GUIDE TO SUCCESSFUL HOT MELT EDGE GLUING

Successful bonds are achieved with Hot Melt when both surfaces are brought together while the glue is hot and full wetting of both substrate occurs before cooling and setting takes place.

The following points will help achieve this result:

1. Keep the Glue Hot
   This is achieved by maintaining glue pot temperature and application roller temperature at the recommended level.
   a) Check actual temperature at the roller regularly.
   b) Avoid adding fresh solid glue to the pot while gluing, as this can cool the product in the pot.
   c) Check pot temperature after fresh glue is added before gluing.
   d) Avoid operating in draught or cold areas which will cool the glue.

2. Pre-Heat Stock to be Glued
   Do no store board of edging in cold conditions prior to gluing i.e. below 25°C. It is recommended that edging be stored at 30-35°C for optimum results.

3. Control Speed of Operation
   We recommend a speed of 25m/min, with a minimum of 20m/min. This avoids pre-cooling of the glue before bonding.

4. Machine Alignment
   Check set up of all pressure rollers to ensure:
   a) All rollers are square to the surface so that even pressure is applied across the edging.
   b) Moderate not excessive pressure is applied to spread the glue and wet all surface area without excessive squeeze out.

5. Care of Glue
   Continuous operation is efficient, as the glue then does not burn in the pot due to overheating.
   Regular small addition of new glue does not cool the pot like a large irregular top up.
   If the gluing operation is interrupted for a period, the glue pot temperature should be dropped by 30-40°C to avoid burning of the heated glue.

6. Clean Up
   Consult Machinery Manufacturer for specific instructions. Flushing can be carried with either,
   a) Mineral Oil (Flash Point above 180°C)
   b) Paraffin Wax (Flash Point above 180°C)
      Do not exceed 150°C during flush operation. Run hot melt through unit after cleaning to be sure cleaning medium is flushed out.

7. Quantity of Glue
   A good glue film retains heat and stops premature cooling. A glue loading of 3.5-4.0 gm per lineal metre of 20mm edge strip is a guide.
   We recommend running a test strip on a regular basis to check glue coverage and bond. Peel off a test strip before cooling and check if glue has fully wet both substrates.

8. Timber Edging
   Hot Melt bonding of timber edging is common, however there are more stringent requirements than with PVC or Melamine. See the attached article “Some difficulties with lipping panels on a hot melt edgebander”.

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HOT MELT TROUBLE SHOOTING

General Considerations

In any adhesive application, it is essential that proper wetting of the substrates occur. It is therefore necessary to be aware of the conditions that favour good setting.

Best wet-out occurs on the substrate that the adhesive is applied to. Hot melts often set so fast that the wet out of the second substrate becomes a problem. Therefore, the adhesive should be applied to the substrate that is the more difficult of the two to bond.

Higher application temperatures improve wet-out because the resulting lower viscosities make for better penetration, and the extra heat that is available helps burn through coatings and ensures that the adhesive is still fluid when the second substrate is applied. However, increased temperatures also result in quicker degradation and a slower speed of set of hot melts.

A large volume of hot melt applied to a substrate will give better wetting than a small volume because it retains its heat for a longer period of time. However, this also results in a slower rate of set and poorer mileage.

A hot melt applied in the form of a bead retains its heat longer than a flat ribbon (wiped on seam) or dots of the same quantity. A single large bead of hot melt retains its heat longer than several small beads of the same volume. For maximum wet out, a single bead of a given quantity of hot melt is best. However, this is also the condition under which the hot melt has the slowest speed of set.

Heavy compression squeezes out a hot melt bead to a wider and thinner film with a resulting drop in temperature. Poor wet-out may thus result, especially of the second substrate. Moderate and steady compression is best for optimum wetting. Again, this is also the condition under which the hot melt has the slowest speed of set.

Minimum time for closure gives the most favourable condition for maximum wet-out. Operations where the second substrate is mated immediately after glue application and maximum production speeds create this favourable condition.

Variables that can be manipulated in a Field Run

Variable A-Application Temperature (nozzle, head, wheel temperature)
Increase in application temperature:

1. Decreases application viscosity
2. Increases open time of hot melt
3. Improves wetting
4. Decreases speed of set
5. Decreases tendency to string
6. Increases thermal degradation

Decrease in application temperature does the opposite.

Variable B Pot Temperature
Increase in pot temperature:

1. Decreases viscosity of glue in reservoir
2. Speeds up melt down
3. Facilities pumping (reservoir pump)
4. Increases thermal degradation

Decrease in pot temperature does the opposite.

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Variables that can be manipulated in a Field Run (cont'd)

Variable C Volume of Hot Melt Applied
Increase in volume applied:

1. Increases open time of hot melt
2. Improves wetting
3. Decreases rate of set
4. Decreases mileage

Decrease in volume applied does the opposite.

Variable D Amount of Compression
Increase in amount compression:

1. Increases rate of set
2. Decreases wetting

Decrease in amount of compression does the opposite.

Variable E Production Speed
Increase in production speed:

1. Reduces open time requirement of hot melt used
2. Improves wetting
3. Shortens compression time and thus raises speed of set requirement of hot melt used
4. Lowers thermal stability requirement of hot melt used in continuous runs

Decrease in production speed does the opposite.

Edgebanding

Edgebanding is the application of a strip of material to the edge of a panel. The panel is normally particle board or medium density fibre board (MDF) and in most cases this panel is pre-faced with melamine or other laminates.

The edge strip is mainly melamine or PVC, however it can also be other plastics, natural timber veneer or solid timber edging.

Most melamine edging is supplied pre-etched or pre-primed. Melamine edging is common as it is made by the melamine manufacturers to match the colour of their board.

Most edging is not pre-glued and hence the need for hot melt glue for use in fast application of edging to panel.

Edgebanding is carried out in large and small manufacturing sites, as it can only be done once the panel is cut to size e.g. for cupboard doors, table tops etc.

Solid timber edging is commonly used on tabletops, bookshelves and large doors.

Material Safety Data Sheet available on request.