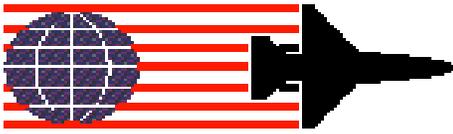


The Penetrant Professor



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Some Things Never Change

Years ago, we had a customer who complained that when he used our D-70 spray can developer, the nozzles plugged and he only got a small amount of use from each can. We discussed this with the customer and found that he had not shaken the can prior to using it. We needed to point out that this was an important step in the use of the developer because it resuspended the developer particles in the liquid carrier. The customer was a bit embarrassed when we pointed out that the label on the can had the words, “Shake before using” in eleven places. This was a classic case of a person using a product without paying attention to the directions.

We do not often see similar examples in other parts of our lives, but one recently showed up that clearly was similar. For several years, the City of Los Angeles has required homeowners in areas that are close



Do not forget!

*Mothers' Day May 8, 2011
Armed Forces Day May 21, 2011
Memorial Day May 30, 2011*

to fire prone areas to meet certain requirements of brush clearance on their properties. Last year the City added an inspection fee to this requirement. The usual notice advising that it was time to remove brush was sent to homeowners, and it was pointed out that a bill would be sent later to cover the cost of inspection.

We do not know how the average homeowner responded to this advice, but when the notice was sent out this year we could make some guesses. Opening the mail envelope, one was met with a page that was almost completely blank except that it said, in large red letters, “THIS IS NOT A BILL”. The following page had the usual instructions about the required brush clearance in regular black type, but at the top of the page and at the bottom of the page were the words, “THIS IS NOT A BILL” again in red letters.

The following two pages consisted of affidavits that one could use as

evidence that they had complied with the requirements, and on each page, again in red letters were the words, “THIS IS NOT A BILL”. We can guess that when last year’s notice was sent, a number of recipients may have not read the details about paying the fee. As a result, the City Fire Department might have been deluged with checks from people who incorrectly thought that they had to pay in advance. The old saying applies, “When in doubt, read the instructions”.



cinco de mayo

The Penetrant Professor is pleased to be able to share with readers an article on non-aqueous developers written by Pierre CHEMIN and Patrick DUBOSC, which echoes the Professors thoughts.

DPC Newsletter N° 035 – April 2011
Non-Aqueous Developer:
How To Apply A Thin, Even Layer
From A Spray Can?

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While penetrant testing has been used globally for decades, we are amazed by how few people really know how to apply the non-aqueous developer (NAD) the right way. Application is a critical step, and impacts on the reliability of the inspection. This article is intended to help every operator get the best results.

Standards, specifications and procedures require that a thin, even layer of developer be applied on the test surface. This applies to all developer forms.

Non-aqueous developers are based on a volatile solvent containing fine white developer powder and other additives for wetting, suspending and leveling effects which ensure developer performance.

The “volatile solvents” commonly used, evaporate readily within the temperature range of 10 °C (50 °F) and 50 °C (122 °F) which is the normal specification inspection range. For temperatures outside this range specialty developers are required.

Non-aqueous developers must be sprayed onto the test surface. No other technique of applying this developer form is allowed, by specification, although there are those who try to apply with a brush! Bulk NAD may be applied using dry and oil-free compressed air and paint spray guns, but the most common and convenient way is from aerosol spray cans. The issue for the opera-

tor then is how to spray a thin even film of developer?

The operator must bear in mind the following:

The NAD particles will settle on standing so it is critical to shake the developer can to resuspend the particles in the liquid.

The liquid is a solution of liquefied gas (propellant) in the solvent. The spray pressure is created by the gaseous phase of the propellant in the can. Shaking the can increases the gaseous phase in the can and ensures spraying of the contents.

It is obvious then that the first step is to thoroughly shake the can for at least 30 seconds before use.

Before spraying the developer on to the test surface the dip tube contents of the can must be expelled by spraying outside of the target area. The dip tube contents are not mixed uniformly even when the can is shaken so this material needs to be expelled before application to the test surface.

Now target the area of interest, keeping a distance in the 20/30 cm (8 to 12”) range between the nozzle and the test surface. Firmly push down the spray tip. A partially opened spray valve will not provide a uniform spray and this will result in an uneven film.

Maintain the distance, and move the hand in a smooth even rate, across the test part surface. It is better to apply a very light film with the first pass and add a second if needed. The film should only be enough so one can still see the metallic back-



ground. This is especially true for fluorescent penetrants and if one is working to French Nuclear codes. Painting the surface white can produce a thick film which will mask fine flaws. The French always say “it is always possible to add a bit more salt to a soup; but if there is too much salt in it; it is impossible to remove the excess”.

Spraying for a long time in a row may have adverse consequences. The spray can will cool down, due to the evaporation of some liquefied gas to compensate for the increased head space volume in the can as the total quantity of liquid product is reduced. This may effect the spray pressure. The particles may settle with limited agitation reducing the developer uniformity.

It is a good idea to spray for one minute maximum, then to shake the spray can before spraying further.

The quality of the layer is dependent on the quality of the developer, the quality of the spray can, and the know-how of the operator. This last point is only achieved through experience. No standard, no specification, no procedure, no software will be of much help, only hands on practice.

Other in depth information from Patrick & Pierre may be found at <http://www.ressuage-magnetoscopie-penetranttesting-magneti-esting-dpc.info>

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