

TEST REPORT: 7191261724-CHM21-NYL

Date: 11 JUN 2021

Tel: +65 6973 6160

Client's Ref:

Email: lei.yang@tuvsud.com

Note: This report is issued subject to the Testing and Certification Regulations of the TÜV SÜD Group and the General Terms and Conditions of Business of TÜV SÜD PSB Pte Ltd. In addition, this report is governed by the terms set out within this report.



PSB Singapore

Add value.
Inspire trust.

SUBJECT

Sub-micron Particulate Filtration Efficiency (PFE) at 0.1 Micron

CLIENT

METALLURGY AND MATERIAL SCIENCE RESEARCH INSTITUTE
Chulalongkorn University
Soi Chula 12, Phayathai Road
Patumwan, Bangkok
Thailand

Attn: Dr. Ratthapol Rangkupan

SAMPLE SUBMISSION DATE / TEST DATE

19 MAY 2021 / 10 JUN 2021

DESCRIPTION OF PRODUCT

One mask sample described as below was received.

Product Name	Manufacturer	Lot No.
CURE-CU Filter Pad N95 Type 1	CURE Enterprise - CU	210501



Laboratory:
TÜV SÜD PSB Pte. Ltd.
TÜV SÜD @ IBP
15 International Business Park
Singapore 609937

Phone : +65-6778 7777
E-mail: info.sg@tuvsud.com
<https://www.tuvsud.com/en-sg>
Co. Reg : 199002667R

Regional Head Office:
TÜV SÜD Asia Pacific Pte. Ltd.
TÜV SÜD @ IBP
15 International Business Park
Singapore 609937
TÜV®

DESCRIPTION OF SAMPLE *(cont'd)*



Figure 1. "CURE Enterprise - CU / CURE-CU Filter Pad N95 Type 1" sample as received.



METHOD OF TEST

The test is referring to the following standard:

ASTM F2299/ F2299M - 03 (Reapproved 2017) - Standard Test Method for Determining the Initial Efficiency of Materials Used in Medical Face Masks to Penetration by Particulates Using Latex Spheres.

Unneutralized aerosol which represents a more natural state, is used in this test procedure, referring to FDA guidance document on surgical masks (FDA-2003-D-0305).

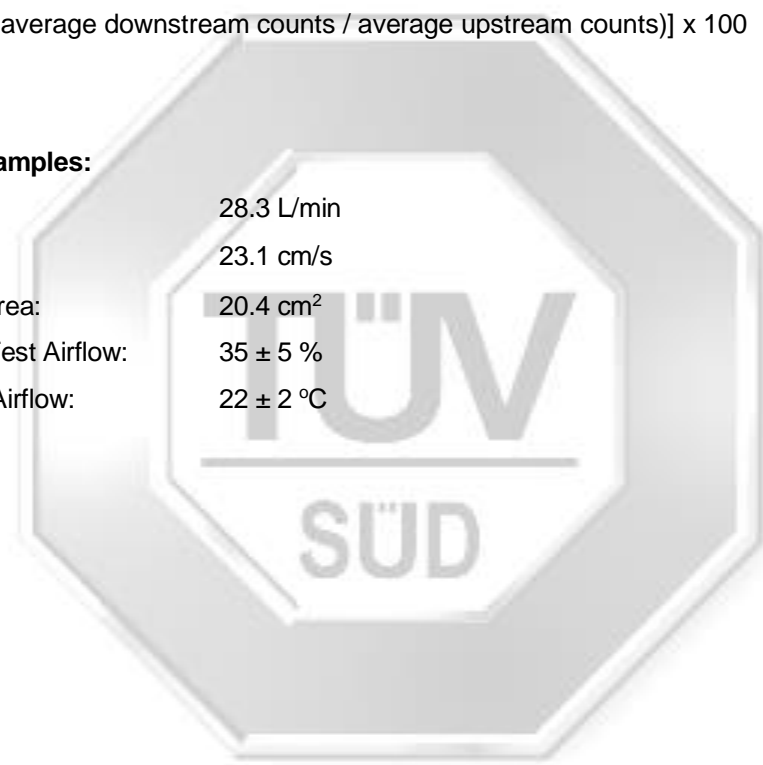
After airflow and aerosol stability is established, sample and record upstream and downstream aerosol counts for a minimum 5 counts at each position, using a 1-minute sampling time.

Average the upstream counts and the downstream counts, then calculate the efficiency by the following definition:

$$\text{Efficiency (\%)} = [1 - (\text{average downstream counts} / \text{average upstream counts})] \times 100$$

Test conditions of samples:

Flow rate:	28.3 L/min
Face velocity:	23.1 cm/s
Exposed Specimen Area:	20.4 cm ²
Relative Humidity of Test Airflow:	35 ± 5 %
Temperature of Test Airflow:	22 ± 2 °C



TEST REPORT: 7191261724-CHM21-NYL

11 JUN 2021



PSB Singapore

RESULTS

Sample Description: CURE Enterprise -CU / CURE-CU Filter Pad N95 Type 1
Sample Thickness Range (mm): 0.41 – 0.43
Sample Basis Weight Range (g/m²): 72.2 – 74.6

Table 1. Summary of Results and Calculated Particulate Filtration Efficiency (PFE) at 0.1 micron

Material Identification (S/N)	Particle Diameter (µm)	Particle Diameter Standard Deviation (µm)	Pressure Drop (kPa)	Efficiency (PFE) %	Average Efficiency %
1	0.1	+ 0.01	0.1450	98.0	98.1
2	0.1	+ 0.01	0.1450	98.0	
3	0.1	+ 0.01	0.1500	97.8	
4	0.1	+ 0.01	0.1500	98.1	
5	0.1	+ 0.01	0.1600	98.5	

MR NG YEOW LEONG
ENGINEER
ELEMENTAL ANALYSIS
CHEMICAL CENTRE

DR YANG LEI
EXECUTIVE CONSULTANT
ELEMENTAL ANALYSIS
CHEMICAL CENTRE

TEST REPORT: 7191261724-CHM21-NYL

11 JUN 2021



PSB Singapore

Please note that this Report is issued under the following terms :

1. This report applies to the sample of the specific product/equipment given at the time of its testing/calibration. The results are not used to indicate or imply that they are applicable to other similar items. In addition, such results must not be used to indicate or imply that TÜV SÜD PSB approves, recommends or endorses the manufacturer, supplier or user of such product/equipment, or that TÜV SÜD PSB in any way "guarantees" the later performance of the product/equipment. Unless otherwise stated in this report, no tests were conducted to determine long term effects of using the specific product/equipment.
2. The sample/s mentioned in this report is/are submitted/supplied/manufactured by the Client. TÜV SÜD PSB therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture, consignment or any information supplied.
3. Nothing in this report shall be interpreted to mean that TÜV SÜD PSB has verified or ascertained any endorsement or marks from any other testing authority or bodies that may be found on that sample.
4. This report shall not be reproduced wholly or in parts and no reference shall be made by the Client to TÜV SÜD PSB or to the report or results furnished by TÜV SÜD PSB in any advertisements or sales promotion.
5. Unless otherwise stated, the tests were carried out in TÜV SÜD PSB Pte Ltd, 15 International Business Park Singapore 609937.
6. The tests carried out by TÜV SÜD PSB and this report are subject to TÜV SÜD PSB's General Terms and Conditions of Business and the Testing and Certification Regulations of the TÜV SÜD Group.

Effective 26 January 2021

