

YOUR LITHO-KIT™ GUIDE



**MYRON L
COMPANY**
Water Quality Instrumentation
Accuracy • Reliability • Simplicity

INTRODUCTION

Your Litho-Kit™ is a quality control "tool" to help you print better. It and this Guide will improve your printing through better control of fountain (dampening) solutions. The rising popularity of alcohol-free solutions has increased the need for very careful monitoring of their conductivity, pH and temperature.

While this Guide offers information we hope will be very useful, it makes no specific recommendations regarding fountain solution temperature, concentration, pH or conductivity values. A good source for such information is your solution supplier, who is most familiar with your local conditions. Another source is the Graphic Arts Technical Foundation, a non-profit research and educational organization which provided much of the information in this Guide.

CONDUCTIVITY AND pH: HOW THEY CAN HELP YOU

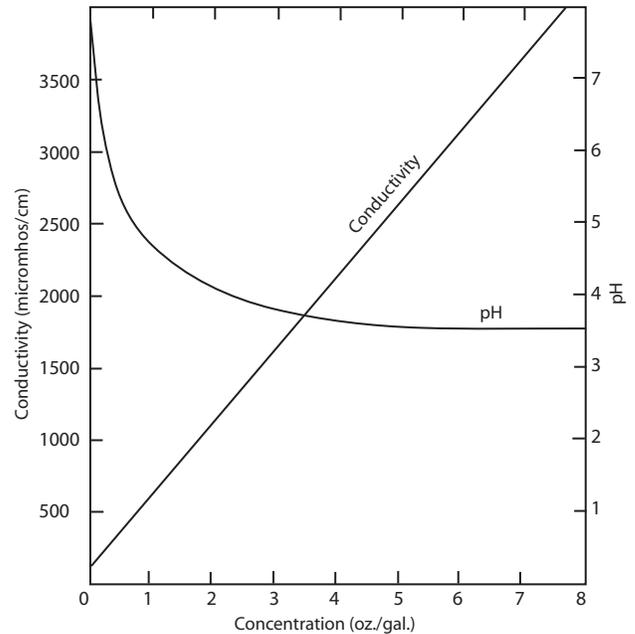
The Myron L instrument which is the "heart" of your kit is either a conductivity instrument or a conductivity/pH instrument. Both are industrial-quality instruments for professionals. Reliable even in demanding conditions, they feature electrodes mounted inside a cell cup for maximum protection. Details of specifications and operation can be found in the instruction manual in each kit.

Conductivity is the ability of a solution to pass an electrical current. The amount of current passed depends on the concentration of ions, or electrically charged particles in the solution. The higher the concentration of ions, the higher the degree of conductivity. The unit of conductivity measurement is the microsiemen (also called the micromho).

Traditionally, pH, a measure of the degree of acidity or alkalinity, was used to check fountain solution concentration. Today, however, conductivity testing is recognized as a much more accurate method. Many modern dampening solutions are pH stabilized (or buffered), so only small changes in pH are seen, even when solution strength is dramatically changed.

The conductivity, however, increases as solution concentration rises.

The advantage of checking fountain solution concentration with conductivity, rather than pH, can be seen in the following graph.



Concentration vs. pH and Conductivity for a hypothetical combination of fountain solution concentrate and water

Notice how the pH levels off, but conductivity values rise on a straight-line basis as the concentration increases. This "linear" relationship allows you to easily match the conductivity value to a specific concentration of your own solution.

Even though pH usually is not the best method to check the concentration of fountain solution, it is still very important and must be checked regularly. The pH of acid dampening solution affects sensitivity, plate-life, ink-drying, etc. Also, pH can change during a run if the paper has a high acid or alkaline content. Conclusion: pH must be maintained at the proper level for good printing.

The table below lists recommendations for checking fountain solution conductivity and pH.

RECOMMENDED TESTING METHOD

TYPE OF FOUNTAIN SOLUTION	MIXING		ON PRESS	
	COND.	pH	COND.	pH
ACID	X	X	X	X
BUFFERED ACID	X		X	X
NEUTRAL	X		X	X
ALKALINE	X		X	X

Because contaminants in water are often ionized, conductivity has long been recognized as a good overall indicator of water quality. Portable conductivity instruments and/or in-line conductivity monitor/controllers are normally included in industrial reverse osmosis and deionization water treatment systems.

If the system in your plant did not include a Myron L portable instrument, the instrument in your Litho-Kit™ can be used to check:

1. System Efficiency
2. Tap Water Quality Fluctuations

Other models designed specifically for water treatment equipment testing can be found in the REPLACEMENTS/OPTIONS section of this Guide.

