

Tip: Gellan Gum Tips

INTRODUCTION

Since attending the 2016 workshop led by the Canadian Conservation Institute and Library and Archives Canada, the conservation staff at Northwestern has been experimenting with gellan gum. While many publications feature gellan gum used in overall treatments, it can also be quite versatile for local treatments, and it has become part of the daily toolkit for things such as humidification and flattening and softening of adhesive residues.

REACTIVATION OF PRECOATED TISSUES

Staff routinely use gellan gum for reactivation of adhesive on precoated tissues. Using previously prepared tissues coated in a methyl cellulose and wheat starch paste mixture, tissue pieces are cut to size and laid adhesive side up on 3% gellan gum (fig. 1).

Several strips of tissue can be laid out to hydrate at the same time. The adhesive swells uniformly in less than a minute. The adhesive does not dry out or overmoisten, even if left on the gellan gum for a long time.

Using the gellan gum and precoated tissue combination provides a very low moisture mending option. The moisture level is low enough to pass the bathophenanthroline iron gall ink indicator test (fig. 2).

Conversely, it is also possible to lay the tissue in place on the object, and then dab it with gellan gum in situ to reactivate the adhesive (fig. 3). This technique is a little more difficult to control, but can be used when a moist tissue is too floppy or awkward to get into position or when a previously applied tissue is incompletely adhered or shiny.

CLEANING PLASTIC

Gellan gum can be used to surface clean dirt, drips, and splashes off of plastic film (fig. 4). The surface dirt can be

hard to capture due to static electricity, but it will stick to the gellan gum. The smaller splashes can be picked up directly by the gellan gum, although softening followed by swabs may be needed for the more stubborn drips. Gellan gum seems to be completely scratch-free, unless grit becomes embedded in it.

CASTING WITH SPUN POLYESTER TO EASE HANDLING

It can be difficult to handle large sheets of gellan gum for overall treatments. While 3% seems most useful for local, everyday use, a wetter concentration of 1% or 2% may be preferred for overall washing. The wetter the gel, the more difficult it is to move as a sheet.

When spun polyester is laid into the hot gellan gum, it is easier to handle. The spun polyester is laid on top of the liquid gellan gum and becomes embedded in it, providing physical support (fig. 5). If the spun polyester is laid in the tray before the gellan is poured in, the tray side of the gellan is irregular, but if the spun polyester is laid on top, the tray side is smooth.



Fig. 1. A butter dish makes a convenient container for holding a sheet of gellan gum. Strips of water-sensitive adhesive pre-coated tissue lay on the gellan gum to reactivate the adhesive.

Tips presented at the Book and Paper Group Session, AIC's 46th Annual Meeting, May 29-June 2, 2018, Houston, Texas

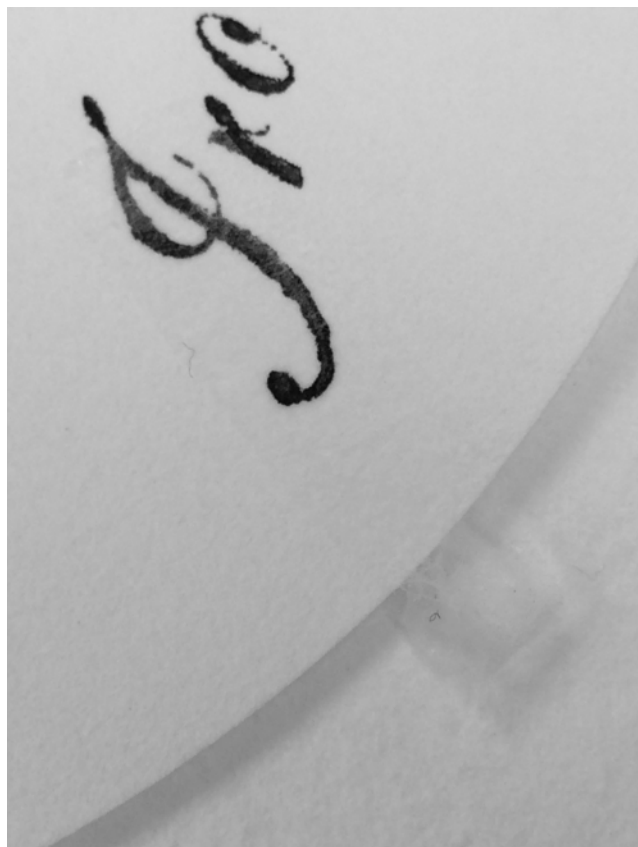


Fig. 2. This paper is impregnated with the bathophenanthroline indicator and would turn pink if iron(II) were mobilized by adequate moisture. This example utilized precoated tissue that was laid on gellan gum to reactivate prior to placing the tissue.

