Instructions for Use
MTP AnchorChip Targets

Polished steel targets with hydrophilic sample and calibrant spots surrounded by a hydrophobic barrier for MALDI sample preparation

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The CARE product range is specifically optimized and certified for use with all Bruker Daltonics systems.

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Language: en
1 Product Description

Sample positions on patented AnchorChip™ targets contain "anchors"; hydrophilic patches surrounded by a hydrophobic ring. The "anchor" localizes droplets at the sample position and the hydrophobic ring prevents sample spreading and concentrates the sample into a spot between 0.4 and 2 mm in diameter.

After correct adjustment of the target in the MALDI ion source, the localization effect ensures that every single laser shot fired throughout an automatic run will hit a sample spot. This significantly increases the efficiency of the MALDI acquisition process.

In addition, the concentration effect provides enhanced sensitivity when analyzing dilute samples (see Figure 1).

The hydrophobic coating not only repels aqueous liquids, but also polar organic solvents (for example, alcohols, acetonitrile and acetone). Therefore, MTP AnchorChip Targets are well-suited for use with sample solutions with a high organic solvent content, which would otherwise spread over the target.

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1Bruker's AnchorChip Technology is protected by German, UK and US patents. Patents applied for elsewhere.
Figure 1  The basic principle of MTP AnchorChip Targets

2 MTP AnchorChip Targets Product Overview

MTP AnchorChip Targets are compatible with autoflex, ultraflex and solariX series instruments. The MTP target frame III (# 8074115) is required to mount MTP targets in Bruker MALDI ion sources.

MTP AnchorChip Targets for autoflex / ultraflex / solariX instruments

<table>
<thead>
<tr>
<th>Part No</th>
<th>Product Name</th>
<th>Spot Ø (µm)</th>
<th>Sample spots</th>
<th>Calibrant spots</th>
<th>Autoteaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>8209514</td>
<td>MTP AnchorChip 384 T F</td>
<td>800</td>
<td>384</td>
<td>96</td>
<td>Yes</td>
</tr>
<tr>
<td>8267912</td>
<td>MTP AnchorChip 1536 T F</td>
<td>800</td>
<td>1536</td>
<td>176</td>
<td>No</td>
</tr>
</tbody>
</table>

A transponder attached to MTP AnchorChip Targets is automatically read when the target is loaded into the source and the relevant target geometry is set in the instrument control software.

3 Software Requirements

Compass for flex series instruments software (Version 1.3 and later) provides full support (geometry, calibration templates) for all AnchorChip targets, including the MTP AnchorChip 1536 T F.

Compass for solariX software (Version 1.5 and later) provides full support for the geometry files and calibration lists for all AnchorChip targets except the MTP AnchorChip 1536 T F.
4 Risk and Safety Information

Additional chemicals may be required for procedures described in these Instructions for Use. Carefully read the Material Safety Data Sheet provided by the supplier and follow general safety regulations when handling chemicals or biohazardous material.

5 General Sample Preparation Recommendations for MTP AnchorChip Targets

Consumables

Many plastics are not compatible with mass spectrometric analysis because they release polymers. Avoid all types of siliconized ("low-bind") tubes. Using unsuitable plasticware typically results in heterogeneous crystallization and polymer signals, which can adversely affect analyses. In extreme cases, samples do not crystallize at all and remain liquid even after many hours.

Table 1 Recommended consumables for MTP AnchorChip Targets applications

<table>
<thead>
<tr>
<th>Consumables</th>
<th>Recommended supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipette tips</td>
<td>Eppendorf tips 0.5–20 μL (# 0030 000.854, Eppendorf), 2–200 μL (# 0030 000.870, Eppendorf), 50–1000 μL (# 0030 000.919, Eppendorf)</td>
</tr>
<tr>
<td>Microcentrifuge tubes</td>
<td>Eppendorf tubes, 1.5 mL (# 0030 120.086, Eppendorf)</td>
</tr>
<tr>
<td>Plastic bottles</td>
<td>Nalgene FEP Teflon bottles</td>
</tr>
<tr>
<td>Microplates (MTPs)</td>
<td>Greiner PP, natural MTP</td>
</tr>
</tbody>
</table>

Solvents and Chemicals

Solvents and chemicals used for MALDI-TOF-MS must be high-purity reagents (at least HPLC-grade). Avoid the use of detergents.

5.1 Preparation Protocols

For preparation protocols, see the Bruker Guide to MALDI Sample Preparation (Product Number # 8702557), which is available for download at www.bruker.com/ifu.
5.2 Compatibility of Solvents with the Hydrophobic Coating of MTP AnchorChip Targets

The hydrophobic coating of MTP AnchorChip Targets is resistant to water and polar organic solvents (for example, alcohols, acetonitrile, and acetone) at neutral and acidic pH.

**CAUTION**  Do not use solvents or solutions with a basic pH. Using solutions with a basic pH will destroy the hydrophobic coating of MTP AnchorChip Targets.

<table>
<thead>
<tr>
<th>Solvents</th>
<th>Other chemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-propanol</td>
<td>Trifluoroacetic acid (TFA)</td>
</tr>
<tr>
<td>Water</td>
<td>Ammonium dihydrogen phosphate</td>
</tr>
<tr>
<td>Acetonitrile</td>
<td>Sodium chloride</td>
</tr>
<tr>
<td>Ethanol</td>
<td>Diammonium hydrogen citrate</td>
</tr>
</tbody>
</table>

If your workflow requires a solvent or chemical not listed in Table 2, we strongly recommend that the chemical compatibility is checked. Deposit a 1 µL droplet outside the sample spot region of the target and incubate for 5 minutes. After 5 minutes, aspirate the liquid and check that the coating is still hydrophobic at the test location.
6  Cleaning MTP AnchorChip Targets

If correctly handled, MTP AnchorChip Targets can be reused up to 50 times.

For cleaning protocols, see the Bruker Guide to MALDI Sample Preparation (Product Number # 8702557), which is available for download at www.bruker.com/ifu.

7  Instrument Teaching of Anchor Positions

Precise spot alignment of the target positions is achieved by using a simple 3-point teaching procedure in the flexControl software. For details, refer to the flexControl online help.

**Tip** Empty target positions are often almost invisible on the camera video display in the flexcontrol software. Therefore, target positions that will be used as positions for target teaching should be spotted with MALDI matrix to enhance their visibility.

**AutoTeaching**

Most MTP AnchorChip Targets (see section 2) provide fully automated teaching of the target position raster. For details, refer to the flexControl online help.

8  Calibrant Anchors

MTP AnchorChip Targets contain a regular pattern of "calibrant anchors" that can be used for the preparation of external calibrants (see Figure 2). These positions provide optimal external calibration accuracy due to the short distance between sample and calibrant spots. This minimizes mass errors that originate from deviations in plate flatness.

Each of the calibrant spots is intended to be used for nearest neighbor calibration of the surrounding four (96- and 384-spot targets) or eight (1536-spot targets) sample positions.

The nomenclature used for sample and dedicated calibrant spots is illustrated in Figure 2. Sample spot positions form a raster called Chip #0 (example sample spot positions 0_A1, 0_A2, 0_B1, 0_B2). Calibrant spots form a raster called Chip #1 (example calibrant spot position 1_A1).

When processing prepared MTP AnchorChip Targets in the instrument control software (flexControl; autoXecute run editor), switching between chip #0 and chip #1 rasters allows the operator to access either the sample or calibrant positions for MALDI analysis.

Dedicated calibration templates for the different target types are available in the AutoXecute run editor.
Figure 2  Calibrant anchor layout (96 and 384-spot targets)
9 Manufacturer

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