

# 3M™ Single Cartridge Half Facepiece Reusable Respirator HF-50 Series

## Product Description

The 3M™ Single Cartridge Half Facepiece Reusable Respirator HF-50 Series may be used with a variety of 3M cartridges and filters to help reduce inhalation exposure to many airborne contaminants.



**Particulate Type**

**Gas & Vapor Type**

## Key Features

### Headband Assembly

- Slim and flexible head harness

### Snap-Fit Connect

- Unique streamline design of inhalation port allows easier breathing

### Valve Cover

- Valve cover directs exhaled breath and moisture downward and helps provide cool, dry comfort

### Cool Flow™ Valve

- The proprietary 3M™ Cool Flow™ Valve's unique design allows easier breathing and enhanced comfort

### Silicone Faceseal

- Softer feel on the face provided by a soft seal design and advanced silicone material
- Unique faceseal design helps reduce tension and pressure points on face for excellent comfort
- Made from soft, resilient silicone and heat-resistant plastics



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## Standards

The 3M™ HF-50 Series respirator with appropriate cartridges and filters meets the requirements of the following standards: AS/NZS (Australian/ New Zealand Standard) 1716:2012; KMOEL (Korea Ministry of Employment and Labor) 2017-64; China GB2626-2006 and China GB2890-2009; and JMHLW (Japanese Ministry of Health, Labour and Welfare) Notification 299: 2001.

## Technical Features

### Assessment per Australian/New Zealand Standard 1716:2012

Requirement	Result	
Filter mass: 3301K-55 and 3301K-100 $\leq$ 300 g	< 300 g	Pass
Total inward leakage: $\leq$ 8%	< 8 %	Pass
Exhalation valve leakage: $\leq$ 30 ml/min at suction of 250 Pa	< 30 ml	Pass
Exhalation resistance: $\leq$ 120 Pa at airflow of 85L/min	< 120 Pa	Pass
Straps and buckles withstand axial tensile force of 10 N for 10 seconds in direction of pulling when facepiece is fitted	No breakage or separation	Pass
Simulated rough usage: no visible deterioration	No visible deterioration	Pass
Inhalation resistance of HF-50 facepiece + 1744C filter + retainer: <ul style="list-style-type: none"><li><math>\leq</math> 110 Pa at airflow of 30L/min</li><li><math>\leq</math> 340 Pa at airflow of 95 L/min</li></ul>	< 110 Pa < 340 Pa	Pass
Particulate filtration efficiency: 1744C, 3311K-55 and 7711 $\leq$ 6% penetration	< 6%	Pass
Inhalation resistance: <ul style="list-style-type: none"><li>HF-50 facepiece + 3301K-55, 3311K-55 or 3301K-55+7711+774 <math>\leq</math> 500 Pa at airflow rate of 85 L/min</li><li>3301K-100, 3301K-55+7711+774 <math>\leq</math> 160 Pa at airflow rate of 30 L/min</li><li>3301K-100, 3301K-55+7711+774 <math>\leq</math> 610 Pa at airflow rate of 95 L/min</li></ul>	< 500 Pa < 160 Pa < 610 Pa	Pass
Filter capacity for cyclohexane: <ul style="list-style-type: none"><li>3301K-55, 3311K-55 <math>\geq</math> 20 minutes at 1000 ppm</li><li>3301K-100 <math>\geq</math> 70 minutes at 1000 ppm</li></ul>	> 20 min > 70 min	Pass

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## Assessment per China GB2626-2006 and GB2890-2009

