherever you are.

Typically laboratories deal with large amount of data that must be tracked and analyzed. Here it is not easy to handle hundreds or thousands of analyzed data without losing control.

Often **L**aboratory **I**nformation **M**anagement **S**ystems (LIMS) are used to fulfill the needs of QA and QC in a company. Using LIMS the data quality with built in QC and QA criteria can be controlled in real time. Direct connection of instruments to a LIMS helps to reduce transcription errors and increase sample throughput in your laboratory.

Customization of LIMS interfaces is required for specific lab instruments. With Buchi software capability this is an easy task. *NIRWare LIMS Interface* has been introduced to support connecting the Buchi NIRWare software to an external management or Manufacturing Execution System (MES). This bi-directional interface allows the direct import of analysis settings from a LIMS to measure your individual samples and exports the collected results in return.

Using several NIR spectrometers at different locations, Buchi supports you to manage and centralize all relevant data (spectra applications, calibrations, security settings, hardware tests, samples, references and reports) easily with *NIRAnywhere*.



NIRAnywhere, a software tool for remote data management among Buchi NIRFlex N-500 spectrometers via a network. NIR applications can be distributed from your headquarters to satellite plants and archive your backups and analysis results. *NIRAnywhere* is an extension of Buchi's *NIRWare* suite. It supports the administrator managing and controlling calibrations and instrument settings.

Wherever your production is located you will know the condition of your instrument and quality of your product.

Buchi services

At Buchi, customer service does not stop with a sale – our top priority is to maintain solid, long-term customer relationships. Therefore, our global competence centers all over the world are an integral part of our after-sales support service. Our experienced application chemists will gladly assist you wherever you might need help – from sample preparation to fine-tuning of calibrations.

By continuous assessments and certified training of all our partners we ensure that our global network of NIR experts provides you with competent service as an integral part of NIRsolutions® – anywhere in the world and at a consistently high level. Wherever your company may be located, our specialists will always gladly help you in solving any issues or answering your questions and assist you insuring regulatory compliance.

Buchi applications support

From the initial feasibility study and routine service to the solution of complex special issues, you will be supported by a team of highly qualified specialists who will offer you competent assistance in every phase of your NIR project. Our specialists will support you in determining all the related requirements – locally at your own site or in our applications laboratories. This will enable you to determine the optimal measurement setup for each case and the best application site in your facility.

A profitability analysis normally will then quickly show that NIR spectroscopy allows you to solve your quality control requirements faster, more dependably, and – most important – at lower cost.

Training

We offer you both individual on-site training and a broad choice of courses satisfying a wide variety of needs. In our basic and advanced courses, we provide a solid basis of knowledge – ranging from the fundamentals of NIR spectroscopy and chemometric data evaluation to complex optimization strategies. In small groups or individual training sessions, we will treat your individual questions in detail.



System diagnostics

Our service engineers will support you quickly and effectively using the Buchi diagnosis software – anywhere in the world. Should you detect or suspect a malfunction or simply want a preventive system check, Buchi will conduct a fast diagnostics test wherever your site may be located, saving you valuable time. This will also confirm that your system is performing properly and that you are complying with legal regulations.

