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AN ART CONSERVATION EQUIPMENT COMPANY

EQUIPMENT, SUPPLIES, AND SERVICES FOR INSTITUTIONS AND INDIVIDUALS

WATER-SOLUBLE ACRYLIC ADHESIVES LASCAUX 303HV, 498HV, 498-20X

Technical Data:

Thermoplastic copolymer butyl-methacrylate dispersion; the two types 303HV and 498HV are thickened with acrylic butyl-ester, the type 498-20X with 20% xylene. All types have a pH 8-9 and are biocide stabilized.

Film properties:	303HV	498HV	498-20X
Min. film formation temperature (MFT)	~ 0ºC	~ +5ºC	~ 0ºC
Glass transition temperature	~ -28ºC	~ +6ºC	~ +6ºC
Elongation at break	~ 1000%	~ 400%	~ 400%
Minimum sealing temperature	~ +50ºC	~ +68-76ºC	~ 68-76ºC
Dry film	sticky	elastic hard	elastic hard

SOLUBILITY:

Water-thinnable, insoluble in water after drying. Permanently soluble in acetone, toluene, xylene, etc. Insoluble in White Spirit, V.M.& P. Naphtha, etc.

Application:

For light- and ageproof, non-crosslinking linings, marouflages, laminations, collages, etc.
For wet application or reactivation of dry film, on absorbent and non-absorbent supports such as paper and cardboard, textiles, wood and fiberplates, polyesterplates, plaster and concrete, glass and acrylic glass, aluminum etc.

Lascaux Acrylic Adhesive 303HV is extremely elastic; the dry film remains permanently tacky. Can be used as a contact-adhesive when doing hot-sealing linings.

Lascaux Acrylic Adhesive 498HV has a strong elongation at break, suitable for wet and dry applications (reactivation with solvents). Standard type for lining and marouflages.

Lascaux Acrylic Adhesive 498-20X is especially suited for strip-lining, fabric marouflages, mounting and hobby adhesive.

LINING OF PAINTINGS WITH LASCAUX ACRYLIC ADHESIVES

At the ICOM conference in Madrid, in 1972, V.R. Mehra from Amsterdam first introduced the lining of paintings with water-soluble acrylic dispersions. The so-called cold lining, together with the use of the newly developed low-pressure table (at the Greenwich conference on lining techniques 1974 presented) has in the meanwhile been adapted and further developed by many restorers.

These methods of lining do not only meet up-to-date demands of minimal intervention, meaning minimal use of adhesives, temperature and pressure, but also provide for maximum reversibility.

To aid the restorer in the lining process, Lascaux Restauro has further developed three acrylic adhesives in ready-to-use form, on the basis of Plextol pure acrylic dispersions, which have been approved for this technique worldwide. The Lascaux Acrylic Adhesives are distinguished by very good adhesion strength and elongation at break; on the other hand does a weaker peal strength give maximum facility for a later possible removal of the lining-canvas. These properties can be adjusted according to the object by using the appropriate type of adhesive.

Before the lining, a careful analysis of the painting's condition is recommended to take the necessary conservatory measures as for example: consolidation of paint and ground layers, flattening, tear mending etc. The choice of lining method depends on the conservation condition of the painting and its quality (e.g. the quality and strength of the canvas, paint film and texture). Besides, the basic question is addressed, whether a lining is necessary or whether a strip lining would be sufficient. It further has to be considered what kind of equipment is available (e.g.) hot table, low-pressure table, hot air blowers etc.).

The use of acrylic resin solutions for the consolidation and stabilization of the paint and ground layers have also proven successful. Appropriate materials can be: Plexisol P550 (Lascaux Acrylic Resin P550-40TB), a white spirit soluble butyl-methacrylate, Paraloid B-72 (in toluene/xylene), an ethyl-methacrylate copolymer soluble in aromatics (with approx. 5 – 10% solid matter).

Next to the cold-lining technique developed by V.M. Mehra, another application procedure has proven to be very useful: while during the first method the painting was pressed on the still wet adhesive, the lining in the second method proceeds after drying of the adhesive through the reactivation of the dispersion film by means of heat or solvents. When using the latter method, an undesired reaction through the water content of the adhesive can be prevented and the time limitation in the preparation of the lining is eliminated. Besides, in case of a future removal of the lining-canvas, the backside of the original remains free of adhesive residues, since the adhesive layer is closely attached to the lining-canvas.

The lining process

Prior to flattening or tear mending, consolidation of paint and ground layers, the painting is stretched onto a working frame and, when necessary, a strip lining can be made, using Lascaux Acrylic Adhesive 498-20X. The lining-canvas is stretched onto a larger frame so the first frame will fit into the second. The lining proceeds as follows: first the size of the original is marked with tape on the lining-canvas. Then a first isolation coating of Lascaux Acrylic Adhesive 498HV, diluted with water in a 2:1 mixture is applied. After the drying, one to two coatings of undiluted Lascaux Acrylic Adhesive 498HV are applied evenly, wet in wet, to obtain an even milky coating. According to the format of the object, a short hair roller, a fine porous foam roller, a soft wide brush or a silkscreen (mesh HD 500-1200) with a spatula can be used.

When using the Mehra method, the original is put on the milky adhesive surface and, under light pressure, pressed down on the low-pressure table until dry. Previously, it should be determined if the humidity of the adhesive will not affect the painting.

When using the reactivation method, the adhesive surface is wetted with xylene after complete drying (after several hours or even days or weeks). Depending on the amount of solvents used, the film is

reactivated for 5 – 15 minutes and functions as a contact adhesive. When necessary, let part of the solvent vapors evaporate and put the original on the prepared lining-canvas and keep it in plane with light pressure on the low-pressure or hot table. If insufficient adhesion should remain, wet these areas through the lining-canvas with xylene and keep them under pressure.

