1.6.2. MODERN REQUIREMENTS FOR PENETRANT TESTING MEANS

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Modern general requirements to the penetrant testing as NDT method, are:

– Sensitivity corresponding to wide variety of inspection tasks, and provided for wider range of materials than earlier, now including different plastics and light metals;

– Reliability of the inspection procedure;

– Stability of the expendables in wide range of inspection conditions;

– Safety for personnel and environment.

The sensitivity of penetrant depends mostly on its physical properties in some ideal conditions, more related to the inspection reliability, but method sensitivity depends in whole on many factors:

– Correct choice of means to solve particular inspection task;

– Quality of components and quality homogeneity from batch to batch;

– Inspection procedure reliability, i.e. required preciseness of process performance;

– Reliability of the operator.

The manufacturer can play significant role helping customer with the right choice, producing means suitable to solve majority of the inspection tasks – so that customer would buy any specific means for specific inspection tasks only, when it is impossible to use any other means, or at present not allowed by existing norms.

When choosing within the product line of a particular manufacturer, for the customer it is the best when the choice adds up to the choice of a penetrant suitable for particular inspection task, and cleaners and developers are compatible with most of penetrants of the manufacturer, and are interchangeable.

Thus, so to increase liquid penetrant inspection process reliability, means are:

– To allow operation in wide range of surface and environment temperatures;

– To be reliable enough to penetrant excess removal;

– To have high tolerance to influences within inspection process, for example to water contamination.

Reliability of the operator depends of health condition, training and education level, and fulfillment of general norms and manufacturer's recommendations for occupational health and safety. Generally, less attention is turned to this, as well as to that significant part of operator's reliability depending on health condition, finally depends of wealthiness.