

Some Lining Techniques Using BEVA Solution and BEVA Gel: Notes from the Bench

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Some Lining Techniques Using BEVA Solution and BEVA Gel: Notes from the Bench

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BEVA adhesive products can be used in a wide range of lining processes. With BEVA Gel, cold lining can be undertaken where the painting in question is either heat, heat and pressure sensitive or where size or surface configuration preclude the use of heat. BEVA Gel can also be used successfully in conjunction with BEVA 371 for lining to a laminate system where localized or overall heating is admissible. These treatments are time-tested and have proven to be successful both in preserving the character of the painting and in maintaining long-term stability combined with reversibility. The techniques described in this note are based on methods developed by Gustav A. Berger.

Les produits adhésifs BEVA peuvent être utilisés pour toute une gamme de procédés de rentoilage. Le BEVA Gel rend possible le rentoilage à froid dans le cas de peintures sensibles à la chaleur ou à la fois à la chaleur et à la pression, ou dans le cas de peintures qui ne peuvent être rentoilées à chaud à cause de leurs grandes dimensions ou de la configuration de leur surface. De plus, le BEVA Gel peut être jumelé au BEVA 371 dans des rentoilages stratifiés où l'application de la chaleur sur l'ensemble ou sur une partie de l'oeuvre est possible. Il a été démontré que ces traitements résistent au passage du temps et réussissent à maintenir l'intégrité de la peinture tout en étant stables à long terme et réversibles. Les techniques décrites dans cette note sont basées sur des méthodes développées par Gustav A. Berger.

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Introduction

The lining procedures elaborated in the following “notes from the bench” are only a few examples, and do not exhaust the repertoire of lining procedures using BEVA products. The primary function of what follows is to introduce readers to the use of cold lining using BEVA products. It is important to note that if a painting requires prelining interventions to remediate issues such as interlayer adhesion failure, this treatment normally requires the application of heat in combination with (in specific instances) cold lining. As most paintings undergoing lining processes require some form of prelining intervention the use of either overall or localized heat treatments, where admissible, is often carried out in conjunction with cold lining.

There has been much discussion among paintings conservators over the years as to the various materials used in “cold lining” processes, that is, lining without the use of heat. The adhesives for cold linings have ranged from natural organic materials to silicone and acrylic based compounds, each with its procedural idiosyncrasies and respective benefits and drawbacks. This note on the use of BEVA Gel does not intend to discuss the comparative efficiencies or deficiencies of various materials and procedures, as comparisons would not be meaningful without the rigors of an evaluation grounded in the methodologies of scientific analysis and testing. This note will present the specific materials and techniques developed by Gustav Berger¹ that have been used and time tested in the author's studio, with minor modifications, since the late 1980s, with excellent, and, in some cases, exceptional results.

Rationale for Cold Lining

The fundamental consideration for employing a cold lining technique is the contraindication of the application of heat or pressure in the lining or mounting process. This may be due to the inability of the artwork to withstand heat or pressure during the mounting process. It may also be that the artwork is very large and the location of the substrate onto which the artwork is to be attached is hard to access, or that the substrate itself is irregular or topographically complex. In the case of some artworks, where common lining techniques onto fabric supports may be inadequate for the treatment requirements and a solid support, such as an aluminum honeycomb panel, is chosen, the use of cold lining materials and techniques can provide a system that is stable, workable, maintainable, removable and legible.²

Procedures

1. Two-Step Cold Lining (Parts “A” and “B”)

The adhesives used in cold lining as outlined in Berger's method¹ include BEVA 371 (in solution or film form) and BEVA Gel. BEVA 371 in solution form is an ethylene vinyl acetate copolymer compound in a solution of aromatic hydrocarbons. The film is composed of the same solids in a dry form. BEVA Gel is an aqueous dispersion of ethylene vinyl acetate and acrylic resins in a solution of water soluble cellulosic material. Both components are critical to the successful application of this cold lining technique.

