

# Opaque containers help to protect milk flavor

ITHACA, N.Y. — Exposing milks to light causes losses in flavor and nutritive value, but these losses can be prevented by using containers that block the light. Fiberboard containers provide good protection, and amber colored returnable plastic containers, which are available in some markets throughout the

Northeast, also protect milk.

A 1980 consumer taste panel evaluation revealed that some milks in clear plastic containers had light-induced, off-flavors. This prompted Cornell University food scientists to determine how much light entered these containers.

Tests revealed that significant amounts of light penetrated into the milk causing deterioration in vitamins A and B<sub>2</sub> (riboflavin), as well as flavor. Similar observations have also been made by other research groups in the United States, Canada, and Europe.

In view of these findings, the Cornell scientists set out to find a way to keep the light out and the vitamins in. Research by Frank

Shipe, Gary Senyk, and David Bandler led to the development of creamy-yellow plastic containers that minimize flavor and nutrient losses.

"Development of the new containers was not simply a matter of tinting plastics, but the result of experimentation until the right combination of pigments in plastic were found that would block out light," says Shipe, a professor of food science in the New York State College of Agriculture and Life Sciences at Cornell.

Another concern of the Cornell scientists was to find a container color with high consumer acceptability. The story of their success has been presented to the American Dairy Science

Association.

Light exposure can cause flavor and nutrient changes in many foods such as meat, vegetable oils, and orange juice. The extent of light damage depends on light intensity and length of exposure.

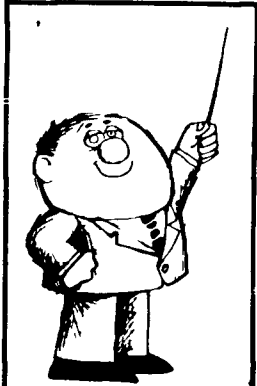
"Low fat and skim milks are especially sensitive, though, because light can readily penetrate into them if they are stored in unprotected containers such as clear glass or plastic," Shipe points out.

Substantial amounts of the vitamin A added to low fat and skim milks are lost on exposure to ultraviolet rays from the sun or fluorescent light. Visible light rays cause riboflavin (vitamin B<sub>2</sub>) and flavor deterioration. Con-

sequently, milk containers should block both ultraviolet and visible light.

Although many stores display milk under bright fluorescent lights, this source of light in stores is not the only culprit. Consumers who leave clear plastic jugs or glass bottles of milk on the kitchen counter in the morning sunshine are inviting damage, and so are those who tote unbagged milk jugs outside during the day. A thirty minute exposure to bright sunlight can cause more deterioration than 24 hours under fluorescent lights.

Cornell food scientists point out that consumers can avoid "light damage" by buying their fresh, wholesome milk in light-blocking containers.



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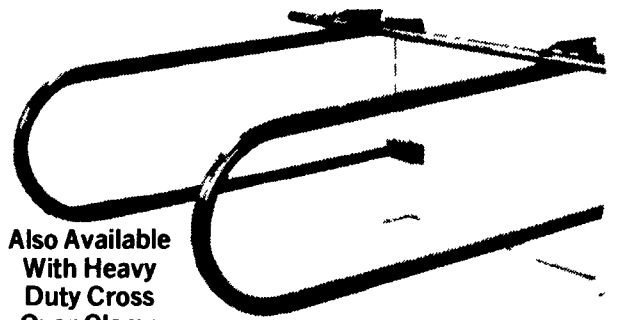
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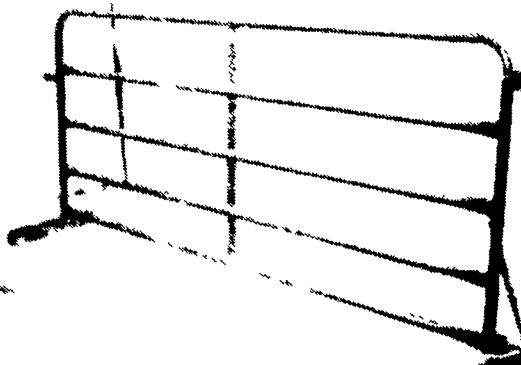
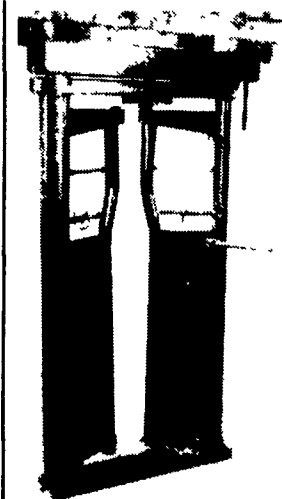


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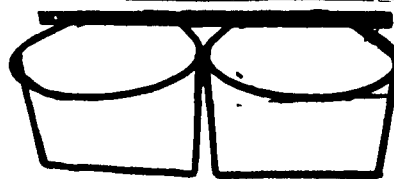
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