LASCAUX ACRYLIC ADHESIVE 303HV

This acrylic adhesive is especially suited for warm-lining as for example described by A. Ketnath. The preparation work proceeds as described above. Before applying the second coating, the first one has to be dry. Depending on the fabric texture, two coatings of adhesive should be sufficient to obtain a good adhesion bond between the fabrics. It is important to prevent the adhesive from reaching over the edges of the original and penetrating the lining-canvas, since the adhesive remains sticky when dry.

After a drying time of approx. 6 – 12 hours, the lining can be carried out with low pressure or hot table at approx. 45 - 50ºC.

In cases where greater tensile strength is needed, Lascaux Acrylic Adhesive 303HV might be too elastic (1000% elasticity). In such cases, Lascaux Acrylic Adhesive 303HV can be mixed with the harder Lascaux Acrylic Adhesive 498HV (400% elasticity) in a 1:1 to 2:1 mixture. For the heat-sealing, the temperature has to be raised to about 60ºC. It is important to determine, by means of testing, the necessary amount of adhesive, temperature and pressure in order to obtain the desired adhesion bond and tensile strength. In general, less adhesive is used for finer fabrics. The higher the sealing temperature and pressure, the stronger the adhesion.

Strip-lining

LASCAUX ACRYLIC ADHESIVE 498-20X

An alternative to lining is the strip-lining of the painting edges. In cases where the edges are damaged or too short to allow for a new stretching, the less intervening method of strip-lining can be applied.

For such work Lascaux Acrylic Adhesive 498-20X is especially suited. The adhesive is applied undiluted in an approx. 10 – 20 mm width (depending on the painting size)onto the new fabric strips and these are laid down wet on the painting edge, if necessary with some pressure and heat, with the help of a rubber roller or an iron.

Despite the water content of the adhesive a distortion of the fabric is prevented through the 20% xylene content, and a great tensile strength is provided. The peel strength is very low, a common characteristic of all Lascaux Acrylic Adhesive types, so the adhesive has to be dissolved with acetone or alcohol. The dry Lascaux Acrylic Adhesive 498-20X can, as the Lascaux Adhesive 498HV, be reactivated with xylene or toluene.

Marouflages

Lascaux Acrylic Adhesives are very suitable for the mounting of fabric or paper on rigid or flexible supports (e.g. plaster, concrete, wood, fiberplates, aluminum, rust-free iron metals, glass etc.) as well as for collages and posters.

Absorbing supports have to be previously isolated (with a 1:4 water diluted Lascaux Hydro Primer 750, 10% Paraloid B-72 solution, 10% solution of Lascaux Acrylic Resin P550-40TB), in order to prevent the adhesive from drying too fast. On non-absorbing supports as aluminum, polyester, glass etc., a first layer of diluted adhesive is applied. After drying one to two further coatings are applied, wet in wet, with the necessary amount of adhesive. Then the fabric is put on the still milky adhesive (e.g. with a rubber roller). For permanent marouflages Lascaux Acrylic Adhesive 498HV is especially suited; for extremely

water resistant and faster drying marouflages Lascaux Acrylic Adhesive 498-20X is used when the 20% xylene content of the adhesive is not hazardous.

Lascaux Acrylic Adhesives are marked with strong adhesion strength and water resistance, characteristics which are not desired in all cases (e.g. for facings, paper marouflages, fresco removal etc.).

All adhesives can be mixed in any ratio with 2 – 5% water solution of methylcellulose, carboxy-methycellulose etc. According to the purpose and use, high or low viscosity types (glues and pastes) are used; once to reduce the strong adhesion strength of the acrylic adhesive and to further improve the adhesion strength of the cellulose paste. Consequently, the water resistance of the acrylic adhesives is reduced, thus they can cause swell or even become water-soluble. For fresco removal, it is possible to mix Lascaux Acrylic Adhesive 498HV with 5% cellulose solution in a 1:3 mixture and glue it on kaliko and paper layers. By soaking this layer with water (or compress), a total removal of the facing should be possible.

Consolidation and stabilization of paint layers

Consolidations, stabilizations of paint- and groundlayers, marouflages or tear mending should be performed before the lining.

For the stabilization and consolidation of paint- and groundlayers one preferable uses: 5 – 10% solution of Lascaux Acrylic Resin P550-40TB or Paraloid B-72 in toluene or Lascaux Hydrosealer 750 (1:1 to 1:4 diluted in water). The painting is impregnated from the reverse side, or in certain cases from the front, and after drying can be put on the hot table at 40 - 50ºC or on the low-pressure table, when still humid.

For the local consolidation of paint layers the Lascaux Acrylic Adhesives 498HV and 498-20X are suited, in appropriate dilution with water of approx. 1:1 to 1:10. This way, cuppings can already be laid down through the drying of the adhesive under vacuum or heat, or also with the hot air blowers (Leister or heat spatula).

In regard to all the above-mentioned work, it is very important to adapt the appropriate method to each painting. Sensitivity to water and solubility tests aid in the determination of the type of adhesive needed and its application.

Bibliography:

V.R. Mehra: Cold lining and its scope (ICOM Copenhagen 1984)
W. Percival-Prescott: The lining cycle (Conference on lining techniques, Greenwich 1974)
W. Percival-Prescott, P. Boissonnas: Alternative to lining (ICOM Copenhagen 1984)
A.Ketnath: The application of acrylic resins and the low-pressure table for the conservation of painting on canvas (Restauro 1983/4)