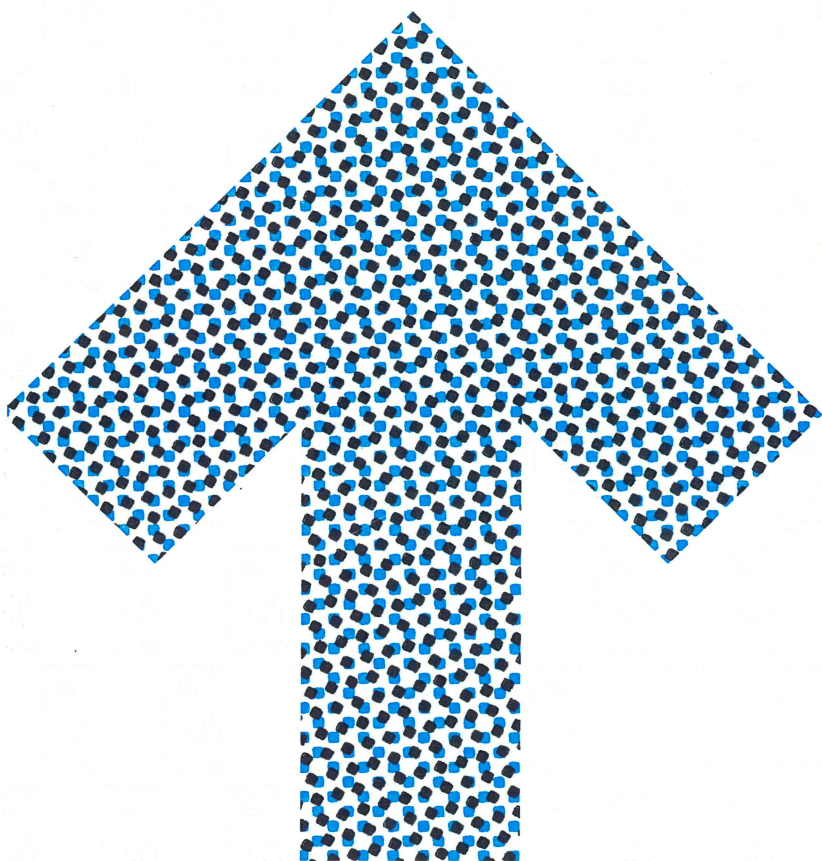


Complaint Checklist



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Introduction

This booklet contains instructions and information necessary to properly document difficult ink-press-paper problems.

Securing appropriate materials during the complaint investigation will be an aid to resolving these types of printing complaints.

This checklist is not all inclusive but is intended to serve as a guide for on-site troubleshooting.

S.D. Warren's technical bulletins address specific areas of Graphic Arts and should be used as references:

Technical Bulletin #1	Ghosting
Technical Bulletin #2	The Influence of Paper on Color Printing
Technical Bulletin #3	Black & White Halftone Prints
Technical Bulletin #4	Wet Ink Trapping
Technical Bulletin #5	Coated Papers for Web Offset Printing
Technical Bulletin #6	Varnishing Techniques
Technical Bulletin #7	Specks in Printing

Quality Statement and Liability Policies

It is S. D. Warren's intent to supply printing paper of optimum quality. In attempting to achieve this goal, Warren utilizes sophisticated process controls and monitoring devices, quality control tests, and actual on-press testing of finished paper. In spite of these extensive efforts, it is virtually impossible to realize this objective 100 percent of the time.

Notification

If a problem develops related to paper, the printer should immediately stop production and notify the merchant supplier, who will investigate the problem promptly and involve the local Warren District Sales Office, when necessary. If the printer decides to continue the press operation after a problem occurs, the printer assumes responsibility for the acceptance by the customer of the printed results and any accrued costs.

Evidence

It is the responsibility of the paper merchant, with the help of the printer, to obtain order numbers and physical evidence (as outlined in the following pages) to accurately demonstrate the nature of the problem. This information will be forwarded to the proper mill location by the local Warren District Sales Office to allow Warren's technical experts to analyze the problem.

S. D. Warren will not consider claims unless accompanied by sufficient supporting evidence.

Grade Selection

Therefore, while making every effort to supply paper of the highest quality, ***S. D. Warren makes no warranties of any kind, either express or implied, including no warranties as to merchantability or fitness for a specific end use requirement.*** Selection of the proper grade of paper for a specific end use is the responsibility of the printer or the printer and its customer. S. D. Warren will not be responsible for any problem or claim resulting from use of the paper for processes other than for which it has been designed.

