

PRINTER'S INK DIGEST



Published January 1999
By Van Son Inks UK Ltd
©Van Son Inks UK Ltd, January 1999

TABLE OF CONTENTS

Introduction	4
Fountain solutions, water, pH and conductivity	5
Achieving proper ink/water balance	10
How ink dries	11
Ink estimating	14
Estimated ink coverage chart	15
Printing on non-porous stocks	16
Printing on Teslin	18
Printing on Tyvek	18
Printing fluorescent colours	19
Printing with metallic inks	19
Most often asked questions about metallics	20
Opacity and transparency	22
When colour fails to match	25
Thermography	26
Laser safe inks	26
Most often asked laser questions	28
Wax free inks	29
UV inks	31
Security inks	33
Fade resistant inks	36
Printing four colour process on a duplicator	37
Waterless printing	38
Ink disposal and tips on eliminating ink waste	40
Closest PANTONE® colour to Van Son	
Standard colour	43
PANTONE basic "0" series colours	45
The PANTONE matching system	46
Weighing and mixing ink	47
Mixing cool and warm grays	50
Printing with overprint varnishes	54
Top ten ink related printing problems	56
Supplies and additives	62
CML-Oil Base Plus	64
Infinity Acrylic	64
Rubber Base Plus	65
Mega-LASER	66
Tough Tex LR	66
Quickson range	67
Quickson SonaDry	67
EasyFill ink jet refill system	70

INTRODUCTION

With the wealth of different inks available these days, it's almost impossible to carry all the technical information you need in your head.

Which is where the Van Son Printer's Ink Digest will prove invaluable. It covers virtually everything you need to know about getting the most from your inks.

We've based it on a publication we originally produced for the US market, called the Van Son Guide to Quality Printing.

It was such a success with both dealers and printers, we had to produce an enlarged and updated second edition.

In this European edition, we answer all the technical questions we get asked most often. You'll also find useful tips and advice on how to get the most from all our products, including laser-safe inks and security inks. Other subjects you'll find covered include ink estimating, ink disposal and much more.

Of course, no matter how hard we try, there's bound to be something you won't find in the following pages. Which is why our technical department is always here for you at the end of the phone.

And, because we're always looking at ways to improve our service to you, we welcome feedback on what you would like to see covered in future editions.

Yours sincerely

Eduard Mulder

FOUNTAIN SOLUTIONS, WATER, pH AND CONDUCTIVITY

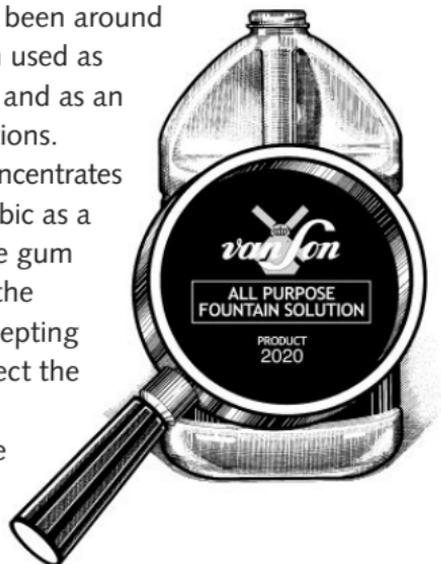
With all the variations there are in the offset printing spectrum, none has more than fountain solution. This is mainly caused by the many sources for the water used to make the fountain solution.

pH has long been used as a measurement to determine the alkalinity or acidity of the mixed fountain solution. Until recently, there was never much attention paid to conductivity, as a way of obtaining a more accurate measurement of the alkalinity or acidity of the fountain solution.

In order to understand the importance of pH as it refers to fountain solution, you need to know a little about fountain solutions and what they are designed to do.

First, most fountain solutions are made up of four basic ingredients. Each designed to do a specific job. These four ingredients are:

1. **Acid** – Usually a mild acid, which helps reduce the pH and keep the image area sensitive to ink and the non-image area more sensitive to water.
2. **Wetting agents** – Sometimes referred to as surfactants, these are used to lower the surface tension of the water allowing it to maintain the wetting ability of the fountain solution in the non-image areas while allowing you to run less water. Some common wetting agents used are; Isopropyl Alcohol, Glycerin, and various Glycols.
3. **Plate conditioners** – These are used to minimise the corrosive action of the acid on the plate surface of an aluminum or metal plate. This is designed to increase the print quality, and also extend the life of the plates.
4. **Gum arabic** – This has been around a long time and has been used as both a plate preservative and as an additive to fountain solutions. Most fountain solution concentrates already contain Gum Arabic as a part of their makeup. The gum arabic is used to protect the non-image area from accepting ink. It also serves to protect the plate from humidity and chemical attack when the press is idle.



What is pH?

pH can be traced back to the Roman times. The Romans knew pH as "potential Hydrogen," or "potential for Hydrogen", hence the small "p" and capital "H."



pH is extremely vital to high-quality, trouble free printing. Maintaining the optimum strength of the pH during the run will assure you of the best print quality possible.

What is the pH scale?

The pH scale is a set of numbers by which pH is measured. The scale runs from 0 to 14, with 7, being neutral. Any number higher than 7 is more alkaline and any number lower than 7 is more acidic. Each whole number on the pH scale represents a tenfold change in acidity or alkalinity. A pH of 5 is ten times more acidic than a solution with a pH of 6. A pH of 4 is 100 times more acidic than a pH of 6. The reverse is true when measuring alkalinity. 8 is 10 times more alkaline than 7 and a pH of 9 is 100 times more alkaline than a pH of 7. What seem to be relatively small differences in pH may in actuality be quite large.

How do you determine pH?

There are two methods that are primarily used today. There is pH paper (sometimes called litmus paper), individual strips which come in a plastic case and each case has a printed colour bar inside facing out. There is a pH number printed under each colour on the bar. The most common scale found has a range of 3 to 5.5 going from a goldenrod colour, through yellowish green to green. There are other pH papers that have a higher range, but this scale is the most common.

To check the pH of a solution, simply take a strip of pH paper and dip it into the solution. Pull it out and compare the colour to the colour bar on the plastic case to check the pH. Some pH strips require a two minute immersion into the solution before checking colour. As you can imagine, this method is not the most accurate and may not give you optimum press performance.

The second method used to check pH is a pH meter. A good electronic pH meter can be relied upon for highly accurate pH readings. These meters do not react with solutions being tested or rely on illumination or colour perception on the part of the person taking the reading. Simply immerse the probe into the the solution being tested. Either a dial or in most

cases a digital reading will appear in the window of the meter.

pH meters must be properly maintained following the manufacturer's instructions.

How important is the water supply?

To put it in simple terms, you can use the best of everything in the printing process, but the quality of the water can affect inks, blankets, plates and rollers. Controlling the quality of the water gives the printer more consistency and in the long run will give better reproduction and print quality.

The two primary sources of water for printing use are tap water or bottled water, usually distilled. Distilled water is colourless, tasteless and odourless and should have a pH of 7. It is important to take a pH reading of your distilled water. We found that supermarkets often label water that is not truly pure distilled water and have been known to test as low as 2 to 3 pH readings below 7.

Tap water is rarely pure. As we know, tap water begins as rain or snow and from that moment passes through a long natural pipeline where it picks up various minerals and inorganic compounds. It then goes through many man-made stages of purification before it ever reaches your tap.

The terms "hard water" or "soft water" are common terms. "Hard water" is the most frequently mentioned of the two terms. Water hardness is defined as that characteristic which represents the total concentration of calcium and magnesium ions, and is expressed in terms of a calcium carbonate equivalent. "Hard water" can cause a multitude of printing problems including roller stripping, and filled-in halftones.

How do you know if you have "Hard Water"?

There is, of course, a method of determining "hard water." It involves tests that cannot be made by most printers and it would be best to call your present fountain solution manufacturer. In most cases they will be happy to do any tests for you concerning the type of water that is coming from your tap. There is one way that you can check that will at least indicate that you might have "hard water." It is difficult for "hard water" to break down and remove hand soap when you wash your hands.

If you have "hard water," it would be wise to use either distilled water, deionized water or check with your fountain solution manufacturer to see if they have a special "hard water" fountain solution.

Conductivity

Conductivity is the ability to transmit or conduct an electrical charge. Conductivity is determined by the number of ions present as a result of minerals in the water. The higher the concentration of minerals, the higher the degree of conductivity. "Hard water" will usually have a higher concentration of minerals. Water will normally have a very low ion level which results in registering a very low conductivity reading.

For those who use isopropyl alcohol or glycerine base fountain solutions, neither of these two conduct an electrical charge and only serve to dilute. They will reduce the overall conductivity reading of the solution.

Measuring conductivity

As with anything that is measured, conductivity uses the term "mho" or "ohm" spelled backwards as a measurement. Because of the difficulty in measuring the conductivity of water or fountain solution in terms of "mho" units, a fraction of a mho or "micromho" is normally used. A micromho is equal to one millionth of a mho. To take a conductivity reading, a conductivity meter is used. There are a wide range of meters available, but most printers will only need one that has a range of about 3,000 micromhos.

To take a reading, just place the electrode into the solution and stir a few seconds. Most conductivity meters are digital and a reading will appear in the viewer.

What is a good conductivity reading?

When taking a conductivity reading, you should first take a reading of the water only. When you mix the fountain solution, you take another reading of the solution. It should read between 1200 and 1400 micromhos above straight water readings. What conductivity reading is the best for you? Only testing with various readings can tell you that.

Why the need for conductivity?

With the new technology that has evolved in the printing industry, including buffered fountain solutions and neutral fountain solutions, pH is not enough in determining the best level of performance of a fountain solution. Conductivity gives you a more accurate way to monitor the conductivity level throughout the press run.

pH in paper

We've talked about pH and conductivity of fountain solutions and have addressed some of the problems that are

associated with them. One thing that we have not talked about, but is of equal importance, is the pH of paper.

Paper can be one of three things when referring to pH. The paper can be alkaline, neutral, or acid. Up until a few years ago, most papers leaned toward the mild, acid side. Everyone was happy, most jobs printed well and dried well. Then suddenly the paper manufacturers, for many reasons, most of them good, switched to an alkaline sheet. This caused havoc in the printing community with most printers experiencing problems they had not encountered before.

The most common problem was toning. Another was losing ink and water balance somewhere during the run and not being able to bring it back without having to re-ink the machine and replace the fountain solution. These problems still pop-up now and then, but have dropped significantly.

Now, when printers tell us of drying problems, tests made at Van Son, show that in about 98% of these cases, the stocks were very highly acidic. Acid stocks can affect the drying process and when used in combination with a mildly acidic fountain solution, can cause inks to dry slowly.

How can I test the pH of the stock?

Testing the pH of the paper is very simple. All you need is a "litmus" pen, which can be obtained from almost all graphic



art supply companies. This pen is similar to a regular felt tip marker. The fluid in the pen is designed to change to different colours; blue, green or yellow, to indicate the pH of the stock. It does not give you numbers to go by.

A simple line drawn on the stock will change colour depending on the type stock it is. If the line turns blue, the stock is alkaline. If it remains green, it is neutral. If it turns yellow, it is acidic. A bright yellow line indicates a high acid content. A dark blue indicates a high alkaline content. A green line indicates a neutral sheet. The colours in between green and bright yellow can vary. A colour more to the green side is less acidic than a colour that is more toward the yellow side. The same is true for the blue. A greener blue is less alkaline than a darker blue-green. If you know what kind of stock you are working with, you can take steps to compensate for high alkalinity or a high acidic stock.

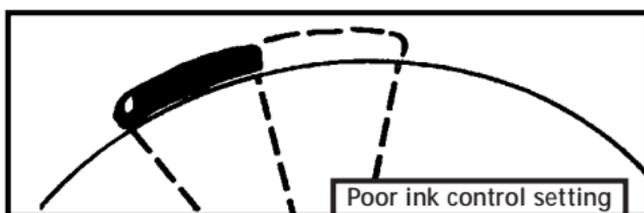
ACHIEVING PROPER INK / WATER BALANCE

The primary function of a press operator is to deliver a constant flow of clean, sharp copies all day long. Correct ink and water balance is essential to accomplish this.

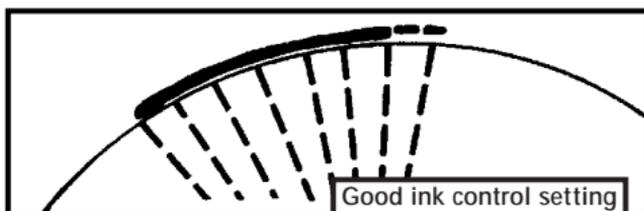
Perfect ink and water balance is accomplished when you use "just the right" amount of ink to maintain even colour and "just the right" amount of water to keep the non-image areas of the printing plate clean.

Although PERFECT ink/water balance may be hard to obtain on a small duplicator, you can come close by following some simple beginning steps while inking up the press.

1. Start with a clean press; no ink in the fountain, close all the fountain keys; do not force.
2. Add enough ink to the ink fountain to produce a small roll of ink.
3. Turn the fountain roller by hand. See if there are key areas across the roller that are allowing ink to go through. If there are, snug up that ink key tighter until the roller remains clean all across its length when rotating.
4. Open each key 1 turn. Rotate the fountain roller again. If the ink film is even and uniform across the roller, it is set for a minimum to deliver ink to the remaining rollers. If the ink flow is not even, adjust the proper keys accordingly.
5. Set the ink fountain roller ratchet at about the mid-point position and ink up the press.
6. Set the water fountain ratchet to about 1/4 its maximum setting.
7. Check pressures of form rollers, both ink and water forms.



Fountain ink control setting on 1 keys loosened. Thick ink bead transfers to ductor roll at 1 setting.



Fountain ink setting in mid-range position (6 on this press). Keys are snugged up to transfer thin ink film spread over greater arc.

Adjustments will have to be made on both ink and water, depending on ink coverage of the job being printed and the type of plate used. When making these adjustments, it is best to adjust only one system at a time, either ink or water. It is important to resist the urge to spin the water roller or crank the ink roller by hand. This is only a temporary solution for either toning or light copy and can cause unevenness in colour throughout the printed job.

When the printing is under way, check the overall printing quality and colour print density. If the density appears light, do not add more ink until you are sure you are not washing out the print with too much water. Water is your enemy, but is a necessary evil. Once it has accomplished its task of keeping the non-image areas of the plate clean, you want it to go away. It's easy to tell if you don't use enough water because the plate doesn't print clean. If you use more water than necessary, nothing much seems to happen, for a while. But the excess water gradually water-logs the ink and can cause slow drying, dull finish, and poor scuff resistance of the printed surface. So don't use any more than you really need.

With these settings and, of course, Van Son Inks, you can turn out ream after ream of crisp, dense, copy with a minimum of fuss and hassle.

HOW INK DRIES

Ink chemists have invented numerous ways to make ink dry, but litho and letterpress inks dry primarily by two methods; absorption and oxidation.

Absorption means that the ink soaks into the stock like water into a sponge. Oxidation means that the varnishes in the printed film will harden by chemical process when exposed to air and form a solid layer, which binds the pigment to the printed surface. Offset inks use both methods of drying, but dry predominantly by one method or the other.

Rubber Base Plus inks dry 100% by absorption, making it suitable for all uncoated stocks.

CML-Oil Base Plus inks dry 50% by absorption and 50% by oxidation. It can be used on coated and uncoated stocks.

Tough Tex LR inks dry 100% by oxidation. Non-porous surfaces, such as foil, plastics and pyroxylin coated stocks require this type of ink.