GB2626-2006 Requirement	Result	
Particulate filtration efficiency:		
<ul style="list-style-type: none"> <li>1705CN, 1744CN, 3701CN, 3704CN ≤ 5% penetration</li> <li>1701CN ≤ 10% penetration</li> </ul>	< 5% < 10%	Pass
Total inward leakage:		
<ul style="list-style-type: none"> <li>&lt; 5% (46/50 activity)</li> <li>&lt; 2% (8/10 individual)</li> </ul>	< 5% < 2%	Pass
Inhalation resistance: ≤ 350 Pa at airflow of 85L/min	< 350 Pa	Pass
Exhalation resistance: ≤ 250 Pa at airflow of 85L/min	< 250 Pa	Pass
Exhalation valve leakage: ≥ 20 s duration from -1,180 Pa to 0 Pa	> 20 s	Pass
CO <sub>2</sub> concentration inside facepiece: volume fraction ≤ 1%	< 1%	Pass
Strength, elongation: no breakage and separation:		
<ul style="list-style-type: none"> <li>≥ 10 s, 50 N force between facepiece and headband</li> <li>≥ 10 s, 50 N force between facepiece and cartridge</li> <li>≥ 10 s, 50 N force between facepiece and exhalation valve housing</li> </ul>	No breakage and separation	Pass
Flammability: no continued burning after flame removed	No burn after 5 seconds	Pass
GB2890-2009 Requirement	Result	
Flammability: no continued burning after flame removed	No burn after 5 seconds	Pass
Exhalation valve leakage: ≥ 20 s duration from -1,180 Pa to 0 Pa	> 20 s	Pass
Total inward leakage: ≤ 2 % (10 subject)	< 2%	Pass
CO <sub>2</sub> concentration inside facepiece: ≤ 1 %	< 1%	Pass
Vision Field:		
<ul style="list-style-type: none"> <li>≥ 65° (dual eyes)</li> <li>≥ 35° (downward)</li> </ul>	> 65° > 35°	Pass
Inhalation resistance: ≤ 20 Pa at airflow of 30L/min	< 20 Pa	Pass
Exhalation resistance: ≤ 50 Pa at airflow of 30L/min	< 50 Pa	Pass
Strength, elongation: no breakage and separation:		
<ul style="list-style-type: none"> <li>≥ 10 s, 50 N force between facepiece and headband</li> <li>≥ 10 s, 50 N force between facepiece and cartridge</li> </ul>	No breakage and separation	Pass
Filter mass: 3301CN, 3303CN < 300 g	< 300 g	Pass

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GB2890-2009 Requirement	Result	
Filter air flow resistance:		
<ul style="list-style-type: none"> <li>&lt; 80 Pa at 30L/min</li> <li>&lt; 400 Pa at 95L/min</li> </ul>	< 80 Pa < 400 Pa	Pass
Sorbent leakage: < 0.12mg	< 0.12 mg	Pass
The air tightness: air tightness package shall be provided.	Air tight	Pass
Service life:		
<ul style="list-style-type: none"> <li>≥ 45 minutes against 5.0 mg/L benzene</li> <li>≥ 25 minutes against 2.7 mg/L sulfur dioxide</li> </ul>	> 45 min > 25 min	Pass

## Assessment per KMOEL (Korea Ministry of Employment and Labor) Act 2017-64

Requirement	Result	
Filter mass: 3301K-100, 3301K-55 and 3311K-55 ≤ 300 g	< 300 g	Pass
Total inward leakage: ≤ 5%	< 5 %	Pass
Operation of exhalation valve: accurate operation at 300 L/min	Accurate operation	Pass
Exhalation resistance: ≤ 300 Pa at airflow of 160L/min	< 300 Pa	Pass
Strength, elongation: no breakage and separation		
<ul style="list-style-type: none"> <li>Connection between headband and facepiece (50 N)</li> <li>Connection between facepiece and cartridge (50 N)</li> <li>Connection between facepiece and exhalation valve cover (50 N)</li> </ul>	No breakage and separation	Pass
Inhalation resistance of HF-50 facepiece + cartridge (3301K-100, 3301K-55, 3303K-100):		
<ul style="list-style-type: none"> <li>≤ 170 Pa at airflow of 30 L/min</li> <li>≤ 640 Pa at airflow of 95 L/min</li> </ul>	< 170 Pa < 640 Pa	
Inhalation resistance of HF-50 facepiece + combined filter (3311K-55, 7711):		
<ul style="list-style-type: none"> <li>≤ 160 Pa at airflow of 30L/min</li> <li>≤ 610 Pa at airflow of 95 L/min</li> </ul>	<160 Pa <610 Pa	Pass
Inhalation resistance of HF-50 facepiece + particulate filter (1744, 1744C):		
<ul style="list-style-type: none"> <li>≤ 120 Pa at airflow of 30L/min</li> <li>≤ 420 Pa at airflow of 95 L/min</li> </ul>	<120 Pa <420 Pa	
Particulate filtration efficiency:		
<ul style="list-style-type: none"> <li>3311K-55 and 7711: ≤ 20 % penetration</li> <li>1744, 1744C: ≤ 6 % penetration</li> </ul>	< 20% < 6%	Pass
Facepiece inhalation resistance:		
<ul style="list-style-type: none"> <li>≤ 200 Pa at airflow of 160 L/min</li> <li>≤ 130 Pa at airflow of 95 L/min</li> <li>≤ 50 Pa at airflow of 30L/min</li> </ul>	< 200 Pa < 130 Pa < 50 Pa	Pass

