ADVANCED ADHESIVES REPORT

JUNE/JULY, 1999

Your corrugating adhesives newsletter from Harper/Love Adhesives Corporation

# Waste water in your adhesives? Well, okay, but be careful.

***Control pH, hardness, solids and temperature to maintain adhesive quality.***

Recycling wash-up and other waste water into adhesive formulations is environmentally responsible and makes economic sense. Either treated or untreated waste water can be used to make adhesive.

However, waste water varies, and this can create quality problems. So if you plan to use waste water, it's important to control the process to maintain consistent adhesive performance.

The major factors to monitor and control are pH, hardness, solids, and temperature. Using a biocide to control microorganisms is a good idea.

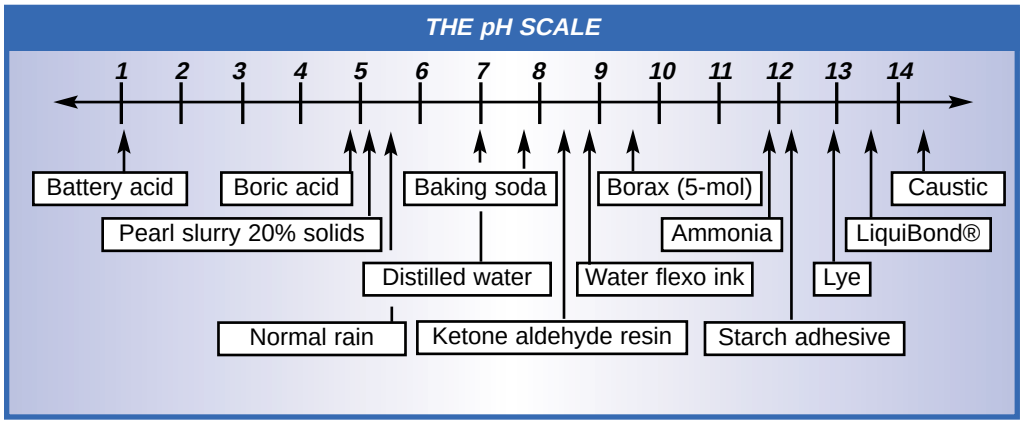
## *pH*

Until the advent of waste water as an ingredient in starch adhesives, water was assumed to be one of the most consistent raw materials in the formula. Testing of city water was rare. Formulas were designed to work with the water available.

To keep waste water pH from affecting the adhesive formula, it should be maintained as close as possible to the pH of the city water. It's a good idea to test city water regularly, perhaps monthly, for even tighter control. Even small changes in pH can affect adhesive quality.

## *Hardness*

Hardness is a measure of the mineral content in the water. Calcium and magnesium are two common minerals that contribute to water hardness. Calcium deposits are often a problem in the 11 to 12 pH range of starch adhesives.




They can fill up the cells on engraved glue rolls, decreasing their efficiency to deliver starch to the flute tips. Starch adhesive supply lines should also be watched for calcium carbonate buildup.

## *Solids*

The amount of solids in the waste water affects the viscosity of your adhesives.

To keep the solids content consistent, use continuous agitation in the waste water holding tanks.

Controlling waste water solids with flocculating agents must be done with care, as flocculent carryover into the starch mix can cause starch solids to settle out, decreasing the starch's ability to bond.

If your waste water includes reclaimed water from the corrugator, it may contain additional borax, caustic, and pearl that can affect your formula. You may have to mix it half and half with fresh water to control solids and batch stability. Generally, it's best to use only fresh water in a primary mixer.

## *Temperature*

Too-hot recycled water can make it difficult to control viscosity and gel points. Mixing with cooler fresh water is one way to control temperature.

## *Don't forget the biocide*

Microbial growth is not a problem in city water, but can occur in well water. Mold, yeast, bacteria, and fungus can all be present in starch adhesives.

*(See "Waste water" - next page)*

## *Waste water (continued)*

Yeast will digest cooked starch, which reduces viscosity over time. To avoid these problems, use a broad-spectrum biocide to your waste water holding tanks and in all starch adhesive batches.

### *Be selective*

Consider using wash-up water in two stages. Initially, use it in the noncarrier cook portion of the formulation. (For two-tank systems, this would normally be the raw starch slurry in the secondary mixer).

Once waste water use in the noncarrier cook portion is well established, you may extend its use to the carrier cook. Caution: Corrugator wash-up water often contains a high concentration of starch adhesive solids, which can significantly affect final adhesive viscosity. You may want to consider excluding corrugator wash-up water from the carrier cook portion to avoid wide swings in viscosity.

Managed properly, waste water can be used in your adhesive formulations, contributing to cleaner, more environmentally friendly plant operations. As each plant's situation is unique, we suggest you contact your local Harper/Love representative for technical assistance.