Factors that affect ink drying

Fountain water acidity

As the ink and fountain solution come together on the rollers of a lithographic press, the ink will pick up 10% to 30% water in the form of tiny droplets within the body of the ink. This is normal and the water will dissipate in the print. If the pH of the fountain solution is too acidic, the ink/water balance is upset and three things can happen that will affect drying.

Firstly, the acid can attack the driers in the ink, rendering them inactive and slowing up the oxidation process. On coated paper, this slow drying can cause the varnish to drain into the paper coating instead of setting on the surface and binding the pigment to the paper. This results in a chalky ink surface that can only be corrected with overprint varnish.

When printing with Tough Tex on non-porous stock, such as plastic or foil, excessive acidity can cause severely slow drying because the water is not absorbed by the stock, but rather stays with the ink and actually becomes more concentrated in acid as it slowly evaporates.

Secondly, excessive acid can break down the water resistance of an ink, requiring the use of more water to prevent scumming. The ink takes on more water, resulting in mottled print as the water globules become larger within the printed film.

Thirdly, excessive acid can sensitise your metal rollers causing them to strip, i.e., accept ink unevenly.

Excessive acidity can be prevented by testing the fountain solution with pH test strips [VS Product #2052] and adjusting the solution to a pH of 4.5 to 5.5. If your pH is too low (acid), add water. If it's too high, (alkaline) add more fountain concentrate.

Humidity

Relative humidity can cause paper to become damp and limp. Ink takes a long time to dry on paper in this condition.

The effect of moisture on drying is the same, whether it comes from paper, the atmosphere or the press fountain. This situation can be corrected by winding the printed sheet or by placing the stock on edge and blowing dry, heated air between the sheets.

Temperature

Ink dries faster on warm stock than on cold. The drying time is reduced about 25% for each 6°C. increase in temperature. This is true for inks that dry by absorption or oxidation. Heat lowers the viscosity of absorbing inks so they strike into the stock more rapidly. Heat accelerates the chemical reaction of inks that dry by oxidation.

Ink coverage

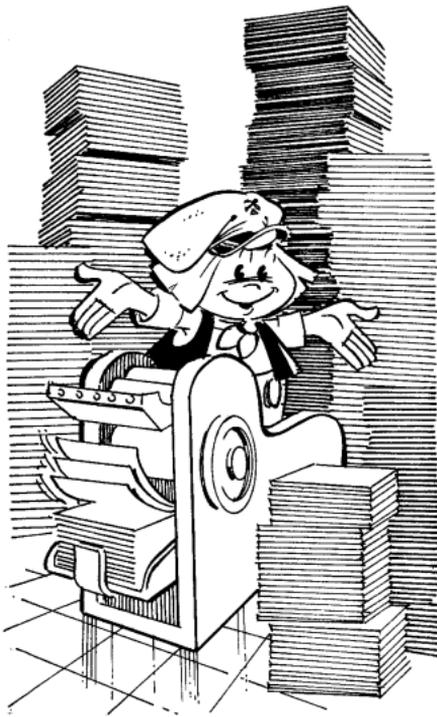
Occasionally, a small printed area will take longer to dry than a large one. With each impression, the form rollers travel across the plate, which is mostly covered in water, except the small image area. The form rollers pick up this water and feed it back into the ink distribution system. The ink may get tired of this continual barrage of water and start to emulsify.

In contrast, a large coverage requires faster ink take-off by the form rollers and a more rapid flow of ink from fountain to blanket with much less exposure to water.

When printing a small area, one ounce of Van Son Fountain Stimulator per gallon of fountain solution will help. Adding 10% to 15% isopropyl alcohol will reduce the amount of water needed to keep the plate clean.

In conclusion

When the failure of ink to dry is discovered, the damage has already been done, and at best, the result is an



inconvenient delay in finishing the job. Sometimes, delay involves serious loss and it is necessary to apply a remedy to complete the job on time. Remedies are inconvenient and often expensive. Intelligent planning avoids drying problems. By familiarising yourself with possible ink drying problems, you should be able to avoid them.

INK ESTIMATING

In order to estimate the amount of ink necessary to print a job, you need to know the following information.

1. The amount of square cms that can be printed with one kg of the ink you plan to use.
2. The type of stock used.
3. The amount of ink coverage on the sheet.
4. The amount of copies.
5. The kind of ink or overprint varnish to be used.

Step one: Determine the number of square centimetres that will be printed on one sheet, based on the amount of ink normally required for various types of printed areas.

Solids	= 100% Coverage
Halftones	= 50% Coverage
Line Copy	= 20% Coverage

Example: You have a job to print. Everything to be printed is 200 x 300mm. There is an 200 x 300mm solid, an 200 x 300mm halftone and an 200 x 300mm area of 10 point type on the sheet.

Note: When measuring coverage, round off measurements to the closest 50 mm. For example a 195 x 280mm printed area would round off to 200 x 300mm.

Here's how to figure for this job:

Solid 200 x 300 = 600 square cms.

(100% coverage)

Halftone 200mm x 300mm = 300 square cms.

(50% coverage)

Line Copy 200 x 300mm = 120 square cms

(20% coverage)

Now add all of these square centimetres together to get the total number of square centimetres per sheet.

$600+300+120 = 1020$ Total square cms per sheet.

Step two: Take this figure, 1020, and multiply it by the number of copies you need to print.

Example Job: 30,000 copies to be printed.

1020 square cms x 30,000 sheets = 30,600,000

(30,600,000 total square cms to be printed.)

Step three: Check the chart on the next page and find the type of stock you are using, then find the type of ink you are using. When you find them, you will see an amount underneath the stock type and opposite the type of ink being used. This number represents the amount of square centimetres of copy you can print with one litre of that ink on that type stock.

Example: Black ink on an uncoated stock. Check the chart on the next page of this booklet and find under inks, black. Find the type of stock, uncoated. Check the number and you will find that one litre of that ink on that stock will print approximately 30,600,000 square centimetres per kg of ink.

Step four: Divide the total amount of square centimetre, 30,600,000, by the ink you are going to use. In this example, using black ink on uncoated stock, the figure is 4,400,000.

Example: 30,600,000 divided by 4,400,000 = 6.95. Round up to 7 kgs of ink will be required to do the job.

Note: This technique is usually accurate to within 10% or closer.



ESTIMATED INK COVERAGE

The figures listed are estimates of how many square centimetres of print can be obtained from 1 kg of ink.

TYPE OF INK	TYPE OF STOCK				
	Regular Coated	Matt Coated	Uncoated	Antique	Non-Porous
Black Inks	6,000,000	5,500,000	4,400,000	3,850,000	5,700,000
4C Proc. Inks	5,600,000	5,000,000	4,000,000	3,500,000	4,950,000
Coloured Inks	5,300,000	4,800,000	3,840,000	3,270,000	4,950,000
Opaque Inks	4,000,000	3,600,000	2,850,000	2,500,000	3,550,000
Metallic Inks	4,000,000	3,600,000	2,850,000	2,500,000	3,550,000
Fluorescents	2,000,000	1,900,000	1,700,000	1,550,000	————
OP Varnish	6,400,000	6,000,000	————	————	————

PRINTING ON NON-POROUS STOCKS

Sooner or later every printer is asked to print on a specialty stock such as metallic foil, polyester, acetate, vinyl, plastic or leatherette binder covers. It is possible to print these stocks on a lithographic press and can be very profitable. But there are pitfalls and not all specialty stocks can be printed by offset presses.

Stocks

Not all stocks can be printed by lithography. For example, some vinyls contain plasticizers which will ooze to the surface and prevent ink from drying. This type of surface must be printed by silk screen. Offset printable vinyls have a top-coat which seals in the plasticiser and permits offset ink adhesion.

It is impossible to list all the stock variables. Before committing to a production run, test the stock by tapping out a film of ink on its surface. Put it in a telephone book at about page one hundred to simulate pile drying. Check it in 24 to 48 hours for drying, adhesion, scratch resistance, etc. If the ink dries to a hard, scratch resistant surface, you can probably print it on a duplicator press.

Inks

Use Tough Tex or Tough Tex LR inks. They are formulated to dry completely by oxidation and contain adhesion promoters that will bind the ink to a wide variety of non-porous stocks.

Fountain solutions

For best results, use an alcohol based fountain solution. Do not use Electrostatic Fountain Solution. It contains anti-oxidants that will seriously affect ink drying and adhesion.

Try to avoid fountain solutions that contain high percentages of glycerin or glycols. These are non-evaporating wetting agents which will slow down drying. For printing on non-porous stock, we recommend the following fountain mixture:

- 25 oz (700g) water
- 2 oz (57g) Van Son All Purpose Fountain Solution
- 4 oz (113g) Isopropyl Alcohol
- 1/4 oz (7g) Van Son Fountain Stimulator.

Plates

For best results use a metal plate. Photo Direct "Black Plates" can be used, but the fountain solutions used for these plates generally contain non-evaporating wetting agents which will slow down drying.

Tough Tex LR inks should be run at the same pH or conductivity as regular inks. A pH of between 4.5 and 5.5 or a conductivity reading between 800 and 1200 micromhos above the reading of straight water would be fine. If pH sinks below 4.5, the increased acidity can slow or stop ink drying.

Humidity

Very low humidity causes static problems and very high humidity causes ink emulsification and slow drying problems. A relative humidity of about 50% is ideal.

Stock conditions

Make sure that stock is at room temperature(21°C-27°C). Cold stocks, particularly plastics, can develop static that makes it virtually impossible to feed through the press. Cold stocks will also retard drying.

Drying

Non-porous stocks require a totally oxidising ink because there is virtually no absorption in the stock. The ink dries and gets hard on the surface of the stock. To optimise drying:

1. Use spray powder. It keeps the sheets separated and allows air to penetrate into the pile of stock.
2. Take out small lifts (about 30mm). Be careful where you place your fingers. Excessive pressure where you grip the stock can cause set off.
3. Air and dry heat aid in faster drying. After sheets have set for several hours, wind the sheets by gently flipping them (similar to thumbing through a book) so that air can get down between each sheet.

Press techniques

Begin by setting all guides so that stock feeds smoothly through the press.

Use minimum water: The ink/water balance when printing on non-porous stocks is more critical than when printing on regular paper stocks. Non-porous stocks do not absorb water and, therefore, very little water is needed. The plate requires only enough water to keep the surface wet and any more will only cause problems.

Use minimum Ink: No more than is required to achieve colour.

Printing the job: A good approach is to start printing with about 50 sheets of waste stock. Once all the adjustments are made

and the press is ready to print, start the waste stock through the press. As you get down to the real stock, start cutting back the water to about half the setting you started with.

By the time you reach the non-porous stock you will be printing on, you should be just about ready to tone. When the non-porous stock starts feeding, you should be right on the money with the water settings.

All this may sound intimidating, but once you master these techniques, you can obtain some beautiful printing results.

Tips

When printing with a light ink on non-porous stocks, it is sometimes helpful to add about 10% of Van Son High Gloss Overprint Varnish [V2174] into the Tough Tex LR ink. (This will help give you better control over the ink and water balance, as well as overcoming slow drying, due to excess water build-up in the ink.)

PRINTING ON TESLIN®

Teslin is a new type of synthetic stock that is finding wider use in Europe. Just about any ink from Rubber Base to Tough Tex dries almost instantly on this stock, but a low VOC (solvent) type ink is preferred because of the stretching effect of the solvent on the synthetic fibres. Van Son's Mega-Laser, and Tough Tex LR ink formulations are an excellent choice for printing on Teslin.

Caution: Care should be taken when cutting or punching Teslin sheets. Dull cutter blades or drill bits can cause the Teslin stock to fuse together.

PRINTING ON TYVEK®

Tyvek is perhaps the most recognisable name when it comes to synthetic stocks. It looks like paper. Its unique ability to resist tearing has made it ideal for use in mailing envelopes.

Many printers believe that Tyvek is non-porous, but the opposite is true. The plastic fibres can suck up solvents in the ink causing the stock to swell or "cockle," if large solids are involved. There are usually no problems when only small areas are printed, such as a return address.

Van Son's Tough Tex LR is an ideal ink for Tyvek because it dries quickly and has a very low VOC content. This vegetable oil-based ink will print smooth and flat with no swelling or cockling, even on the largest printed solids.

Tough Tex LR can be used if there are no large solid areas.

PRINTING WITH FLUORESCENT COLOURS - DAY GLO

They have a unique quality of appearing to glow as if they were illuminated from behind with a light bulb. Indeed, under “black light” they will actually glow brightly in the dark. The secret of this remarkable effect is the special coloured pigments in these inks which have the ability to absorb ultraviolet energy (invisible to the human eye), and transmit it back to your eye as longer waves of visible colours. The printed surface radiates an intense saturated colour that attracts the eye like a magnet.

PRINTING WITH METALLIC INKS

What are metallic inks?

Metallic inks are formulated with tiny metallic flakes which “leaf” together on the printed surface as the ink dries. This leafing of the metallic flakes creates a brilliant lustre. Aluminum flakes are used for silver and brass flakes are used for golds. The gold shades are varied from reddish gold to yellowish gold by varying the metallic composition of the flake and using different tinted varnishes.

Van Son Unipack metallic inks are recognised worldwide as the finest pre-mixed metallic inks available. All of Van Son’s metallic inks are formulated to run straight out of the can. There is no need to premix metallic paste and varnish. Van Son’s Metallic golds and silver will not tarnish in the can, even after a year on the shelf. PANTONE metallic colours, on the other hand, are very unstable in the can and should be run as soon as possible after being mixed or received.

Metallic inks are softer than regular ink. It is formulated this way so that the metallic flakes can “leaf out” on the printing surface to achieve the maximum brilliance.

For range of available inks, please contact Van Son or visit the Van Son web site.

Paper

Coated paper with good ink hold-out produces the highest metallic lustre. Smooth, uncoated papers give good results with a slightly lower lustre. Papers with rough surfaces prevent the tiny metallic ink pigment flakes from “leafing” together and much of the metallic effect can be lost.

Plates

For best results, use a metal plate. Yes, Silvermaster™ plates can be used successfully. We do not recommend the use of

electrostatic plates for running metallic inks. They contain ferrocyanides that prevent oxidation.

Fountain solution

Van Son metallic inks do not require any special fountain solution. An alcohol based fountain solution such as Van Son All Purpose [V2020] would be best. Avoid fountain solutions that contain high amounts of glycerin or glycol. These non-evaporating wetting agents can slow down drying. Again, avoid using Electrostatic fountain solutions.

pH

Most printing inks are run at a pH of between 4.5 and 5.5. Metallic inks, in general, will print cleaner and more brilliant when run at a pH of between 6.0 to 6.5. To increase the pH, it may be necessary to add some clear, non-detergent, household ammonia to the fountain solution mixture. Usually one ounce of ammonia per gallon of mixed fountain solution is sufficient.

Ink film thickness

Metallic inks are so opaque that it is easy to run too much ink which can overpower the dampening system. Even experienced press operators can apply too much ink inadvertently in an effort to produce the maximum metallic effect. The best way to prevent this is to start with a light image and bring the ink up so it just covers. Then increase the ink flow one notch and adjust the water so it's just ahead of the minimum to prevent catch-up.

That's it! Your press will produce quality printing all day with Van Son metallic inks at these settings.

MOST OFTEN ASKED QUESTIONS ABOUT METALLIC INKS

Q: My metallic inks dry fast but sometimes I can rub my finger on the printed copy and the metallic colour will come off on my finger. Why does this happen?

A: Some stocks, particularly cast-coated and clay-coated enamels may sometimes cause the ink varnishes to be drained into the paper coating, leaving the metal pigments on the surface of the stock without enough binder to anchor it firmly to the paper. This condition is called "chalking." Here are some suggestions on how to eliminate this problem.

