

RUO/GP



## MALDI Biotyper®

- Changing Microbiology

For research use only. Not for use in clinical diagnostic procedures.



# In Microbiology, Speed and Accuracy Matter

## The MALDI Biotyper<sup>®</sup> System

### A powerful technology for better results

To help answer key challenges in microbiology, Bruker has utilized its many years of experience to create the truly groundbreaking MALDI Biotyper System. In the past decade, this revolutionary technology has been adopted in many microbiology laboratories worldwide, for reliable, fast and efficient identification of a wide range of gram-negative and gram-positive bacteria, yeasts and molds, by an easy to operate, yet powerful benchtop analyzer.

- Accuracy comparable to Nucleic Acid Sequencing
- Much faster than traditional methods
- Cost-effective
- Robust and easy to use
- A true benchtop system
- Easy to implement
- Optional workflow improvement tools

### Identifying microorganisms by their molecular fingerprint

The MALDI Biotyper System identifies microorganisms using MALDI-TOF (Matrix-Assisted Laser Desorption/Ionization Time of Flight) mass spectrometry to determine a unique proteomic fingerprint of an organism. Specifically, the MALDI Biotyper System measures highly abundant proteins that are found in all microorganisms.

The characteristic patterns of these highly abundant proteins are used to reliably and accurately identify a particular microorganism by matching the respective pattern with an extensive reference library to determine the identity of the microorganism.

But there's more. The outstanding capabilities of the system go well beyond microbial identification and Bruker is continuously working on further innovations.

# A Simple Procedure for a Sophisticated Platform

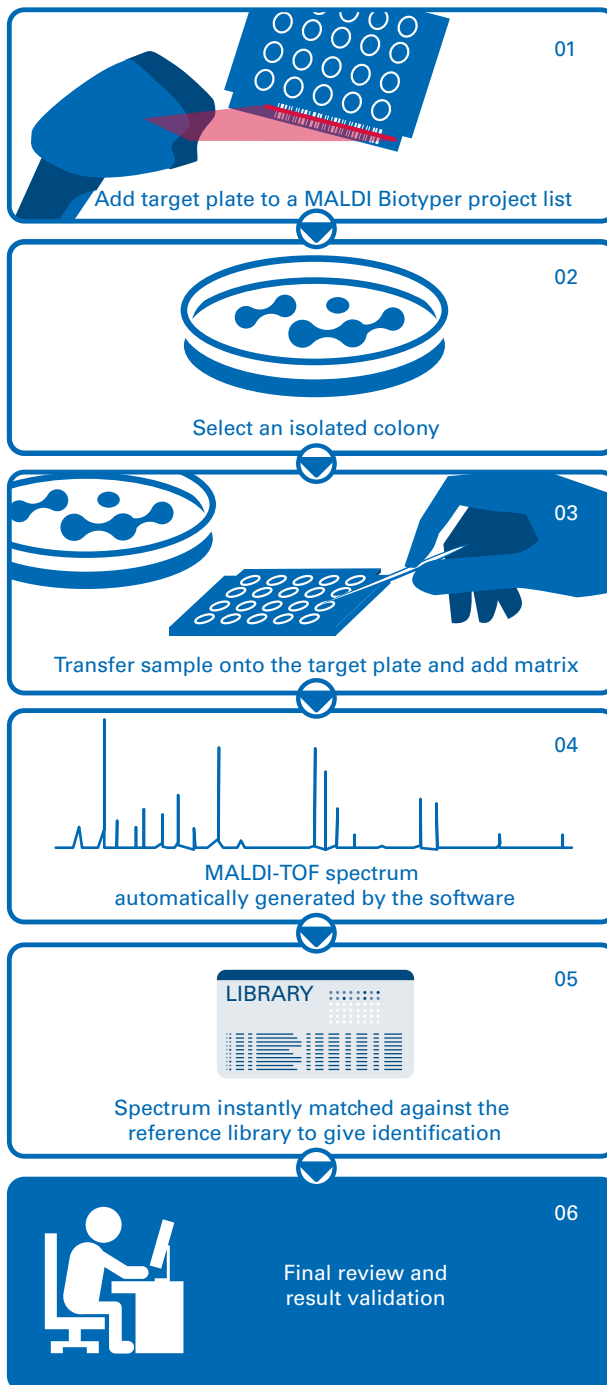
## Innovative design leads to enhanced performance and productivity

The MALDI Biotyper System workflow has been designed to be efficient and easy. No previous experience with mass spectrometry is required. As shown, the fully traceable workflow has been streamlined and requires only a few simple steps to generate high quality microorganism identifications.

No need to know the type of microorganism prior to analysis; bacteria, yeast or mold samples are all analyzed together, following the same workflow.

