Technical Marketing Bulletin

Managing Adhesive Ooze

BACKGROUND

Pressure-sensitive adhesives can be generically defined as “a soft, viscous material that is sticky to the touch and adheres to a substrate with slight pressure.” To function, these adhesives have to maintain a balance between flow and resistance to flow. Too little flow and adhesion is reduced. Too much flow and the product can be prone to adhesive build-up on press and in application equipment, along with labels that can adhere to the backside of the liner. Sometimes, the adhesion requirement is such that flow cannot be avoided so actions must be taken to prevent failure.

PREPARING FOR SUCCESS

The ideal time to resolve potential adhesive ooze problems is in the design phase. It is at this point that attempts can be made to make the product robust enough to withstand future converting and handling issues. Of particular importance are material selection, label design, and securing proper material and label storage.

1.) Material Selection: The materials selected for a particular label greatly affect the product performance with respect to adhesive flow. Facestocks that are difficult to die cut, like polyester or polyethylene, are particularly prone. This is also true of very thin facestocks, very soft adhesives and liners that don't provide adequate support during the die cutting process. Seek assistance from your Fasson representative in choosing a material that will be resistant to adhesive ooze. Because demanding applications, such as highly textured surfaces, may require the selection of a soft adhesive, use of an anti-block coating on the backside of the liner and other cautionary measures may be required.

2.) Label Design: The size and shape of a label can impact the likelihood of adhesive ooze. Most difficult are round, oval and tapered shapes that focus web pressure along small sections of the label roll. This causes ooze at the leading and trailing edges of the label at that spot. To avoid trouble, always strive for shapes that are rectangular or balanced, allowing even distribution of the web tension across the width of the label. Also avoid small label sizes when possible.

3.) Material Storage: All pressure-sensitive materials should be stored at 72 deg. F and 50% relative humidity. Try to secure a controlled environment for storage of unconverted material as well as finished labels at the start of any project.

SUCCESSFUL LABEL CONVERTING

The key to avoiding adhesive ooze during the converting process are focused on temperature, pressure and time, but die cut quality is also a major consideration. Follow these guidelines for successful label converting:
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1.) **Start out cool**: As previously noted, pressure-sensitive material should be stored in a cool environment, but it should also be kept cool throughout the converting process. U.V. lamps and radiant heat sources should be reduced as much as possible, while still maintaining adequate ink cure. Web tension should also be kept to a minimum to avoid stretching. To avoid adhesive build-up on nip rollers, try reducing nip pressure.

2.) **Die cut it cleanly**: The most common cause of adhesive ooze complaints is poor die cut quality. The adhesive must be cut completely to insure proper separation of the waste matrix. Only use a die that is tooled for the material being converted. This is especially important for film constructions. The secret to efficient rotary die cutting is a light, complete impression of each die cavity on the liner. A clear imprint of the die should be visible on the liner forming a complete outline of the label. No outline or a light irregular outline may indicate worn cutting edges or a die set too lightly or improperly. An evaluation of die impression should be made for every roll of material taken off press.

3.) **Wind it loosely**: Rolls should be wound on press as loosely as possible while still maintaining registration. Excessive tension can cause the adhesive to be squeezed outside of the die cut edge and also cause shifting of the label off of the die cut. Use of 6” cores between the converting and finishing operation can help to reduce web tension issues typically seen near the core.

4.) **Finish it immediately**: Because material running through a press gets heated and rewind tension can be difficult to control, rolls should be finished (slit and rewound) immediately after converting. Storing press rolls for long periods of time increases the likelihood of squeezing the adhesive beyond the die cut edge of the label.

5.) **Wind it loosely**: Roll tension should be loose enough after finishing allowing for easy, fluid movement of the core. This requires manual or automatic tapered tension control of the rewind machine.

6.) **Keep it cool**: Keep all finished materials should be stored at 72 deg. F and 50% R.H.

**OTHER RECOMMENDATIONS**

There are other means of working with very tacky adhesives.

1.) **Detackifiers**: Corn starch, talc and silicone are commonly applied to the edges of a tacky roll to prevent build-up on press. Glycerin (in the form of dish washing liquid) is also used. Any detackifier should be used sparingly and only at the time of converting to avoid contamination of the print surface.
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2.) **Clean Thoroughly:** Make certain all rollers and dies are thoroughly cleaned between production runs. Use of citrus based cleaners can be helpful, as well as mineral oil and WD40. Make certain all cleaning residue is also removed.

3.) **Die Lubrication:** To prevent adhesive build-up inside the die cavity, keep a felt pad in contact with the die that has been lightly coated with oil (as recommended by the die manufacturer). Avoid spraying the die with silicone during a run, as this can lead to excessive oil on the facestock and in the die cut.

4.) **Use Solid Tooling Instead of Flexible Dies:** Flat, magnetic dies are more prone to this problem than engraved dies due to the relief (blade height) of the cutting edge to the floor of the die.

5.) **Coated Rollers:** Rollers on presses and application equipment can be release coated to prevent adhesive build-up. This can be done with Teflon tapes, silicone tapes or plasma coatings that are applied offline.

6.) **Refrigeration:** Refrigeration of some label materials may help to reduce adhesive flow and improve die cut quality.

7.) **Patterned Adhesives:** Some adhesives are too tacky to be finished properly. To avoid this problem, the adhesive may be available as a gum pattern. Contact your Fasson representative to determine if this is an option.

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