1. Keep water to a minimum. Waterlogged inks are more prone to chalking.
2. Add (3%) of Van Son Three Way Drier to the ink when printing heavily coated papers and enamels.
3. A pH of 4.5 is the absolute minimum. Lower pH (more acid) will slow drying and excessive acid can dull the metal flake in the ink. A pH of 6.0 to 6.5 is the best for printing metallics. To achieve this high of a pH will require adding something to the fountain solution to make the pH jump. We suggest adding one ounce "non-detergent" household ammonia to a gallon of mixed fountain solution to elevate the pH.
4. For maximum brilliance and binding, under-printing the gold with a size coat of regular oil-base transparent white is sometimes used to seal the paper surface before the gold or silver is printed. If chalking has already occurred, printing another impression of metallic ink over the first usually corrects this problem.

Q: Do you have Laser-Safe metallic inks?

A: We do not recommend any metallic inks for use on stationery that is destined to be run through a laser printer or high-speed copier. The metallic flakes that are used to make a metallic gold or silver get their brilliance from the "leafing" of the metallic flakes on the printed sheet. The flakes can peel off the sheet by the heat and pressure of the printer or high speed copier, stick to the fuser roller or drum, leading to costly replacement.

Q: If there are no metallic inks recommended for use in a laser printer or high speed copier, what can I do to satisfy my customer's needs?

A: Unfortunately, there are not too many things that you can do. One suggestion is that you choose a colour in your PANTONE Colour Formula Guide that looks a little like gold. Check the 120s and 130s in the guide. Van Son can provide a special mix of Mega-Laser ink which is guaranteed laser-safe. Although the result will not have the metallic glitter of true metallic, the colour shades are close.

Another solution is to try a combination of Tough Tex and metallic ink, although the exact combination should be tested first. The metallic ink should not exceed 45% of the total formula.

Wash-up

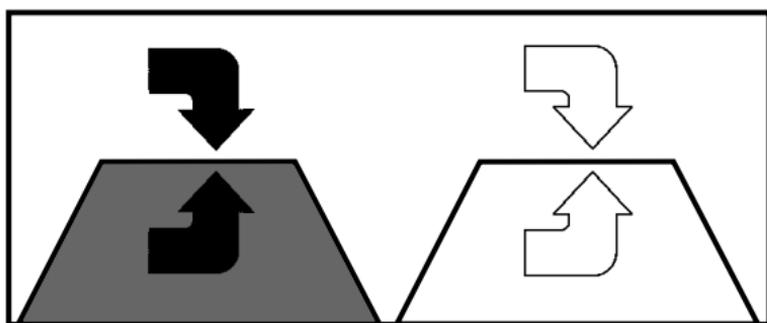
Metallic inks do not require special roller washes, however, the metallic flake in the metallic inks are often more difficult to remove than just regular ink. A combination of Van Son's Easy Street roller deglazer and blanket & roller wash will do a fast, excellent wash-up.

OPACITY AND TRANSPARENCY

Most offset inks are made from very transparent materials. The printed ink film acts as a clear coloured filter over the white paper, allowing the light rays to pass through the ink and be reflected from the underlying white stock, back to the eye as a colour.

An almost infinite rainbow of colours can be created with transparent inks by combining half-tones of different transparent colours so that the tiny half-tone dots printed over and next to each other in varying sizes, are combined in your eye to create the true-to-life colours we see in full colour reproductions. To those not familiar with the process, it is a fascinating experience to examine four-colour process printing with a magnifying glass for the first time.

There are times when a transparent ink simply will not do the job. The colour or brilliancy of transparent inks is completely dependent on the paper underneath the ink being white enough to reflect the colour back through the ink to your eye. If the underlying stock is dark, or even black, the colour can be completely absorbed by the stock. The result is that the colour is radically altered or even disappears.



Almost all printers are faced with the problem of printing on dark or coloured surfaces. To achieve these printing objectives, we must use an opaque ink that hides the underlying surface so that the light is reflected back from the coloured surface of the ink rather than going through the ink and being absorbed or radically changed by the dark underlying stock.

The problem can be compared to painting a dark blue wall with a light buff colour paint. You must use an opaque buff to hide the dark background and it may take more than one coat (impression) to accomplish this. It is usually not possible to match exactly a bright colour that is to be printed on a dark stock. The offset printed ink film is less than one tenth that of an average coat of paint. Some very pleasing effects can be obtained on dark stock by the simple addition of 50% opaque white to the colour. Less than 50% doesn't give enough opacity to the ink at the extremely thin offset ink films. More than a 50% addition of opaque white makes the colour too pastel or gives it a washed out look.

When you are using custom matched colours or PANTONE® mixed colours that require PANTONE Transparent White in the formulation, opaque white can be substituted with minimal loss of colour strength. In most cases it will not be necessary to replace the entire amount of PANTONE Transparent White with the opaque white. A good method to use when mixing your own colour that you want to make opaque, and one that contains PANTONE Transparent White in its formulation, is to weigh out all the other colours in the formulation first. This mixture will produce a "mass tone" (ink in a mass). Start adding the opaque white to the mixture starting at about 20% of the necessary amount needed in the formula. (Van Son has a maximum opacity Opaque White in the Rubber Base Plus, CML-Oil Base Plus, and Tough Tex ink formulations.) When mixed with the other colours, it will change the colour of the "mass tone." Compare the new "mass tone" with the "print tone" in the PANTONE Colour Formula Guide or the colour sample print. Keep adding opaque white until the "mass tone" begins to look close to the "print tone." When this happens, it is as opaque as you can make it. Use regular PANTONE Transparent White, or clear overprint varnish, to complete the needed weight of PANTONE Transparent White in the original ink formulation.

Multiple impressions and metallic inks

There are two additional approaches to achieving pleasing effects on dark coloured stocks; multiple impressions and metallic inks. If the job can afford more than one impression to achieve the colour, and, if the registration is not critical (fine type, etc.), give it two hits. The first hit with straight opaque white is for maximum covering power. The second hit is with the opaque colour, as described previously. If you make the plates for the job, shoot the second plate with a slight spread to minimise registration problems. (This could

also be done at the negative making stage). For best results make single passes of both colours, rather than printing both colours at the same time.

The other approach to printing on dark stock is to use metallic inks. This, of course, limits the colours to gold or silver, but these inks have tremendous opacity because the metallic particles in the ink are in the shape of flat leaves or flakes which overlap each other and effectively block out the underlying surface with a metal shield of solid aluminum (silver) or brass (gold). Van Son's Unipak Silver and Golds do an excellent job of covering and they are particularly effective when used on coated and enamel stocks.

There is still another situation in which opaque inks can solve a printing problem. It can eliminate or at least minimise *mechanical ghosting* that sometimes occurs when printing heavy solids. These "ghosts" are unwanted areas in a printed solid that are slightly lighter or darker than the rest of the printing. They are caused by the mechanical limitations of the press ink distribution system. A portion of the surface of a form roller may be momentarily "starved" or depleted of ink because it has just transferred some of its ink to a corresponding surface of the plate, usually bold type. Before it has a chance to get more ink, the form roller must ink another adjacent portion of the plate, but has less ink to do so, and lays down a thinner ink film. This results in an uneven ink coverage in which the former printed area may be visible in the latter printed area as a lighter "ghost" image.

Reverse type in solids that are adjacent to another solid above or below can result in faintly darker images of the reverse type in the other solid. Either way, these annoying ghosts are not welcomed in quality printing.

Transparent inks are quite sensitive to the conditions that cause these ghosts and a relatively tiny change in the ink film thickness in the solid printed area of transparent ink can result in a large visual colour density change.

Opaque inks do not change colour very much with changes in ink film thickness. A thick ink film of an opaque colour looks about the same shade as a thin ink film. Making an ink opaque will eliminate, or at least minimise ghosts caused by ink distribution limitations.

Some beautiful effects can be achieved by printing opaque and metallic inks on coloured stocks. Most paper companies have available a wide assortment of coloured stocks that can expand your ability to serve your printing customers in a unique and profitable way.

WHEN COLOUR FAILS TO MATCH

A colour selected from a colour card or the PANTONE® Formula Guide may not print exactly the way you expect. There are many factors involved that determine the shade of the printed colour. In most situations the colour will print the way you want it to. When it doesn't, there are a few tests you can use to determine where the problem lies.

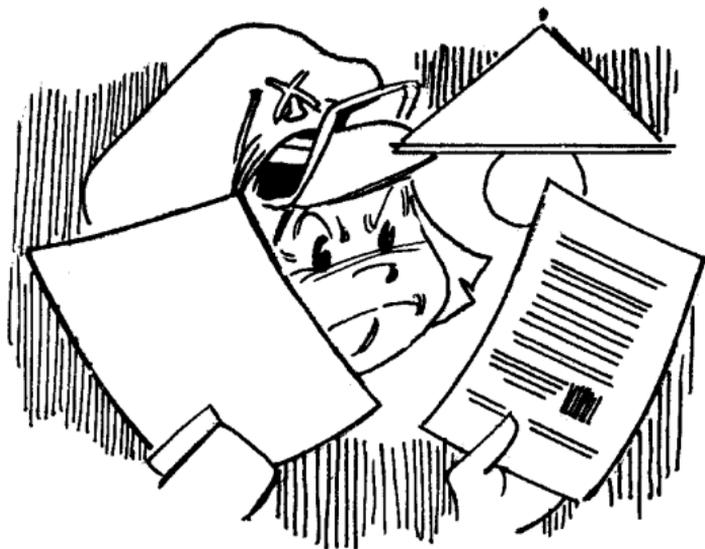
Colour of stock

The colour of the stock will affect all inks to some degree. Transparent inks are greatly affected by allowing the stock colour to show through the ink film. Colour inks that are to be printed on colour stocks should be colour-matched on the actual stock being used. Proofing the job on the actual stock to be used is recommended before going to press.

Paper absorbency

Paper absorbency is another big factor in printing with transparent inks. Ink is formulated to print a given colour by using a normal ink layer on the printed surface. If the paper is very absorbent, it will require more ink to cover the surface, especially if the surface is not smooth. When a heavier ink film is printed, the transparent ink colour will be deeper and more intense.

Again, proofing the job on the actual stock to be used is recommended before going to press.



Light source

Colour inks, when printed, can be affected by the light source used to view the printed sheet. Be sure to compare the printed colour and the original colour swatch under the same light source.

THERMOGRAPHY

The process commonly known as thermography involves printing paper in black or a colour, by offset or letterpress. The printed sheet is then ejected from the press, placed on a conveyor belt and dusted with thermographic compound powder.

The printed sheet then passes through a vacuum that collects the excess dust from the non-printed areas, or the excess dust is shaken off, leaving powder on the wet ink area.

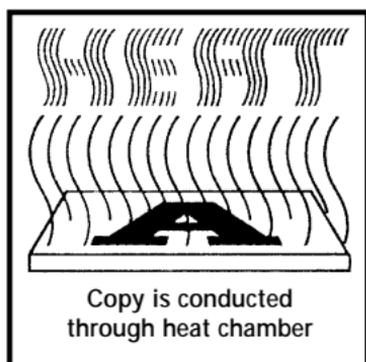
The continuous belt carries the paper through a heat chamber. This heated oven melts the thermographic



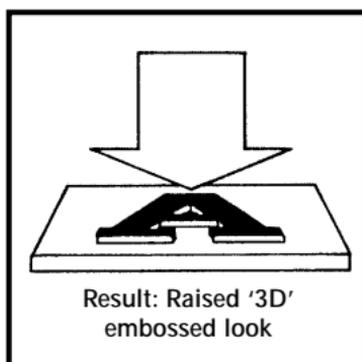
1



2



3



4

compound into the ink, giving it a three dimensional or raised appearance.

Clean, sharp printing and uniform coverage are important for quality thermography.

Van Son's Rubber Base Plus performs well with this process.

Leading thermographic equipment manufacturers recommend Van Son inks to their customers.

LASER-SAFE INKS

What are laser-safe inks?

Laser-Safe inks are specialty inks that are used to print letterheads, forms, etc. that will eventually be run through a Laser Printer or High-Speed Copier.

Why the need for laser-safe inks?

Before copiers and laser printers became a part of our everyday printing world, letterheads were printed by offset. Letters were often printed by typing on them on an office typewriter or by offset. Sometimes there was a combination of both. The body copy was printed by offset and then personalised with a typewriter. Today, we have the laser printer and the high-speed copier. Often the body copy is printed on a high-speed copier or by offset and then is personalised on a laser printer. The letterhead that has been printed by offset, must now be able to withstand the high heat generated by the laser printer or high speed copier. In some cases the temperature inside these machines can reach 400° Fahrenheit 205°C. If the ink that is used to print the letterhead is not able to withstand these high temperatures, it will actually melt and adhere to the laser printer fuser roller or high speed copier drum. If this happens, it can cause costly repairs or replacement of the fuser roller or drum.

What inks are laser-safe?

Van Son manufactures several ink formulations that are considered "Laser-Safe;" Mega-LASER, Tough Tex LR and Quickson UV Coatable.

Mega-LASER contains 100% vegetable oil vehicles, including soy. It meets the requirements of the American Soybean Association and the federal government's Vegetable Oil Printing Act of 1994. It is available in a selection off-the-shelf stock colours, an all purpose black, almost any custom matched colour, and all PANTONE Special Mixes, except Metallic Gold or Silver. A 72 hour post curing time is recommended before running the printed material through a laser printer or high-speed copier.

For an up to date product listing please contact Van Son or visit the Van Son web site.

Caution: Do not leave Mega-LASER on an idle press for more than 2 to 3 hours. Be sure to wash up immediately after printing is completed.

Note: Metallic inks, are not recommended for use in high-speed copiers or laser printers.

Tough Tex LR is a specially formulated printing ink designed for use on offset and letterpress. Tough Tex LR contains no wax and is made with fade resistant pigments. This makes it an excellent choice for printing that will be foil stamped, UV coated,

laminated, aqueous coated in-line or off-line. It is recommended for printing that will be placed outside or for printing that is destined to be run through a laser printer or high speed copier. Tough Tex LR can be used in printing on non-porous materials such as, plastic, mylar or vinyl. It is also a good choice for synthetic stocks, such as Tyvek or Teslin. Tough Tex LR is available in a variety of off-the-shelf colours. It is available in most custom matched colours and all PANTONE Colours, except metallic gold or silver.

Note: Tough Tex LR colours are made with light-resistant pigments. When mixed according to the recipe shown in the PANTONE Colour Formula Guide, the resulting shades may vary from the colour shown in the Guide.

Tough Tex LR is available in 1kg and 0.45kg cans. Contact Van Son or visit the Van Son web site for product listing.

Quickson UV Coatable is designed for the mid-to large-size press, and it accepts lamination, UV coating and foil stamping beautifully. This is one of the most popular process Quickson formulas and is available in standard colours in 2.5 kg cans

Important information

An ink need not be “wax free” in order to be “laser safe”. There are high-heat resistant waxes, as well as synthetic waxes, which are laser safe. This should be kept in mind should you get a job that actually requires wax free ink, such as foil stamping, UV coating, or lamination. Do not use just any laser safe ink, since it could contain wax which will make it the wrong choice for these applications. Check with your ink manufacturer before you proceed with the job.

MOST OFTEN ASKED LASER QUESTIONS

Q: Can I print laser safe thermographed (raised printing) stationery?

A: Ordinary thermo powders cannot be used for this purpose as they are thermo-plastic powders that will re-melt under high heat and pressure.

Q: Do you have a gold ink that my customer can run through their laser printer?

A: No. Metallic inks (gold or silver) contain metallic flakes of brass or aluminum. They get their brilliant metallic look

through a “leafing” process when printed. Each flake falls like a leaf, one on top of another giving that metallic look to the printed area. These flakes can be lifted off the sheet by the high heat and pressure of the fuser roller. This will build up on the roller resulting in costly repair or replacement of the fuser roller or copier drum.