Use spun polyester larger than the tray in one dimension to form a tab on one side for lifting the gellan gum without disturbing the surface. A knife or scissors are needed to cut it, and it is no longer crystal clear (fig. 6).

WASHING

Gellan gum is able to draw stains out of objects. It becomes discolored when this happens, but if dirty gellan gum is placed in clean water for a few minutes, it appears colorless again. Obviously, there will be some residues of the staining left in the gellan gum, but in some cases it may be acceptable to clean and reuse the gellan gum while working on the same treatment.

DRYING

Gellan gum keeps for about 2 weeks in the refrigerator before growing mold. If unused, it can be dried for long-term storage (fig. 7). This process seems to work best with thin 3% sheets and can be used for fairly large pieces or precut into



Fig. 3. Dry precoated tissue is laid in place and touched with gellan gum to reactivate the adhesive.

smaller ones. In a dry environment, sheets will dry overnight, however it may take longer in moderate humidity or with thicker sheets. It forms a rigid, wrinkled film even if held flat while drying. Once dry, gellan gum seems to have a very long

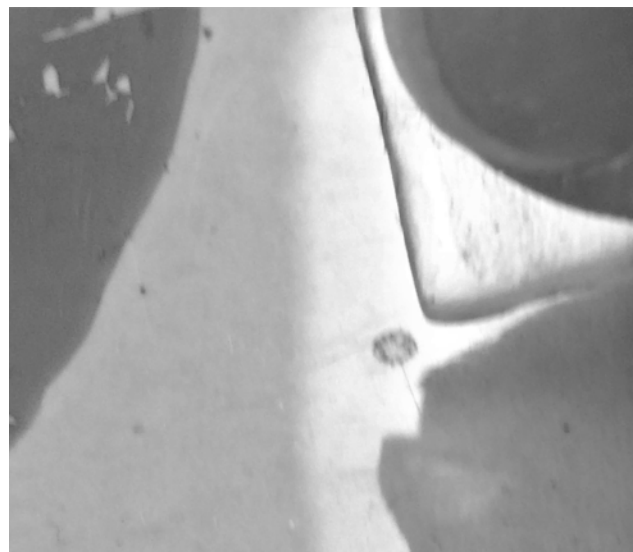


Fig. 4. Gellan gum is used to clean drip marks from plastic without abrasion.



Fig. 5. Leave a tab of spun polyester at one side to ease lifting so that the gellan gum is not pinched or damaged.



Fig. 6. The gellan gum is perfectly smooth on the tray side and large sheets are easily handled.

shelf life and can be easily stored in a file folder or toolkit and safely transported on an airplane.

REHYDRATING

Rehydrating dried pieces of gellan gum is easy—just submerge it in some water. It takes about 5–10 minutes for thin sheets to rehydrate. Regardless of how wrinkled it became while drying, it becomes flat again once rehydrated. It is never quite as smooth as the freshly made gellan gum, but it is useful for local applications.

Although people are already using gellan gum with aqueous solutions like ammonium hydroxide and the Modular

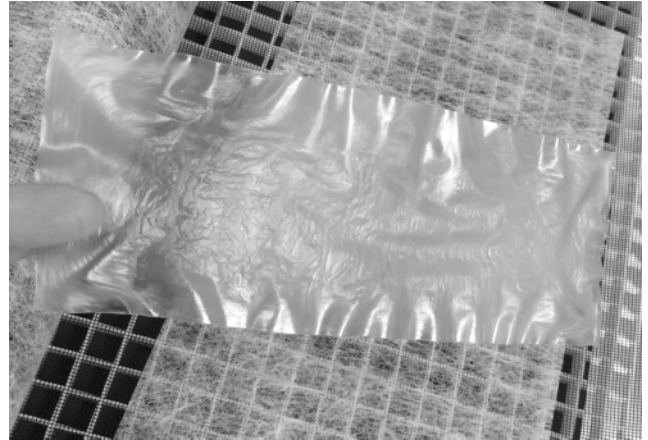


Fig. 7. A thin sheet of 3% gellan gum dried overnight on a drying rack sandwiched between spun polyester and window screening.

Cleaning System, it can absorb more of those solutions if dried out first. It may not absorb all components at the same rate and may throw off some calculations.

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