

Single-Use MALDI Matrices

90031 90032 90033 90035

2098.0

Number	Description
90031	Alpha-Cyano-4-Hydroxycinnamic Acid (CHCA), Single-Use , 24 × 1 mg microtubes (green)
90032	Sinapinic Acid (SA), Single-Use , 24 × 1 mg microtubes (purple)
90033	2,5-Dihydroxybenzoic Acid (DHB), Single-Use , 24 × 4 mg microtubes (blue)
90035	CHCA, SA and DHB Sample Pack, Single-Use , 8 × 1 mg microtubes (green) of CHCA, 8 × 1 mg microtubes (purple) of SA and 8 × 4 mg microtubes (blue) of DHB

Storage: Upon receipt store product at 4°C. Product shipped at ambient temperature.

Introduction

Thermo Scientific MALDI Matrices are highly purified, recrystallized reagents packaged in convenient single-use tubes sufficient for analyzing up to 96 samples. Matrix assisted laser desorption ionization (MALDI) matrices produce the cleanest mass spectrometric (MS) spectra when they are recrystallized and prepared daily, which is inconvenient and typically results in significant waste. The unique packaging of purified, recrystallized alpha-cyano-4-hydroxy-cinnamic acid (CHCA), sinapinic acid (SA) and 2,5-dihydroxybenzoic acid (DHB) MALDI matrices (Table 1) makes it easy to prepare high-quality MALDI reagents in minutes.

MALDI and electrospray ionization (ESI) are the most common methods to ionize peptides for MS analysis. MALDI is widely used because it is significantly faster than ESI and the ionized molecules are almost exclusively singly charged, making interpretation easier. Also, MALDI is readily automated and highly sensitive. This powerful method for MS peptide analysis is now easier to perform with our single-use, highly pure MALDI matrices that are exceptionally convenient to use.

Table 1. Properties and uses of CHCA, DHB and SA MALDI matrices.

<u>Compound</u>	<u>Synonyms</u>	<u>MW</u> <u>(g/mol)</u>	<u>Wavelength</u> <u>(nm)</u>	<u>Working Conc.</u> <u>(mg/ml)</u>	<u>Applications</u>
α-cyano-4-hydroxycinnamic acid	CHCA	188.16	337, 355	5-40	Peptides, lipids, nucleotides
2,5-dihydroxy benzoic acid	DHB, gentisic acid	154.12	337, 355, 266	40-100	Small molecules, small peptides, nucleotides, oligonucleotides, oligosaccharides
3,5-dimethoxy-4-hydroxycinnamic acid	SA, sinapic acid, sinapinic acid	224.21	337, 355, 266	5-40	Large peptides, whole proteins, lipids

MALDI Procedure

1. Dissolve one tube of MALDI matrix with 100 μ l of 70/30 acetonitrile/water with 0.1% TFA, which results in 10 mg/ml of CHCA or SA or 40 mg/ml of DHB.
2. Apply 0.5 μ l of a protein digest (0.1-1 pmol/ μ l) onto a MALDI target plate and immediately add 0.5 μ l of the MALDI matrix solution. Alternatively, mix the protein digest with the matrix solution and then apply to the MALDI target plate.
3. Dry sample at 22°C or 37°C.
4. Analyze sample by MALDI-MS.