Claims

Should claims for losses prove to be the direct result of defects for which S.D. Warren is solely responsible, after investigation by Warren, S. D. Warren's liability will be limited, at its option, to the original purchase price paid to S.D. Warren or cost of the replacement of the paper together with the reasonable cost of lost press time (up to a maximum of three hours) to identify the nature of the problem. Without prior approval from S.D. Warren, no claim will be considered 60 days after the loss occurs. The deduction of claims from payments due is not allowed.

In no event will S. D. Warren be liable for any other damages or for special, incidental, or consequential damages of any sort, including, but not limited to, damage to press, lost profits, start-up costs, or expenses representing loss of production.

Replacement Paper

S. D. Warren will replace defective paper as quickly as possible. If replacement paper cannot be delivered in time to meet customer needs, Warren will not be liable for additional costs incurred – grade or size substitution, makereadies, plate costs, premium time. Warren's liability is limited as above.

Defective Paper Disposition

Paper which Warren authorizes to be returned to the mill or job-lotted must be accompanied by a Bill of Lading in accordance with Warren's instructions. Care should be taken in packaging and shipping returned paper. Credit will not be issued for printed paper or paper received in damaged condition; credits are also subject to the above terms.

Debits

It is Warren's intent to settle claims promptly. Once a claim has been approved, debits must be received within six (6) months of the approval date to receive credit.

S. D. Warren will make every effort to settle claims promptly and amicably.

Sampling Procedures:

It is the merchant's responsibility, with the help of the printer, to obtain order numbers and physical evidence to accurately demonstrate the nature of a printing problem. Here are recommended procedures and the symbol codes which will be used throughout this book for you to use as a guide:

Information:



All information required by the mill should be filled in on the complaint form. Gather and record all mill order numbers. Identify press type, press size, printing sequence, blankets used, dampening system type and pressroom conditions.

Ink from the Can and Fountain:



Ink samples from the can and fountain will help determine the condition of the ink as it was received into the pressroom, and also after it has been on press.

A sample of each of at least 4 ounces should be placed in an airtight, non-porous container and sealed with vinyl or plastic tape.

Printed Sheets with Original:



It is imperative to obtain the press sheet or web signature which contains the *original* defect being described. When obtaining printed sheets, be sure to collect at least 12 consecutive sheets, including several sheets immediately before and after the *original*. Clearly identify the defect by circling it and staple the sheets together.

Unprinted White Paper: Web and Sheet-Fed



Samples of the unprinted paper which have *not* been through the press should be obtained so a complete analysis can be done at the mill. Sheet-fed unprinted and printed sheets should be wrapped and shipped *flat* whenever possible. Web paper can be rolled and placed in a mailing tube.

Tape-Pulls:



When the press becomes contaminated with material that is causing print interference, it is necessary to retrieve this material for further analysis. A recommended material is Clear Adhere laminating sheets, which allow the sample to be pulled from the press and rejoined with a backing sheet which can then be identified as to **where** the tape-pull was taken.

Fountain Solution:



If it is necessary to obtain a sample of the water from the press's water system, be sure to use an air-tight plastic container. Label the bottle as to which unit it came from and include **all** information regarding the mixture. (See page 22 for information about pH and Conductivity.)

Blanket Smashes:



Send the damaged blanket along with the tape-pull of the material(s) that caused the smash. Be certain to roll the blanket and place it in a mailing tube.

Photographic Documentation:



Occasionally it would be helpful to take a picture of certain paper and/or press conditions in the pressroom, such as moisture related problems or excessive piling. If the photo will supplement the other physical evidence, include it with the information going to the mill.

Packaging:



Sheet-fed unprinted and printed sheets should be wrapped and shipped **flat** whenever possible. Web paper can be rolled and placed in a mailing tube. Be sure the items are properly labeled in accordance with postal and other applicable transportation regulations.

Proper packaging procedures apply to all materials being returned for evaluation.

Blanket Smashes:

Description:

A compressed or smashed area(s) on a blanket due to excessive pressure against the blanket's surface in the printing nip.

Causes:

- 1) Scuffs – a roll-up of paper, usually originating at the edge of a sheet.
- 2) Scraps – paper trimmings, folded sheets, labels, packaging materials etc.
- 3) Splices in cartons or skids.
- 4) Folded edges.