Q: If you can't run metallic inks through a laser printer or high-speed copier, what can be done?

A: There are not a lot of choices. One of the most common things to do is to pick a colour from your PANTONE Colour Formula Guide that has a “goldish” look to it. (Many choose colours in the 120s and 130s) Have that colour mixed in a laser-safe formulation.

Another choice is to use one of the custom matched colours that Van Son has made to match the colour shade of the metallic golds and silvers in the PANTONE Colour Formula Guide without the use of metallic base colours. These colour shade matches simulate a metallic ink on an uncoated stock. These custom matches, in no way, can duplicate the PANTONE Colours so that they will have the metallic glitter of a true metallic colour. The shades of these colours are an extremely good match on uncoated stock. Following is a list of the PANTONE Colour and the corresponding Van Son custom match number. When placing an order, use the custom match number. These colours are available in the Mega-LASER formula only.

Note: Printing the non-metallic shades of Mega-LASER on a coated stock will not match the coated section of the PANTONE Colour Formula Guide.

WAX FREE INKS

In today's printing market, printers are faced with using inks designed for special applications. Most specialty inks, when viewed, appear just like any other offset ink. One of these specialty inks is described as “wax free”.

“Wax Free” inks are called for when the printed job is going to be either foil stamped, UV coated, laminated, or aqueous coated off-line.

Some printers believe that an ink must be “wax free” if the printed job is going to be put through a laser printer or high-speed copier. This is not true, although wax free inks are often used for this purpose. Inks that contain synthetic waxes or have a “high melting point” can and are often used for laser safe and high-speed copier safe printing.

Van Son manufactures two totally “wax free” formulations. Tough Tex LR, which can be run on all size offset sheet-fed presses and Quickson UV Coatable, which is primarily used on large multi-colour presses.

Tough Tex LR

Tough Tex LR is a specially formulated printing ink for offset and letterpress printing. Besides being wax free, it has several other benefits that most inks do not have. Tough Tex LR colours are made with the most light-fast pigments and will give the longest life when used for printing that will be exposed to daylight. Tough Tex LR can be used for printing that will be run through a laser printer or high-speed copier. It can be used to print on most non-porous stocks such as plastic, or vinyl. Tough Tex LR is available in a selection of off-the-shelf colours and most custom match colours, but is not available in Metallic Gold, Silver or Fluorescents. Tough Tex LR colours are made from light-resistant pigments. This makes it an excellent choice for printing that will be exposed to the sun; bumper stickers, no hunting signs, etc. For an up to date product listing, please contact Van Son or visit the Van Son web site.

Note: Tough Tex LR is made with fade resistant pigments. When mixed according to the recipe shown in the PANTONE Colour Formula Guide, the resulting shades may vary from the colours shown in the Guide.

Printing Tip: We recommend that you add 3% of Van Son Three Way Drier to the ink, especially if printing on a non-porous surface.

Caution: Do not leave Tough Tex LR on an idle press for more than two hours. Wash-up the press immediately after printing is completed.

Quickson UV coatable

This ink is fast setting with excellent gloss. It can safely be used for printing that will be foil stamped, UV coated, laminated or is destined to be run through a laser printer or high-speed copier. Quickson UV Coatable ink has excellent water resistance to eliminate emulsification. It is alkali free to eliminate bleeding. It has excellent press stability and can be aqueous coated in-line. Back-up or handling time is immediate to 2 hours for coated stocks and 2-4 hours for uncoated stocks.

Quickson UV Coatable is available in a matched set of process colours.

Technical specification

Tack rating 9.5 +/- .03 on black, 9.5 to 12.0 at 800 RPMs. Tack remains stable on press all day. Setting time on press is 6-8 hours.

UV INKS

These two letters, UV, have caused a lot of confusion in the printing industry. Van Son receives hundreds of calls each year asking for UV inks. Most of these calls do not mean "UV curing" inks, but rather inks that won't fade in the ultra violet rays of the sun, inks that can be ultra violet coated, or inks that can glow under ultra violet "black light."

Let's take these various printing requirements, one at a time. We'll start with UV curing.

"UV curing" is a process involving polymerisation, or cross linking of monomers upon exposure to UV radiation. UV curing monomers often include a sensitiser. The sensitiser absorbs UV energy which will cause the sensitiser to start a polymerisation reaction in the monomer.

The advantages of UV curing

"UV Curable" inks are made of 100% solids. There are no solvents in the ink which could be discharged into the air. This results in a noticeable reduction of air pollution. There is less space needed for the UV curing line than for a gas oven. Time is saved as material reacts immediately to UV exposure. There are less steps in the processing and handling procedures, which saves time and money. Printed material can be handled, cut and folded right after UV processing.

UV curing lamps, mounted in between each station of a multi-colour offset press will cure one colour before the next colour is laid down. This will eliminate colour bleed. It also virtually eliminates scratches or scuff marks.

Controlled temperature can be obtained where UV curing is used on heat sensitive substrates.

UV curing inks

"UV curable" inks are specialty inks. Regular Rubber Base or Oil-Base Inks are not "UV curable." "UV curable" inks contain photo initiators, cross linking monomers and inhibitors that prevent the ink from hardening into a brittle state.

UV coatings

UV coatings are used in a similar manner as Overprint Varnish or Aqueous Coatings and Liquid Lamination are used. They give a high gloss and protective coating to a finished printed job.

Unlike the other coatings, UV coatings are dried with the use of a special Ultra Violet light. The UV coating can be applied in-line or off-line. UV coatings require that the ink be "wax free." There are many different UV coatings and it is advisable that you make a test run before going into a full production run.

UV fade resistant inks

Fade resistant or light resistant inks are inks that will resist colour change when exposed to the UV rays of the sun. Printing that will be put outside or placed in a store window, bumper stickers, "no hunting" signs, posted property signs, and "vote for" signs, are some of the most common uses for outdoor printing.

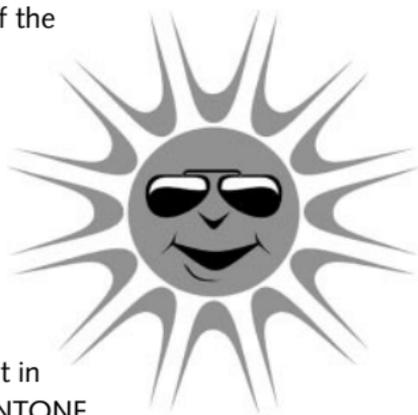
The fade resistance of an ink is based on the "wool scale" method. The system rates the fade resistance on a 0 to 8 scale. 0 is the worst and 8 is the best. There are three colours that are considered the most fade resistant in any ink formulation. They are PANTONE

Process Blue, PANTONE Green, all black inks, and any combination of these three colours. Although they are fade resistant in all ink formulations, all inks cannot be run on all substrates. You need to pick the correct ink formulation for the substrate that you are going to be printing on.

Van Son makes one ink formulation that uses the most fade resistant pigments of all our ink formulations. It is called Tough Tex LR. Most colours will last up to a year or more in average sunlight. Length of time is dependent on the circumstances. PANTONE Warm Red and PANTONE Yellow are more susceptible to fading than most colours and should be avoided, if possible.

Tough Tex LR inks are unique in that they are not only light resistant but they are wax free and can be used for jobs that require foil stamping, UV coating, liquid lamination or will be used in a laser printer or high-speed copier. They can be used to print on non-porous stocks, such as plastic, mylar, foil or vinyl.

Because Tough Tex LR colours are made from light resistant pigments, when mixing the inks according to the



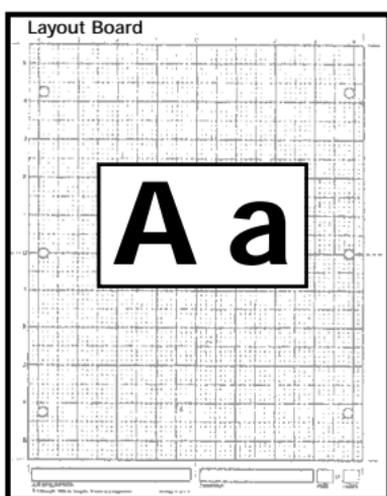
recipe shown in the PANTONE Colour Formula Guide, the resulting shades may vary from the colours shown in the Guide.

For up to date product listing please contact Van Son or visit the Van Son web site.

SECURITY INKS

Non-photo / non-repro blue

During the course of the year, the Van Son Technical Centre will have been asked these two questions hundreds of times: "Do you have a non-repro Blue?" or "Do you have a non-photo blue?" Before both black and white and colour copiers were around, when a printer asked for "non-photo" or "non-repro" blue, they were referring to a light



blue that was used to print paste-up sheets, boards or pre-printed forms. In the past, graphic artists had to position their designs by hand, making sure that they were positioned properly so that when they were photographed by a darkroom camera, they would be in the correct position when the

negatives were stripped up by the film stripper. Rubber cement, wax, and various other glues were used to adhere the artwork to the sheets.

When the paste-up sheet or board was sent to be shot on film, the darkroom camera would automatically drop the blue so that only the artwork would be picked up. Of course, through the use of filters, the lines could be picked up, but that's not what they wanted. They didn't want the lines to "reproduce" or "photograph," hence the name "non-photo blue" and "non-repro blue."

The most common blue that Van Son sold for this purpose was Tulip Tint Blue. The closest PANTONE colour to Tulip Tint Blue is PANTONE 297. You can still use these colours if you are going to use it for printing paste-up sheets, boards or pre-printed forms and you want to drop the lines. Any light shade of blue can be used. We recommend PANTONE 304. You can even mix your own by using 3% PANTONE Process Blue and 97% PANTONE Transparent White. That was the way it used to be. Today, when a person calls and asks for a "non-photo blue" or "non-repro

blue”, more information is required. Questions need to be asked. Many times they don’t want it for paste up purposes, but want to print something that someone else cannot reproduce. If that is the case, there is none. With the new colour copiers, even the lightest blue shades of colour can be reproduced. Many of the new black and white copiers have the same capability. Besides that, there are many other methods to reproduce a copy. If the customer does not want to print a grid or a pre-printed form that he/she can use for positioning purposes and drop out the blue, we suggest that they simply take the PANTONE Formula Guide and simply pick out some light shades of colour in the book. Take the actual book and try to photograph those colours. This will give you an instant answer as to what colour is the best to use.

Barcode / bank cheque inks

Printing designed to be “read” by machines rather than humans has increased dramatically over the last five years. More electronic scanners that can “read” printed type are used in commerce. This profitable printing is well within the capability of most small and medium-sized print shops, but some turn away these orders because of fear of the unknown. Hopefully this article will remove the mystery and reveal the opportunities.

MICR (Magnetic Ink Character Recognition)

Van Son Magnetic Black 68841

Van Son Magnetic Black ink is used for printing cheques, deposit slips and other financial documents. It contains magnetic iron-oxide particles, similar to those on magnetic tape. The printed characters are magnetised and then read by MICR equipment.

Van Son Magnetic Black ink can be run on all types of sheet and cold-set web presses, both offset and letterpress. The high strength magnetic density insures reliable read-outs

DEPOSIT TICKET

DATE _____ TO _____

FOR DEPOSIT ONLY

FEDERAL SAVINGS BANK

CURRENCY	
AMOUNT	
RECORD YOUR SERIAL	
TOTAL	
FOR DEPOSIT RECEIVED	
NET DEPOSIT	

65-7109/2530

BE SURE EACH ITEM IS PROPERLY ENDORSED

⑆ 25507198 ⑆ 1932 368 ⑆ 01

CHECKS AND OTHER ITEMS ARE SUBJECT TO THE TERMS AND CONDITIONS OF THE FEDERAL RESERVE'S COLLECTION AGREEMENT

without applying excessive ink. Van Son Magnetic Black ink is formulated for best results with uncoated papers normally used to be sorted electronically by MICR equipment. The characters to be read must be of the common language E-13B style adopted by the American Bankers Association or CMC7 in Europe.

Van Son Magnetic Black ink can be run on all types of paper, plastic and metal plates. It is frequently used with Electrostatic Plates when printing short runs of individual personal checks. Use a fountain solution recommended for the particular plate system you are using. (We do not recommend using electrostatic plates or fountain solutions if printing is destined to be run through a laser printer or high speed copier).

Van Son Magnetic Black ink can be left on the press overnight with the aid of an anti-skinning spray, although good printing practice is to wash the press up each night. Van Son Magnetic Black ink can also be used if finished printing is to be run through a laser printer or high speed copier. Full curing time, however, could take from 2 - 3 weeks.

Tips and precautions

When printing by offset, whenever possible, print the whole check or deposit slip with the Van Son Magnetic ink, not just the number codes. This does the job in one press-pass and speeds up the exchange of ink on the press rollers preventing the ink from becoming water-logged. It also insures that the MICR number is registered exactly in the correct place.

We recommend that you stir magnetic ink before putting it on press. Van Son Magnetic Black will not plug up the type when printing with letterpress or magnetic character numbering machines. You should avoid over-inking and too much impression squeeze to prevent bead edges from forming on the letterpress type. Van Son Magnetic Black will provide plenty of magnetic signal strength at normal ink-film thickness.

Important things to remember about printing MICR forms.

1. Numbers must be printed in correct place.
2. Numbers must be printed in the correct size
3. Numbers must be printed clean and sharp.

OCR (Optical Character Recognition)

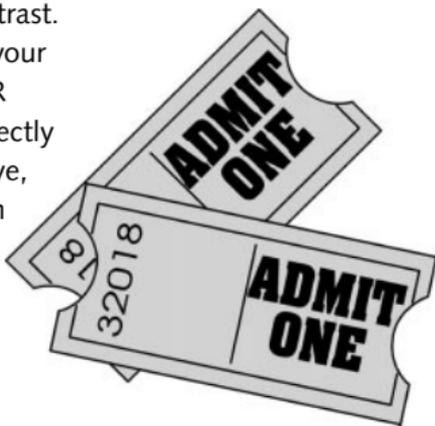
OCR inks are used to print bar codes, labels, lottery tickets,

forms and any document designed to be processed by optical scanning. These devices which have become part of practically every business, are capable of doing an incredible number of dull, error-prone, repetitive tasks with the speed of light. There are two types of OCR Inks.

Readable and non-readable OCR ink

Readable OCR inks can be detected or “seen” by the scanning device. Any carbon black ink will do. Coloured inks that contain at least 3-5% carbon black depending on the OCR Scanner used, will also work. Don’t be fooled. Dark colours, although they may appear to be dark enough to be picked up by an OCR scanner, will not, unless they contain at least 3% to 5% carbon black. The bar-code or printing should be done on white or at least light coloured paper to provide sufficient contrast.

The check-out counter of your supermarket probably has OCR laser readers that not only correctly price items in the blink of an eye, but prints the name of the item on your sales receipt. This keeps track of store inventory for each item and alerts the store manager that he is out of an item.



Non-readable OCR inks are formulated to absorb some energy in the 400-700 nanometer range of the visible spectrum to produce a colour, but not to absorb any energy in the 900 region so the scanner reads it the same as the paper. No special equipment is required of the printer, just the right ink.

Van Son has a wide range of custom matched non-readable colours, including a non-readable black. The most popular non-readable colour is red.

Caution: The press must be cleaned thoroughly, especially if the previous colour run was black.

FADE RESISTANT INKS

Van Son’s Technical Department is receiving daily inquiries from printers all over the country asking what ink they should use to print on the special weather-resistant stocks that are used to produce most of these bumperstickers that we see on the car bumper in front of us.

Bumperstickers are printed on a wide range of adhesive backed materials, from plain uncoated stocks to clay coated, cast coated or non-porous crack and peel vinyls and plastics.