Remote Support

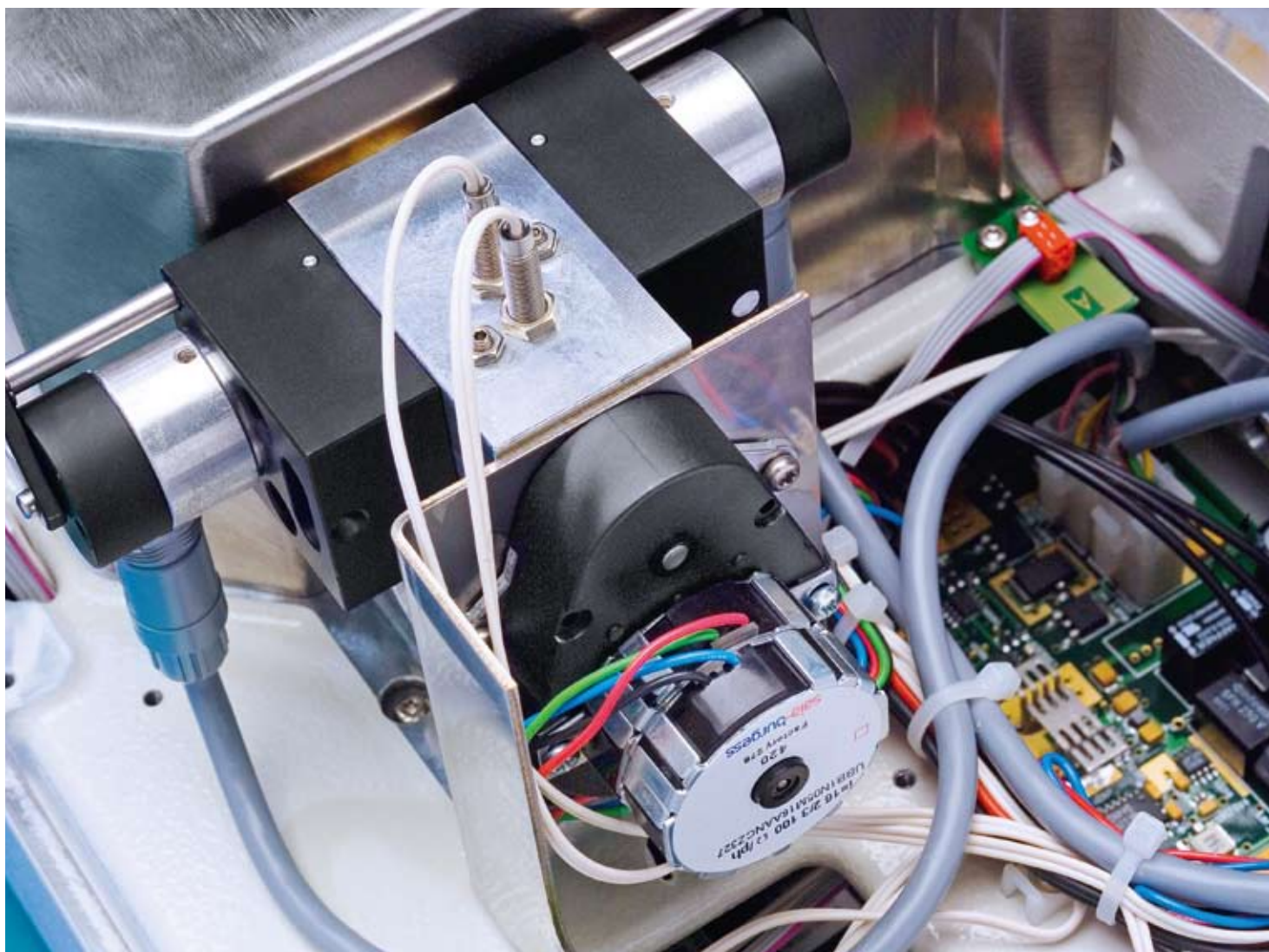
Wherever you need our support, we will always assist you using a remote support. With the remote support, our support team can quickly view, diagnose

and solve your technical issues at any points over the internet with maximum precision and less time.

Service contracts

Service contracts are a profitable investment: They ensure optimal maintenance and a state-of-the-art standard of your Buchi system at all times. Service contracts that you take with Buchi or Buchi partners are tailored to your specific needs. You decide which contract suits you best – from annual preventive maintenance to instrument qualification as demanded by official directives.

Though service contracts are not mandatory, they do constitute an essential part of NIRSolutions® and ensure optimum instrument performance. In the long run, they will help you trim costs, and you will enjoy preferred treatment in service missions.



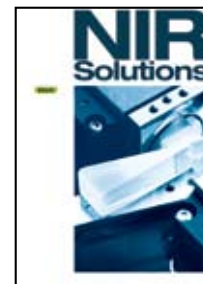
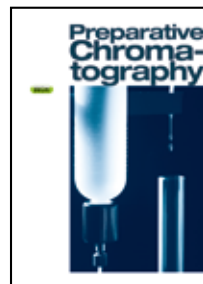
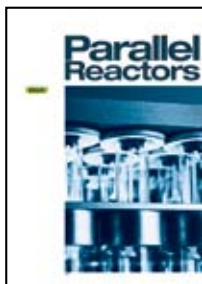
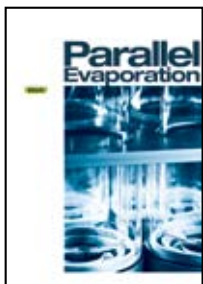
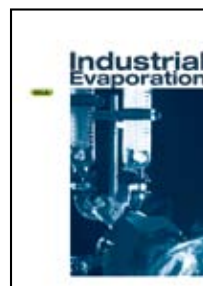
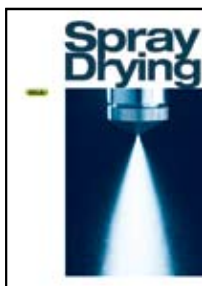
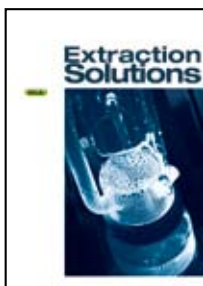
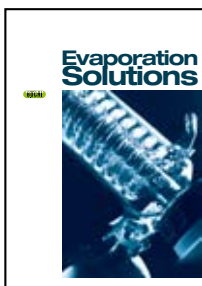
Buchi NIRsolutions® the key to your success

