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Organic Solvent Nanofiltration Membranes

DuraMem™

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Membrane Extraction Technology is a limited company registered in the UK.
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Membrane Extraction Technology Ltd

Data Sheet

Organic Solvent Nanofiltration Membranes - DuraMem™ Series

DuraMem™ 150; DuraMem™ 200; DuraMem™ 300; DuraMem™ 500; DuraMem™ 900

Membrane Material	Modified Polyimide				
Flat Sheets	215 x 280 mm				
Modules	Spiral Wound (1.8" x 12"; 2.5" x 20"; 4" x 20")				
Maximum Pressure	Membrane specific (see below)				
Maximum Temperature	50 °C				
Stable in Solvents ¹	Polar aprotic (e.g. Dimethylformamide, N-Methylpyrrolidone, Tetrahydrofuran) Alcohols (e.g. Methanol, Ethanol, Iso-propanol) Aromatics (e.g. Toluene, Xylene) Ethers (e.g. Methyl- <i>tert</i> -Butyl-Ether) Ketones (e.g. Acetone, Methyl-Ethyl-Ketone, Methyl-iso-Butyl-Ketone) Others (e.g. Butyl Acetate, Ethyl Acetate)				
Membrane Code:	DuraMem™				
MWCO / Dalton ^{2,3} :	150	200	300	500	900
Maximum Pressure (bar):	60	60	60	20	20

1. Data referring to pure solvents. If you intend to use a different solvent please contact us for further advice.
2. Performance Data are approximate.
3. Based on rejection of styrene oligomers dissolved in acetone, MWCO = molecular weight cut-off, defined as MW at which 90% rejection is obtained from a curve of rejection versus molecular weight of styrene oligomers dissolved in acetone. See Journal of Membrane Science 291 (2007) 120-125.



DuraMem™ Series

Instructions for Use

1. The shiny yellow side is the active surface of the membrane. Care should be taken to avoid scratching this surface where possible.
2. After cutting the membrane to the correct size for the filtration test cell, soak the membrane in the filtration solvent for 1-2 hours before installation in the filtration system. After soaking, trim the membrane disk if the area of the membrane is larger than the sintered support disc used in the filtration test cell. (NB Whilst soaking, the membrane may curl.)
3. These membranes contain polyethylene glycol that can be easily washed out with a solvent such as ethanol, acetone, THF or DMF. Allow at least 40 L per m² (200mL for a 90mm diameter disk (51 cm²)) of solvent to permeate through the membrane at a filtration pressure of 20-30 bar to flush the preservative from a new membrane disk, and discard the resulting permeate.
4. Once wetted, the membrane should remain wet, and not be allowed to dry out. Use of dried-out membranes will result in poor membrane performance and rapid failure.
5. Please store away from light.

If the goods supplied hereby by Membrane Extraction Technology Ltd are used in any work which is published, or submitted for publication, in any forum, including, but not limited to, conferences, seminars, internet publications, academic journals, magazines, newspapers, and any other public media not explicitly described above, the authors of this work undertake to include reference to Membrane Extraction Technology Ltd as the supplier of these products, and to include in the publication the MET website (www.membrane-extraction-technology.com) and other company details as appropriate.

Further information is available from:



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Membrane Extraction Technology Ltd

Terms and Conditions of Sale

1. General

- 1.1 The following Terms and Conditions of Sale shall govern sales of all goods (henceforth called "Products", and including membranes supplied as flat sheets or spiral wound elements, equipment such as the METcell System and METcell Crossflow System) sold by MET to the Customer (henceforth called "Customer") and shall prevail over any inconsistent provision, term or condition contained in any order form or other document from Customer, whether prior or subsequent in time. No waiver or amendment of the provisions hereof, no acceptance or other undertaking made by any of the agents or representatives of MET, and no offer made by MET shall be binding on MET unless made in writing and agreed to by a duly authorized officer of MET.
- 1.2 The Terms and Conditions of Sale set forth below are the exclusive terms and conditions of the Customer's order. Without prejudice to other forms of acceptance, the Customer's failure to object to said terms upon receipt of them or the Customer's acceptance of any shipment of the Products hereunder shall constitute acceptance of these Terms and Conditions of Sale.
- 1.3 If customs duties, taxes or similar fees or charges are included in the quoted price of the Products then any increase in any such customs duties, taxes, fees or charges prior to the date of delivery, as well as any new charges introduced prior to that date, shall be charged to the Customer.

