

with deionized water. Use deionized water also for the first rinsing bath. Further rinsing can be carried out with tap water.

<b>Universal detergent</b>		
alkyl benzol sulphonate	1 g/l	} pH 7.5
CMC	0.05 g/l	
possibly, sodium citrate	0.5 g/l	

<b>Detergent with high foaming properties</b>		
alkyl sulphonate	1 g/l	} pH 7.5-8
CMC	0.05 g/l	
possibly, sodium triphosphosphate or sodium citrate	0.5 g/l	

#### Adequate supply of deionized water

If one has enough deionized water to prepare the detergent solution and the complete rinsing, and there is an experienced textile restorer, one can use the increased cleaning power of the various surface-active agents, depending on the amount and type of dirt on the textile. The following is a list of surface-active agents in order of increasing cleaning power:

primary alkyl sulphates  
alkyl polyglycol ether  
alkane sulphonates  
 $\alpha$ -olefine sulphonates  
alkyl aryl sulphonates  
secondary alkyl sulphonates  
fatty acid methyl ester  $\alpha$ -sulphonates

All the compounds can be combined with or without complex-builders. The chosen pH is dependent on the type of textile fibre. Wool and silk have to be washed at neutral pH. Linen and cotton can be washed, depending on the condition of the textile, at pH 8.5. In all cases it is preferable to add a small quantity of CMC (0.05 g/litre) as a dirt carrier.

#### How to obtain special surface-active agent

It is impossible to give here all the trade names of the above-mentioned surface-active agent groups. There are hundreds of these products. Many large factories which produce raw materials for the detergent industry have in their programme most of those mentioned. They are often willing to give samples for our purposes. Some of the surface-active agents can be obtained in a pure form from chemical suppliers.

On the other hand there are a number of books in which one can find the basic chemical composition of materials, with their trade names, so that one can easily discover what product is needed. Subsidiary components may not be listed.

During the interval since the first edition of this book much thought and work has been devoted to the problems of washing, both from the point of view of cleaning efficiency and the effect of water on

degraded textile fibres. Individual workshops have developed systems of their own and a wider range of additives has been tried. Some confusion has also been experienced when working out quantities of detergent per litre, as brands of detergent may differ in concentration. However there is usually an optimum concentration which may be ascertained from the manufacturer and which it is pointless to exceed. The following comments are still valid.

In the context of a busy workroom it is necessary to have two basic stock mixtures which are safe to use in almost any situation. One can have an alkaline ingredient for dealing with cellulose fibres, the other should consist of a non-ionic detergent only, plus a redeposition inhibitor, for use with wool and silk. A third detergent of an anionic nature can be very useful in circumstances where there is very heavy soiling or the presence of both protein and cellulose fibres in the object prohibit the use of an alkali to give the non-ionic detergent greater cleaning power. Made up in 10% solutions in quantity they can be diluted 10:1 with water at the time of need. However, experience has shown that solutions should not be kept standing for too long, or biological contamination will occur. Always thoroughly clean the receptacle before adding new stock.

In use, the actual quantity of detergent needed for the particular object will depend on the original weight of the object and the degree of soiling present. It is as important not to use too much as it is not to use too little as it can take a very long time to remove the surplus.

### 6.3 Practical advice for wet cleaning

The basic procedure and sequence for the application of the water and detergents applies in each case and is given in the first example. In the others, only the handling is different.

#### 6.3.1 Using a flat surface

The surface employed can vary in size from a piece of Perspex on the side of the sink (see Figure 6.1) to a specially constructed platform, made from scaffold poles and blockboard, large enough to take the Ardabil Carpet (see Part Two, section 14.1). Any

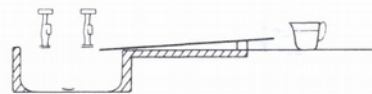


Figure 6.1 Perspex propped up on the side of a sink

surface can be provided with sides to restrict the possibility of flooding, or can be left without barriers if the drainage is free enough. It is, in fact, surprising how little tendency there is for water to spread in all directions on a horizontal surface as long as the quantity of water is controlled. Surface tension will hold it in position around the object until the board is tilted, when it will run away in the direction required without much deviation. Washing tables and sloping floors built into the workshop area are only more sophisticated versions of the same principle.

Try to ensure that the direction of the flow goes with that of the general weakness in the object. Thus:

- in a warp-faced fabric the warp wears away leaving the weft free, therefore the flow should be across the loom width;
- in a tapestry the weft tends to break, leaving the warp uncovered, therefore the flow should be along the warp.

In each case the tendency will be to close the gaps, rather than to open them even more.

Water can be introduced from a hose with a hand-held spray nozzle, from a perforated pipe suspended across the width of the washing surface, or simply from a jug if the object is small.

Whatever the nature of the washing surface the object must be given its own separate, flexible support of Melinex or polythene sheet. Failure to do so can be bitterly regretted when trying to turn the object over during the washing process or move it to another surface for drying.

#### General procedure

1. The prepared object is spread out on the supporting film as squarely and neatly as possible on the washing surface, which should be in a horizontal position (see Figure 6.2).
2. Stretch a layer of fine nylon tulle taut across any object which is delicate or fragmented, to hold it in place during rinsing and protect the fabric

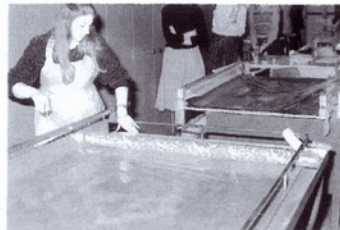


Figure 6.2

from the risk of abrasion by the brush or sponge during the application of detergent (Figure 6.3). It can easily be removed at any time to allow more direct contact with the object if necessary (Figure 6.4).

3. Using de-ionized water apply enough to wet out the object thoroughly and ease any distortions of the weave into a more correct position (Figure 6.5). This is easy to do on a skin of water as the fibres begin to relax (Figure 6.6). The amount of

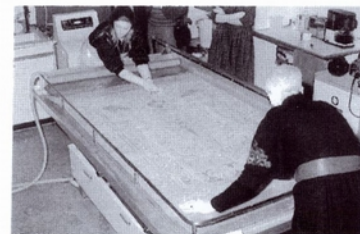


Figure 6.3



Figure 6.4

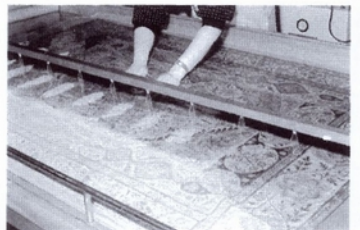


Figure 6.5