We strongly believe that the most important element of NIRsolutions® from Buchi is our dedication to our clients. Application, service, software, chemometrics, and product specialists, provide and support our commitment of NIRsolutions®!

Buchi provides laboratory equipment for research & development labs and analytical instruments for quality control – worldwide. All our products comply with our philosophy of “Quality

in your hands”. We strive to develop products and solutions that are solid, cleverly designed, convenient and easy to use in order to fulfil customer needs to the highest degree.

Buchi's fields of activities:



BÜCHI Labortechnik AG
Postfach
9230 Flawil 1
Schweiz
T +41 71 394 63 63
F +41 71 394 65 65
buchi@buchi.com
www.buchi.com

BÜCHI Labortechnik GmbH
Postfach 10 03 51
45003 Essen
Deutschland
Freecall 0800 414 0 414
T +49 201 747 490
F +49 201 237 082
deutschland@buchi.com
www.buechigmbh.de

BÜCHI Labortechnik GmbH
Branch Office Netherlands
Postbus 142
3340 AC Hendrik-Ido-Ambacht
The Netherlands
T +31 78 684 94 29
F +31 78 684 94 30
netherlands@buchi.com
www.buchi.nl

BÜCHI Italia s.r.l.
Centro Direzionale, Milano Fiori
Pal. A-4, Strada 4
20090 Assago (MI)
Italia
T +39 02 824 50 11
F +39 02 57 51 28 55
italia@buchi.com
www.buchi.it

BUCHI India
Private Ltd.
201, Magnum Opus
Shantinagar Industrial Area
Vakola, Santacruz (East)
Mumbai 400 055,
India
T +91 22 667 18983 / 84 / 85
F +91 22 667 18986
www.buchi.com

BUCHI (Thailand) Ltd.,
77/121, Sin Sathon Tower,
28th FL, Unit C
Krungthonburi Rd.
Klongtongsai, Klongsan
Bangkok 10600
Thailand
T +66 2 862 08 51
F +66 2 862 08 54
bacc@buchi.com
www.buchi.com

BUCHI Corporation
19 Lukens Drive, Suite 400
New Castle
Delaware 19720
USA
T +1 302 652 3000
F +1 302 652 8777
Toll Free: +1 877 692 8244
us-sales@buchi.com
www.mybuchi.com

BUCHI Hong Kong Ltd.
14th Floor South China Building
1-3 Wyndham Street
Central, Hong Kong
China
T +852 2389 2772
F +852 2389 2774
china@buchi.com
www.buchi.com.cn

BUCHI Shanghai
570 West Huaihai Road
NO.38 Chuangyi Street
200052 Shanghai
China
T +86 21 6280 3366
F +86 21 5230 8821
china@buchi.com
www.buchi.com.cn

BUCHI UK Ltd
5 Whitegate Business Centre
Jardine Way
Chadderton
Oldham OL9 9QL
United Kingdom
T +44 161 633 1000
F +44 161 633 1007
uk@buchi.com
www.buchi.co.uk

BUCHI Sarl
5, rue du Pont des Halles
Z.A. du Delta
94656 Rungis Cedex
France
T +33 1 56 70 62 50
F +33 1 46 86 00 31
france@buchi.com
www.buchi.fr

Nihon BUCHI K.K.
3F IMON Bldg.,
2-7-17 Ikenohata, Taito-ku,
Tokyo 110-0008
Japan
T +81 3 3821 4777
F +81 3 3821 4555
nihon@buchi.com
www.nihon-buchi.jp

We are represented by more than 100 distribution partners worldwide. Find your local representative at www.buchi.com

Quality in your hands

