

## LG QuantumFlux™ Pressurized UF Membrane

## Technical Service Bulletin 610

## Customer Claim and Complaint Procedure

This procedure is for customers whom LG Water Solutions ("Manufacturer") have advised to return their purchased product for evaluation in support of a warranty claim ("Return Merchandise").

Before returning the Return Merchandise, customers are required to complete the 'Request for Return Merchandise Authorization Form (see a copy at the end of this bulletin, or download from our website [www.LGwatersolutions.com](http://www.LGwatersolutions.com)) and email the completed form to the email corresponding to your region listed below:

Region	E-mail
Americas	<a href="mailto:nasales@lgchem.com">nasales@lgchem.com</a>
Europe, Africa	<a href="mailto:eumanasales@lgchem.com">eumanasales@lgchem.com</a>
Middle East, Egypt	<a href="mailto:mesales@lgchem.com">mesales@lgchem.com</a>
Korea	<a href="mailto:krsales@lgchem.com">krsales@lgchem.com</a>
China	<a href="mailto:cnsales@lgchem.com">cnsales@lgchem.com</a>
India	<a href="mailto:insales@lgchem.com">insales@lgchem.com</a>
Southeast Asia	<a href="mailto:seasales@lgchem.com">seasales@lgchem.com</a>

Customers will receive a Return Merchandise Authorization (RMA) number by email within 48 hours after submitting the Request for Return Merchandise Authorization form. The RMA number MUST appear on all shipping documents accompanying Return Merchandise to ensure that Return Merchandise is identified, accepted, and routed to the proper department for processing and evaluation. Any Return Merchandise received without an identifiable RMA number will be refused at the expense of delivery charges to the sender.

Please ship all Return Merchandise corresponding to the RMA claim to the Manufacturer immediately upon confirmation of your RMA number by the Manufacturer. Immediate shipping allows for a more accurate analysis of Return Merchandise claims. The Manufacturer must receive the Return Merchandise within 30 days for domestic shipments and 60 days for international shipments from when the RMA number is issued. Failure to comply with this requirement may void your warranty claim, and the Manufacturer will not be liable for any incurred costs (i.e., shipping).

Shipping of Return Merchandise to Manufacturer does not mean that the Manufacturer accepts all responsibility of a warranty claim. The sole purpose of returning the Return Merchandise to the Manufacturer is to carefully inspect the Return Merchandise to determine whether it falls within or outside of the warranty terms. Before any conclusions are determined through analysis of the Return Merchandise, all expenses will be the customer's responsibility.

Merchandise should be prepared for shipment and packaged per the Packing and Shipping Requirements detailed below:

**DO NOT RETURN MERCHANDISE UNTIL YOU HAVE RECEIVED A WRITTEN AUTHORIZATION  
AND A VALID RMA NUMBER FROM LG WATER SOLUTIONS**

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**Packing and Shipping Requirements:**

Flush membrane elements with UF Filtrate for a minimum of 30-minutes at pH 6-8 to ensure that any hazardous liquids contained in the Return Merchandise are flushed out and for safe handling of the Return Merchandise.

**LIQUIDS CONTAINING A STRONG ACID OR AN ALKALI CLEANING SOLUTION ARE CONSIDERED TO BE HAZARDOUS FOR TRANSPORT AND MUST BE FLUSHED OUT BEFORE SHIPMENT.**

Before shipping, the Return Merchandise ports must be sealed with rubber caps, packaged in a leak-proof polyethylene bag, and securely packaged in wooden crate to keep the element hydrated and protect it from physical damage during shipment.

**DURING SHIPMENT, TAKE PRECAUTIONS TO ENSURE THAT MEMBRANE ELEMENTS ARE PROTECTED FROM FREEZING OR PROLONGED EXPOSURE TO TEMPERATURES EXCEEDING 40°C.**

**Contact LG Chem Technical Service representative  
for return merchandise shipping instructions**

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### Warranty Claim Validation Procedure

1. The return of the UF modules will only be necessary when both the customer and the manufacturer agree.
2. Before any UF modules are returned, the requester must submit a request and seek approval from the manufacturer.
3. The cost of shipment will be solely borne by the requester.
4. The manufacturer will bear the cost of the membrane autopsy and will be responsible for delivering the autopsy reports, which will typically include visual inspection, permeability testing, cleaning testing, contaminant analysis, fiber analysis, and potting layer analysis, unless otherwise specified.
5. Determination
  - 1) Return Merchandise found to comply with warranted performance values will be returned to the customer at the customer's expense ("freight collect").
  - 2) Return Merchandise found to be defective based on the Material and Workmanship Warranty will be replaced or credited to the customer according to the applicable warranty terms and conditions.
  - 3) Return Merchandise performing below warranted performance values regarding filtrate flow, or turbidity removal, will be replaced or credited to the customer according to the applicable warranty terms and conditions.