When printing on paper stocks, coated or uncoated, you can use most oil base inks. However, most regular oil base inks are not made with “fade resistant” or “light resistant” pigments. In which case, if you use them, they can fade in a very short time.

If you are printing on a non-porous stock such as plastic, or vinyl, it will require special oxidation type inks. They must be made with “fade resistant” or “light resistant” pigments. Van Son manufactures a line of ink that is designed for printing on non-porous stocks and is also made with fade resistant pigments. It's called Tough Tex LR.

It should be noted that there are three colours that are considered “Light Resistant” in any ink formulation. They are PANTONE Process Blue, PANTONE Green and any Black Ink. The formula of ink that you use would depend on the stock you are going to print on.

Tough Tex LR

Tough Tex LR is not only made with fade resistant pigments and will dry on a non-porous stock, but it is also wax free. This makes it an ideal formula for printing that will be foil stamped, UV coated, laminated or if the finished product is destined to be run through a laser printer or high speed copier.

PRINTING FOUR COLOUR PROCESS ON A DUPLICATOR SIZE PRESS

When printing 4-colour process on any size press, two things are necessary for optimum results; a colour bar and a densitometer. Without them, the printer must rely on their own eye to determine correct colour, dot gain, density, slur, trap, etc.

Van Son's 4-colour process inks are a unitack system ink which allows you to run the colours in any sequence. There are preferred colour sequences for the best results, depending on the equipment used.

Single colour presses

1st pass: Print Cyan (sometimes called Process Blue). Blue can be seen easier than yellow by the human eye, and therefore, the amount of uniformity of colour across the printed sheet can be easily monitored.

2nd pass: Print Magenta (sometimes called Process Red).

This is also easy to see and control.

3rd pass: Print Yellow. When you start putting down the yellow, the picture looks a lot more like a true colour photograph and you can adjust the amount of ink across the sheet for the best overall balance, sort of like turning the knob on your TV for optimum colour.

4th pass: Print Black. It is surprising to see how little black it takes to pull the whole picture together. The danger of printing black earlier is that you could use too much.

Two colour press - two separate blankets

A popular colour sequence is Cyan-Magenta on the first pass and Yellow-Black on the second pass. For best colour trap, try to avoid heavy coverage on the same pass.

Two colour press - single blanket

Because two colours are superimposed on one blanket, the problem is cross-colour contamination. To minimise one colour contaminating another, we suggest on the first pass running Yellow on the parent press and Magenta on the colour head. On the second pass, run the Cyan on the parent press and Black on the colour head. It is also helpful to add Van Son Aqua Flo Varnish to the parent press colour and Van Son Tack Reducer to the colour head colour.

Van Son inks for process printing on a duplicator press

There are no process colour standards for the Mega-LASER Van Son ink formulation. We suggest substituting basic PANTONE colours to give the best colour reproduction possible.

- Substitute PANTONE Yellow for Proc. Yellow.
- Substitute PANTONE Process Blue for Process Cyan.
- Substitute PANTONE Rubine Red for Magenta.
- Substitute All Purpose Black for Process Black.

Do not substitute PANTONE Black For Process Black as it has no toners and tends to gray out the colour reproduction.

WATERLESS PRINTING

The 3M Company first developed a waterless plate system in the late 1960s. They called their system "Dryography," using an offset plate that required no water to keep the non-image areas clean during the run. It did have some drawbacks.

The plates were subject to scratching very easily. 3M abandoned the system and sold the patents, licence, etc., to Toray, which perfected the process control elements. Toray continues to improve the waterless plate and is one of the dominant players in waterless printing.

In September 1991, at the McCormick Place Complex, in Chicago, Presstek and Heidelberg jointly introduced the world's first waterless digital colour printing process, which uses no films, chemicals, toner or dampening solution. The system receives digital data of the fully composed pages from a broad range of colour Electronic Prepress Systems (CEPS). The pages are imaged directly on the press in register and then printed on a four-colour Heidelberg GTO-DI. This method is still in use today.

Waterless plates

Waterless plates are not like conventional metal plates. Most standard aluminum plates are pre-sensitized with a subtractive coating. Most have an aqueous coating which makes them more environmentally friendly because the primary ingredient used to develop these plates is water.

Waterless plates are multi-layered with a base of either aluminum or polyester. Subsequent layers are made of various materials, such as, a photo-polymer (UV Sensitive) layer, a silicone-rubber layer or a clear, protective-film top layer. Waterless plates can be imaged on press or off press, depending on the plate system.

Benefits of waterless printing

- No emulsification problems - excellent ink holdout on paper.
- Faster make-ready - minimum waste copies.
- More consistency of colour during the run due to lack of water.
- Fine type and detail can be achieved early.
- Very little start-up waste.
- Printed work which is rich in contrast; less dot gain in the high density areas.
- Environmentally friendly - eliminates fountain solution, paper waste, and the need to dispose of hazardous waste water.
- Extremely simple handling of the plates on the press.
- Electronic inking control system works more efficiently due to the omission of the dampening units.

Waterless printing inks

SonaDry: Van Son's waterless printing ink is designed for use with all dry offset plates and presses. It dries fast to a high gloss finish on coated paper, board and a wide variety of synthetic materials. (Test the stock before going into a full production run.) SonaDry's Critical Tone Temperature (CTT) range, between 18°C and 35°C, virtually eliminates toning, even on long runs.

There are no silicones or silicone derivatives used in SonaDry, making wet on wet printing easy to accomplish. Flexibility is maintained because this lack of silicon allows press rollers to remain conditioned for use with traditional ink and fountain solutions. High density with low dot gain in halftone makes SonaDry ideal for the best waterless reproduction.

SonaDry, unlike other waterless inks, looks like, feels like, and runs like a regular offset ink.

SonaDry is available in 15 off-the-shelf colours, including a matched set of process colours. It is also available in any PMS colour and almost any custom matched colour. It is not available in metallic or fluorescent colours. SonaDry Process and PANTONE Standard Colours are packaged in 1 kg cans.

Technical specifications

- Process colours can be run in any desired sequence, although maximum gloss potential is obtained when run Black, Cyan, Magenta, Yellow.
- Back-up or handling time is immediate to 2 hours for coated stock, 2 to 4 hours for uncoated stock.
- SonaDry cannot be left on the press overnight.
- SonaDry cannot be used on non-porous stocks.
- SonaDry can be aqueous coated in-line.
- Cobalt Drier is not recommended for use in SonaDry.
- Tack Ratings of the 4 process colours are 12.6 +/- .3 at 800 RPMs. Tack can raise up to 2 points during a press run depending on the length of run. Setting time on press is 4 to 6 hours.

INK DISPOSAL & TIPS ON ELIMINATING INK WASTE

One of the most frequent questions we are asked in the technical centre is, "Do you take back ink for recycling?" or "Do you recycle inks?" The answer is no, we do not. There are no ink manufacturers that we know of, that do.

We hope to give you some helpful hints on the proper handling and disposal of ink, and suggestions on how best to cut down the amount of your ink waste.

Vegetable oil-base inks

Most inks actually contain vegetable oils of some kind, however, the name that is sweeping the printing industry is “Soy.” In soybean oil-base inks, hydrocarbon oils are replaced with soybean and other vegetable oils. Soybean oil has several good qualities.

It is a renewable resource that lessens our dependency on petroleum products and contains virtually no VOCs (volatile organic compounds).

Most major ink companies, including Van Son, offer a line of vegetable oil-base inks containing no hydrocarbon oils. These inks have excellent printing properties on uncoated paper. By adding a small amount of drier, these inks can be used on coated stocks. Some states promote the use of soybean oil-base inks because it benefits our farming economy.

It is important to know that the presence of soybean or other vegetable oils does not make an ink “biodegradable,” nor does it enable press returns to be casually disposed. Ink contains pigment colouring, and press returns are contaminated with wash-up solvents and fountain chemistry. Vegetable oil-base inks are still considered hazardous waste.

Blending your own colours

Blending your own custom ink colours can result in less waste. The average amount of colour used on a small press job is much less than one pound of ink, usually two to four ounces.

The ability to efficiently blend small amounts of ink can be a key profit element. If you do a lot of short runs that use small amounts of special colours, a good way to avoid tying up capital and creating leftover ink is to mix your own colours and blend just enough to do jobs as they come up.

All your ink inventory will be “live,” usable material that will never have to be written off as a future loss. You can offer clients a virtually unlimited selection of colours, with no down time waiting for an ink delivery or running out of ink halfway through the job.

It takes about 15 minutes to mix 100g of ink, considerably less with practice. The PANTONE Colour Formula Guide shows over 1,000 colours available for mixing.

Work off inks

It is possible to work off ink (not press returns) into new ink for non-critical printing jobs. One of the most revealing pages in the PANTONE Colour Formula Guide shows a series of 6 blacks which have been modified with substantial amounts of colour, i.e. red, green, yellow, etc. Some look like premium blacks in spite of the addition of large amounts of coloured ink.

Try this on some of your own work. You will turn “minus dollars” into “plus dollars” for every pound of old ink that you use, and will also do your part to protect our environment.

SIMPLE WAYS TO PREVENT INK WASTE

Store ink in a warm, dry place that remains relatively free of airborne contaminants. Before opening a can of ink, wipe its outside surface with a lint free rag. If only a small amount of ink is to be removed from a can, that will then be returned to the shelf, try to remove the band of sealing tape carefully so it can be replaced later.

Use care in removing the lid. If it becomes bent, it may admit air into the container. This makes it very difficult to replace the lid later on.

Remove the cardboard donut from the can and save. Always re-cover the supply of ink in the can with a protective cover. Heavy duty Saran Wrap works well.

Note: not all plastic wraps will prevent air from coming in contact with the ink.

First, smooth the surface of ink in the can. Place Saran Wrap on top of the ink and replace the cardboard donut. Press down on the cardboard donut until it is firm against the ink.

When removing ink from the can, avoid digging deeply into the ink. If you dig deeply, it makes it difficult to reseal the ink can properly causing hard, dry ink to form a skin. If this skin is not properly removed, it will cause hickies.

Keep the lid on the can when not in use to prevent dust and dirt from landing on the surface of the ink.

Make sure the last person to use a can of ink marks the amount of ink left in the can with a red pencil line on the outside of the container. This way anyone at any future time can determine if enough ink remains to complete a proposed job of printing.

Disposable ink tubes (cartridges)

Van Son now packages Quickson Fresh in 1 kg tubes. The use of tubes eliminates virtually all ink waste, as only a trace amount of ink remains in the tube itself, thereby meeting many regulations for ink disposal. Quickson ink tubes are available in process colours and Intense Black.

CLOSEST PANTONE COLOUR TO VAN SON STANDARD COLOUR



"I just ran out of ink...thought I had another can of Amazon Green. My customer needs his job tomorrow morning and I can't get it from my dealer in time. How can I mix enough ink to finish the job?"

Van Son gets many calls like this. (See the listing of the closest PANTONE Colours to Van Son's standard ink colours.) While many of these are not exact matches, in most cases the PANTONE formula will be close enough to bail you out of the emergency. It may require running a slightly heavier or lighter ink film thickness to minimise the difference. This is also a handy check-list that frequently enables printers to run an off-the-shelf standard Van Son colour instead of using a more expensive custom colour match.

If you anticipate running out of ink before the end of the job, it's a good idea to make up the additional amount of ink before you completely run out and add it to the regular ink so that the colour difference will be even further minimised.

Caution: Many of Van Son's colours are made using coloured pigments not found in the PANTONE Basic Colours. For example, Van Son Bordeaux Red is made from a unique pigment having spectral reflection features that cannot be exactly duplicated using other pigments. Although PANTONE 221 is about as close as you can get to Bordeaux, using the PANTONE formulas, it will not match under all light sources. If you match it in daylight, it will not be a very good match under artificial light and vice versa. This peculiarity of colours to match under one light but not under another is called METAMERISM.

Van Son Colour

Amazon Green
Autumn Brown
Blue Green*
Blue Spruce*
Bordeaux Red
Brick Dust
Brilliant Blue
Brilliant Orange*
Buffalo Brown*
Cactus Green*
Caramel*
Chocolate Brown
Chrome Yellow
Cocoa Brown
Cornflower*
Dark Navy Blue*
Delft Blue
Dutch Fireball
Emerald Canary
Evergreen
Fast Blue Lake
Fast Viridine Green*
Flame Red
Forest Green
Holland Green*
Ivy Mint
Liberty Blue
Navy Blue
Niagara*
Oriental Blue*
Pale Green*
Peacock Blue*
Red Pepper
Rota Brown*
Russet Brown*
Scarlet Red
Silver Grey*
Slate Grey
Teal
Terra Cotta*
Tiger Lily
Tulip Tint Blue*
Vandijk Brown
Wedgewood Blue
Windmill Brown

PANTONE Colour

PANTONE 3298 is the nearest+ match
PANTONE 469 is an exact match
PANTONE 326 is the nearest match
PANTONE 3145 is the nearest match
PANTONE 221 is the nearest match
PANTONE 180 is the nearest match
PANTONE 300 is an exact match
PANTONE 151 is an exact match
PANTONE 439 is the nearest match
PANTONE 370 is the nearest match
PANTONE 145 is the nearest match
PANTONE 4635 is the nearest match
PANTONE 109 is an exact match
PANTONE 470 is the nearest match
PANTONE Process Blue is the nearest match
PANTONE 289 is the nearest match
PANTONE 286 is an exact match
PANTONE 185 is an exact match.
PANTONE 354 is an exact match
PANTONE 362 is the nearest match
PANTONE 2728 is the nearest match
PANTONE 354 is the nearest match
PANTONE Red 032 is an exact match
PANTONE 357 is an exact match
PANTONE 363 is the nearest match
PANTONE 347 is an exact match
PANTONE 293 is an exact match
PANTONE 273 is the nearest match
PANTONE 320 is the nearest match
PANTONE 285 is the nearest match
PANTONE 374 is the nearest match
PANTONE 633 is the nearest match
PANTONE 199 is an exact match
PANTONE 188 is an exact match
PANTONE 471 is an exact match
PANTONE 200 is an exact match
PANTONE 413 is the nearest match
PANTONE Warm Grey 11 is an exact match
PANTONE 320 is an exact match.
PANTONE 158 is the nearest match
PANTONE 165 is an exact match
PANTONE 297 is the nearest match
PANTONE 181 is the nearest match
PANTONE 294 is the nearest match
PANTONE 154 is an exact match

*Standard colours available, but not shown on the Van Son Colour Chart.

Cross-referencing with the permission of Pantone, Inc.

+Nearest does not imply a match to PANTONE Colours.

PANTONE® BASIC "0" SERIES COLOURS

We get several calls from printers trying to find the formulas for PANTONE "0" series of colours, i.e., PANTONE Red 032, PANTONE Yellow 012, PANTONE Orange 021 or PANTONE Blue 072.

The reason they can't find the formulas in the PANTONE Colour Formula Guide is that these colours are not made from blends of other colours. They are single pigment inks that Pantone, Inc. has included in their series of PANTONE books because of their special qualities.

For example, PANTONE Yellow 012 looks practically identical to PANTONE Yellow, but PANTONE 012 has much greater resistance to fading in the sun and is, therefore, a better choice for use when printing material that will be used outdoors. In like manner, PANTONE Orange 021 resembles PANTONE 165 and PANTONE Red 032 looks like PANTONE 185. PANTONE Blue 072 is almost a dead ringer for PANTONE Reflex Blue. But all have better fade resistance than their standard PANTONE counterparts.

Print buyers may like the shade of the PANTONE "0" colours, but don't need or care about the fade resistance. PANTONE "0" series colours can be closely matched (for colour only) by the following formulations.