Part "A"

BEVA 371 has been used extensively around the world as a lining adhesive since 1970 and has proven to be a stable conservation material. Its versatility allows for a broad range of treatment procedures that can include a spectrum of options from impregnation of the original support to various nap bond lining techniques. The qualities of flexibility and relatively low heat activation (65.6°C) allow for the artwork to retain its surface legibility and character without alterations caused by excessive heat or pressure. BEVA 371 is also reversible or removable depending on the method of application using heat and/or hydrocarbon solvents having sufficient aromatic content. It is important to note that, in preparation for cold lining with BEVA Gel, BEVA 371 is applied as an isolating layer to the verso of the artwork, and in specific circumstances, to the support substrate as well. These layers are applied for two purposes: i) as a functional isolating barrier between the painting and the BEVA Gel to facilitate easier removability of the lining system (this is necessary as the higher molecular weight of the BEVA Gel requires higher temperatures to activate; 5 to 7°C more than that of BEVA 371, and longer solvent exposure times to soften than the BEVA 371), and perhaps more importantly, ii) to ensure the long-term maintenance of the system. As long as heat can be tolerated by the painting, the BEVA 371 component allows any incidental separations of the artwork from the support, after mounting, to be gently heat set back into place without having to resort to injecting remedial adhesives. When the original artwork is structurally sound and robust, the application of an isolating layer of BEVA 371 to the verso of the painting canvas may be sufficient in preparation for mounting with BEVA Gel.

Part "B"

BEVA Gel, the second part of this two part system, is used as a contact adhesive in cold lining, providing good preliminary contact of the artwork onto the substrate while allowing for initial slippage for correcting alignment. BEVA 371 and BEVA Gel have excellent adhesion to one another making the adhesive system functionally compatible and strong. Once the BEVA solution (Part "A") has dried, the BEVA Gel is then applied onto this prepared surface as well as to the surface of the new support substrate. The canvas and auxiliary support are brought together when the BEVA Gel is tacky and the two held under pressure

until this has dried, usually about 48 hours. Light spraying or misting of water onto the applied BEVA Gel surfaces can keep the BEVA Gel activated when large areas are being prepared.

2. Cold Lining Used in Laminate Structures

It may be advantageous or necessary to perform preparation and lining treatments on the artwork prior to cold mounting with the two-part cold lining system on a laminate structure. If the artwork has severe planar distortions or delaminations, has a brittle or desiccated canvas support or is inherently weak, if there are significant tears or other structural deteriorations and damages, it is necessary to treat these problems individually prior to attaching the work to a semi-rigid laminate or solid support. It must also be kept in mind that the attachment of a weak canvas to a semi-rigid or solid support without prior reinforcement of the original provides for potential problems should removal be necessary. The material strength of the artwork should be capable of withstanding not only the mounting treatment but also its possible removal. In these cases, a lining "laminate sequence" may be incorporated to structurally prepare the artwork for attachment to its support.

The choice of a laminate sequence is an important one and should incorporate in its design the components that will provide adequate dimensional stability. A simple lining, the attachment of an auxiliary support consisting of a single layer of fabric, may suffice in many instances. However, when required, adequate stiffness must be incorporated into a laminate sequence to resist the internal stresses of deformed or impastoed paint layers that have been brought back into plane prior to or during the lining process. Paintings with brittle, polymerized materials that have become cupped and distorted, have the tendency, over time, to regain their deformed state if not restrained. The insertion of a Mylar interleaf of sufficient stiffness to restrain these stresses has proven effective in preventing a return to the pre-treatment state.

Materials selected for their characteristic qualities should enhance the overall integrity and function of the system when these are brought together. One system that has been successfully employed to prepare weak canvases for cold lining is the laminate sequence shown in **Figure 1**.