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### General Conditions

The customer is responsible for prepaying the shipping charges of the Return Merchandise. The Manufacturer will not accept any Return Merchandise unless it is prepaid. The Manufacturer may request that the customer issue a valid purchase order covering all work related to the warranty inspection, such as analytical work.

When inspection of the Return Merchandise by the Manufacturer concludes that a defect did not cause the warranty claim in material and workmanship:

- The Return Merchandise shall be returned to the customer at the expense of the customer (freight collect); and
- The customer will be billed for the Return Merchandise evaluated including autopsy and house analysis.

When inspection of the Return Merchandise by the Manufacturer concludes that a defect caused the warranty claim in material and workmanship:

The Return Merchandise will be shipped to the customer free of charge. Please review your warranty for the terms and conditions applicable to your purchase order.

All terms, conditions, and specific remedies outlined in the customer's applicable warranty shall apply in processing all warranty claims. Please contact LG Water Solutions through the email address corresponding to your region listed above for further questions.

The customer is responsible for returning the Return Merchandise to the Manufacturer for membrane analysis. The warranty claim will not be accepted unless the membrane analysis is complete.

The Manufacturer advises the customer to complete the Request for Return Merchandise Authorization Form, including "The option for prior compensation request" on the form if replacement UF modules are required to prevent the shutdown of the system while the Manufacturer conducts the warranty claim inspection.

When the customer receives replacement UF modules by prior compensation request, the Return Merchandise must be shipped immediately to the Manufacturer following UF module replacement. If the Return Merchandise is not returned within two months, the customer is responsible for the compensation UF modules at current pricing plus shipping charges.

The UF modules delivered under prior compensation will be billed to the customer at their recent purchase price if the conclusion of the analysis of the used module is that the problem has not been caused by the membrane supplier.

The information and data contained herein are deemed to be accurate and reliable and are offered in good faith, but without guarantee of performance. LG Chem assumes no liability for results obtained or damages incurred through the application of the information contained herein. Customer is responsible for determining whether the products

and information presented are appropriate for the customer's use and for ensuring that customer's workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Specifications subject to change without notice. QuantumFlux is the Trademark of LG Chem. All rights reserved. © LG Chem, Ltd

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### UF/MBR Module RMA Request Form

#### New or Used Elements Removed from Original Packaging

Section 1			
<b>TO BE FILLED OUT BY REQUESTOR</b>			
Name of Requestor		Date of Request	
<b>CUSTOMER INFORMATION</b>			
Company Name			
Address/ Region			
Contact Person			
Phone/ Mobile		Email	
Purchase Order No.		Ship Date	
<b>REPORTED PROBLEM</b>			
<input type="checkbox"/> Low Flow (High Feed Pressure)		<input type="checkbox"/> High Filtrate Turbidity	
<input type="checkbox"/> High Differential Pressure		<input type="checkbox"/> Visual Product Defect	
<input type="checkbox"/> Other:			
<b>TIME WHEN PROBLEM FIRST OCCURRED</b>			
<input type="checkbox"/> Before UF Module Installation			
<input type="checkbox"/> At Startup (Less than 24 hours of continuous operation)			
<input type="checkbox"/> After Startup (2 to 14 days)			
<input type="checkbox"/> XXX Months After Startup			
<input type="checkbox"/> Describe failure mode and attach pictures			
<b>SYSTEM INFORMATION</b>			
Feed Water Type Surface water, seawater, tertiary wastewater etc.			
Filtrate Application RO pretreatment, drinking, discharge etc.			
Upstream treatment e.g. Primary clarification, aerobic system, secondary clarifier, media filter, bag filter etc.			
Downstream treatment	e.g. RO		

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SKID/MODULE INFORMATION			
Total No. of skids		No. of modules per skid	
No. of skids per train		Total modules per system	
Serial numbers of affected modules (attach separate file if necessary)			
Have the modules been exposed to hazardous materials?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	If <b>Yes</b> , provide details (attach to this document) and advise customer that MSDS sheets for all hazardous materials have to be submitted along with this RMA request.		

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### FEED AND FILTRATE WATER QUALITY INFORMATION

For performance warranty claims, please provide historical trend data in addition to the following.

