



HELP! Our Glasses Are Cloudy!¹

Virginia Peart²

Glassware washed in a dishwasher can be very clean, but may still be cloudy. There are several types of cloudiness and the causes of cloudiness are different for each type. It's important to identify the type of cloudiness to determine how to deal with it.

The two main types of cloudiness are 1) a build-up, a film of matter on the glass and 2) etching or leaching out of metal ions from the glass. To identify the type of cloudiness, try scratching the surface of the glassware with a pin or other sharp object. If the pin scratches off some of the cloudiness, it is due to filming build-up. Or drop some vinegar on the surface in a cloudy area, rub with your finger. If the surface is clear when it has dried, the type of cloudiness is a film. If the surface of the glass seems pitted when scratching with a pin or if the surface remains cloudy after rubbing with vinegar, the cause of the cloudiness is probably etching.

FILMING

The most common cause of filming is water hardness. The calcium and magnesium in hard water drops left on glassware at the end of the washing cycle will dry in place. Detergent will not remove these spots. The next time they are washed new spots will leave more hardness minerals to increase the filming.

Food films can form on glassware and dishes when the calcium and magnesium in hard water

combine with protein in the residue of milk, soft cooked eggs or rare meat. Hot water will also act to denature or "set" these proteins.

A *hardness film* build-up can be removed by treating with an acidic material like white vinegar or citric acid. Commercial products are also available. Care must be exercised when using these products to prevent damage to metals. Follow dishwasher manufacturer's instructions to get the best results.

Preventing *hardness filming* may require the use of softened water if the water hardness tests to be 6 grains per gallon (gpg) or more. Otherwise an increase in detergent use and the regular use of a rinse agent may be all that is needed.

Food films can be removed by hand washing and drying since the reversal of protein denaturation cannot be reversed through the chemical, mechanical or thermal action of detergent solution in a dishwasher.

Foods films are often related to water hardness, but if a pattern is recognized in this problem, such as always a residue from eggs or meat. It may be wise to pre-rinse items with these soils. Also, such food soils may be worse on plastics where the finish has been scratched or worn thin. Replacing older dishes may help.

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 2. Virginia Peart, associate professor, Housing, Home Economics Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL 32611.

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ETCHING

The first sign of etching is often iridescent or a “rainbow” appearance on glassware or on the glaze of china. Poor quality of glassware is not necessarily more likely to etch than fine crystal. So it is impossible to predict which glassware is most likely to have this problem. The true cause seems to be related to very soft water and/or the over use of detergent since the largest component of a dishwasher detergent is polyphosphate, a water softener. Metal ions are readily dissolved out of glassware in very soft water. Extremely hot water can probably speed this process.

Since etching is the loss of matter (metal ions), the damage cannot be corrected. Etching can best be prevented by adjusting the amount of detergent use. If dishes are pre-rinsed there may be little soil for the detergent to react with. The combined softness provided by softwater and detergent will be free to attack glass and glazing. When etching has been identified as a probable cause, try using only 1 tablespoon of dishwashing detergent in each detergent cup. If dishes are not clean increase slightly until you find the optimum level. Then use only as much detergent as needed.

Antique and other glassware that are difficult to replace, may best be hand washed and dried.

DISHWASHER PROBLEMS

Cloudiness of Glassware

Filming

Build-up of matter on the surface:

- Hard water film

Causes:

- Hard water
- Under use of detergent

To remove:

- Check instructions with *your* dishwasher for amounts to use and remove all flatware and metalware during process.

- White vinegar, chlorine bleach, then white vinegar rinses in the dishwasher.
- Citric acid crystals in a dishwasher cycle.
- Commercial stripping products may also be available. Ask your dishwasher dealer. Follow package instructions.

To prevent:

- If water has more than about 6 gpg hardness, you may need a water softener. Otherwise use more detergent and a rinse agent.
- Food film such as milk on the inside of glassware or residue of fat or protein.

Causes:

- Rounded shape inside glass may keep the spray from removing food.
- Under use of detergent.
- Water temperature too high (cooks on protein) or too low (can't melt some fats).

To remove:

- Hand washing and drying can remove this type of film.

To prevent:

- Soft, hot water with sufficient detergent will solve most food film problems, however, pre-rinsing milk glasses, egg and other protein films may be necessary if these are frequent causes of the problem.

Etching

Metal ions dissolved out of the surface of glassware.

Causes:

- Very soft water plus too much detergent.

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To remove:

- Etching cannot be removed. When it has started, it is irreversible.

To prevent:

- Use less detergent. If dishes are lightly soiled or have been pre-rinsed, very little detergent is needed.
- Hand dry valuable glassware at the end of the wash cycle.