Troubleshooting

Problem	Possible Cause	Solution
No signal	Insufficient sample	Spot larger amount or a more concentrated sample
	Sample contained contaminating salts or detergents	Spot less sample to minimize contaminants
		Clean sample with reversed-phase ZipTip® Pipette Tip
		Wash crystallized sample/MALDI matrix with 1-2 μ l cold distilled water, remove water, add a small amount of matrix and let dry
	Poor matrix crystallization	See contaminating salts or detergents (above)
	The MALDI matrix used was not optimal for the application	Matrix choice depends on instrument, instrument settings and sample type; try individual reagents in the sample pack
	Insufficient matrix	Dissolve MALDI matrix in less volume to produce a higher concentration of the matrix stock
Matrix did not efficiently ionize peptides of interest	Use a different matrix such as CHCA or DHB for small peptides, or SA for proteins and peptides > 4,000 Da	
Poor crystal formation, shiny or gel-like material	Sample contained contaminating salts or detergents	See contaminating salts or detergents (above)
	Matrix solution was prepared too far in advance of analysis	Prepare matrix daily or weekly at a minimum
	Poor co-crystallization	Premix sample and matrix then spot onto the target
High background signal	The MALDI matrix used was not optimal for the application	For optimal signal-to-noise ratios, use DHB for small molecules and SA for intact proteins and large peptides
		Measure spectra above 500 m/z
Cannot detect phosphopeptides	Poor phosphopeptide ionization	To enhance phosphopeptide ionization, substitute phosphoric acid for TFA in 50/50 acetonitrile/water MALDI matrix solution and apply 0.5 μ l of 25 mM ammonium citrate on spot

Related Thermo Scientific Products

20291	No-Weigh™ DTT, 48 × 7.7 mg microtubes
20290	DTT, 5 g
20490	TCEP•HCl [Tris(2-carboxyethyl) phosphine hydrochloride], 1 g
28904	Trifluoroacetic Acid (TFA), 10 × 1 ml
51101	Acetonitrile, HPLC grade, 1 L
77720	Bond-Breaker® TCEP Solution, Neutral pH, 5 ml
89853	Phosphopeptide Isolation Kit
89871	In-Gel Tryptic Digestion Kit
89895	In-Solution Tryptic Digestion and Guanidination Kit

90051	Lys-C Endoproteinase, MS Grade, 20 µg
90053	Asp-N Endoproteinase, MS Grade, 2 µg
90054	Glu-C Endoproteinase, MS Grade, 5 × 10 µg
90055	Trypsin Endoproteinase, modified, TPCK treated, MS Grade, 5 × 20 µg
90056	Chymotrypsin Endoproteinase, TLCK treated, MS Grade, 4 × 25 µg

General References

1. Siuzdak, G. (2006). The Expanding Role of Mass Spectrometry in Biotechnology, 2nd Ed., pp 99-107. MCC Press, San Diego, CA.
2. Zhou, W., *et al.* (2000). Detection and sequencing of phosphopeptides affinity bound to immobilized metal ion beads by matrix-assisted laser desorption/ionization mass spectrometry. *J Am Soc Mass Spectrom* **11**:273-82.
3. Kjellstrom, S. and Jensen, O.N. (2004). Phosphoric acid as a matrix additive for MALDI MS analysis of phosphopeptides and phosphoproteins. *Anal Chem* **76**:5109-17.

ZipTip[®] is a registered trademark of Millipore Corporation.

This product ("Product") is warranted to operate or perform substantially in conformance with published Product specifications in effect at the time of sale, as set forth in the Product documentation, specifications and/or accompanying package inserts ("Documentation") and to be free from defects in material and workmanship. Unless otherwise expressly authorized in writing, Products are supplied for research use only. No claim of suitability for use in applications regulated by FDA is made. The warranty provided herein is valid only when used by properly trained individuals. Unless otherwise stated in the Documentation, this warranty is limited to one year from date of shipment when the Product is subjected to normal, proper and intended usage. This warranty does not extend to anyone other than the original purchaser of the Product ("Buyer").

No other warranties, express or implied, are granted, including without limitation, implied warranties of merchantability, fitness for any particular purpose, or non infringement. Buyer's exclusive remedy for non-conforming Products during the warranty period is limited to replacement of or refund for the non-conforming Product(s).

There is no obligation to replace Products as the result of (i) accident, disaster or event of force majeure, (ii) misuse, fault or negligence of or by Buyer, (iii) use of the Products in a manner for which they were not designed, or (iv) improper storage and handling of the Products.

Current versions of product instructions are available at www.thermo.com/pierce. For a faxed copy, call 800-874-3723 or contact your local distributor.

© 2008 Thermo Fisher Scientific Inc. All rights reserved. Unless otherwise indicated, all trademarks are property of Thermo Fisher Scientific Inc. and its subsidiaries. Printed in the USA.