PANTONE Yellow 012: Regular PANTONE Yellow is very close. For the particularly selective client, add 1/16 part of Warm Red to 16 parts of PANTONE Yellow.

PANTONE Orange 021: PANTONE 165 is close. Best match is 9 1/2 parts PANTONE Yellow, 6 1/2 parts PANTONE Warm Red.

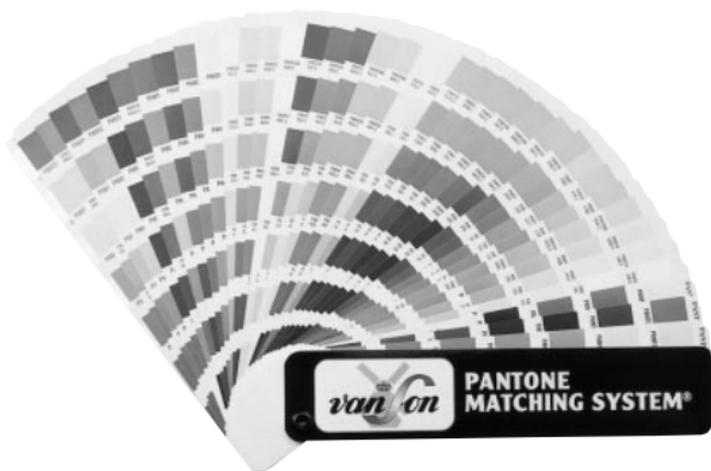
PANTONE Red 032: PANTONE 185 is close. Best match 14 1/4 parts PANTONE Warm Red, 1 3/4 parts PANTONE Rubine Red.

PANTONE Blue 072: Somewhat cleaner and redder than PANTONE Reflex Blue, but in most cases, straight PANTONE Reflex Blue is close enough. Best is 1 1/2 parts PANTONE Violet, 14 1/2 parts PANTONE Reflex Blue.

Caution: When mixing PANTONE numbered colours that call for one of the "0" series colours do not substitute imitation matches. If fade resistance is needed, specify when ordering.

THE PANTONE® MATCHING SYSTEM

The PANTONE Matching System is the best known colour mixing system in the world today. It was designed to provide colour standardisation for the entire printing industry. It also provided an array of colours to graphic designers.



The printer was able to reproduce these colours by mixing together two or more standard basic colours. When the PANTONE Colour Formula Guide first came out, there were 10 standard basic colours. With these 10 basic colours, you could mix any one of 487 different colours, not including metallic golds and silver or the 42 fluorescent colours. Each formula was printed in “parts” only. All formulas were 3 digit numbers. By following the formula provided, you could mix any colour very accurately. In the mid-1970s, Pantone added the “gram” or percentage formulas to the guide as well as the “parts”.

In the mid-1980s, Pantone introduced an up-dated PANTONE Colour Formula Guide 747XR. The number of colours available increased from 487 to 747. In that book, 4 digit numbers were added, an additional basic colour was added, PANTONE Violet, and 4 basic “0” series colours; PANTONE Yellow 012, PANTONE Orange 021, PANTONE Red 032, PANTONE Blue 072 were added. The number of fluorescent colours dropped to 7 instead of the original 42.

In 1991 Pantone introduced still another up-dated PANTONE Colour Formula Guide, the PANTONE Colour Formula Guide 1000.

This new book contained over 1000 colours, including all the old numbered colours from the 747XR series book. The fluorescent colours were increased from 7 to 14. When Pantone expanded the amount of colours that could be made with their system, some of the lighter “tints” were

difficult to get correct, not because the formula was wrong, but because some formulas required large amounts of PANTONE Transparent White. Printers who were used to weighing out the ink using "parts" or ounces, were unable to break down the formulation to where it could be weighed out accurately on their scale. For example: in the present PANTONE Colour Formula Guide, the formula for PMS 3935, in parts, is: 16 parts PANTONE Yellow, 1/8 Part PANTONE Process Blue and 160 parts PANTONE Transparent White.

This formula could be mixed as indicated, if, you needed 0.5 kgs of PANTONE 3935, which is not likely. If you tried to break down the formula, the 1/8 part of blue would become so small, that it could not be weighed accurately on the "parts" or ounce scale. Using the "gram" formula, it becomes very easy. Each "gram" formula in the book totals 100 grams which is about one fifth of a pound. Surprisingly, that is just about the amount of ink needed for most short run colour jobs. If more ink is required, just double, triple, etc. the formula.

Suggestion: Do not use old PANTONE Colour Formula Guides to judge colour reproduction.

Purchase a new one at least once a year so that you can be sure that the colour in your present book is accurate and has not faded from exposure to light.

WEIGHING AND MIXING INK

As the demand for colour printing increases, the demand for short run black and white printing shrinks. Many of the smaller print shops have had to look into new printing markets. Most are looking toward the short run colour and coated stock markets. These markets create a new challenge for the small printer; keeping costs down, yet providing the customer with a wide range of colours. Many of these printers have turned to the PANTONE Matching System® to give the customer the largest selection of colours available.

The PANTONE® Matching System, which began in 1963, is by far the most popular ink matching system in the world today. The PANTONE Matching System requires the printer to have certain material for the system, such as ink, ink scales, ink knives, empty cans, and a formula guide. All of these things can be purchased separately.

There are several methods of mixing ink by hand. Each individual will develop a method that they feel

comfortable with. We will attempt to describe two of the many methods that we have seen used. Hopefully they will be easy to follow and understand.

Mixing a small amount of ink

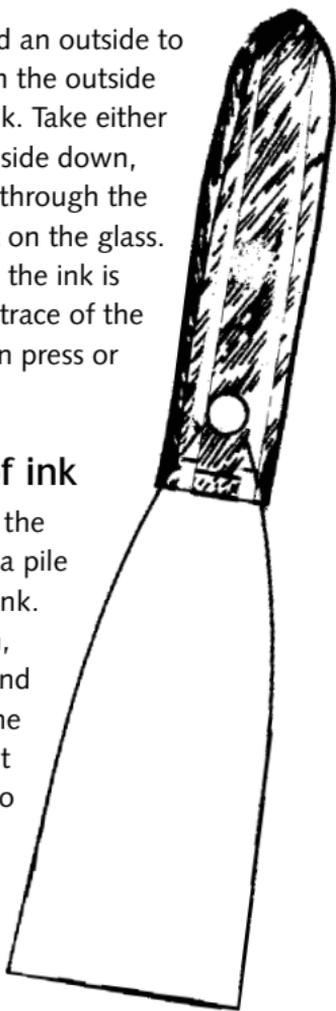
Scrape the ink off the surface that you weighed the ink on, i.e. old plate, plastic sheet, etc., on to the mixing glass. (If the subtractive method was used, ink will already be on the mixing glass. The subtractive method will be explained later in this section.)

Using the 1 1/2" ink knife and an outside to centre motion, scrape the ink from the outside into the centre to form a pile of ink. Take either palette knife and keeping the flat side down, make short zig-zag motions right through the pile of ink. The ink will spread out on the glass. Repeat as often as necessary until the ink is mixed thoroughly and there is no trace of the basic colours visible. Put the ink on press or into an empty can.

Mixing a large amount of ink

Using the 3" or 4" ink knife, use the same method of getting ink into a pile as you would a small amount of ink.

With an outside to centre motion, scrape the ink from the outside and fold into the centre. Next, take the 2" stiff blade ink knife and hold it as you would an ice pick, about to chop some ice. (Handle in palm of hand, with blade extended out.) Put blade into the centre of the pile of ink, use a stirring motion, and moving the knife blade through the pile of ink while continuing the stirring motion. When ink has spread out on the glass, use the 3" or 4" knife and keep doing this until the ink is thoroughly blended and there is no trace of the basic colours visible. The faster you stir, the faster the ink will mix. You can also incorporate the zig-zag motion used in mixing small amounts of ink, using the 2" stiff blade ink knife. Put the mixed ink on press or in an empty can. There are other variations in these two methods and it's up to the printer to find one that they feel works best for them.



Ink mixing scales

There are many different ink mixing scales in use today. Any scale that the weighing configuration can be broken down accurately into grams or ounces can be used.

The ultimate in mixing scales are the PANTONE Formula Scale 2 and the Heavy Duty PANTONE Formula Scale 2, that can weigh 100g to 22.7 kg. The scales are digital and are pre-programmed with the PANTONE formulas already in the scales' memory bank. Simply select the colour you want. Press a button and the scale will tell you how much of each colour is needed to obtain the proper finished mixed colour.

Weighing the ink

When using the "triple beam" scale, you weigh the ink by addition. First, you push all the weight indicators, including the balance cylinder to the left. Next, move the balance cylinder toward the centre of the beam until the scale is balanced. (An arrow at the far right of the parts beam will point to "0" on the frame of the scale when the scale is balanced). You then take something to weigh the ink on, i.e. an old plate, piece of plastic, etc., and place it on the scale plate. This will cause the scale to go out of balance. Take the balance cylinder and move it until the arrow again points to "0". You are ready to weigh your ink.

As an example we will use a simple formula, PANTONE 123, which calls for 15 parts PANTONE Yellow and 1 part PANTONE Warm Red.

First, you take the "parts" weight located on the 2nd beam of the scale and you move it to the 15 part mark on the beam. The scale will go out of balance. Then, using an ink knife, take the PANTONE Yellow from the can of ink and place it on the surface that you chose to weigh the ink on. Keep adding ink until the scale is balance with the arrow pointing to the "0" on the scale frame. Next, we will add the PANTONE Warm Red right on top of the PANTONE Yellow. You do not have to re-zero the scale, simply move the parts weight from 15 to 16, and then start adding the PANTONE Warm Red until the arrow on the parts beam points to the "0" on the scale frame. Your ink is now weighed and ready for mixing.

Weighing ink on a digital scale is much easier, but uses many of the techniques used to weigh ink on a manual "parts" scale.

To start, plug the scale cord into an electrical outlet and turn the scale on. (These digital scales can also be run on batteries.)

You start by placing the surface that you have chosen to weigh the ink on the scale plate. Then press the “tare” or “re-zero” button on the scale. Then press the “mode” button on the scale so that it reads the weight configuration that you want to weigh the ink in, “grams” or “ounces.” Again, press the “tare” button so the scale reads “0.0.” Using the same PANTONE 123 formula, we will weigh the ink in grams.

The formula for PANTONE 123 in grams is 93.8 PANTONE Yellow and 6.2 grams PANTONE Warm Red. Starting with the PANTONE Yellow, take an ink knife and start putting the PANTONE Yellow on the weighing surface. Keep adding until the scale reads 93.8. Push the “tare” button again. It will read 0.0. Now start putting the PANTONE Warm Red right on top of the PANTONE Yellow until the scale reads 6.2. The ink is now weighed and is ready to be mixed. This method of mixing is by the addition method.

The subtractive method is similar to this, except that you don’t need to put anything on the scale to weigh the ink on. Simply put the whole can of PANTONE Yellow on the scale and push the “tare” button. The scale will read 0.0.

Remove the ink from the can using an ink knife and place the ink on the surface you are going to mix the ink on. (We recommend an 450 x 450 x 15mm piece of glass with a finished edge.) Keep removing the ink until the scale reads 93.8.

Next put the whole can of PANTONE Warm Red on the scale and push the “tare” button. Again it will read 0.0.

Now remove the ink from the can and place it on the mixing glass. Remove enough ink so that the scale reads 6.2. Your ink is now weighed and ready to be mixed.

As you can see, this is much easier and a lot less messy. This way of mixing ink, however, requires a scale that has a weight capacity of at least one pound of ink, plus the weight of the can. That is why we recommend the Van Son V-2170 scale that has a 1.2 kg capacity.

MIXING COOL & WARM GREYS

Twenty-two new greys have been added to the PANTONE Colour Formula Guide; 11 warm greys and 11 cool greys. These shades are becoming popular with graphic artists and are being specified with increasing frequency.

Printers who blend their own coloured inks are having difficulty matching these delicate greys because of the tiny

amounts of colour in the formulas. For example, the formula for cool grey number 1 calls for about one tenth of one percent of blue, which is far beyond the capacity of the average ink scale.

Here's an easy technique to mix these inks with speed and precision. Using this method, all of the 22 warm and cool greys can be made right "on the button" the first time with no muss or fuss. The secret is to first make a Warm and Cool Grey "toner" which will be described below. These toners are then mixed with PANTONE Transparent White per the following chart to make any of the greys. These simple two-component mixes are well within the range of standard scales.

If you have a gram scale, make a hundred grams or even a kilo (1000 grams) depending on usage. If you have an ounce scale, make a pound of warm grey toner and cool grey toner per the instructions below. We suggest using Rubber Base inks to make these warm grey and cool grey toners so they won't skin-over in storage. They can be used to make both Rubber Base and CML Oil-Base greys (the two ink types are compatible with each other and the small amount of Rubber Base will not affect the characteristics if used to make CML-Oil Base Plus greys. If you prefer to buy the concentrates ready-mixed, rather than making them yourself, they can be ordered through your local Van Son dealer.

Here's how to make them yourself:

Warm grey toner L-15940

	% formula to make 100 grams
PANTONE Black	91.5
PANTONE Red 032	8.5
Total	100.0

Cool Grey Toner L-15941

	% formula to make 100 grams
PANTONE Black	70.0
PANTONE Blue 072	30.0
Total	100.0

Any of the 11 greys can be achieved by a simple blend of the toners in combination with PANTONE Transparent White using the proportions shown in the following chart:

Cool or warm grey#	Items to be mixed	% formula to make 100 grams
1	Trans White	99.6
	Toner	.4
	Total	100.0
2	Trans White	99.0
	Toner	1.0
	Total	100.0
3	Trans White	98.0
	Toner	2.0
	Total	100.0
4	Trans White	97.0
	Toner	3.0
	Total	100.0
5	Trans White	96.0
	Toner	4.0
	Total	100.0
6	Trans White	94.0
	Toner	6.0
	Total	100.0
7	Trans White	92.0
	Toner	8.0
	Total	100.0
8	Trans White	89.0
	Toner	11.0
	Total	100.0
9	Trans White	85.0
	Toner	15.0
	Total	100.0
10	Trans White	82.0
	Toner	18.0
	Total	100.0
11	Trans White	78.0
	Toner	22.0
	Total	100.0

For those who do not have a digital scale or do not want to mix the base toners to make all the cool and warm greys, the following chart will give you the formula in parts (ounces). However you will quickly learn that the formulas can become difficult to weigh if trying to mix less than a pound. In some cases even when weighing a pound can be difficult and can cause miss-matches.