ACCESSORIES IN YOUR LITHO-KIT™

Calibration solutions ensure continued instrument accuracy. Information on the procedures and frequency of recalibration will be found in your instrument Operating Instructions booklet. The small bottles included in the kit can be refilled with the 1 L/32 oz. solutions found in REPLACEMENTS/OPTIONS.

The syringe included in your kit is the easiest way to take a dampening solution sample. This is especially true when the sample is drawn from the fountain pan (the most representative source). Carefully transfer solution directly into the meter's cell cup for testing. Make sure to always rinse the syringe with clean water after use.

Using the thermometer to check dampening solution temperature regularly during a run is important for continued quality printing. Dampening solutions, especially alcohol-free types are more viscous (therefore, more effective) when chilled to 10-13° C/ 50-55°F.

Since it is normal for the temperature to increase slightly in the fountain pan, it is preferable to check temperature there, rather than in the recirculator. The temperature difference between the recirculator and pan usually should not be more than + 1 °C/2 °F. If the difference is greater, and pan solution temperature is not within the ideal range, steps can be taken to reduce the differential. These include insulating solution supply and return lines and moving the recirculator.

For advice on ideal solution and how to maintain it, see your local supplier.

RECOMMENDATIONS FOR USING YOUR LITHO-KIT™

PLOTTING A CONCENTRATION GRAPH

One of the most useful benefits your Litho-Kit™ can

provide is a solution concentration graph. After plotting various mixtures of etch with your water, it will be very easy to later check the strength of your dampening solution on the press. Then, you can see which concentration results in the best quality printing.

The following procedure can be accomplished using the blank graph form at the end of this guide. This form may be copied for future use.

1. Measure the conductivity and pH of water normally used to make the dampening solution. Fill a clean 3,8 L /1 gallon bottle with water.
2. Add 29,6 mL/1 oz. of fountain solution concentrate. Remeasure both conductivity and pH. Record these values.
3. Add another ounce (59,15 mL/2 oz. total) of fountain solution concentrate and remeasure both conductivity and pH. Repeat this process (in 14,79 mL/1/2 oz. additions, if preferred) until the amount of fountain solution added exceeds the manufacturer's recommendations.
4. Plot these values on the graph form provided.
5. Make new charts when changing brands of dampening solution, or tap water quality changes more than + 50 microsiemens (micromhos).

ADDITIONAL RECOMMENDATIONS

1. Discuss your printing requirements with your chemical supplier to obtain the best dampening solution for your local water and other conditions.
2. Carefully follow the manufacturer's mixing instructions.
3. Run the recommended mixture of dampening solution and monitor its printability. Communicate this information back to the dampening solution manufacturer.
4. Check dampening solutions regularly with your Myron L instrument and thermometer. Paper coating, ink bleed, and blanket or roller cleaners can contaminate dampening solution. Take temperature, pH and conductivity readings after every 1-3 hours of press operation. Record these readings in the press log book. Keep the solution at the concentration you have found works best.

5. As the press run continues, observe the changes in pH and conductivity. When printing problems such as plugging or scumming begin, the dampening solution is probably contaminated. Record your findings in the press log book and remix a fresh batch of solution.
6. If alcohol is used in your fountain solution, it should be added after the solution has been mixed to the desired conductivity range. Alcohol has no conductivity, and it dilutes the solution conductivity value. To properly monitor a solution containing alcohol while running, the reading after dilution should be used as the "standard".
7. Drain and clean your dampening system weekly.



REPLACEMENT/OPTIONS

These items can be obtained from your local dealer:

<u>Item</u>	<u>Description</u>
M6/PH	Conductivity/pH meter (Ranges: 0-5000 μ S; 2-12 pH)
512M5	Conductivity meter (Range: 0-5000 μ S)
EP	Conductivity meter for DI water system testing (5 ranges: 0-0.5, 5, 50, 500, 5000 μ S)
EP11/PH	Conductivity/pH meter for checking reverse osmosis water treatment systems (4 conductivity ranges: 0-10, 100, 1000, 10,000 μ S; pH range 2-12)
6PII	Conductivity, TDS, Resistivity, pH, ORP & Temperature
CLK	Litho-Kit only (without instrument) for 512M5 or other conductivity model
PLK	Litho-Kit only (without instrument) for M6/PH or other conductivity/pH model
ULK	Litho-Kit only (without instrument) for Ultrameter 6PII instruments
pH 4 Buffer*	pH calibration solution
pH 7 Buffer*	pH calibration solution
pH 10 Buffer*	pH calibration solution
442-3000*	3900 microsiemens Conductivity Standard Solution
KCI-7000*	7000 microsiemens Conductivity Standard Solution
CSFP	Calibrating Solution Four-Pack (1 ea., 2oz bottles pH 4, 7, 10 & 442-3000)
PS35	Plastic Syringe (35 CC)
TM	Thermometer