Possible Solution:

Replace blanket.

Precautions

(to avoid
blanket smashes):

- 1) On Sheet-fed jobs:
 - a. The top and bottom sheets in a carton should be removed or examined carefully before printing because these sheets are the most susceptible to damage during handling, i.e., scuffs, folded edges, tears, etc. This is an accepted trade practice.
 - b. When loading the press, examine the sides of the lifts for any signs of a problem.
- 2) Web jobs:

Roll labels indicate the number of splices in a roll. The location of a splice is marked on one side of all rolls.

Documentation:



Information



Original



Tape-Pulls



Blanket
Smash

Blistering:

Description:

A blister is a bubble-like formation that occurs on a coated sheet during drying in a web oven.

Cause:

The blister(s) is caused by the "explosion" which occurs when the moisture within the sheet vaporizes and cannot escape through the paper's coating layer and the ink film.

Precautions:

When blistering is experienced on press the following suggestions may help determine the cause or minimize the problem:

- 1) Determine the Paper's Surface Temperature (PST) as the web exits the oven, and lower it, if possible, by:
 - a. Decreasing the web speed and oven temperature proportionately.
 - b. Increasing the web speed.
 - c. Changing to inks that have higher tinctoral strength which would require thinner ink films and require less heat.
- 2) If the blisters are confined to one area of the form, turn the roll around to determine if the blisters follow the paper, or remain with the press. Hot spots in the oven can be detected by intentionally scorching the sheet.
- 3) Check machine reel and roll positions for comparisons, if possible. Isolating the problem rolls may enable the printer to complete the job.

Documentation:



Information



Ink:
Can



Ink:
Fountain



Original



Unprinted:
Web



Fountain
Solution

Contamination:

Description:

Print Interference which results in non-print areas or *specks in printing*.

Causes:

- 1) **Ink Hickeys** are caused by material which is carried by the ink and are not particles which originate from the paper. Possible sources of Hickeys are pieces of ink skin, uncooked resin in the ink or roller fragments from a dry or deteriorating rubber ink roller.
- 2) **Pick-outs and Coating Lumps** are agglomerates of fiber or coating material that are poorly bound into the paper coating or adhered to the paper's surface.
- 3) **Coating Pick**, also referred to as "pepper picking," is the result of the tack of the ink exceeding the cohesive or binding strength of the coating materials.
- 4) **Wood Vessel Segments** are fibers which, because of their composition, are difficult to remove during pulping procedures, and tend to be poorly bound into a coated paper.
- 5) Occasionally the print can be disrupted by **Fibers** which have contaminated the system.
In general, fibers are water receptive and reject ink. These fibrous materials will adhere to the blanket or plate and accept water but will not take on any ink, and will therefore cause a *speck* in the print in the form of its own shape.
- 6) **Pits** may be described as indentations or wells in the surface of the *paper* or *plate*.
Pits cause specks in print because the ink form rollers cannot apply ink down into the pits in the plate; and the blanket cannot apply ink down into the pits on the paper's surface.

7) **Loose Surface Dust** on paper is a major cause of specks in printing. When the loose dust sets on the paper's surface, it prevents the ink from reaching the sheet and sticks to the blanket.

8) In both sheet-fed and web printing the interaction of ink, fountain solution and paper must be kept in proper balance or a printing defect will occur which is commonly referred to as **Water Interference**.

Water Interference manifests itself as white specks in prints, and can originate from three different sources:

Ink – Water Emulsification Rates

Paper – Receptivity to Water

Fountain Solution – Wettability

9) Specks in printing caused by **Anti-Offset Spray** occur in sheet-fed printing and are normally a result of running too much spray. The excess spray will interfere with subsequently applied ink.

10) **Piling** is a build-up of ink and/or paper material on the blanket during printing. There are 3 common types of piling:

Image Area Paper Piling

Image Area Ink Piling

Non-Image Area Piling

Documentation:



Information



Ink:
Can



Ink:
Fountain



Original



Unprinted:
Web



Unprinted:
Sheet-Fed



Tape-Pulls



Fountain
Solution



Photographs

Calender Cuts:

Description:

Calender cuts are small cuts or slices in the paper.

Causes:

Wrinkles or creases in a roll of paper that is passing through a calender stack under high pressure may result in cuts along the wrinkle or creases.