### *How to produce better quality waste water*

- Do not use phosphate-based cleaners in your wash-up tasks. They contribute to microbial growth.
- Do not use any cleaner containing Volatile Organic Compounds (VOCs).
- Keep waste water thoroughly agitated in storage tanks to keep solids in suspension.
- Monitor and test for preferred pH, hardness, solids, and temperature before use.
- Use as little water as possible in your clean-up operations.

## Zero-discharge seminars

Harper/Love has teamed up with Enviro-Chem, Inc., to present recent seminars for corrugated box plants entitled "Zero Discharge — Waste Water Reuse."

Topics include waste treatment systems, reverse osmosis systems, water reduction techniques, and the use of waste water in adhesives.

Cosuppliers included DMP, Gillespie Environmental, Advanced Chemical, Ringwood, and United Container Machinery.

The initial seminar was held in Worcester, Massachusetts, on April 27, 1999. The next are in planning for northern and southern California in July.

## Harper/Love expands representation in South America

Luis F. Lozano, (seated, left) of Bogota, Colombia, is the most recent addition to Harper/Love representation in South America. With 25 years technical experience in the corrugating industry, he adds great strength to the company's presence in the growing South American markets. Meeting with Luis are Augusto Cavallini (seated, right), Miami-based HLA regional manager, John Curielli (standing, left), HLA vice-president of sales and technical service, and Jorge Romero (standing, right), our technical representative based in Guayaquil, Ecuador.

# New computer system supports customer service

Harper/Love has installed a new computer system designed to improve communications relating to customer service, upgrade overall information management, and avoid Y2K problems.

Among the customer benefits of the new system is the ability to track purchase patterns more efficiently, and build customer profiles. This will help our production managers anticipate individual customer needs, so we can maintain appropriate stocks for immediate shipment.

Says Bill Kahn, general manager, "We already ship 90 percent of our orders the same day they are received. We expect customer profiling will help us keep exactly the right inventories in exactly the right place, so we can improve on a batting average we're already proud of."

The system maintains inventory information throughout Harper/Love's distribution system in real time, so that customer inquiries may be answered accurately at any time. In addition to the Charlotte plant, the company ships from three distribution points in California, one in Chicago, and one in Toronto.

*Ed Burritt, director of management information systems for Harper Companies, International, demonstrates a new system feature for Denise Barlow, manager of sales administration.*

Thirty-two Harper/Love representatives throughout the Americas and the Caribbean have direct access to the new system through their laptop computers.

The new system also supports the company's Quality Assurance program, tracking raw materials as well as production lots. Among other uses, this extensive data base provides detailed information to support Certificates of Analysis.

The new system is a Windows-based Wide-Area Network (WAN) with a file server supporting more than 40 PCs and laptops. Redundant off-premise back-up protocols provide for quick disaster recovery, as well as routine maintenance.


*Miniflute construction is replacing chipboard and foam for many packaging applications. OBM use is growing with the market.*

## OBM: a perfect match for miniflute applications

Harper/Love's OBM (One Bag Mix) concept was created to answer the needs of corrugators pursuing the industry's fast-growing miniflute markets.

OBM offers "just add water" convenience, small-batch flexibility, reduced investment in equipment and starch inventory, and greater personnel safety. It also reduces space requirements and training costs.

It is well suited to small, 50- to 300-gallon batches, and simplifies precise application of low-viscosity, high-solids adhesives. Harper/Love customizes OBM adhesives to match specific customer applications.

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Harper/Love Adhesives Corporation
11101 Westlake Drive
P.O. Box 410108
Charlotte, North Carolina 28241-0408
**800 438-3066**

*Leaders in the science of making good adhesives better*

IN THIS ISSUE



# Use Calciban™ to keep your glue rolls clean and efficient.

## *Calciban prevents calcium build-up that can cause adhesive transfer problems.*

Inorganic compounds in your adhesive water can cause calcium build-up on your glue rolls. These deposits, which appear as a milky-white haze on the roll surface, clog cells and reduce the amount of adhesive the cells can carry. This creates a risk of bonding problems and increased waste.

In also means lost productivity when you need to shut down for time-consuming cleaning operations.

Just 3 to 6 ounces of Calciban in a 700-gallon batch of adhesive can prevent this build-up and the problems it creates. It can be post-added to the batch, or to starch in a storage tank.



***The problem:*** *Inorganic compounds in adhesive mix water can clog cells in your glue transfer rolls.*



***The solution:*** *Used regularly, Calciban keeps glue-roll cells clean and efficient, for proper adhesive transfer.*

At just $3.95 per pound, Calciban is low-cost insurance against the problems of calcium build-up.

To order, contact your local Harper/Love representative or call us toll free at 800-438-3066.

### *Other uses for Calciban:*

- **Add to cooling water in closed-loop systems**
- **Add to flexo wash water**
- **Add to boiler feed water**