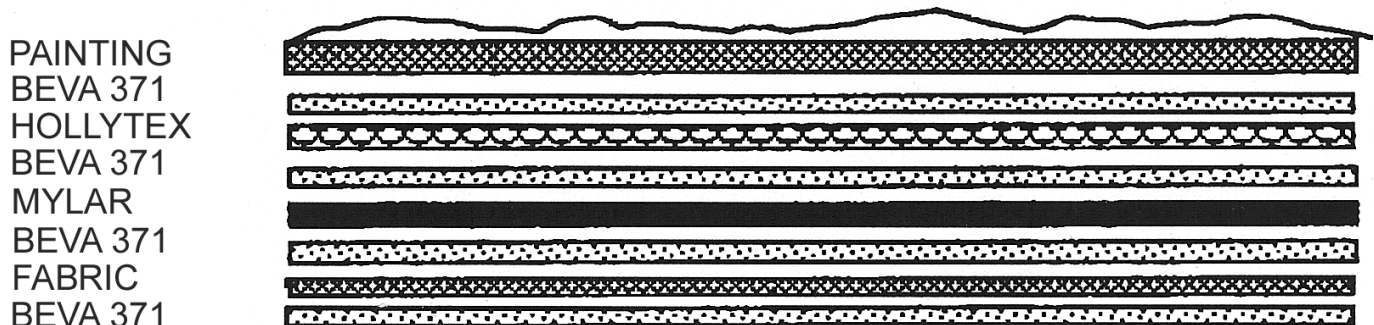


Figure 1. Laminate sequence (in preparation for mounting painting onto final lining support with BEVA Gel).

Hollytex, a dimensionally stable, non-woven polyester fabric interleaf, is used to add structural strength to the original canvas and is chosen for its lack of weave pattern. BEVA 371 can be applied to the verso of the painting or directly to the Hollytex. In some cases, where significant stiffness is required, a 10 mil Type D Mylar interleaf is inserted next. The mylar interleaf is dimensionally and materially stable and has the capacity to restrain vertical forces of cracked and cupped paint that have been brought back into plane during preparation treatments or that will be brought back into plane during lining. Generally, the Mylar insert can be coated by brush, roller, or sprayed on both sides with BEVA 371. The backing fabric should ideally be a dimensionally stable, 100% polyester monofilament, preferably with a heat set weave interface. The above laminate sequence is prepared then heat set under vacuum to present an integrated structure prior to cold lining of the laminate to its final support. When preparing for cold lining, the outside, exposed face of the backing fabric is coated with BEVA 371 to facilitate a consistent low temperature heat set adhesive layer that will serve to provide an effective remedy for future re-adhesion to the final semi-rigid or solid support, if required.

BEVA Gel is applied to the verso of the lining laminate sequence and to the surface of the substrate onto which the artwork is to be mounted using either a brush or a roller. In most cases stock solution of the BEVA Gel is used, although dilution, depending on the project in question, is possible. When the BEVA Gel on the two contact surfaces displays suitable tack the artwork is aligned and brought into contact. Any realignments or adjustments are made at this time while there is slippage within the BEVA Gel. The artwork is then pressed onto the substrate by hand or roller, working outward from the center to encourage effective seating and connection of the coated surfaces. The laminate structure is then placed under weights or vacuum. The drying period, as stated previously, is approximately 48 hours, the time factor being dependent on the contact materials and the atmospheric conditions. If a vacuum is applied, some leakage should be introduced into the system to assist in the drying. If delamination should occur following evaporation of the water from the BEVA Gel in the system, all that is required is a heated tacking iron to gently soften and activate the BEVA 371 adhesive layer. Hand pressure following the application of heat should be sufficient to rejoin the delaminated areas. If removal should become necessary, the application of heat, or a combination of heat and solvents may be used to separate the painting and part of the laminate structure from the substrate.

Summary

This lining system using BEVA Gel and BEVA 371 provides for a range of treatments using materials that are stable and versatile. When applied appropriately this method renders a significant treatment with good structural results and minimal visual interference which can be readily maintained and removed as required.

Materials

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BEVA® products may be purchased in the United States from the parent company, Conservators' Products Company, PO Box 601, Flanders, New Jersey 07836 USA (www.conservators-products.com), as well as from distributors across the country. International suppliers information can be made available upon request.

Notes and References

1. Berger, Gustav A., *Conservation of Paintings: Research and Innovations*, Archetype Publications Ltd., London, 2000.
2. In this context, legibility is an attribute of the treatment. Legibility defines the success of a treatment (in this instance, lining). Legibility precludes negative results such as weave interference or flattening of the impasto, and includes positive results such as bringing distortions back into plane.