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POLYMER PRODUCTS DEPT.
WASHINGTON WORKS

GLOVE TESTING FOR C-8 (Ammonium Perfluorooctanoate) PERMEATION
Haskell Laboratory Report No. 612-81 [REDACTED]

Results of the evaluation of five types of gloves for their permeation resistance to a 30% aqueous solution of C-8 and C-8 dry powder are reported below. Samples of the gloves were tested in duplicate in 10 mL glass Haskell permeation cells with water used as a collection medium on the inside surface of the gloves. A 10 mL aliquot of the collecting medium was analyzed for C-8 after an 8 hour exposure by spectrophotometry following the methylene blue method for determination of C-8 and C-9 dispersing agents. (1) Breakthrough was determined when a detectable amount of C-8 was found in the collection medium. The minimum detection limit for C-8 was 1 µg/mL in the collection medium.

Results:

The results of the evaluation are shown in Table 1.

Discussion:

Results of the evaluation show that three of the glove samples do have a measurable breakthrough time and permeation rate after 8 hours of continuous exposure to a 30% solution of C-8. However, the permeation rates are very low indicating that the materials do offer some resistance to C-8.

Results of the tests performed with C-8 powder show that in four of the glove samples no breakthrough was observed after eight hours of continuous exposure and only a very small amount permeated in the yellow latex sample from Best Manufacturing Company.

Therefore, depending on the intended use of the glove for protection against C-8, either the Nova 327-Y (latex glove) or Best Manufacturing Article 724 (neoprene rubber) glove would offer the best protection against C-8 in solution or as a dry powder.

Company Sanitized. Does not contain TSCA CBI

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(1) Polymer Products Dept. Method Code number W 240.240 10/9/69 pgs. 1-5

NWH:BMM:jms

Date Issued: October 23, 1981

HL Report No.: 612-81
[REDACTED]

TABLE 1

Glove Material	Color	Thickness mm	Breakthrough Time		Permeation Rate	
			30% sol.	Hours powder	$\mu\text{g/min/cm}^2$ 30% sol.	powder
Edmont-Wilson Scorpio (Neoprene)	Green	1.42	<8	N.D.	0.5	N.D.
London Rubber Limited (Neo-synthetic latex rubber, floc lined)	Pink	.64	<8	N.D.	0.1	N.D.
Nova Rubber Company, Nova 327-Y (Latex)	Yellow	.76	N.D. (2)	N.D.	N.D.	N.D.
Best Manufacturing Article 702 (Natural Latex)	Yellow	.83	<8	<8	0.3	8×10^{-4}
Best Manufacturing Article 724 (Neoprene Rubber)	Black	.71	N.D.	N.D.	N.D.	N.D.

(2) none detected after 8 hours continuous exposure

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