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**Subject:** NaCl / Paraffin efficiency test on filtering face piece  
**Your reference:** as agreed by email  
**Contact person:** M. de Jonge

**Date** 26-1-2021  
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**Ref.no.:** 88520  
**Doc.no.:** 89286

Dear Mr. Van der Logt,

At the request of Vadelo B.V. (your reference as agreed by email) ProQares performed particle efficiency experiments for Sodium chloride (NaCl) and Paraffin oil according to EN149 (2001 + A1 2009) to determine the classification of the material of a filtering face piece. The details of the received samples are presented in Table 1 and all test results are presented in Table 2 and 3. Note that the test results are only applicable to the tested materials, mentioned in Table 1. The samples arrived January 22<sup>nd</sup> 2021, the experiments have been performed January 25<sup>th</sup> and 26<sup>th</sup> 2021.

Table 1: Received samples

Sample code ProQares	Description by customer
21 PQA 0146	Filtering face piece; Foshan Xujian; Model : XJ-9501; EN149:2001 + A1:2009; FFP2 NR; CE2163; Manufacturer : Foshan Xujian Medical Equipment Co., Ltd

As agreed with WWS (April 3<sup>rd</sup>), the samples were tested as received only, also the duration has been shortened, similar as VG2 committee (EU Notified Bodies) consensus. Normally all experiments are conducted up to a total of 120 mg challenge aerosol, but in this report 3 are conducted for 30 minutes. The penetration procedure is following the BSI protocol, short certification procedure for the Corona crisis only, only applicable for respiratory protective devices for (para) medical personnel.

These changes from the standard are taken to speed up the possibility to introduce the samples to the medical personnel, which are in desperate need of the products during the Corona crisis, but still give ProQares sufficient confidence of the functionality of the material.

For FFP2 classification according to EN149, normally both NaCl and Paraffin oil should be conducted. In China to obtain KN95 classification only NaCl penetration is measured.

A picture of the sample is displayed in the Annex.

The results of the solid aerosol (Sodium chloride / NaCl) and Paraffin oil according to Clause 7.9.2. are shown in Table 2 and 3.

Table 2: Filter penetration for Sodium chloride (NaCl)

Sample code	Penetration Sodium chloride (%)	Total loading (min)
21 PQA 0146 – 1	1.0	30
21 PQA 0146 – 2	0.8	30
21 PQA 0146 – 3	0.9	30
Requirement FFP1	<20%	
Requirement FFP2	<6.0%	
Requirement FFP3	<1.0%	

Table 3: Filter penetration for Paraffin oil

Sample code	Penetration Paraffin oil (%)	Total loading (min)
21 PQA 0146 – 4	5.2	30
21 PQA 0146 – 5	5.3	30
21 PQA 0146 – 6	5.8	30
Requirement FFP1	<20%	
Requirement FFP2	<6.0%	
Requirement FFP3	<1.0%	

**Overall conclusion:** the filtering face piece meets the requirements for the particle efficiency regarding Sodium chloride and Paraffin oil in the as received state, to be classified as FFP2 according to requirements stated by EN149.

This report is regarding the material penetration of the filtering face piece only, the protection of the total device is a combination of facial leakage and penetration of the material. In the circumstances we are living currently (COVID – 19) no Total Inward Leakage experiments are conducted in our laboratory.

The information above can be used by a specialist to decide whether the product could be used during the Covid-19 crisis as an appropriate protective device.

## Accuracy and Disclaimer

The breakthrough time of a filtering face piece in case of an adsorption experiment depends on the following parameters:

- the air flow through the filtering face piece
- the influent concentration
- the temperature
- the relative humidity of the air
- the effluent concentration

When all uncertainties of the parameters are taken into account, the accuracy of the breakthrough time is determined to be  $\pm 10\%$ .

It should be noted that the above values have not been taken into account when making the assessment. The results that are reported in this document concern the samples with internal ProQares sample code 1111-0146 only. The results do not necessarily hold for other samples of the same type.

In case of public communication about the results please mention that the tests have been conducted by ProQares B.V. as the testing agency.

We trust all things are clear to you. In case of any questions, please do not hesitate to contact us.

Kind regards,



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