

Z3338 Adhesive

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1.0 Background and Scope

Labeling cold/wet bottles with pressure-sensitive labels has always been an issue. Pressure-sensitive labels need to have an initial adhesion to the substrate, assisted by pressure to increase this adhesion level. A wet surface resists the ability of the label to adhere to the substrate. The purpose of this paper is to assist in the learning of how to apply labels featuring Z3338 adhesive to bottles which are cold and with condensation.

2.0 Challenge of Labeling Cold/Wet Bottles

The challenge of cold/wet labeling is driven by two issues:

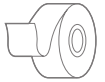
- > Cold temperatures
- > Water on the substrate surface

Cold temperatures cause pressure-sensitive adhesives to become firm and drop in initial tack. This means adhesives that perform well at high temperatures now lose too much tack to work well on the cold/wet surface.

The amount of condensation on the surface is also a major concern. A pressure-sensitive label material will not stick to water (condensation) - due to the deadening of the tack. This is a situation where Z3338 is designed to work. A surface with limited surface moisture at reduced temperatures, below 38-40° F.

3.0 Z3338 Adhesive Value Proposition

Z3338 is adhesive engineered for variable temperatures and humid environments resulting in consistent label positioning and improved ice bucket and cold box performance.



4.0 Material and Bottle Considerations

Most wine and prime paper stocks work with Z3338 adhesive, but we have seen more flexible materials tend to perform at a higher level. The use of an overlamine could potentially stiffen the material to a point where it can not hold a standard bottle mandrel. Thus meaning, any mandrel smaller than that of a 750 ml bottle could be even more of a challenge. Use stocks in the 50# to 60# basis weights for best results. Avoid 70# sheets if possible - as these may require more modifications to a labeling line. Consult your Avery Dennison application consultant regarding the best face materials to use with Z3338 adhesive.

Glass and PET containers work well with the adhesive. PE coating offers better adhesion than oleic acid/ AP-5 coatings, but either will work. PET coated with Lubristat can offer adhesion issues, so again consult Avery Dennison for a product recommendation in these cases. In both glass and PET containers, the better the shape of the container, the better the chances for labeling success.

5.0 Pressure-sensitive Labeling Line Set-up Recommendations

Since cold/wet bottles are difficult substrates to label, the following items will aid in the successful labeling of Z3338 adhesive.

- > Air knife system
- > Pre-squeegee
- > Wipe-down options, including squeegees or brushes
- > Label leading edge application
- > Complete primary wipe-down
- > Secondary wipe-down a plus, more brushes or a wrap-belt station

6.0 Cold/Wet Labeling Application Recommendations

All pressure-sensitive labeling applications require the set-up to be specific to the label type and product being labeled. This is more of an issue with the use of Z3338 adhesive, since the substrate is cold and wet. Although called a cold/wet adhesive, the adhesive can only adhere to certain levels of surface water. If the surface becomes too wet, the label will slide and fail to adhere to the container. It is difficult to say how much is too much, as each situation is different. The following recommendations have helped make labeling in these conditions a success.

Air Knives

Air knives are recommended in any wet labeling situation. To ensure the labeling surface is as dry as possible for initial label contact, the air knife should be placed as close to the labeling peel blade as possible. This action is critical for success. The label must adhere to the container at the point of contact. It cannot slide or skew immediately following contact.

Leading Edge Application

It is very important the leading edge of the label be in good contact with the glass. This requires a good primary wipe-down, as discussed below. A center contact labeling may not work, as the label will have no pressure to hold it in place, it will most likely slip or skew. The flagging leading edge may also hit other areas of the labeler, making good labeling impossible. Avoid center contact application.

Pressure

As the label contacts the container, there must be a pressure device to push the label into place. This action helps squeeze the residual condensation or water off the surface, allowing the label to get a good grip on the substrate. This pressure can be applied by either a brush, squeegee or foam roller on rotary labelers. On a wrap belt or trunion labeler the label must be inserted into a nip point formed between the container and the vacuum belt.

In both cases, rotary and in-line labelers, there is a balance between enough pressure and too much pressure. Too much pressure will force the label to slide out of position, too little and the label may not tack on or the label edge will lift.



Primary Wipe-down

Once the initial contact with the container has been made and is good, the wipe down must continue to finish the operation. Part of the operation may actually squeegee the water out from behind the label. Firm pressure is a plus in this step as well but again not overdoing it. In some cases, more pressure is not always better in these applications. These steps should be taken for each label applied to the container, as condensation may be reforming before the container comes to the second labeling head.

Pre-squeegee

Knowing an air knife will work well and is important to the success of these applications, we still must contend with more condensation forming after the bottle exits the air knife station. A tool that has been found to help is a pre-squeegee. This is a standard urethane squeegee material that is mounted just prior to the peel blade. The action is the same function that would be wiping down a label, but in this case it is wiping water off the bottle surface, much like a squeegee would be used to clean a glass window. This removes enough residual water to allow the adhesive to tack onto the container surface. A pre-squeegee should be placed prior to each labeling station.

Secondary Wipe-down

If possible, a secondary wipe-down station could be used to make sure the label has good adhesion to the substrate. This is important to all applications, but may be more important in these cold/wet situations. Many rotary labelers have a wrap belt station as the labeled containers exit the star wheel.

7.0 Rework and Support

All pressure-sensitive labeling applications have some level of rework, so the following may help to minimize the effort required to remove the old labels.

Z3338 adhesive will remove in a water bath, much like any other emulsion based adhesive. The protective varnish on the label surface will slow the water penetration down, making rework take much longer than preferred by the end-user. To speed this process we recommend scratching the surface of the label with a wire brush, making sure the brush breaks through the varnish coating. This allows fast penetration into the face material and a fast removal process.

Adding ammonia to the water bath may also help, but this must be done with caution, as ammonia adds a safety concern for all the workers involved in the rework process. Please use personal protective gear when using ammonia. Gloves, safety glasses and protective clothing are good choices. If standard processes and the above recommendation are not working, please contact your Avery Dennison support team for help. Our team will determine the best course of action for your specific application.

8.0 Conclusion

Avery Dennison Z3338 adhesive is an exciting innovation for cold/wet labeling, it is however not without its limitations. Understanding the limitations of the adhesive before labeling can minimize the effort required to have labeling success. The key to success is to reduce the amount of water on the surface of the container.

Z3338 adhesive is a working solution for these problem applications. Please contact your Avery Dennison representative with any questions you may have regarding the adhesive and applying it to your labeling operation.

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