Possible Solution:

The calender cuts may be isolated to a particular roll. If this roll was sheeted into a pallet or skid at the mill, then, the problem may only affect a small portion of a certain pallet or skid. Every sheet may not have the problem. Calender cuts usually have a recurring pattern (i.e., every third, fourth, fifth sheet) depending on the number of rolls sheeted into the pallet or skid. Mill order numbers and put up numbers will help us identify the extent of the problem. Nothing can be done about calender cuts, except to sort them out or reject the paper.

Documentation:



Information



Original



Unprinted:
Web



Unprinted:
Sheet-Fed

Cracking or Tearing at the Fold:

Description:

- 1) *Cracking at the Fold (CAF)* occurs when the coating fractures as the sheet is folded and can be a problem in both sheet-fed offset and web offset printing.
- 2) *Tearing at the Fold (TAF)* occurs when a printed and folded job falls apart along a folded edge or around the staples after binding. TAF occurs most often in web offset printing.

Causes:

- 1) *CAF* can be caused by:
 - a. Attempting to fold heavy weight papers without scoring.
 - b. Improper scoring.
 - c. Low moisture conditions.
 - d. Improper folder nip settings.
- 2) *TAF* can be caused by:
 - a. Excessive heat in the web oven.
 - b. Weak paper.
 - c. Improper folder setting.
 - d. Inadequate chill roller temperature.

Precautions:

- 1) *Crack at the Fold*
It is recommended that papers 100 lb. and up in basis weight be scored prior to folding.
- 2) *Tear at the Fold*
 - a. Web exit temperatures should be run at the minimum necessary to dry the ink.
 - b. Folding units should be set properly to place minimum squeeze, and the tucker blade adjustment should be accurate so as not to shear the fold.

Documentation:



Information



Ink:
Fountain



Original



Unprinted:
Web



Unprinted:
Sheet-Fed

Delamination:

Description: Paper peeling apart or separating from within. *Note:* do not confuse delamination with blistering (see pg. 5) in web printing. Blisters occur in the oven. Delamination occurs in the printing units.

Causes: If the internal bond of the paper cannot withstand the tack, or printing forces, during printing, the sheet will separate or delaminate.

Possible Solution: In general, the only viable solution is to reduce the tack of the ink being used. An alternative would be to run another lot of paper.

Documentation:



Information



Ink:
Can



Ink:
Fountain



Original



Unprinted:
Web



Unprinted:
Sheet-Fed



Fountain
Solution

Ink Lay (Mottle):

Description:

Mottle is a phrase used to describe non-uniform ink lay or when the printed reproduction has a pattern which is not present in the original artwork.

Causes:

Mottle can be due to several ink-paper-press or "systems" problems. Among these are:

- 1) Back trap mottle
- 2) Wet ink trap mottle
- 3) Paper mottle
- 4) Water interference mottle

Possible Solution:

If the printer is experiencing an ink lay problem, the following items should be checked:

- 1) Inks should be tack graded to print with the highest tack first.
- 2) Quick release blankets may help minimize the problem.
- 3) The fountain solution mixture should be run with minimum concentrate to run clean and should be monitored by measuring conductivity. (See page 22.)
- 4) Progressive prints should be pulled to determine which printing unit(s) creates the problem.
- 5) All troubleshooting prints should be done at production speed.
- 6) At least 50 sheets should be turned over and printed on the opposite side to determine if the ink lay changes.
- 7) Another lot of paper could be run as a comparison.

Documentation:



Information



Ink:
Can



Ink:
Fountain



Original



Unprinted:
Web



Unprinted:
Sheet-Fed



Fountain
Solution

Misregister:

Description:

Failure of the printed images to align in multicolor printing.

Causes:

Misregister may be caused by a number of factors:

- 1) A moisture imbalance in the stock.
- 2) Inaccurate trimming.
- 3) Paper slippage in the grippers.
- 4) Loose blanket or plate.
- 5) Improper winding of a web roll.
- 6) Improper stripping.

Possible Solutions:

- 1) Care should be taken to allow skids and rolls to acclimate to pressroom conditions while wrapped. (Sheets and Web)
- 2) Retrim the paper if possible so the grippers and side guide have a stable edge. (Sheets)
- 3) Try a roll from a different reel position. (Web)

Documentation:



Information



Ink:
Can



Ink:
Fountain



Original



Unprinted:
Web



Unprinted:
Sheet-Fed



Photographs

Moisture Problems:

Description:

Moisture problems occur due to differentials in the relative humidity between the paper and its environment.

