

Please ship completed questionnaire  
along with sample to:  
**LCI Corporation**  
Test Center  
4404-C Chesapeake Dr.  
Charlotte, NC 28216



# QUESTIONNAIRE

Thin-Film Evaporation

Contact: George Pauley

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The information requested in this questionnaire will help us properly evaluate your particular application. Please attach any additional pertinent information. Call us if you have any questions.

Your Name \_\_\_\_\_ Title \_\_\_\_\_

Alternate Contact \_\_\_\_\_ Title \_\_\_\_\_

Company Name \_\_\_\_\_ Div/Dept \_\_\_\_\_

Phone No \_\_\_\_\_ Ext \_\_\_\_\_ Fax No \_\_\_\_\_ Date \_\_\_\_\_

Email \_\_\_\_\_

Mailing Address \_\_\_\_\_

Shipping Address \_\_\_\_\_

City \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

## I. Project Information

1. Project Designation: \_\_\_\_\_

2. Project Objectives: \_\_\_\_\_  
\_\_\_\_\_

3. What problems will Thin-Film Evaporation solve? \_\_\_\_\_  
\_\_\_\_\_

4. What is the end use of the product? \_\_\_\_\_

5. Desired Capacity, feed throughput basis: \_\_\_\_\_ lbs/hr (continuous) \_\_\_\_\_ lbs/year

**II. Product Information**

1. Process Rates and Weight Percent Splits:

Components	MW	Feed		Overhead		Bottoms	
		lbs/hr	%W/W	lbs/hr	%W/W	lbs/hr	%W/W
A.							
B.							
C.							
D.							
E.							
F.							
TOTAL			100%		100%		100%

2. Is the feed: Slurry?  Solid?  (Melt Point \_\_\_\_\_°F/°C), Solution?

3. Does the product degrade with Heat?  Air?  Shear?   
 Other? \_\_\_\_\_

4. What is the nature of the degradation that occurs? (color, coagulation, change in properties, hazardous decomposition/products, etc.) \_\_\_\_\_  
 \_\_\_\_\_

5. Maximum temperature the product can be exposed to:

For:	1 min.	2 min.	30 min.	1 hour	_____ hours
Feed					
Overhead					
Bottoms					

## 6. Physical &amp; Thermodynamic Properties (if data are estimates, please so state: \_\_\_\_\_)

Component s	Spec. Heat	Spec. Gravity	La. Ht. Vap.	Melt Point	Therm. Cond.	Visc.	Visc.	Boiling Point	Boiling Point
	BTU/lb° F		BTU/lb	°C	BTU/hr ft °F	CP @ Temp. 1=____ =____	CP @ Temp.2 =____	°C @ 760 mmHg	°C @ press. 2 =____
Feed									
Overhead									
Bottoms									
A.									
B.									
C.									
D.									
E.									
F.									

## III. Specification for Discharge Streams

## 1. Required Product Quality:

	Residuals		Color	Viscosity
	Component	%W/W		(Units & Temp)
Overhead (Distillate)				
Bottoms (Concentrate)				

## 2. Analytical Methods Required: \_\_\_\_\_

\_\_\_\_\_

## 3. Other important properties: \_\_\_\_\_

\_\_\_\_\_

#### IV. Present Process Scheme

1. If product is already being processed, what type of equipment is used? \_\_\_\_\_  
\_\_\_\_\_
2. Is this operation batch or continuous? \_\_\_\_\_
3. What are operating conditions of the process? \_\_\_\_\_
4. Are production or test data available? \_\_\_Data Generated: \_\_\_\_\_  
\_\_\_\_\_
5. What improvements are desired? \_\_\_\_\_

#### V. Special Design Standards and Considerations

1. What are the required materials of construction for the product wetted parts?  
Carbon Steel \_\_\_\_; 304 SS \_\_\_\_; 316SS \_\_\_\_; Hastelloy \_\_\_\_;  
Monel \_\_\_\_; Other \_\_\_\_\_
2. What are the gasketing requirements? Teflon \_\_\_\_Silicone \_\_\_\_Viton \_\_\_\_  
Other \_\_\_\_\_
3. Utilities Available: Steam: \_\_\_\_\_psig; Hot Oil: \_\_\_\_\_°F, Type \_\_\_\_\_  
Cooling Water: \_\_\_\_\_°F; Chilled Water: \_\_\_\_\_°F;  
Electricity: \_\_\_\_\_V, \_\_\_\_\_Ph, \_\_\_\_\_Hz;  
Instrument Air: \_\_\_\_\_psig.
4. Are explosion proof electrical components required? \_\_\_Classification: Cl \_\_ Gp \_\_ Div \_\_

#### VI. Special Testing Considerations

1. Can feed material be pumped directly from the shipping container? \_\_\_\_\_  
If not, what type of feed system do you recommend? \_\_\_\_\_  
\_\_\_\_\_
2. Under what conditions should the feed material be stored? \_\_\_\_\_
3. What is a good solvent for cleaning the test equipment? \_\_\_\_\_
4. Briefly describe any problems you anticipate: \_\_\_\_\_  
\_\_\_\_\_

## VII. Material Handling Considerations

1. Do you typically discard, dispose of, destroy, burn, recycle or reclaim the feed material (material being sent for testing)? \_\_\_\_\_  
 Is the feed material a solid waste as defined in 40 CFR 261.2? \_\_\_\_\_
2. If it is a solid waste, is the feed material a hazardous waste as defined in 40 CFR 261.3? \_\_\_\_\_  
 If yes, please provide the Hazardous Waste No. \_\_\_\_\_
3. Are any of the materials considered an acute hazardous waste? \_\_\_\_\_
4. LCI will return all non-hazardous test materials to the client. Unless LCI is conducting a treatability study in accordance with 40 CFR 261.4(f), hazardous materials (i.e. solvent or unused feed) can be returned to the customer only if the materials will be put back into the client's process or otherwise used without further processing. If the hazardous material cannot be directly used and meets the definition of a hazardous waste in 40 CFR 261.3, the material must be disposed of. Will material generated from this test require disposal?  
 \_\_\_\_\_

NOTE: LCI can create and dispose of only 1000 kg of hazardous waste per month as a small quantity generator. If LCI is conducting a treatability study in accordance with 40 CFR 261.4(f), LCI will return to the client any and all feed material and residues within 90 days after the treatability study is completed and in any event within one year after the client shipped the feed material to the test center. Any required disposal of feed material and/or residues relating to a treatability study will be the sole responsibility of the client.

We have endeavored to ask only for relevant process and safety data so that we can plan for and perform a productive test program under the safest operating conditions. Please take a few moments to review the completed questionnaire and attach any additional information about your products that are necessary for the safe and effective execution of this test program.

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Please attach a completed **Material Safety Data Sheet(s)**, such as OSHA Form 20, for your product(s). Please enclose hazardous labels and D.O.T.-UN numbers for all materials. **(DUE TO**

**FEDERAL LAW, NO SAMPLE WILL BE RECEIVED NOR TESTING CONDUCTED WITHOUT THIS INFORMATION)** Your company's emergency phone number: \_\_\_\_\_.

On the graph provided on the next page, please plot Vapor Pressure vs. Temp. for each component and Viscosity vs. Temp. for the Feed, Bottoms, and Distillate.

Please label axes properly.

**Plot Viscosity vs. Temperature and Vapor Pressure vs. Temperature**  
 (Please indicate viscosity scale used)

