

Total Inward Leakage Test During Strenuous Exercise

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The purpose of this total inward leakage test during strenuous exercise was to evaluate the performance of air purifying half masks under much higher work rates than are used today in existing respiratory protective device standards. Ten test subjects, eight male and two female, participated in the study. No beard growth was allowed. General physical fitness was established with each subject before the test. The work intensity test was carried out on a bicycle Ergometer Monark 839 E, in an aerosol chamber with a corn oil aerosol. The total inward leakage was measured and recorded on different brands of air purifying half masks all equipped with particle filter class P3 according to the European standard EN 143:2000. The work intensity test was divided into seven five-minute periods, each with a different external work load. Minute 1-3 in each period the test subject pedaled without any interference and during the fourth minute the test subject was asked to read the alphabet loud. During the fifth minute (the recovery minute) the subject pedaled without any interference. Pressure, inward leakage, temperature and humidity was collected under the entire test at 14 samples per second and presented as one average value per minute in the three last minutes in each five-minute period. At the end of each five-minute period the workload increased automatically with 25W, starting from 50W and up to 200W.