Causes:

Paper fibers are hydrophillic, or water loving, and react rapidly to changes in moisture conditions of their environment.

Wrinkling of the stock on press may occur due to a moisture problem:

Wavy stock, or paper which has absorbed moisture, may develop a wrinkling problem $\frac{2}{3}$ of the way back from the gripper edge and continue to the back edge of the sheet.

Tight edged paper, or paper which has given off moisture, may create a wrinkling problem in the center of the sheet.

Possible Solutions:

- 1) When a moisture problem is encountered, try turning the lift to use the opposite edge to the grippers. This may eliminate the wrinkling problem; however, this is usually more successful when encountering wavy edge-type wrinkling problems.
- 2) While keeping the stock wrapped, allow approximately one day for every 10% incremental difference between the RH of the paper and the pressroom. This will stabilize the paper.
- 3) Abnormal conditions in the storing of paper may result in a moisture related paper problem. Once a skid or a carton is opened and the stock is exposed to the atmosphere, it is standard practice to cover that paper to protect it from climatic changes. The presence of moisture in the offset printing process, together with the stock's exposure to a different atmosphere, may cause flat, acceptable stock to react.

Documentation:



Information



Original



Unprinted:
Web



Unprinted:
Sheet-Fed



Photographs

Picking

Description:

Picking (coating pick, pepper picking) is the result of the tack of the ink exceeding the cohesive or binding strength of the sheet. Picking is the lifting of coating and/or paper fibers from the sheet, and can produce non-print areas of various shapes and sizes.

An *original* pickout has depth and a crater-like appearance. The result of this pickout on subsequently printed sheets is open voids, which show the surface of the sheet without depth, or merely an unprinted speck in the same size and shape of the original.

Examination under a printer's loupe, along with a low angle light, will enable you to determine which sheet contains the original pickout.

Causes:

- 1) Insufficient paper surface strength.
- 2) Excessive ink tack or tack-build during printing.

Possible Solutions:

- 1) Picking can be more severe during a makeready when the ink and press remain stationary for extended time intervals. This can be particularly true when a light coverage form is being run. Be certain enough paper has been run through the press for the system to be stable before attempting to address the problem.
- 2) Decrease impression squeeze to a minimum.
- 3) Before reducing the tack of the ink, have the pressperson pull progressive prints, beginning with the first unit, to determine *where* the picking is occurring. Once

you have determined which ink(s) is causing the picking, then adjustments to the ink can be made.

For example, if the first down black is causing the pick, and a print of the black alone shows the picking, then reducing the tack of the black should improve the problem. However, if the black ink alone does *not* cause picking, but begins to pick as the additional inks are applied, then a more appropriate adjustment would be to reduce the setting rate, or stabilize the ink so that the build-up of tack through the press is slowed.

- 4) There are various blankets available in the market. A quick release blanket could be recommended for a printer with chronic picking problems.

Documentation:



Information



Ink:
Can



Ink:
Fountain



Original



Unprinted:
Web



Unprinted:
Sheet-Fed



Tape-Pulls



Fountain
Solution

Setting and Drying (*Sheet-Fed*):

Description:

- 1) **Setting:** Ink setting time is the amount of time required for an ink to gel or set-up to the point where the sheet can be re-worked through the press.
- 2) **Drying:** The process of ink drying involves a chemical reaction that may require 24 to 48 hours to come to completion.

Causes:

It is important to determine if the problem is one of **setting** or **drying**.

If the problem is **setting**, it could be due to:

- 1) The setting speed or formulation of the ink.
- 2) A paper which has slow ink setting characteristics may require small lifts, additional spray, or longer turn around time.
- 3) An improper mixture of fountain solution concentrate or additives can change the emulsification characteristics of the ink and/or interfere chemically with the setting and drying function of the ink(s).
- 4) Inadequate amount of offset spray.

If the problem is **drying**, it could be due to:

- 1) The formulation of the ink.
- 2) The improper mixture of the fountain solution (see #3 above).

Possible Solutions:

Normally ink setting and drying problems are recognized **after** a job has been printed on at least one side, which makes an analysis of the printing conditions at the time difficult. If the job is a work-and-turn form, probably minimum time has passed since the first side was printed.

