

determining respirators resistance to dust clogging

Test equipment SILICA DUST

developed on Metabolic breathing simulator
OXY ROBOT platform

APPLICATIONS & INDUSTRIES

- HEPA filters designed for powered air-purifying respirators (PAPRs)
- RPE certification, research and design



For developers
and manufacturers
of respiratory protective
equipment (RPE)



For certification
bodies and testing
laboratories



For research
centers and
universities



DESCRIPTION

Test equipment is purposed for a silica dust test requirements on HEPA filters designed for powered air-purifying respirators (PAPRs) acc. procedure № RCT-APR-STR-0025 NIOSH.

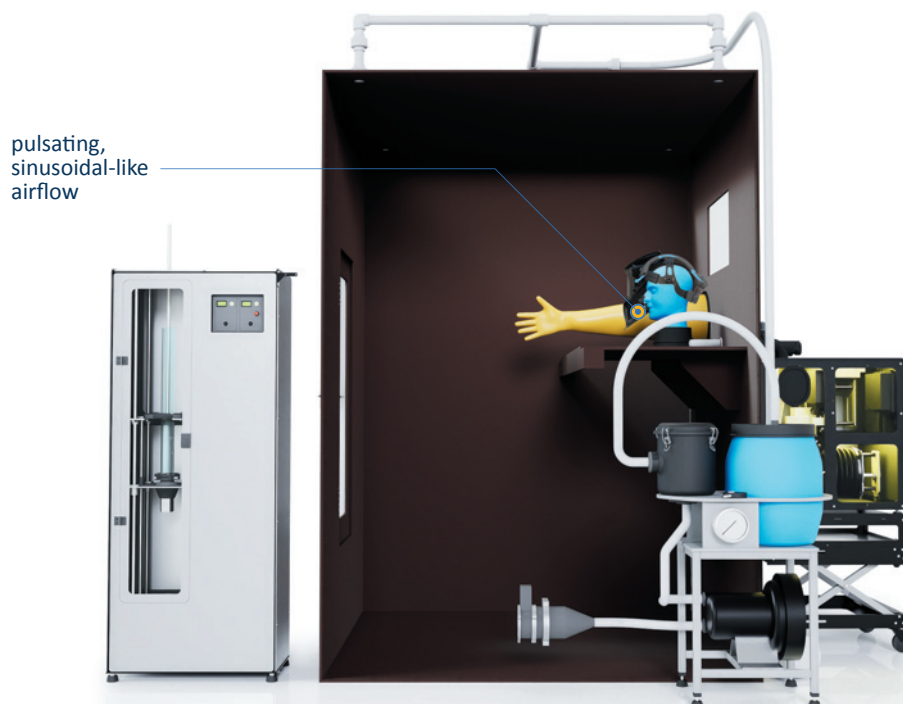
It consists of a dust chamber made of marine laminated plywood with anthropometric dummy human head, a breathing machine, a dust generator, measuring system for dust concentration in the chamber (aspirator), a cleaning air system from dust.

The necessary test conditions are created in the dust chamber, and the breathing machine simulates the human external

breathing and creates a pulsating, sinusoidal-like airflow. An absolute filter installed in the inhalation line captures all the dust that has passed through the HEPA filters during the test.

The initial resistance of the tested filter to a constant air flow is measured before "breathing" in a dusty atmosphere. As a result of the 4 hours test with breathing simulating, the amount of dust that goes through the absolute filter is fixed, determined the total amount of leakage and the result resistance to constant airflow of the respirator after clogging.

PRINCIPLE OF OPERATION:



SOFTWARE PLATFORM POSSIBILITIES



DATA SHEET

SPECIFICATIONS	VALUE	UNIT
Breathing depth	0,5 to 3,0	dm ³
Breathing frequency	10 to 40	min ⁻¹
Exhaled gas breathing mixture relative humidity	94	% RH
Exhaled gas breathing mixture temperature	35	°C
Air volume flow through test chamber	11,89 (7,00)	m ³ /h (CFM)
Silica dust content in the air	50 to 60	mg/m ³
Air volume flow for sampling with lateral dust content in the chamber	32	dm ³ /min
Air volume flow through dust generator	4,00 (2,35)	m ³ /h (CFM)
Constant air flow during checking the resistance of the tested RPE	32 to 170	dm ³ /min
Overall dimensions (length×width×height)		
- test chamber	1524×1524×2134	mm
- breathing machine	515×570×670	
- dust generator	400×671×1495	
- filtration unit with blower	410×730×950	
Power supply	50; 230	Hz, V
Power consumption	no more 5	kW
Assembled weight	no more 400	kg
Average life time	at least 10	years

TERM OF USE	VALUE	UNIT
Ambient temperature	18 to 25	°C
Atmosphere pressure	630 to 800	mm. Hg
Relative humidity	30 to 60	%

DELIVERY COMPONENTS with test equipment

Name	Q-ty, pcs.
Glovebox gloves	2
Trolley for breathing machine	1
Exhaust air filtration system, including a cyclone with a receiving container and an air filter	1
Vortex blower with frequency control	1
Sampling system including sampling probe, analytical filter, float meter and vacuum pump	1
Vane anemometer	1
Filter holder for absolute filter	1
Set of plugs, seals, adapters, hoses, filters	1
Tablet PC with installed software	1
Documentation set	1

*The complete set of delivery is given in the instruction manual

RELEVANT STANDARD:
procedure
№ RCT-APR-STR-0025 NIOSH

WHY TEST EQUIPMENT SILICA DUST?

1. Unique platform for research & quality control of RPE

The breathing machine of SILICA DUST is developed on the software and hardware platform of Metabolic breathing simulator OXY ROBOT. SILICA DUST embodies its ergonomics and automated processes.

2. Modern way of control

To control the test equipment, an application is used on personal computer with a simple and conven-

ient interface in English. It is possible to quickly and easily master the control of SILICA DUST and involve even a laboratory intern in the work.

3. Saves time for lab staff

SILICA DUST software automatically maintains test parameters, records and stores their results, and saves staff time.

4. Lightweight design and advanced ergonomics

SERVICE



Warranty
from 12 months



Training
of the Customer's staff



Service support
for the entire
period of use



**Development
of the equipment**
according to your terms
of reference



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