Cool and warm grey formulas in parts

Warm Grey 1

PANTONE Black	1/16 part
PANTONE Red 032	1/64 part
PANTONE Trans White	15-15/16

Cool Grey 1

PANTONE Black	3/64 parts
PANTONE 072 Blue	1/64 part
PANTONE Trans White	15-15/16

Warm Grey 2

PANTONE Black	5/32 parts
PANTONE Red 032	1/64 part
PANTONE Trans White	15-7/8 parts

Cool Grey 2

PANTONE Black	1/8 part
PANTONE 072 Blue	3/64 parts
PANTONE Trans White	15-7/8

Warm Grey 3

PANTONE Black	1-9/32 parts
PANTONE Red 032	1/32 part
PANTONE Trans White	15-11/16

Cool Grey 3

PANTONE Black	1/4 parts
PANTONE 072 Blue	3/32 parts
PANTONE Trans White	15-11/16

Warm Grey 4

PANTONE Black	7/16 part
PANTONE Red 032	3/64 part
PANTONE Trans White	15-11/2

Cool Grey 4

PANTONE Black	11/32 part
PANTONE 072 Blue	5/32 parts
PANTONE Trans White	15-1/2

Warm Grey 5

PANTONE Black	19/32 parts
PANTONE Red 032	1/64 part
PANTONE Trans White	15-13/8

Cool Grey 5

PANTONE Black	7/16 parts
PANTONE 072 Blue	3/16 parts
PANTONE Trans White	15-3/8

Warm Grey 6

PANTONE Black	7/8 parts
PANTONE Red 032	5/64 parts
PANTONE Trans White	15 parts

Cool Grey 6

PANTONE Black	11/16 part
PANTONE 072 Blue	9/32 part
PANTONE Trans White	15 part

Warm Grey 7

PANTONE Black	1-11/16 parts
PANTONE Red 032	1/8 part
PANTONE Trans White	14-3/4

Cool Grey 7

PANTONE Black	7/8 parts
PANTONE 072 Blue	3/8 parts
PANTONE Trans White	14-3/4

Warm Grey 8

PANTONE Black	1-5/8 parts
PANTONE Red 032	5/32 parts
PANTONE Trans White	14-1/4

Cool Grey 8

PANTONE Black	17/32 part
PANTONE 072 Blue	7/32 parts
PANTONE Trans White	14-1/4

Warm Grey 9

PANTONE Black	2-3/16 parts
PANTONE Red 032	1-7/32 parts
PANTONE Trans White	13-5/8

Cool Grey 9

PANTONE Black	1-11/16
PANTONE 072 Blue	23/32
PANTONE Trans White	15-5/8

Warm Grey 10

PANTONE Black	2-5/8 parts
PANTONE Red 032	5/8 parts
PANTONE Trans White	13-1/8

Cool Grey 10

PANTONE Black	3/64 parts
PANTONE 072 Blue	1/64 part
PANTONE Trans White	15-15/16

Warm Grey 11

PANTONE Black	3-3/4 parts
PANTONE Red 032	5/16 parts
PANTONE Trans White	12-1/2

Cool Grey 11

PANTONE Black	2-1/64
PANTONE 072 Blue	1-1/16
PANTONE Trans White	12-1/2

PRINTING WITH OVERPRINT VARNISHES

What is overprint varnish?

Overprint varnish is a clear, soft-bodied material resembling honey. It is, in effect, a colourless coating that is applied over ink by either litho or letterpress. Van Son makes four kinds of Overprint Varnish.

Printing overprint varnish

Printing overprint varnish is just like printing regular printing inks, except when it's printed, it prints clear. There are three methods of printing overprint varnish.

Spot varnishing

This is used when you just want to print a "spot" of varnish over a particular portion of the printing for highlighting purposes. Make a plate with just the image of the area that you want to varnish. Then run the varnish as if it were a regular ink, using the press dampening system.

Overall varnishing

This method is used when the overprint varnish is to be applied to the entire sheet being printed. A litho plate is made by exposing the entire plate surface. The dampening system is not used and the varnish is allowed to print over the entire surface of the paper.

In-line varnishing

In-line varnishing is done on a multi-colour press. For example, a four colour job could be varnished in-line on the fifth unit of a five-colour press. The resulting printed surface is not quite as glossy when varnishing over wet ink as when the varnish is applied over dry ink in a separate pass. However, the savings in printing costs can be significant in long runs.

Tips on printing overprint varnish

1. Clean the press thoroughly. Overprint varnish will pull colour from unclean rollers.
2. Apply an amount of varnish to the paper about equal to a normal ink film. Excessive varnish may cause blocking (sticking in the pile).
3. Offset spray powder may be used sparingly. Excessive amounts can cause a rough surface.
4. For spot varnishing, a metal plate is preferable. For overall varnishing with no fountain solution, any type plate will be okay.

Knowing how much to use

Overprint Varnish is clear when its printed. So how do you know if your running too much or too little? Most printers can judge this without any problem because they have done it numerous times and have just developed a sense about it. However, if this is your first time, there is a method that is not really scientific, but works very well.

Adjust the ink and water balance to your normal settings if spot varnishing. If varnishing entire sheets, adjust the ink fountain keys evenly across so that a normal flow of varnish feeds through. Using about a hundred sheets of waste stock, begin running through the press. After running about 50 sheets at the film thickness you feel is correct, stop the press. Reach into the receiver tray and place your hand on the top sheet. It should feel a little sticky. Place the palm of your hand flat on the sheet and apply a little pressure. Lift your hand gently. The sheet should stick to your palm momentarily and then drop off. If it sticks to your palm and doesn't drop off, you're running too much varnish, if it doesn't stick to your hand you're not running enough. (Told you it wasn't scientific.)

Additional uses for gloss overprint varnish

Here are some valuable additional uses for Overprint Varnish that will help you.

1. Overprint varnish is often used in place of PANTONE Transparent White in PANTONE colour mixes, for coated paper, when a glossy effect is desired.
2. Oil-base inks such as Van Son's CML Oil-Base Plus, Sonagloss, Mega-LASER or Tough Tex may be added to overprint varnish in tiny amounts to tint coated paper for specialty tinted paper effects.
3. Van Son Overprint Varnish may be used as an additive to Tough Tex Inks when printing on non-porous stocks in amounts from 30g per kg to 120g per kg. This will improve the ink's flow, body, roller stability and gloss without slowing the ink drying rate or adhesion to the stock.
4. Van Son Overprint Varnish may be added to any oil-based ink in amounts of 30g to 60g to improve rub and gloss. For example, it is often used in inks to improve the rub resistance of printed labels that are subjected to scuffing in shipment.

TOP TEN INK RELATED PRINTING PROBLEMS AND HOW TO SOLVE THEM

The Van Son Technical Centre receives thousands of calls each year. The following is a list of the 10 most common ink related problems that printers ask about when they call.

1. Chalking



A condition which occurs when the ink is lacking proper varnish for the paper it is being printed on. The dried ink film has no binding to the paper and will scuff off as a dry chalky powder.

Causes:

1. Excessive vehicle or varnish penetration.
2. Stock is too acidic.
3. Stock is too absorbent.
4. Fountain solution pH is too low.
5. Ink is too soft, providing no hold-out.

Solutions:

1. Add a heavy body water resistant varnish, like Van Son's Aqua Flo Varnish #30. [V2159]
2. Check pH of paper. (Avoid high acid stocks)
3. Avoid highly absorbent stocks.
4. Adjust fountain solution pH to between 4.5 -5.5.
5. Add driers to speed drying.

Tip: If already printed, overprinting with a gloss overprint varnish can save the job.

2. Dot gain

The halftone dots increase in size. This causes the continuous tone photos to lack sharpness and often appear muddy.

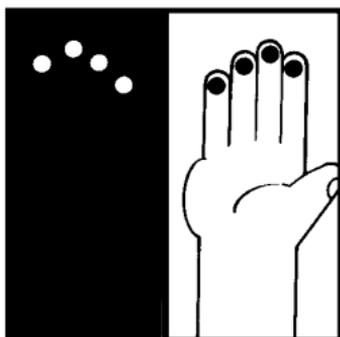
Causes:

1. Too much pressure: from either roller-to-plate, plate-to-blanket or blanket to paper.
2. Dots squashing at the point of impression.
3. Blanket or rollers too soft.
4. Fountain solution too acidic and pH or conductivity too high.
5. Running excessive amounts of ink.

Solutions:

1. Check all settings and correct to proper pressure.
2. Give ink more body by adding heavy binding varnish (Aqua Flo #30) or use higher tack inks.
3. Recondition blankets or rollers. Van Son's Easy Street works well. Replace if necessary.
4. Adjust pH and conductivity. pH between 4.5 and 5.5. Conductivity should not exceed 1500 micromhos.
5. Consult with your ink manufacturer for a more pigmented ink

3. Drying



Inadequate drying.
Printed ink film is wet or tacky for an unreasonable amount of time.

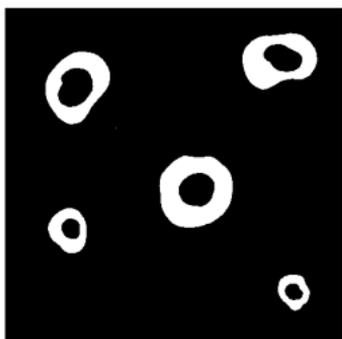
Cause:

1. Ink is waterlogged.
2. Ink film too heavy.
3. Stock is not porous enough.
4. Humidity is too high.
5. Insufficient air/oxygen circulation.
6. Stock too acidic.
7. Stock too absorbent.

Solutions:

1. Make ink more water resistant. Add 15% Van Son Aqua Flo Vanish #30 [V2159]. Add 10% Isopropyl Alcohol to the fountain solution if not using alcohol.
2. Run only enough ink to match the colour.
3. Change stock to a more porous surface stock.
4. Use a dehumidifier. Use Isopropyl Alcohol and drying stimulator in the fountain solution. Air condition shop.
5. Wind sheets. Use minimal anti-offset spray powder on non-porous stocks. Keep in small lifts.
6. Use another stock that has a more neutral pH.
7. Use another stock that has less absorbency.

4. Hickies



Imperfections in the printed area appearing as very small dark spots surrounded by a white ring. Often appear to look like tiny donuts.

Causes:

1. Foreign particles.
2. Plate particles.
3. Dried ink particles.
4. Loose paper coatings
5. Water roller cover particles.

Solutions:

1. Constantly check pressroom for dust, dirt and spray powder.
2. Check plates for loose coatings or metal shavings.
3. Make sure no dried ink skin from the ink can is transferred to the press when inking up press.
4. Check all sides of incoming paper for loose coatings. Vacuum sides of paper. Add tack reducer to ink when running paper with poor coating strength.
5. Replace worn or hardened dampening covers or dampening sleeves.

5. Ink/water balance

Frequent adjustments required on press to maintain print quality.

Causes:

1. Excessive fountain solution.
2. Fountain solution too strong or too weak.
3. Ink taking up too much water.
4. Improper dampening roller settings.

Solutions:

1. Reduce dampener ratchet setting. Only run with enough water to keep the non-image area of the plate clean. Add Isopropyl Alcohol to the fountain solution if not already using or if running dampening system that does not recommend the use of alcohol.
2. Adjust fountain solution to a pH of 4.5 to 5.5.
3. Add heavy body water repellent varnish to ink.
4. Reset water rollers. Make sure the water form roller is

driven by the vibrator roller and not the plate. Check durometer of rubber transfer rollers.

6. Picking/Linting

Picking refers to the lifting of the coating on coated stocks onto the blanket, plate and rollers. Linting refers to the pulling of fibres on uncoated stocks.

Causes:

1. Insufficient ink on rollers.
2. Too much water reaching paper.
3. Ink too tacky for the paper.
4. Pressure set too high for ink/stock combination being used.
5. Blanket too tacky.

Solutions:

1. Increase ink flow across rollers by opening ink keys or increasing ink ratchet setting.
2. Reduce dampener setting for proper water balance.
3. Reduce ink tack with proper tack reducer.
4. Reduce pressure to the impression cylinder. Check packing pressure.
5. Change blanket to a harder surface or quick release type. Use good quality water miscible blanket wash. Wash blanket normally. Then scrub blanket surface with warm to hot water one or two times. Repeat normal wash up.

7. Piling

The building up of ink on the rollers, plate or blanket.

Causes:

1. Ink becomes waterlogged, causing pigment separation due to insufficient viscosity and tack.
2. Poor pigment dispersion.
3. Rollers and/or blanket may be too soft or too hard, rollers improperly set, blanket under-packed or badly conditioned.
4. Ink too short. Lacking fluidity, excessive pigment content and excess emulsification can cause the ink to become short.
5. Running too thin an ink film.

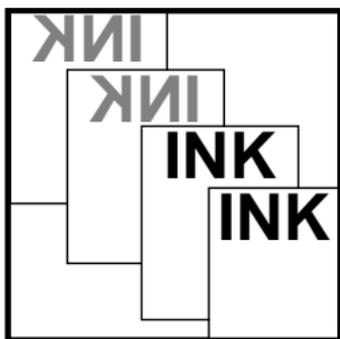
Solutions:

1. Run less water on press. Add 10% Isopropyl Alcohol to fountain solution.
2. May need to have ink re-milled. Check with ink

manufacturer about fineness of grind test.

3. Check all roller and blanket settings.
4. Add Van Son Overprint Varnish [V2174] to lengthen the flow of ink.
5. Run more ink.

8. Set off/blocking



The undesirable transfer of ink from the printed side of a sheet to the underside of another sheet in the delivery pile.

Causes:

1. Slow setting ink.
2. Carrying too much ink.
3. Insufficient spray power.
4. Overheating in the load.
5. Excessive use of driers.

Solutions:

1. Increase setting speed. Add Van Son's Three Way Drier. Consider an infrared dryer unit.
2. Use a thinner film of a stronger ink.
3. Increase powder application, use a coarser spray powder.
4. Stack in small lifts. Wind sheets.
5. Using too much drier, especially cobalt, can cause ink to skin over too quickly, causing blocking.

9. Gloss ghosting



Sometimes referred to as gas or chemical ghosting. It is the transfer of a printed image from the front of one sheet to the back of another. This type of ghosting results from one printed ink film altering the drying of a printed ink film on the adjacent sheet in the pile.

Causes:

1. Large solids printed on a back-up form.
2. Large lifts.

3. The first side is backed-up too soon after it is run.
4. The drying of ink on the second side is accelerated or retarded by fumes given off by ink on first side.

Solutions:

1. Print the heavy form first, and the light form on the back up side.
2. Run small lifts and keep them in sequence.
3. Allow first side to dry 24 hours before backing up.
4. Wind sheets before printing back-up side. Reverse sequence when running second side.
5. Run sheet through press without printing to supply fresh air to printed surface before backing up.
6. Slip sheet expensive stock when printing the second side.
7. Varnish first side immediately after printing.

10. Rubbing and scuffing

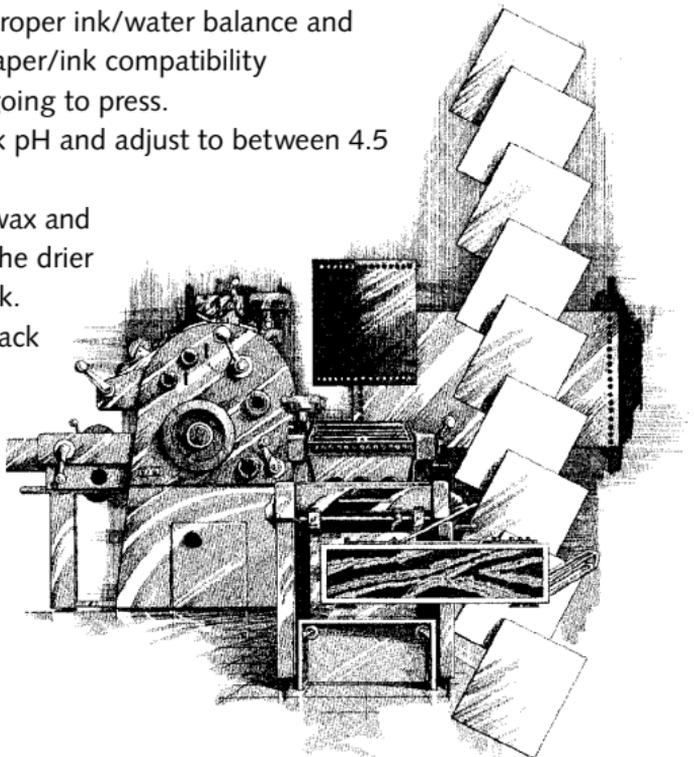
Printed ink film appears dry, but exhibits poor rub and/or scuff resistance when abraded.

Causes:

1. Too much water run on job or paper contains excessive moisture.
2. pH of fountain solution is too high.
3. Ink has dried too hard.
4. Too much ink.

