

VINYL FILM VBAA-9123 NATURAL
EXTRACTION BY FOOD EQUIVALENTS

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SUMMARY Bakelite VBAA-9123 Natural, a vinyl cast film designed for general food packaging, was examined to determine the extractability of the zinc stearate with which it is stabilized. The four extractants used were: 4 per cent acetic acid, which simulates acid foods; Armour Oil, which typifies the fats; Locke-Ringers solution, which is isotonic to body fluids; and one per cent sodium bicarbonate, which represents the alkaline foods. None of the simulated foods picked up as much as 0.1 part per million of zinc after contact with the film for 30 days at ambient temperature. Inasmuch as a pick-up of up to 50 parts per million could be tolerated in foods, the results indicate that zinc stearate is a permissible component of the film.

INTRODUCTION The Film and Sheet Products Development Division of the Bakelite Company has formulated a non-rigid vinyl solution cast film designed for general food packaging and designated as VBAA-9123 Natural. The formulation of the film given in the following table was furnished by A. R. Bullman (1).

Formulation of Cast Film VBAA-9123 Natural

VYNW (vinyl chloride-acetate copolymer)	72.17
Santicizer 141 (diphenyl mono octyl phosphate)	23.20
Paraplex G-62 (epoxidized soybean oil)	3.50
Zinc stearate	0.20
Acrawax C (a synthetic wax)	0.25
Stearamide (stearic acid amide)	0.18
Syoid 244 (silicone dioxide)	0.50
	100.00

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All the components of the film except zinc stearate have been accepted for contact with meat and meat food products (2). This investigation was initiated to prove that zinc stearate does not extract from the film and should also be accepted for use in food packaging material. R. H. Philbeck (2) has indicated that a cast film will be acceptable for use in food packaging if it contributes less than 50 parts per million of zinc to the enclosed product.

DISCUSSION No specimen of cast film lost in zinc content and no extractant gained in zinc concentration. Detectability of zinc was less than 0.01 ppm in Armour's Oil and 4 per cent acetic acid solution, and less than 0.1 ppm in the Locke-Ringer and 1 per cent sodium bicarbonate solutions. We have concluded that no migration of zinc takes place between the cast film and the food equivalents.

PROCEDURE Portions of the film were placed in clean glass containers and the synthetic food equivalents added at a ratio of 250 ml to 100 square inches of film surface area. The food equivalents were: Armour's cooking oil, Locke-Ringer solution, 4 per cent acetic acid in water and 1 per cent sodium bicarbonate in water. The samples were extracted thirty days at room temperature with daily agitation. Both film and extractants were analyzed for zinc before and after the test. This extraction procedure was furnished by Dr. Henry F. Smyth, Jr. (3).

The extractants and cast films were sulfated and the ash analyzed by an authoritative emission spectrographic procedure (4).

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