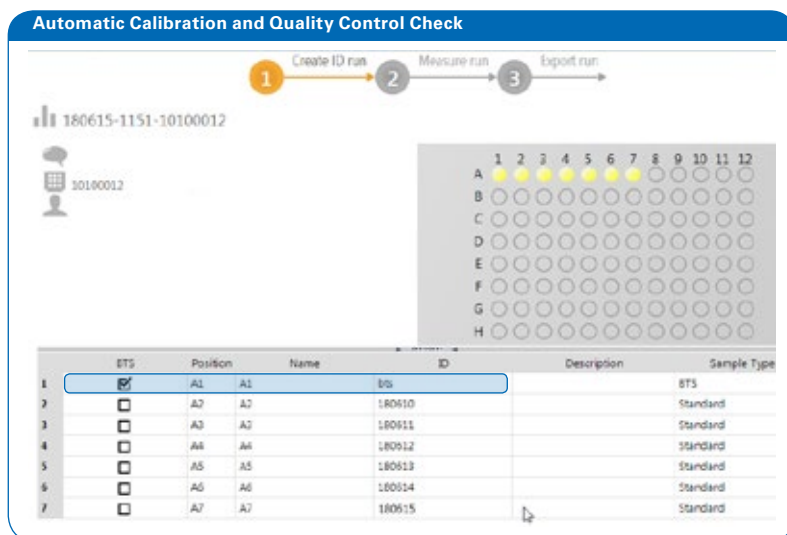
Typically, no more than an isolated single colony from a culture is required. The entire process needs only a few minutes to complete.

Our dedicated microbiology software automates the process of acquiring the mass spectrum and performing the match against the extensive reference library. The results, presented using a 'traffic light' color scheme, are effortless to interpret.



# Easy-to-Use Software

In just a few steps, the simple-to-use software guides users through the set-up of samples for analysis.



◀ The MALDI Biotyper System can automatically be checked by analysing Bruker Bacterial Test Standard (BTS) before each run. Using BTS for the quality control of the MALDI Biotyper assures the highest data reliability and measurement reproducibility.

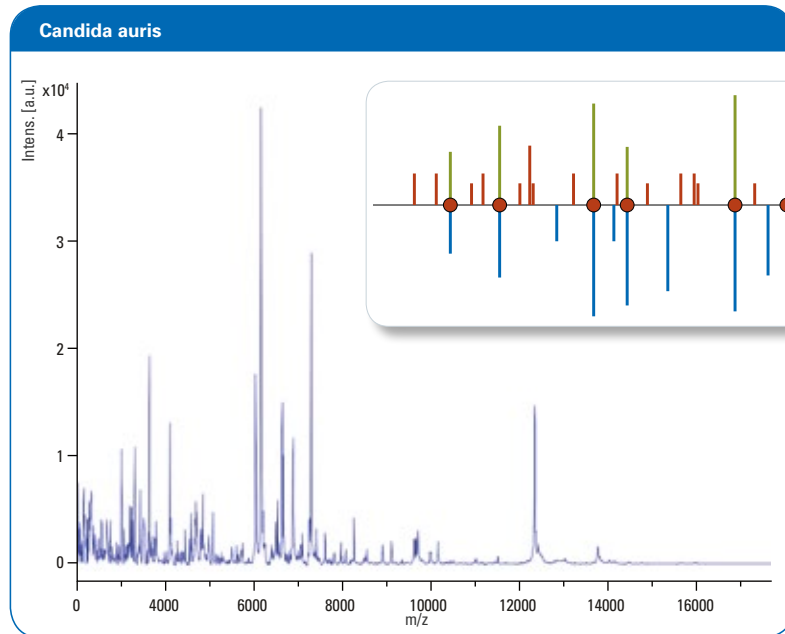
▶ After the acquisition of the spectral data has been completed, a report is generated. The result for each sample is clearly listed under 'Organism (best match)' accompanied by the resulting score and an appropriate 'traffic light' color scheme.

Sample Name	Sample ID	Organism (best match)	Score Value
A1	BTS	Escherichia coli	2.68
A2	180610	Klebsiella pneumoniae	2.25
A3	180611	Proteus mirabilis	2.62
A4	180612	Candida albicans	2.19
A5	180613	Pseudomonas aeruginosa	2.23
A6	180614	Enterococcus faecium	2.53
A7	180615	Trueperella bernardiae	2.20

## Open microbiology concept

The MALDI Biotyper allows for smooth integration with existing laboratory informatics. MALDI Biotyper results are converted into a format that can easily be exported to the LIMS.

# More Than a Comprehensive Library



## The Main Spectra Concept

Reference library entries in the MALDI Biotyper system are stored as Main Spectra (MSP). These MSPs are based on multiple measurements of a single defined strain to ensure that the true biological variability of an organism has been captured.