M6/pH



512M5

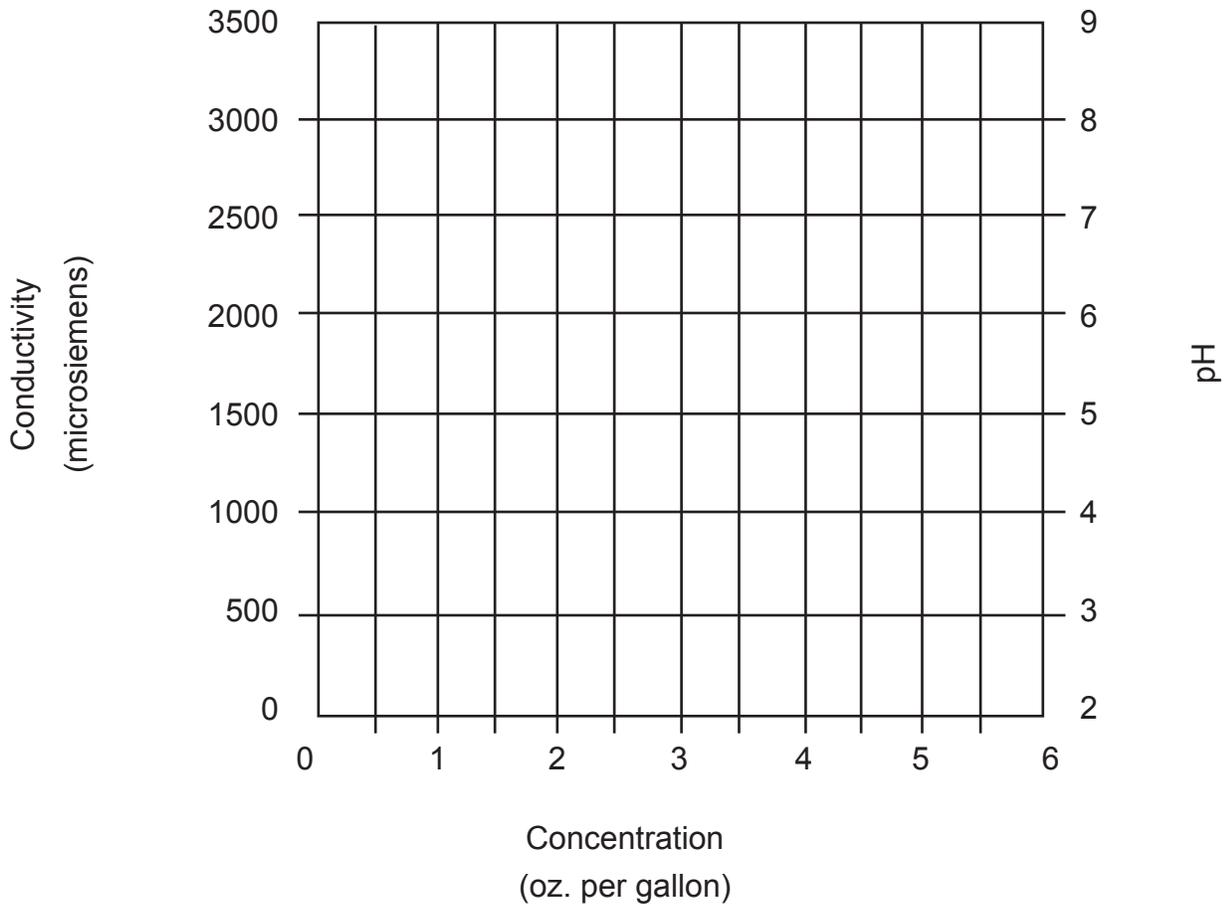


6PII

*Available in 2oz., quart and gallon sizes

FOUNTAIN CONCENTRATE CONTROL WORKSHEET FOR

	Concentration (oz. per gallon)	Conductivity (Microsiemens)	pH
	0.0		
DATE _____	0.5		
	1.0		
OPERATOR _____	1.5		
	2.0		
WATER pH _____	2.5		
	3.0		
WATER CONDUCTIVITY _____	3.5		
	4.0		
FOUNTAIN BRAND _____	4.5		
	5.0		
_____	5.5		
	6.0		



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