ISO 15714:2019 (E)

Method of evaluating the UV dose to airborne microorganisms transiting in-duct ultraviolet germicidal irradiation devices

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms, definitions, symbols and abbreviated terms

3.1 Terms and definitions
3.2 Symbols and abbreviated terms
3.2.1 Symbols
3.2.2 Abbreviated terms

4 Configuration of the test rig

5 Test rig qualification

6 Preparation of test microorganisms

6.1 Test microorganisms
6.1.1 Serratia marcescens
6.1.2 Bacillus subtilis
6.1.3 Cladosporium sphaerospermum
6.2 Preparation of microbial suspensions
6.2.1 Acquisition of pure culture of test microorganisms
6.2.2 Cultivation and dispersion of the test microorganism
6.2.3 Dilution of the microbial suspensions

7 Testing procedure for an in-duct UVGI device

7.1 Determination of airflow rate, temperature and humidity
7.2 Production of the airborne test microorganism
7.3 Measurement of the test microorganism concentration without and with UV irradiation
7.3.1 Sampling procedure
7.3.2 Test microorganism sampling methods
7.3.3 Test microorganism culture and enumeration
7.4 Repeating the tests at other flow rates
7.5 Determination of the UV susceptibility of the test microorganism

8 Safety and environmental considerations

9 Calculation, evaluation and reporting

9.1 Determination of the inactivation rate of the test microorganism
9.2 Determination of the UV dose of the UVGI device
9.3 Evaluation of the UVGI capacity
9.4 Results reporting

Annex A (informative) Recipe of culture medium for the test microorganism

A.1 Nutrient agar
A.2 Potato dextrose agar (PDA)

Annex B (informative) Method for determining the UV dose-response curve and susceptibility constant of a test microorganism in air

B.1 Aim of the UV dose-response curve and susceptibility constant test

B.2 Test microorganism and apparatus
B.3 Test procedure and measurement method

Annex C (informative) Susceptibility constants of some typical microorganisms in air by the literature

Page count: 17