Unknowns are then compared to the MSP library using a superior pattern-matching approach. This includes peak positions, intensities and frequencies ensuring the highest possible levels of accuracy and reproducibility across the complete range of microorganisms.

## A continuously updated reference library

Bruker is fully committed to the continuous development of the reference library. An active program of reference spectra generation culminates in regular library updates for MALDI Biotyper users. These updates focus on strains from various origins being collaboration partners, strain collections, clinical, veterinary, environmental and industrial samples etc.

## Taxonomy becomes easy

The metadata of the MALDI Biotyper Reference Library facilitate the access to taxonomical information, such as synonyms and taxonomical modifications.

## No need of expertise in mycology anymore

The MALDI Biotyper is perceived as the most promising alternative for molds identification. A dedicated

MBT Filamentous Fungi Library is available to facilitate the identification of this group of microorganisms.

## The best mycobacteria identification ever

The optional MBT Mycobacteria Suite for the MALDI Biotyper is the comprehensive solution for highly reliable and fast mycobacteria identification. It is composed of a software module and a specific reference spectrum library covering most of the currently known mycobacteria species.

## Create your own libraries and run your data comparison

Laboratories that need to create their own libraries can make use of software tools to easily compile customized microorganism entries and to share and export libraries. For further investigations, software tools – such as dendrogram analysis – are available.



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# The Best Technology from the Experts in Mass Spectrometry

## A platform suited to your needs

Being the leader in MALDI-TOF technology, it is of great importance to Bruker to design robust, compact, high performance platforms intended for extensive and routine usage in the microbiology laboratory.

Bruker offers laboratories the opportunity to choose the MALDI-TOF mass spectrometer that best fits their needs:

- The microflex™ LT/SH MALDI-TOF mass spectrometer with N<sub>2</sub> laser at 60 Hz repetition rate
- The microflex™ LT/SH smart system with Bruker's proprietary smartbeam™ solid-state laser technology at 200 Hz repetition rate, the first MALDI-TOF system for microbial identification using a lifetime\* laser. Measurement cycle time is reduced to a minimum due to the fastest target exchange time of all microbial mass spectrometry systems.

## Resolution meets sensitivity

Resolution and sensitivity are tailored to the needs of microbiologists. Due to Bruker's patented PAN™ resolution the MALDI Biotyper achieves optimal results from a compact benchtop instrument.

## Highly reproducible results

The quick and simple Bacterial Test Standard quality check performed before each run ensures the highest standard of run-to-run reproducibility.

## Accelerated data acquisition

With Smart Spectra Acquisition™, data generation is accelerated by minimizing the number of laser shots per sample needed to acquire a spectrum. An additional benefit of this function is the optimal exploitation of the laser lifetime.

## Continuous operation

The MALDI Perpetual Ion Source™ permits continuous high performance with minimized maintenance requirements. Cleaning the source using the separate IR-laser is performed easily under push-button operator control.

## True benchtop solutions

Low-noise operating systems with low weight and requiring less than 1 m / 3 feet of counter space offer flexibility in meeting laboratory needs for compact system solutions. Both systems need only a 220 V / 110 V electrical supply which results in very minimal heat output.

# Compact Benchtop Systems – No Performance Compromise

	microflex™ LT/SH	microflex™ LT/SH smart
Laser	Nitrogen Laser <ul style="list-style-type: none"> <li>• 60 Hz repetition rate</li> <li>• ~200 samples/hr</li> <li>• 60 million laser shots</li> </ul>	Bruker's proprietary lifetime* smartbeam laser <ul style="list-style-type: none"> <li>• 200 Hz repetition rate</li> <li>• ~400 samples/hr</li> <li>• 500 million laser shots</li> </ul>
Vacuum system	Original vacuum system <ul style="list-style-type: none"> <li>• fast target exchange</li> </ul>	New high-performance vacuum system <ul style="list-style-type: none"> <li>• three times greater pumping capacity</li> <li>• even faster target exchange</li> <li>• less down-time after maintenance</li> </ul>
L x W x H	530 x 680 x 1093 mm / 20.9" x 26.8" x 43"	530 x 680 x 1093 mm / 20.9" x 26.8" x 43"
Weight	84 kg / 185 lb	99 kg / 218 lb
Common features	Perpetual Ion Source™ with IR-laser self-cleaning functionality Whispermode™ Oil-free membrane pre-vacuum pump and turbo pump <60 dB under normal operating conditions Patented PAN™ technology for high mass resolution over a wide mass range Voltage: 220V / 110 V	

\* Lifetime means: 500 million laser shots or seven years (whichever occurs first)

