BRACKETT

Adhesive ~ Padding Troubleshooting Guide

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AN INTRODUCTION TO HOT-MELT PADDING

This troubleshooting / maintenance guide is designed to help you, the padding equipment operator, to obtain maximum performance from your padding equipment and adhesive. The first section is devoted to safety issues. It includes some "Do's and Don'ts" for maintaining your personal safety and the quality of your Brackett adhesives. The next section addresses common padding problems and how solve or prevent them. The final section gives further information regarding prevention of padding adhesive failure.

You and your customers know about pad problems. Padded sheets can simply fall loose unexpectedly -- or may be glued together so tightly, sheets can't be removed without tearing. Your customers expect their pads to hold together yet come apart in an orderly fashion, i.e. first sheet first, second sheet second, etc.

There <u>really is</u> a secret to achieving great padding performance.
Brackett has the secret!

You must use ethylene vinyl acetates (EVA) resin based hot melt adhesive which have been developed and formulated specifically for padding, such as the Brackett Hot Melt Padding Adhesives. Don't be fooled and lose customers to so called "less expensive" or "It's the same thing" products. The adhesive is the least expensive part of any padding operation – Don't skimp, lost customers ARE expensive, use the best -- Genuine Brackett Hot Melt Padding Adhesives.

Happy, Profitable Padding,

ADHESIVE SAFETY PRECAUTIONS

The handling of hot melt adhesives in their molten state should be undertaken with great care abiding by all safety precautions:

To protect the operator, observe the following rules:

- ***DO: Wear appropriate clothing at all times.***
- ***DO: Wear eye protection when necessary***
- ***DO: Provide adequate ventilation to remove any hot melt fumes or vapors generated.***
- ***DON'T: Allow adhesive or padding pot to come in contact with any part of your body.***

To protect the hot melt, observe the following rules:

- ***DO: Rotate stock using oldest material first. Brackett hot melt adhesives have an estimated shelf life of about 12 months.***
- ***DO: Store adhesives at room temperature.***
- ***DO: Keep containers, premelters and glue pots covered to avoid contamination.***
- ***DON'T: Mix with other adhesives without consulting the manufacturer.***

The information in this guide pertains to all the Brackett adhesives in general. Each individual product has its own "spec" sheet available by mail, e-mail or online.

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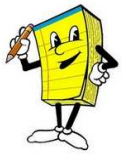
HOT MELT PADDING TROUBLESHOOTING



The following are some helpful hints ~ things to look for if you are having trouble with product failure. However, do not hesitate to call Brackett with any questions you might have concerning padding. We are the world's leading manufacturer of padding equipment.

1 ***DARK COLORED ADHESIVE***:

Excessive or prolonged heat can be responsible for burning off the anti-oxidant found in many hot melts. This can cause discoloration of the adhesive at or near the bottom of the glue pot or actually cause a buildup of burnt material or "char" on the pot. As fresh adhesive is added to the pot, the rotation of the glue roller causes this darker material to circulate up, mixing with the fresh adhesive. Hence, what started out as white or off white adhesive quickly darkens to beige or brown. If the adhesive in your hot melt pot appears dark in color, drain the pot. Also check the level of char on the pot itself. If there is a build up of char, clean the pot. *(See "GLUEPOT MAINTENANCE" Pg.7.)*
If the pot is OK, then add fresh adhesive noting batch number. If the batch is in question, i.e. out-of-date, contaminated, etc., add fresh material from another batch after draining the questionable material. (As always, please remember to use extreme care, good common sense and abide by all safety precautions when handling molten adhesive or your hot-melt pots)

2 **GLUE POT CHAR:**

Char on the surfaces of the glue pot or floating in the adhesive occurs when the hot melt adhesive has been subjected to excessive heat. This can be the result of turning up the thermostat to hasten melting of the product - leaving pots on when not in use - or by setting the glue pot temperature too high and exceeding the suggested operating range for the adhesive. Glue pots can also develop "hotspots" for one reason or another. Any of the above conditions alone or in combination can cause heat degradation of the adhesive fairly quickly.

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3 COLD CRACKING: -

Cold cracking occurs when hot melt adhesive is "heat aged". Leaving the glue pot on for extended periods of time while the machine is not being used will cause "heat aging". Also, running the padding pot temperature much hotter than the suggested operating range may cause "heat aging". This results in loss of the compounds that provide product flexibility. The manufacturer's product specification sheets provide the correct operating ranges.