		Feed		Filtrate	
Parameter	Units	Design	Actual	Design	Actual
Water Temp	°C				
Total suspended solids	mg/l				
Turbidity	NTU				
TOC	mg/l				
BOD <sub>5</sub>	mg/l				
COD	mg/l				
Iron	mg/l as ion				
Manganese	mg/l as ion				
Aluminum	mg/l as ion				
Calcium	mg/l as ion				
Alkalinity	mg/l as CaCO <sub>3</sub>				
Total Hardness	mg/l as CaCO <sub>3</sub>				
Total dissolved solids	mg/l				
pH	S.U				
O&G	mg/l				
Chlorine	mg/l as Cl <sub>2</sub>				
SDI <sub>15</sub>					
Other (specify)					

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## OPERATING PARAMETERS AND PERFORMANCE

Provide historical trends in addition to the following. Trend files in raw data form to be attached in a separate file

Process Fluid	Parameter	Position	Units	Design	Actual
Filtration	Feed Flow Rate	All skids (total)	m3/h		
		Single skid	m3/h		
	Pressure (single skid)	Feed	Bar		
		Filtrate	Bar		
		Concentrate	Bar		
		TMP	Bar		
		Pressurization Rate	Bar/second		
Air Scour	Air Scour Flow Rate		m3/h		
(per skid)	Air Scour Pressure		Bar		
	Air Scour Duration		minutes		
	BW Flow (if used)		seconds		
	BW Frequency (if used)		m3/h / GPM		
	BW Duration (if used)		Bar / kPa / psi		
	Air Scour /Backwash process (if applicable)				
	Describe steps				



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PROCESS SEQUENCES					
Process	Sequence		Units	Design	Actual
Maintenance Cleaning (MC) / Chemically Enhanced Backwash (CEB) / Enhanced Flux Maintenance (EFM)	MC1	1. Recipe			
		2. Cleaning Frequency			
		3. Wash Orientation			
		4. Backwash flow rate (if used)			
		5. MC 1 duration			
		6. MC1 protocol			
	MC2	1. Recipe			
		2. Cleaning Frequency			
		3. Wash Orientation			
		4. Backwash flow rate (if used)			
		5. MC 2 duration			
		6. MC2 protocol			
Recovery Cleaning (RC) / Clean-In-Place (CIP)	RC1	1. Recipe			
		2. Cleaning Frequency			
		3. Duration			
		4. Protocol			
	RC2	1. Recipe			
		2. Cleaning Frequency			
		3. Duration			
		4. Protocol			

Integrity Test	Air pressure applied to inside or outside of fibers?				
	Starting Pressure		Bar / kPa / psi		
	Frequency		days		
	Duration		mins		

Other process sequences e.g. Forward flush (describe)	
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COMMERCIAL CLASSIFICATION	
<input type="checkbox"/> Warranty Claim	<input type="checkbox"/> Non-Warranty Replacement
<input type="checkbox"/> Non-Warranty Credit	<input type="checkbox"/> Billable Technical Service Evaluation
<input type="checkbox"/> No Charge Technical Service Evaluation	<input type="checkbox"/> Application Engineering

Section 2
TO BE FILLED OUT
REQUIRED TEST
<input type="checkbox"/> As Received Visual Inspection
<input type="checkbox"/> Autopsy including permeability test, cleaning test, contaminant analysis, fiber analysis and potting layer analysis
<input type="checkbox"/> Other:
<input type="checkbox"/> Other:
<input type="checkbox"/>

Section 3		
INFORMATION FOR CUSTOMER SERVICE		
No of Modules to be Returned:		
Serial Numbers and Customer PO:		
Commercial Classification:	<input type="checkbox"/> Credit	<input type="checkbox"/> Replacement
Further Instructions:		
RMA NUMBER		

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### Commercial Invoice

Sender:  Email Address: Phone Number:			Recipient: <i>Contact LG Chem Technical Service representative for shipping information</i>			
Invoice Date:			Invoice Number:			
Waybill Number:			Sender's Reference:			
Carrier:			Recipient's Reference:			
Quantity	Country of Origin	Description of Contents	Harmonized Code	Unit Weight	Unit Value	Sub Total
Total Net Weight			Total Declared Value: (USD)			
Total Gross Weight			Freight & Insurance Charges (USD):			
Total Shipment Pieces			Other Charges (USD):			
Currency Code			Total Invoice Amount (USD):			
Type of Export			Terms of Trade:			
Reason for Export						
General Notes						

The exporter of the products covered by this document declares that, except where otherwise clearly indicated, these products are of Republic of Korea, preferential origin.

I/We hereby certify that the information on this invoice is true and correct and that the contents of this shipment are as stated above.

Name: Position in Company: Signature:  _____ -	Company Stamp     
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