2. Analysis, Transfer and Imitation of the Products

- 2.1 Customer agrees that, unless it obtains written permission from MET, it will not analyse or attempt to determine the chemical or physical composition of Products supplied by MET, or components thereof, or permit a third party to do so.
- 2.2 Customer agrees that it will make no attempt to copy or imitate the design of the Products with the intention of constructing identical or similar Products, or Products intended for a similar purpose.
- 2.3 Customer agrees that it will not transfer, ship or forward Products supplied by MET to any third party.

3. Technical Documents and Regulations in Force at Destination Site

- 3.1 Technical documents such as drawings, descriptions, illustrations and the like, shall be deemed to be approximate unless expressly designated "final". MET reserves the right to make any changes to these technical documents it considers necessary.
- 3.2 All technical documents pursuant to item 3.1 above remain the exclusive property of MET and shall not be copied or reproduced or communicated in any other manner to any third party; nor shall they be used for the construction of any machinery/equipment or parts thereof.
- 3.3 Any technical documents submitted with tenders/quotations not resulting in an order shall, upon request, be returned to MET.
- 3.4 The purchaser must inform MET of any statutory, governmental, or other regulations to be observed in fulfilling the order. Additional costs arising from changes to existing regulations or from new regulations after conclusion of the order or arising from a failure to inform MET of existing regulations, shall be borne by the purchaser.

4. Price and Terms of Payment

- 4.1 Unless otherwise agreed in writing, all invoices are payable, without deduction, within 30 days of receipt by Customer. Any bank charges levied on Customer shall be paid by Customer. Payment must be by direct bank transfer: payment by other means, including by cheque, will only be accepted by prior arrangement.
- 4.2 VAT will be charged to the tender/quotation price at the rate current at time of invoicing.
- 4.3 Payments will be made on the agreed dates, even if transport, delivery, erection, commissioning acceptance of any machinery/equipment or delivery of any service is delayed or prevented by circumstances out of the control of MET.
- 4.4 MET shall have the right, without prejudice to further claims, to require payment of interest on all overdue amounts at a rate equal to 8% over the Official Dealing Rate under the Late Payment of Commercial Debts (Interest) Act 1998. Payment of default interest shall not release the purchaser from paying sums due under the terms of the contract. Should collection become necessary, Customer shall reimburse MET for all reasonable costs necessary for such collection, including legal fees.
- 4.5 MET reserves the right to require Customer to post adequate security or to demand payment of a deposit prior to delivery of the Products if, in MET's discretion, the credit worthiness of Customer shall be impaired in any respect whatsoever.
- 4.6 The goods and services supplied by MET shall remain the property of MET unless/until they are paid for in full at the mutually agreed price, including any late payment charges under section 4.4.