4 BRITTLE LOOK: -

Overheated hot melts lose their flexibility and will be thinner in viscosity. This thinner strip of adhesive, when cured, may appear cracked, brittle or crystalline. The product MAY still have sufficient strength to hold the substrates together but in applications using chipboard backings, the chipboard could release.

5 "BUBBLES" IN THE FINISHED GLUE STRIP:

Bubbles in the finished glue line indicate excessive ambient moisture in the air or excessive moisture in the paper stock. MOISTURE and EVA (Ethylene Vinyl Acetate) resin based adhesives DO NOT mix.

6 "DUSTING":

If you are using a roughing or notching attachment on your machine, make sure the vacuum system is operating correctly and excessive dust is not getting into the glue line or glue pot.

7 ADHESIVE THICKNESS:

The mil thickness of the adhesive application is also very important to the success of any hot-melt padding job. Apply too little adhesive can "starve" the glue line. Too much adhesive and you risk improper set times. This in turn may rob the finished product of the time to set or "cure" the adhesive. Shortened set times can cause product failure. In most padding applications the adhesive thickness should stay in the 10-mil range. For perfect binding applications the correct thickness is usually in the 20-mil range.

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OTHER THINGS TO CHECK FOR:

TEMPERATURE* – *VERY IMPORTANT ! !

The adhesive temperature must be correct at the point of application. Smoke rising over the pot suggests the temperature is too high. Stringing (angel hair) can indicate the temperature is too low. The ability to easily peel the cured glue strip off the finished pad also hints the temperature at the point of application is too low. Fans or drafts of cool air over the glue pot can result in low temperature of the adhesive. Always check POINT OF APPLICATION temperature using a thermometer like Brackett's #108398 Glue Thermometer. Temperature should be checked as close to the glue roller as possible to assure that POINT OF APPLICATION temperature is within manufacturers specified range.

***PAPER STOCK* –**

Check for any changes in the type of ink (solvent based) near the top close to the adhesive area. Paper types, sizing, or coatings can all play a role in adhesive performance.

***PAPER STOCK CURING* –**

Paper stock and chipboard should be brought into the padding work area at least 24 hours prior to use – particularly during cold or humid weather.

MACHINE ADJUSTMENTS –

Are all of the machine adjustments set as prescribed by the machine manufacturer? Consult your owner's manual for the correct settings.

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PREVENTIVE MAINTENANCE

The most common hot melt adhesive problems may be avoided by following four simple steps. (Assuming that substrates: paper stock, chipboard, etc., are suitable for gluing.)

1 GLUEPOT MAINTENANCE:

Hot melt glue pots DO require routine maintenance. The walls, bottom, thermal probe(s) and heating fins in hot melt glue pots get dirty, charred and contaminated. This can cause incorrect temperature readings (usually lower temperatures) causing the operator to turn up the heat, there-by causing heat degradation of the adhesive. Should this occur, completely drain the glue pot of all old adhesive. Clean the glue pot using Brackett's Master Purge Cleaner #108503 or similar product. Repeat as necessary until all char and old adhesive are completely removed. Double check to assure that thermal probes are also free of char and old adhesive.

2 ADHESIVE MAINTENANCE:

If the adhesive begins looking dark in color, drain the dis-colored product and refill pot with fresh adhesive. Bring the new adhesive up to operating temperature then drain this product completely, observing it for clarity and cleanliness. Repeat if necessary. (When refilling the pot it is recommended that you use Brackett adhesive from a different batch. All Brackett adhesives are quality checked for compliance with strict standards for these specially formulated adhesives; but it never hurts to be doubly safe.)

3 TEMPERATURE:

Temperature plays a MAJOR roll in any successful padding/ perfect binding application. Nothing has a greater affect on product success or failure than proper operating temperature. No padding / perfect binding operation should be without a thermometer. Brackett's #108398 Glue Thermometer is a great choice. Use thermometer to check temperature as close to application point as possible. Make sure that the application temperature equals the adhesive manufacturer's recommended temperature specifications. "Heat aged" or overheated adhesives should always be replaced promptly.

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4 ***ADHESIVE THICKNESS:***

The thickness of the adhesive strip on the materials being bound is also critical in achieving successful bonding results. In most padding applications, adhesive thickness should stay in the 10-mil range. For perfect binding applications the strip should be closer to 20-mil range.

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If you are still having problems after cleaning, verifying and double-checking as suggested in this troubleshooting guide or would rather just talk to an expert, please contact our staff for further information or assistance.

OPERATOR NOTES:

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