

### **S3.3.4 AN EVALUATION STUDY OF ISO 16890 ON THE PERFORMANCE OF RESIDENTIAL HVAC FILTERS**

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Indoor air quality is critical to the health of building residents. Room air contains gas contaminants such as radon, volatile organic compounds; and particulates such as PM2.5, dust, smoke, airborne allergens, bacteria and virus. Numerous researches and studies revealed that high levels of indoor air pollutants can cause adverse health effects. Many research studies have discovered that cardiovascular and lung cancer mortality were each positively associated with ambient PM2.5 concentrations. Reduced PM2.5 concentrations were associated with reduced mortality risk.

Filtration and ventilation are commonly used to remove or dilute airborne contaminants and improve indoor air quality. This study is concentrated on assessing the feasibility of ISO 16890- a new air filtration standard, for evaluating the performance of residential HVAC filters which are used for reducing air contaminants in residential buildings. To assess the efficacy of ISO 16890 for residential HVAC filters, efficiencies of filters of different MERV levels were first measured according to ISO 16890 and compared with filter efficiencies from ASHRAE 52.2 MCE and App J tests. Our results show that for residential HVAC filters, the current ASHRAE 52.2 MCE test provides a fair prediction for the filter efficiency in actual use, while App J significantly under-predicts the filter performance. ISO 16890 also under-predicts the efficiency.