SKYDROL® LD-4

SOLUTIA™

Glove facts

Glove Facts Number: IH-88-003 | CAS Number: Mixture | Solutia MSDS Number: M00006727

Glove Facts is a service of Solutia Inc. designed to assist customers in the selection of protective gloves to be used when handling Solutia products. The data presented in this fact sheet were developed, through testing at an outside laboratory, utilizing the ASTM F739 standard method for permeation testing. Applicability of these data should be evaluated by each customer based upon the intended use of the Solutia product.

Permeation Testing

In general, permeation testing involves exposing one side of a glove material to the particular chemical of interest and noting both the breakthrough time (the time at which the chemical can be detected on the opposite side of the material) and the permeation rate (the rate at which the chemical passes through the material). Hours or minutes are the designated units for breakthrough time. The permeation rate is expressed as the mass of the permeated chemical per area of glove material per unit time (μg/cm^2-min.). Permeation tests are generally conducted a maximum of eight hours. If no breakthrough time is observed, the reported breakthrough time is greater than 480 minutes.

Table 1 summarizes mean breakthrough time and permeation rate for SKYDROL® LD-4 tested against six specific gloves. All tests were performed in triplicate. The results reported for the 4H glove were provided by Ansell Edmont. The results reported for the MAPA LF-128 glove were provided by MAPA Professional. They conducted the testing using the ASTM F739 method.

Factors Affecting Glove Selection

Permeation resistance data provide a convenient means of ranking the relative effectiveness of specific gloves. Long breakthrough times and low permeation rates are desirable qualities in glove selection. The following factors, in conjunction with permeation data, should be considered when selecting a glove for a particular operation:

1. Glove Material

Gloves are made from a number of different polymeric materials. Each glove will resist chemicals at different permeation rates and breakthrough times.

2. Frequency/Severity of Contact

Permeation tests present a worst case situation of continuous liquid contact with the glove. Immersion of hands in chemical liquids is not a recommended practice. Where feasible, engineering controls and good work practices should be implemented to reduce or eliminate such a practice. Frequent contact with SKYDROL® LD-4 would require gloves having higher breakthrough times and/or lower permeation rates. Frequent replacement of gloves may be necessary to reduce skin contamination, especially when operations require repeated removal and donning. Observed changes in glove material consistency should result in immediate removal and disposal of the gloves.

3. Chemical Mixtures

The permeation behavior of mixtures can be very different from that of the individual components. The test data given here are for the pure compound. Mixtures with other solvents or dilutions of SKYDROL LD-4 may alter the effectiveness of the gloves listed in this document.

4. Temperature

The data found in Table 1 are from tests conducted at 23°C. It should be noted that gloves generally become less resistant to chemical permeation as the temperature increases. An increase in temperature of 10°C would cause approximately a two-fold decrease in breakthrough time and a similar increase in permeation rate.

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These tests do not consider thermal protection for handling hot materials. Such use may require different materials of construction.

5. Thickness

As would be expected, permeation varies directly with thickness. The thicker the glove material, the longer the expected breakthrough time; however, thickness may not affect permeation rate.

6. Manufacturers and Quality Control

The manufacturing process varies from one manufacturer to another. Consequently, a given glove material from one manufacturer may not have the same breakthrough time and/or permeation rate as one obtained from a different manufacturer when challenged with the same chemical.

Tests are conducted using a single lot of a manufacturer's gloves. The results are manufacturer/glove material specific and are valid only if the manufacturer maintains high standards of quality control.

Table 1: Permeation resistance of glove materials to SKYDROL LD-4

Glove Tested	Mean Thickness (mm)	Mean Breakthrough Time ± One Standard Deviation (minutes)	Mean Permeation Rate ± One Standard Deviation (µg/cm²/min.)
Neoprene-Edmont Model 29-865	0.43	325 ± 38	74.4 ± 26.4
Nitrile-Pioneer Stansolv Model AF18	0.46	No breakthrough in 8 hours	No permeation
Latex-Edmont Model 46-710	0.20	300 ± 113	46.8 ± 3.6
Latex-Marigold	0.61	285 ± 37	64.8 ± 19.8
* 4H Ansell Edmont	0.07	>240	ND
** Latex MAPA Professional Model LF-128	0.51	60 ± 0	31.3 ± 13.4

* Results were provided by Ansell Edmont using a total testing period of four hours.

** Results were provided by MAPA Professional using a testing temperature of 27°C.

The data set forth in the table above are based on samples tested and are not guaranteed for all samples or applications.