5. Delivery and Acceptance of Goods

- 5.1 Unless otherwise agreed in writing, all Products shall be delivered CTP (Carriage Paid To) as defined by the ICC's *Incoterms 2000*) to Customer's address. Customer assumes all risk of loss from the time Products shall have been delivered into the custody of the first carrier at MET's originating location but if MET has selected the carrier, it shall bear all responsibility for processing any claim against such carrier.
- 5.2 In the event that the Products are damaged when received, MET will consider claims from Customer only if:
- (I) Customer has reserved all of its rights to object to the delivery, has included a statement of the damages on the shipping documents and has informed MET of the damages within five (5) business days of Customer's receipt of the damaged Products; and
 - (II) Customer keeps the damaged Products at the disposal of MET until MET has made a final decision on the matter; and
 - (III) Customer has paid MET's invoice covering the damaged Products.
- 5.3 MET shall determine the method and route of transportation in its sole discretion taking into account Customer's interests, unless Customer specifies such method and route of transportation. MET makes no warranty with respect to utilization of the most advantageous transportation facilities.
- 5.4 Upon receipt of the Products, Customer shall endorse the relevant shipping documents with the following information:
- (I) Place and time of receipt;
 - (II) Customer's stamp; and
 - (III) Printed name and signature of the Customer employee who received the goods.
- 5.5 MET reserves the right to make partial deliveries of the Products that are the subject of an order.
- 5.6 Unless MET has designated a specific delivery date in writing as "firm", all delivery dates shall be regarded as approximate.
- 5.7 If any instructions necessary for shipment or for delivery shall not have been received by MET from Customer at least fourteen (14) days before the scheduled date of shipment, MET shall not be liable for any delay in delivery resulting from such delayed instructions and shall have the right to cancel any proposed shipment in connection with which the necessary instructions have not been received.

6. Warranty

6.1 MET makes no warranties in regard to any Products hereunder, except that:

- (I) the Products shall (when assembled correctly) conform to MET specifications as in effect at the time of shipment or as incorporated herein and;
- (II) all MET cells, crossflow cells and pressure vessels shall (when assembled correctly) conform to the Certified Test specifications as in effect at the time of shipment or as incorporated herein.

MET MAKES NO OTHER WARRANTIES WHETHER AS TO THE FITNESS OF THE PRODUCT FOR ANY PARTICULAR PURPOSE, MERCHANTABILITY OR OTHERWISE AND EXPRESSLY EXCLUDES ANY WARRANTIES THAT ARE OR MAY BE IMPLIED BY LAW. Customer and MET agree that the only terms applicable to the sale of the Products shall be those contained in these Terms and Conditions of Sale.

7. Maximum Liability

7.1 Maximum liability, if any, of MET for any reason including, without limitations, failure of the Products to meet specifications, non-delivery, shortage or improper delivery, shall be limited to the amount of the purchase price payable with respect to the Products in dispute, or at MET's option, MET may replace or repair any non-conforming Products when a quality claim is made. Customer shall make its claim to MET in writing within thirty days of receipt of the allegedly defective Products and shall, at MET's request, return the Products to MET in the same condition received by Customer. In no event will MET be liable for any incidental or consequential damages unless such damages are the sole and direct results of products that were indisputably defective when they were sold by MET to Customer.

8. Force Majeure

8.1 MET will be relieved from its obligations and the consequences of any non-performance in all cases of force majeure, defined herein to include, without limitation, labour troubles, strikes, fires, accidental floods, wars, or shortage of transportation or materials or energy, governmental acts or requirements and any and all like or different causes beyond the control of the parties hereto. MET shall be relieved of its obligations hereunder if unpredictable circumstances cause performance to become an economic hardship. MET may during any period of force majeure or economic hardship, as herein defined, allocate the available supply of Products amongst its customers in such a manner as may be deemed equitable in the sole judgement of MET. In the event of permanent force majeure, as herein defined, MET shall be released from its obligations to Customer without further liability. In the event of a temporary force majeure, the delivery date for the Products shall be extended accordingly.

9. Arbitration and Governing Law

9.1 The law governing the contract shall be the law of England.

10. Acknowledgements

10.1 If the Products supplied hereby by Membrane Extraction Technology Ltd are used in any work which is published, or submitted for publication, in any forum, including, but not limited to, conferences, seminars, internet publications, academic journals, magazines, newspapers, and any other public media not explicitly described above, the authors of this work undertake to include reference to Membrane Extraction Technology Ltd as the supplier of these Products, and to include in the publication the MET website (www.membrane-extraction-technology.com) and other company details as appropriate.