



# VIRALOC™

**VIRALOC™ Test Report**  
Surgical Mask ASTM F2100  
Breathability, Flammability and  
Blood Penetration

# TEST REPORT

## Precision ADM Surgical Mask ASTM F2100 Breathability, Flammability and Blood Penetration Test

**Client** Precision ADM

Xiomara Perdomo  
Unit A – 1595 Buffalo Place  
Winnipeg, MB R3T 1L9  
Canada

**Compiled By** Cale Timlick, B.Sc, EIT  
Test and Verification Engineer

**Ref. #** 20125-R01

**Revision:** C

**Revision Date:** Jan 18, 2021

**Reviewed By** Trevor Gascoyne, M.Sc, P.Eng  
Director of Operations

**Review Date** Jan 18, 2021



### Notes:

This document contains the professional opinion of the Orthopaedic Innovation Centre (OIC) according to the matters set out herein, using its professional judgment and reasonable care based on the information available, the methodology, procedures, and techniques used, and OIC's assumptions and constraints in place at the time of preparation.

This document is to be read as a whole, and sections or parts thereof should not be relied upon out of context. This document may not be reproduced, except in full, without written approval of the OIC. In addition, this document only refers to the particular material, device, or other subject referred to in the document. No representation is being made regarding other similar articles.

Any use of this document by a third party, or any reliance on or decisions taken based upon it are the responsibility of the third party. The OIC accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made, or actions taken based on this document.

The OIC shall not be used in connection with any advertisements, offer or sale of any product process or service without the prior written consent of the OIC.

## Table of Contents

TEST REPORT .....	1
1 Testing Summary .....	3
2 Breathability (Differential Pressure) .....	4
2.1 Test Results .....	4
3 Flammability .....	5
3.1 Test Results .....	5
4 Blood penetration.....	6
4.1 Test Results .....	6
5 Changes to Document .....	7

# 1 TESTING SUMMARY

The testing described in this report for a set of Precision ADM manufactured surgical masks show the below performance.

Test Method	Average Results	ASTM F2100 Requirements		
		Level 1	Level 2	Level 3
<u>Breathability</u> EN 14683 Annex C	3.6 mmH <sub>2</sub> O/cm <sup>2</sup>	< 5.0 mmH <sub>2</sub> O/cm <sup>2</sup>	< 6.0 mmH <sub>2</sub> O/cm <sup>2</sup>	
<u>Flammability</u> 16 CFR Part 1610	Class 1	Class 1		
<u>Blood Penetration</u> ASTM F1862	160 mmHg	80 mmHg	120 mmHg	160 mmHg

## 2 BREATHABILITY (DIFFERENTIAL PRESSURE)

### 2.1 Test Results

**Table 2.1: Breathability test details**

<b>Date</b>	December 15, 2020		
<b>Manufacturer</b>	Precision ADM		
<b>Model</b>	PADM Surgical Mask		
<b>Lot Number</b>	2020-12-15 A008 B C007 D002 E003		
<b>Testing Standard</b>	EN 14683:2019 Annex C		
<b>Required Conditioning</b>	Yes	21 deg C 85 % rh 4 hrs min	
<b>Sample Test Duration</b>	~1 min		
<b>Test Flow Rate</b>	8 l/min		
<b>Anthropometric Headform used</b>	No		
<b>Jig Serial Number used</b>	FMS filter clamp, 2.5 cm diameter adapter plate		
<b>Test Pass/Fail</b>	< 5.0 mmH <sub>2</sub> O/cm <sup>2</sup> for Level 1 < 6.0 mmH <sub>2</sub> O/cm <sup>2</sup> for Level 2, 3		
<b>Notes</b>	dP testing of PADM surgical mask		

**Table 2.2: Breathability test results**

Sample	dP (mmH <sub>2</sub> O/cm <sup>2</sup> )	Lot Average (mmH <sub>2</sub> O/cm <sup>2</sup> )	Result
S1-1	3.6		Pass
S1-2	3.6		Pass
S1-3	3.7	3.6	Pass
S1-4	3.6		Pass
S1-5	3.5		Pass