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Requirement	Result	
CO <sub>2</sub> concentration inside facepiece: volume fraction ≤ 1%	< 1 %	Pass
Flammability: no continued burning after flame removed	No burn after flame removal	Pass
Filter capacity for cyclohexane: <ul style="list-style-type: none"> <li>3301K-100, 3301K-55, 3311K-55, 3303K-100 ≥ 20 minutes at 1000 ppm</li> </ul>	> 20 min	Pass
Filter capacity for chlorine: <ul style="list-style-type: none"> <li>3303K-100 ≥ 20 minutes at 1000 ppm</li> </ul>	> 20 min	Pass
Filter capacity for sulfur dioxide: <ul style="list-style-type: none"> <li>3303K-100 ≥ 20 minutes at 1000 ppm</li> </ul>	> 20 min	Pass

## Assessment per JMHLW (Japan Ministry of Health, Labour and Welfare) Notification 299: 2001

TIIS (Technology Institution of Industrial Safety) does not release the report for the approved product.

Requirement	Result	
Facepiece inhalation resistance: ≤ 50 Pa at airflow of 40L/min	< 50 Pa	Pass
Exhalation resistance: ≤ 80 Pa at airflow of 40L/min	< 80 Pa	Pass
Exhalation valve leakage: ≥ 15 s duration from -1,470 Pa to 0 Pa	> 15 s	Pass
Facepiece air-tightness: No sign of leakage at 980 Pa	No color change	Pass
CO <sub>2</sub> concentration inside facepiece: Volume fraction ≤ 1%	< 1%	Pass
Headband strength: No breakage and separation w/ 25N	No breakage and separation	Pass
Cartridge air-tightness: No sign of leakage at 1470 Pa	No sign of leakage	Pass
Cartridge flow resistance: <ul style="list-style-type: none"> <li>≤ 220 Pa without prefilter (3301J-55, 3301J-100, 3302J, 3303J)</li> <li>≤ 280 Pa with S1 filter (3311J-55, 3311J-100, 3301J-55+774+7711J, 3301J-100+774+7711J, 3303J+774+7711J)</li> </ul>	< 220 Pa < 280 Pa	Pass
Particulate filtration efficiency: <ul style="list-style-type: none"> <li>3311J-55, 3311J-100, 3301J-55+774+7711J, 3301J-100+774+7711J, 3303J+774+7711J ≤ 20% penetration</li> </ul>	< 20%	Pass

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Filter capacity for cyclohexane:

- 3301J-55, 3301J-100, 3311J-55, 3311J-100, 3303J ≥ 50 minutes at 300 ppm > 50 min Pass

Filter capacity for chlorine:

- 3302J, 3303J ≥ 40 minutes at 200 ppm > 40 min Pass

Filter capacity for sulfur dioxide:

- 3303J-100 ≥ 35 minutes at 300 ppm > 35 min Pass

**For more information, please contact your local 3M office**

<b>3M Hong Kong</b>	<b>852 2806 6111</b>	<b>3M India</b>	<b>80 30614498</b>
<b>3M Korea</b>	<b>080-033-4114</b>	<b>3M Taiwan</b>	<b>02 2785-9338</b>
<b>3M Indonesia</b>	<b>62 21 2997-4000</b>	<b>3M Thailand</b>	<b>66 2 260 8577 #1305</b>
<b>3M Singapore</b>	<b>65 6450 8888</b>	<b>3M Philippines</b>	<b>63 2 878 3674</b>
<b>3M Malaysia</b>	<b>603 7884-2888</b>	<b>3M Vietnam</b>	<b>84-8-54160426</b>



**⚠ WARNING!**

3M respirators are part of a system that helps reduce exposures to certain particulate contaminants. Follow all local regulations. Before use, the wearer must read and understand the User Instructions provided as a part of the product packaging. Follow all local regulations. Misuse may result in sickness or death. For correct use, consult supervisor and the User Instructions, or call 3M.



**Personal Safety Division**  
3M Center, Building 235-2W-70  
St. Paul, MN 55144-1000

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