# MALDI Biotyper System Overview

## Basic microbial identification

- Gram +/- bacteria, yeasts, filamentous fungi, mycobacteria

## System components

- microflex LT/SH smart mass spectrometer with 200 Hz smartbeam™ solid-state laser or microflex LT/SH mass spectrometer with 60 Hz laser
- MALDI Biotyper data system running under Windows® 7 operating system
- MBT Compass & MBT Explorer Software plus MBT Compass Library

## Optional Libraries

- MBT Mycobacteria Suite
- MBT Filamentous Fungi Library
- Security Related Library for identification of highly pathogenic microorganisms

## Optional identification directly from positive blood cultures

- MALDI Sepsityper Kit 50
- MBT Compass Sepsityper Module

## Optional software modules

- MBT STAR-BL for resistance detection
- MBT Subtyping Module

## Consumables and Ancillaries

- Matrix HCCA, portioned
- Bacterial Test Standard
- Disposable MBT Biotarget 96 with individual barcode and 96 positions
- Reusable polished stainless steel MALDI targets: 48 & 96 positions with barcode

## Accessories for workflow optimization

- MBT Shuttle ergonomic target holder
- MBT Pilot for optically guided sample transfer
- MBT Galaxy for automated application of HCCA matrix and formic acid

## Dimensions & Operating Parameters

### microflex LT/SH smart

LxWxH:	530 x 680 x 1093 mm (20.9" x 26.8" x 43")
Weight:	99 kg (218 lb) net weight
Noise:	<60 dB
Temp Range:	16- 33°C (61-91°F)
Operating Humidity:	20-75% non-condensing @ 33°C (91°F)

### microflex LT/SH

LxWxH:	530 x 680 x 1093 mm (20.9" x 26.8" x 43")
Weight:	84 kg (185 lb) net weight
Noise:	<50 dB
Temp Range:	16- 33°C (61-91°F)
Operating Humidity:	20-75% non-condensing @ 33°C (91°F)





# MBT Consumables for Basic Identification

## Bacterial Test Standard (BTS)

The BTS is an *E.coli* extract spiked with two high molecular weight proteins and has been developed for the quality control process of the MALDI Biotyper System. Its specific composition covers the entire mass range of proteins used for precise identification of microorganisms.

Contents: One box consisting of 5 tubes providing 50 µL per tube / Part No 8255343



## HCCA Matrix, portioned

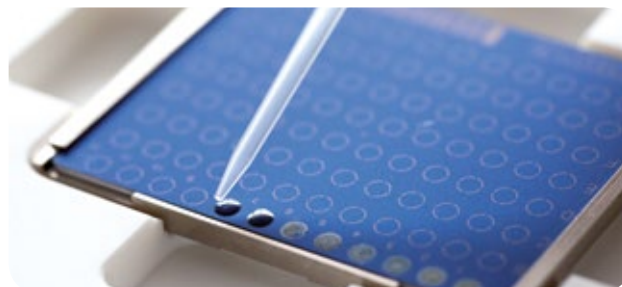
The instant HCCA matrix enables easy and convenient preparation of HCCA matrix solutions. The matrix is soluble in standard organic solvent, easy to handle, and enables highly sensitive measurements.

Contents: One box consisting of 10 tubes providing 250 µL per tube / Part No 8255344



## Disposable MBT Biotargets

The ready-to-use disposable MBT Biotargets offer 96 positions and a unique barcode for full traceability in paperless workflows. Disposable MBT Biotargets render the same level of performance as reusable MALDI target plates without the need for time-consuming cleaning.



### MBT Biotarget 96

Set of 20 individually barcoded disposable 96 position MALDI target plates / Part No 1840375

### MSP adapter for MBT Biotarget 96

Adapter required to use MBT Biotargets with microflex instruments / Part No 8267615

# MBT Workflow Accessories

## Reusable Polished Steel Targets

Reusable barcoded polished steel MALDI target plates with 48 or 96 sample positions provide full traceability in paperless workflows.

MSP 48 target polished steel BC  
One target / Part No 8281817

MSP 96 target polished steel BC  
One target / Part No 8280800



## MBT Shuttle Target Holder

The MBT Shuttle target holder is used to securely hold MSP steel MALDI target plates and MBT Biotargets during the sample preparation process. The secure grip, non-slip rubber feet and ergonomic form make sample preparation easier.

One target holder / Part No 1847032



## MBT Pilot

The MBT Pilot facilitates correct sample positioning through patented microprojection technology by indicating the next free MALDI target plate position.

Part No 1822041



## MBT Galaxy

The MBT Galaxy frees laboratory personnel from cumbersome pipetting while ensuring the highest preparation quality under controlled conditions and complete traceability in a paperless workflow.

Part No 1821269



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This product has no declared clinical intended purpose and is not for clinical diagnostic use.  
Any clinical diagnostic use is at the user's own risk and responsibility.

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