The mask samples all passed the breathability standards outlined in ASTM F2100 with an average lot value of 3.6 mmH<sub>2</sub>O/cm<sup>2</sup>

### 3 FLAMMABILITY

#### 3.1 Test Results

**Table 3.1: Flammability test details**

<b>Date</b>	December 15, 2020	
<b>Manufacturer</b>	Precision ADM	
<b>Model</b>	PADM Surgical Mask	
<b>Lot Number</b>	2020-12-15 A008 B C007 D002 E003	
<b>Testing Standard</b>	16 CFR Part 1610.6	
<b>Required Conditioning</b>	Yes	105 deg C 30 minutes
<b>Flame Length</b>	5/8"	
<b>Flame Exposure</b>	1 second	
<b>Test Pass/Fail</b>	Class 1 level ≥ 3.5 seconds burn time	
<b>Notes</b>	Flammability testing of Precision ADM surgical mask	

**Table 3.2: Flammability test results**

<b>Sample</b>	<b>Time of Flame Spread</b>
<b>Mask 1</b>	DNI
<b>Mask 2</b>	DNI
<b>Mask 3</b>	DNI
<b>Mask 4</b>	DNI
<b>Mask 5</b>	DNI

The code "DNI" refers to did not ignite. This burn characteristic classifies the samples as Class 1 fabric. The samples passed the ASTM F2100 requirement for flammability class.

## 4 BLOOD PENETRATION

### 4.1 Test Results

**Table 4.1: Blood Penetration testing details**

<b>Date</b>	December 15, 2020	
<b>Manufacturer</b>	Precision ADM	
<b>Model</b>	PADM Surgical Mask	
<b>Lot Number</b>	2020-12-15 A008 B C007 D002 E003	
<b>Testing Standard</b>	ASTM F1862	
<b>Required Conditioning</b>	Yes	21 deg C 85 % rh 4 hrs min
<b>Sample Test Duration</b>	10 seconds	
<b>Test Pass/Fail</b>	Any blood found on inside surface AQL of 4.0%	
<b>Notes</b>	Blood Penetration testing of Precision ADM surgical mask	

**Table 4.2: Blood Penetration testing results**

Sample	80 mmHg	120 mmHg	160 mmHg	Sample	80 mmHg	120 mmHg	160 mmHg
Mask 1	n/a	n/a	Pass	Mask 17	n/a	n/a	Pass
Mask 2	n/a	n/a	Pass	Mask 18	n/a	n/a	Fail
Mask 3	n/a	n/a	Fail	Mask 19	n/a	n/a	Pass
Mask 4	n/a	n/a	Pass	Mask 20	n/a	n/a	Pass
Mask 5	n/a	n/a	Pass	Mask 21	n/a	n/a	Pass
Mask 6	n/a	n/a	Pass	Mask 22	n/a	n/a	Pass
Mask 7	n/a	n/a	Pass	Mask 23	n/a	n/a	Pass
Mask 8	n/a	n/a	Fail	Mask 24	n/a	n/a	Pass
Mask 9	n/a	n/a	Pass	Mask 25	n/a	n/a	Pass
Mask 10	n/a	n/a	Pass	Mask 26	n/a	n/a	Pass
Mask 11	n/a	n/a	Pass	Mask 27	n/a	n/a	Pass
Mask 12	n/a	n/a	Pass	Mask 28	n/a	n/a	Pass
Mask 13	n/a	n/a	Pass	Mask 29	n/a	n/a	Pass
Mask 14	n/a	n/a	Pass	Mask 30	n/a	n/a	Pass
Mask 15	n/a	n/a	Pass	Mask 31	n/a	n/a	Pass
Mask 16	n/a	n/a	Pass	Mask 32	n/a	n/a	Pass

The samples passed the ASTM F1862 standard with 29/32 passing. This meets the acceptable quality level of 4.0.

## 5 CHANGES TO DOCUMENT

Rev. To	Rev. From	Sec/Paragraph Changed	Change(s) Made	Date Implemented	Approval
A	N/A	N/A	Initial Release.	2021-01-15	CT
B	A	Title	Update Title as per client request	2021-01-18	CT
C	B	Section 2, 3, 4	Removed test and specific information sections	2021-01-18	CT