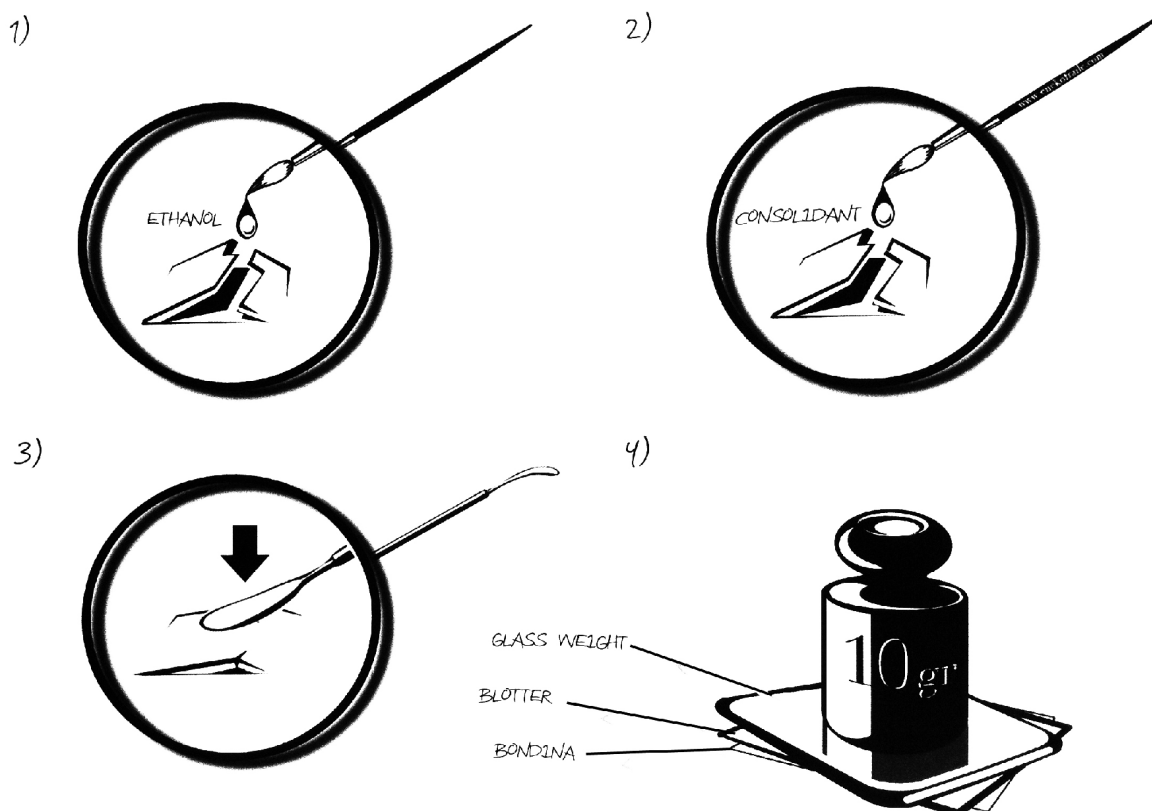


## Consolidation of Flaking Media

### **Definition**

Flaking media is a problem suffered by objects with thick layers of paint. The damage is as a result of poor adhesion between support and media or between different paint layers. The damage is best treated using the traditional brush method, where a consolidant is introduced between the detaching flake and its substrate by means of a fine brush.

### **Method**



### **Choice of consolidant**

A consolidant is nothing but a very diluted adhesive and therefore the choice is quite broad. Gelatin and its more pure form *Isinglass* have been and are employed widely due to their strong adhesive power, even when applied at low percentages.

Cellulose ethers such as methyl cellulose or ethyl hydroxiethyl cellulose (known as Bermocoll®) have also been employed extensively as consolidation agents. They have the advantage of immunity to biologic attack.

Fu-nori, a traditional sea-weed adhesive from Japan, has been introduced more recently in paper conservation. It yields one of the most matt films among all consolidants and it is specially useful for matt light colours.

Paraloid® is one of the most widely employed products when a solvent-based consolidant is called for. It can be dissolved in a wide variety of solvents, among which toluene and acetone.

# Consolidants and their concentrations

Consolidant	Group	Concentration	Solvent
Isinglass	Animal	1 %	Water + 5 % ethanol
Gelatine	Animal	2 %	Water + 5 % ethanol
Fu-nori	Vegetal	3 %	Water + 5 % ethanol
Methyl Cellulose	Cellulose ether	1 %	Water + 10 % ethanol
Ethyl Hydroxiethyl Cellulose (Bermocoll®)	Cellulose ether	2 %	Water + 5 % ethanol
Hydroxypropyl Cellulose (Klucel-G )	Cellulose ether	2 %	Ethanol
Polyvinyl Acetate (Paraloid B 72)	Acrylic resin	2%	Toluene or Aceton

## Preparation of consolidants

**GELATIN**

- 1) Weight 2 gr. of gelatin granules or sheet fragments on an electronic balance.
- 2) Mix the gelatin with 100 ml of deionised water
- 3) Let it soak for at least 30 min.
- 4) Heat the mixture in a double boiler at no more than 70°C until all gelatine goes into solution. Stir while heating
- 5) Add 5 ml of ethanol. Apply warm. (If using for aerosol double amount of water)

**BERMOCOLL®**

- 1) Take 100 ml of deionised water and adjust its pH to 6.5 - 7 by adding few drops of ammonium hydroxide (adjust pH with few drops of acetic acid if your water is too alkaline).
- 2) Weight and sprinkle gently 2 gr of Bermocoll® (EHEC) while continuously stirring.
- 3) Stir solution thoroughly for 1 h. You can use a magnetic stirrer if available.
- 4) Let it settle down overnight.
- 5) Add 5 ml of ethanol to reduce viscosity. Resulting solution: 2 %. Add 100ml of deionised water to use it for aerosol (1%).

**FU-NORI**

- 1) Tear fu-nori sheets into small fragments. Discard the darkest fragments.
- 2) Weight 3 gr. of fu-nori fragments on a balance and add 100 ml of deionised water
- 3) Leave it to soak overnight
- 4) Cook the mixture in a double boiler until the mucilage dissolves completely (aprox. 30 min.). Do not rise temperature above 80°C.
- 5) Strain solution through cotton. Resulting fu-nori is 3%. Add 300 ml of deionised water and 10 ml ethanol to use it as an aerosol (0.75 %). Does not gel on cooling. Keep in refrigerator. Warm up prior to use

## Warning!

- Please note that the localised method explained herein is adapted for media that is **flaking**, that is, reasonably chunks of paint layer underneath which the consolidant can be introduced with a brush. When media lost the chemical cohesion of the binder and becomes **powdery** there are better alternatives such as the application of a consolidant by means of an ultrasonic mister.

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