Therefore, the precautions to take would be:

- 1) Check the mixture of the fountain solution (see page 22), and get a sample of the solution out of the circulating tank for further analysis.
- 2) Obtain samples of the ink from both the can and the fountain so an evaluation can be done.

Note: Samples must be taken from the press at the time when the problem occurs.

A Note About Web Ink Rub Problems:

During web printing the *setting* function is physical. The solvent in the heat-set ink is removed by the increase in temperature in the web's oven. The *drying* function in web occurs in the chill roll section of the press, where the melted (fluid) ink is cooled into a solidified state.

When dry rub problems occur after web printing, the solutions above apply, along with the following:

- 1) Check the paper surface temperature at the oven's exit to assure that the solvents are being removed.
- 2) Check the chill roll temperatures to assure that the paper's surface temperature is being lowered to 50-70 degrees Fahrenheit.

Documentation:



Information



Ink:
Can



Ink:
Fountain



Original



Unprinted:
Web



Unprinted:
Sheet-Fed



Fountain
Solution

Slime Holes:

Description:

A slime hole appears as a hard and brittle contaminate around a hole in the base stock of the paper.

Cause:

Contamination in the fiber furnish during the papermaking process.

Possible Solution:

This problem is not an extensive one and normally will be confined to a limited amount of paper (i.e., a few sheets or a small portion of a roll).

Documentation:

Information



Original

Splice Breaks:

Description:

In web printing, a mill-made splice causes the web to break as it progresses through the press.

Cause:

An improperly mill-made splice. Check for:

- 1) Does the splice have a tail?
- 2) Was adhesive stuck to the preceding wrap?
- 3) Where did the break occur?
- 4) Was the splice marked?

Possible Solution:

Web rolls – our roll labels indicate the number of splices in the roll. The location of the splice(s) is marked on one side of all rolls. This enables the printer to take impression off and let a splice through the printing nips with minimum waste.

Documentation:



Information



Original

Comments on pH and Conductivity

A number of the fountain solution concentrates being used today are "combination" type products which contain *all* the ingredients needed for offset printing. All that must be added in the print shop is *water* and if used, *isopropyl alcohol*.

These concentrates, often referred to as "1-step" etches, can be a *buffered* solution.

A simplified definition of "*buffered*" water mixture would be that you can add either acidic material or alkaline material to this mixture, and the pH value of the mixture will *not* change.

Therefore, after a fountain solution has been mixed and placed in the press, the addition of more concentrate (acid) will not change the pH of the mixture. However, *the acidity of the mixture has been increased*.

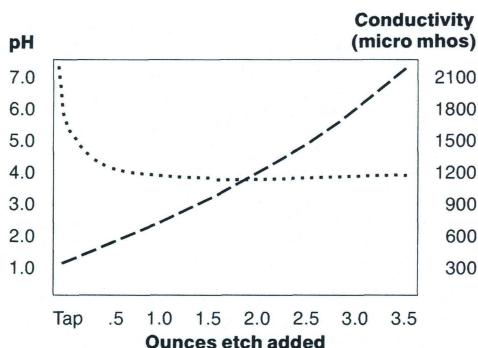
Using pH as the only measurement of the amount of concentrate in the fountain is no longer an accurate tool.

An alternative measurement is *conductivity*. The amount of fountain solution concentrate in a fountain solution will determine the conductivity of the solution.

Conductivity is generally measured and reported in micro mho/centimetre. The term μmho (1/1,000,000 of mho) is used as the measurement unit of conductivity just like pounds are a unit of weight.

Conductivity, or conductance, is the capability of a solution to carry (conduct) electricity through it. This is the opposite of resistance, which is the property of a solution to resist the flow of electricity.

Here is a graph showing the resulting pH and Conductivity values as etch is added to plain tap water:



Conductivity

pH

.....

Note: When using conductivity, you must first know the conductivity of the tap water, and all conductivity measurements of fountain solution mixtures should be done **before** any alcohol is added.

Be sure to consult your fountain solution supplier for the best fountain concentrate for your water supply. The conductivity of your mixed solution, less the conductivity value of your water supply, should be approximately 1000 micro mhos.*

Mixed Solution – Tap Water = approximately 1000 micro mhos

**This is a figure which is generally recommended by many ink manufacturers and is intended to be an estimated value.*

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