Solutions:

1. Run proper ink/water balance and check paper/ink compatibility before going to press.
2. Check pH and adjust to between 4.5 and 5.5.
3. Add wax and reduce the drier in the ink.
4. Cut back on ink.



PRINTERS' SUPPLIES

Goop hand cleaner 14 oz *product ref: V 9423*

Goop hand cleaner 4.5 lb *product ref: V 9425*

Multi-purpose hand cleaner. Easily removes ink or any industrial soils from clothes. Helps condition and protect your hands.

Goop dispenser *product ref: V 9427*

Easy street 1 lb can *product ref: V 2081*

330 gm tube *product ref: V 2082*

Roller and blanket concentrated gel cleaner, deep cleans, de-glazes and conditions all at one time by extraction, not dilution. It will not damage rollers because it is non abrasive.

Gloves medium *product ref: V 2030*

large *product ref: V 2031*

Disposable plastic gloves and durable form-fitting that protect hands from harsh pressroom chemicals and printing inks.

Sonaswell 250 cc *product ref: V 5524*

For the repairing of smashes on blankets quickly and accurately, a temporary remedy which allows a run to be completed.

pH Indicator *product ref: V 2052*

pH accuracy is essential to good printing. Just dip into the fountain solution and compare resulting colour code on the dispenser.

Antiskin 400 ml *product ref: V 5026*

Printing ink preserver that forms an airtight film which prevents the absorption of oxygen as long as the film remains undamaged.

Pantone Formula Guides *product ref: V 1000*

The Pantone matching system is a universally accepted colour mixing system. It can be used by both designers and printers, for colour communication. The Pantone Colour Formula Guide shows all Pantone basic colours and mixed colours, together with the corresponding mixing formulas, on both coated and uncoated stocks.

Fount stimulator 1 ltr *product ref: V 2153*

Drier that you add to the fount solution, add 2 per cent to your premixed fount.

ADDITIVES

Sonabase 1 kg *product ref: V 4008*

Body gumm increases the viscosity of offset inks, reduces water absorption and prevents over emulsification.

Aqua varnish 30 lb *product ref: V 2159*

Stiff body varnish that increases the viscosity of the ink also helps to prevent emulsification.

Smooth Lith 1 qt *product ref: V 2150*

A liquid reducer and anti setoff compound. Prevents picking and promotes an even ink film when printing large solid areas.

Sonalin 1 ltr *product ref: V 4071*

Vegetable based reducer for Tough Tex and Mega Laser inks, reduces the viscosity of the ink.

Tack reducer 1 lb *product ref: V 2152*

Tack reducer differs from Smooth Lith in that it reduces tack only not the viscosity.

Sonatack 1 kg *product ref: VS 377*

Vegetable based tack reducer for Tough Tex and Mega Laser inks.

Liquid Colbat 1 lb *product ref: V 2163*

Surface drier which reduces drying time of the ink.

Multidrier 350 gm tube *product ref: V 4210*

1 kg *product ref: V 4215*

Multidrier is a drying agent activator. It develops oxygen in the printed ink film when in contact with water.

PRINTING VARNISHES

Sonshine 1 kg *product ref: V 5039*

Gloss varnish that is suitable for litho and letterpress. Use for spot or overall varnishing.

Matt Varnish 1 kg *product ref: V 5070*

Matt varnish can be used in the same way as Sonshine.

FOUNT SOLUTIONS

Various fount solutions are available to cover many applications, plates and presses.

Please check with Van Son's technical department or visit the web site for a current listing.

CML-OIL BASE PLUS

CML-Oil Base Plus is an oxidising oil base ink. It is available in 15 basic PANTONE colours which includes the original 11 basic colours plus the 4 new "0" series of colours. There are 25 off-the-shelf colours, an all purpose black and Opaque White, plus a balanced set of SWOP Process Colours. Most Colours and Black are available in 1kg cans. CML-Oil Base Plus is also available in any PANTONE or custom matched colour. PANTONE and most custom matched colours are shipped within 24 hours.

What makes CML so special?

CML-Oil Base Plus dries by a combination of oxidation and absorption into the stock. Its unique oil-base formula meets the special requirements of duplicators without toning, roller stripping, or ink build-up. Produces crisp, clean half-tone dots on coated paper. Excellent mileage, and scuff resistance on uncoated stocks. Works well on all type sheet fed presses with all type dampening systems.

CML-Oil Base Plus is also available in a stay-open formulation, Black Diamond, which is available in black only.

Technical specifications

Tack rating 10.5 to 11.5 at 800 RPMs.

Colours 10 to 11.5 to 13.5 at 800 RPMs.

Tack remains stable all during the day on press. Setting time on press, 6-7 hours.

For product listing please contact Van Son or visit the Van Son web site.

INFINITY

Infinity is an acrylic, oil-based ink designed for use on both coated and uncoated stocks. It will "stay open" on the press and will not skin in the can for true economy.

Infinity Acrylic will dry like an oil base ink on both coated and uncoated stocks and works well with all metal and black plate systems, and with all type dampening systems. It resists toning and emulsification, and is available in a wide range of stock colours as listed on the next page.

What are infinity acrylic's advantages?

Infinity Acrylic is formulated to resist toning and emulsification on all type plate surfaces. Infinity Acrylic works well on all types of pre-sensitized plates and can also be run successfully on all type "black plates" including 3M™, Onyx™,

SilverMaster™, and Megalith™.

Infinity Acrylic inks can be run on both coated and uncoated stocks. It will dry fast and hard like an oil based ink. It cannot be run on non-porous stocks such as foil or plastic.

Infinity Acrylic has good roller stability (non dry-up). It can be left on the press overnight with out the use of overnight spray.

Infinity Acrylic will not skin in the can. This gives you true economical savings and eliminates ink waste associated with inks that skin in the can.

Infinity Acrylic is designed to work well on small to mid-size presses with all type dampening systems.

Technical specifications

Tack rating, 12.5 on Infinity Black at 800 RPMs, 10.5 to 13.0 at 800 RPMs on colours. Tack remains stable all day on press. Setting time on press is 24+ hours depending on the amount of ink left on the ink train.

For product listing please contact Van Son or visit the Van Son web site.

RUBBER BASE PLUS

Rubber Base Plus Black 12630 was created a few years later. The main reason for this new ink was to satisfy the demands of the presses with integrated dampening systems. The addition of more water resistant varnishes gave the ink more water resistance and made the ink slightly softer in body.

Rubber Base Plus is an absorbing, non-oxidising ink. It is available in 15 PANTONE Basic colours including the 4 new "0" series colours. There are 23 off-the-shelf standard colours, plus Opaque White and 2 all purpose blacks. There are no metallic, or fluorescent colours available in the Rubber Base formulation. Most colours and black are available in 0.45 kg and 1 kg cans. All PANTONE Colours and most custom matched colours are shipped within 24 hours, freight free.

Rubber Base Plus is recommended for use on uncoated stocks only. Rubber Base Plus works well on all type pre-sensitized and electrostatic plates, and all type fountain solutions. A pH of 4.5 to 5.5 is recommended. (Choice of fountain solution would depend on the type of plates being run.)

Technical specifications

Tack rating, on the Black 10850 and 12630, 10.5 +/- .03 at 800 RPMs. Colours, 11.5 to 13.5 at 800 RPMs. Tack remains stable all during the day on press. Setting time on press is 48+ hours.

MEGA-LASER

Mega-LASER contains 100% vegetable oil vehicles, including soy. It works well on all offset and letterpress equipment. It is available in all standard PANTONE colours, as well as any custom matched colour, except Metallic Gold, Silver or Fluorescents.

What are Mega-LASER's advantages?

Mega-LASER is formulated with 100% soy and other vegetable oils and meets the American Soybean Association's specifications to carry the official Soy Association Seal. Soy and vegetable oil inks are an environmental preference of many users and buyers of printing.

Mega-LASER works well on all types of pre-sensitized plates and can also be run successfully on all type "black plates" such as SilverMaster™, Megalith™, and Onyx™. It is not recommended for use on Electrostatic Plates. Mega-LASER inks dry to a heat-resistant surface. This prevents ink smudging in laser printers and high-speed copiers. A waiting period of 72 hours is recommended to achieve maximum heat resistance. Mega-LASER inks can be run on both coated and uncoated stocks. It cannot be run on non-porous stocks such as foil and plastic.

Mega-LASER has good roller stability (non dry-up). With a normal film thickness of ink on the rollers, it has two to three hours of stay-open time, which allows you to take a normal lunch hour. It cannot be left on the press overnight, even if sprayed with a stay-open spray.

Technical specifications

Tack rating 11.5 on the Mega-LASER Black at 800 RPMs. Colours are tack rated at 11.5 to 13.5 at 800 RPMs. Tack can increase 2 points or more during a press run depending on length of run. Setting time on press is 2 to 3 hours with a normal film thickness of ink on the rollers.

For product listing please contact Van Son or visit the Van Son web site.

TOUGH TEX LR*® (LIGHT RESISTANT)

Tough Tex LR* is a specially formulated printing ink for offset and letterpress printing. It is available in the standard colours listed below, as well as any PANTONE Special Mix and custom matched colours.

Tough Tex LR* is made from light-resistant pigments. The printed colours will hold for up to a year or more without fading from sunlight.

This formulation is wax-free, making it an ideal choice for printing material that will be foil stamped, uv-coated or laminated. The cured surface is highly heat resistant, preventing smudging in high speed copiers and laser printers.

Tough Tex LR is made with 100% vegetable oils, making it a very low VOC ink. This ink has good roller stability. Slower drying is helpful, particularly when used on larger multi-colour presses. We recommend the addition of drier (Three Way or Cobalt) to Tough Tex LR on all but the most porous of stocks. Even with the addition of drier, Tough Tex LR can be left on an idle press over lunch hour without drying up.

Because of Tough Tex LR's light resistant pigments, when colours are mixed as shown in the PANTONE Colour Formula Guide, the resulting shades may vary from the colours in the Guide.

Please contact Van Son for Special Mix Pricing for Tough Tex LR. For product listing please contact Van Son or visit the Van Son web site.

QUICKSON

Whether you're running a multi-colour midsize, or a high-speed six-colour press, Quickson has a formula. You'll be amazed at the difference Quickson makes in colour, gloss, trap tolerance, setting time and scuff-resistance. You can leave it on an idle press for hours, print on all types of surfaces, and aqueous coat Quickson in-line. You'll also be happy to hear that all Quickson inks are predominantly formulated with vegetable drying oils, which meet and exceed all federal statutes.

Dense, rich pigmentation assures great mileage, and the best value you'll ever get from a process ink. There's really only two cost factors to consider when evaluating process inks. Press performance and mileage. That's why Quickson Printing Inks are the value leaders. All of our inks are formulated with dry, ground pigments and custom blended varnishes for better dispersion, colour strength and mileage.

Bottom line— Quickson goes farther, prints better, and actually saves money in the long run.

For product listing for each of the following, please contact Van Son or visit the Van Son web site.

QUICKSON SONADRY

SonaDry, Van Son's waterless printing ink, is designed for use with all dry offset plates and presses. It dries fast to a high gloss finish on coated paper, board and a wide variety of synthetic materials. SonaDry's Critical Tone Temperature

(CTT) range is between 18°C and 40°C, which virtually eliminates toning.

There are no silicones or silicone derivatives used in Quickson SonaDry, making wet on wet printing easy to accomplish. Flexibility is maintained because this lack of silicon allows press rollers to remain conditioned for use with traditional ink and fountain systems. High density with low dot gain in halftones makes it ideal for the best waterless reproduction.

SonaDry, unlike other waterless inks, looks like, feels like, and runs like a regular offset ink. SonaDry is available in 11 PANTONE Basic colours and a matched set of process colours. It is also available in any PANTONE Colour and almost any custom matched colour. It is not available in metallic or fluorescent colours. It is packaged in 1 kg cans. Special mixes are available.

Technical specifications

Tack readings of the 4 process colours 12.6 +/- .3 at 800 RPMs. Colours 11.8 to 13.2 +/- .3 at 800 RPMs. Tack remains stable all during the day on press.

Quickson Signature

This premium formulation is truly the signature ink of the Quickson line. When the printed image must exude quality, this is the formula to use. When it comes to process inks, Signature's trap and transfer properties have broken new ground. Only Van Son's unique blend of "Aqua-extraction" varnishes produce an immediate water release during ink transfer from roller to blanket. The result? A tighter dot, a crisper image and a cleaner colour. Even the finest line screens are no problem for Signature inks which are available specifically in process colours. Every colour of every batch is perfectly matched for consistency.

Both ink density and colour strength are unparalleled in the industry. And that, combined with its exceptional flow and transfer qualities, make Signature inks come alive on the paper.

Quickson Special

The original of the Quickson formulations has all the basic properties and printing benefits inherent in the Quickson formula. From its high gloss to its exceptional dot retention, Quickson Special remains a favourite of process printers everywhere.

They particularly like Quickson Special's quick setting

characteristics. Its unusual “resin-release” capability allows the solvent to absorb quickly into the printed surface so the resin pigment can set quickly on the stock to a hard scuff-resistant finish. Dot gain and dry back are virtually non-existent, and back-ups are turned around in no time.

Quickson UV Coatable

This customised Quickson formula is not a UV ink, but when printing requirements call for a “wax-free,” Quickson UV Coatable is the perfect choice. It offers all the special print and drying properties of Quickson, and it accepts lamination, UV coating and foil stamping beautifully.

Try running UV Coatable on your next annual report or high-profile brochure. You’ll see why it’s becoming one of the most popular Quickson formulas.

Quickson UV COATABLE is available in the standard process colours. It can be aqueous coated both in- and off-line.

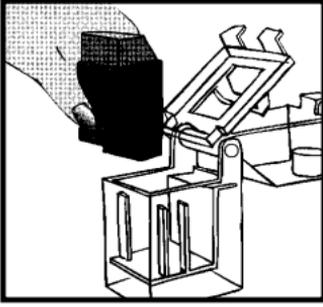
Quickson Fresh

Quickson Fresh is blended for a lower tack rating than Signature or Special.

Its chemistry provides the benefits of both, but with a very important bonus feature. Fresh can comfortably remain in the fountain, on an idle press for 48 hours, with no loss of press performance, ink flow or transfer. On long runs, you can shut down, skip the morning make-ready, and continue printing.

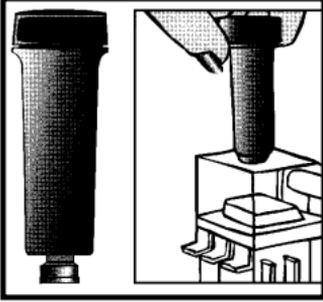
Quickson Fresh is available in the standard process colours and Intense Black.





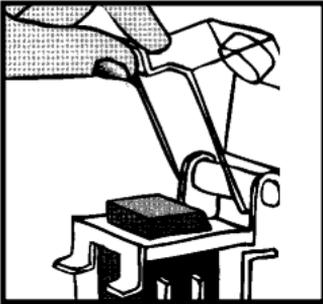
VAN SON "EASYFILL™" INK JET REFILL SYSTEM

As the computer becomes more and more a part of the American way of life, so does the ink jet printer. Those who have an ink jet printer soon realise that ink jet cartridges are costly and are designed to be used once and then discarded.



There is an answer that will help cut the cost of these replacements – The Van Son EasyFill™ Ink Jet Refill System.

The EasyFill System allows you to re-use most of the popular HP cartridges. With normal use, an ink cartridge can be refilled up to 10 times.



Each refill kit comes with simple, easy to understand, step-by-step instructions. The system kit contains a docking

station, providing extreme ease of use and no messy ink spills.

And the refill ink is made by Van Son, providing the consistent quality you have come to rely on.