



OE-3: 2014-01 Update

April 2014

## Update to Requalification Test of Certain High Efficiency Particulate Air (HEPA) Filters

### PURPOSE

This Operating Experience Level 3 (OE-3) document provides updated information regarding the previous requalification test failure and subsequent successful requalification, of certain HEPA filter models manufactured by Flanders Corporation.

### BACKGROUND

In a letter dated December 4, 2013 (Attachment 1), Flanders Corporation notified the Department of Energy (DOE) that filter Model T-007-W-43-05-NU-51-23-GG-FU5 failed a requalification test performed in accordance with American Society of Mechanical Engineers (ASME) AG-1, *Code on Nuclear and Gas Treatment*, at the Edgewood Chemical Biological Center (ECBC). Flanders Corporation notified DOE contractors who purchased the failed filter model. In addition, in February 2014, DOE issued OE-3: 2014-01 to inform DOE program offices of the reported requalification test failure of these filters.

In a letter dated March 7 (Attachment 2), Flanders Corporation notified DOE that this filter model has now been successfully requalified.

### DISCUSSION

The specific failure occurred during a test defined by ASME AG-1, Section FC-5140, *Resistance to Pressure*, during which the filter media ruptured. This test requires the filter to be exposed to water spray and elevated resistance (10" water gauge) without rupturing of the filter media.

Flanders Corporation performed an analysis to determine the cause of the failure at the ECBC where these filter designs are tested and qualified. The March 7 letter from Flanders

Corporation indicated that there had been changes in the testing rig at the ECBC related to location and arrangement of spray nozzles. Flanders Corporation stated that, based on their investigation and testing, it was their conclusion that the lack of airflow uniformity in the initial test was most likely the cause of failure. ECBC made additional changes to improve airflow uniformity in the test rig and retested the filters. The second requalification test at ECBC was successful and Flanders Corporation has stated that these filters are now qualified.

The March 7 letter from Flanders Corporation also included an updated Qualified Products List of filters tested at ECBC. The Flanders Corporation Model T-007-W-43-05-NU-51-23-GG-FU5 is once again listed on the ECBC Qualified Products List.

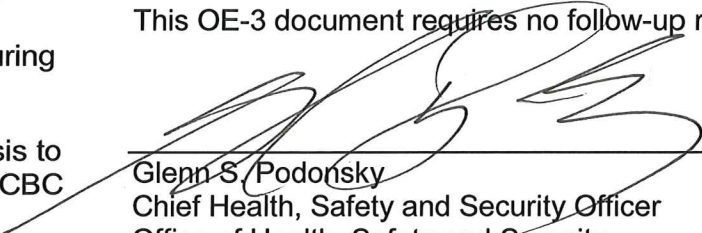
DOE is distributing this OE-3 document as an update to the February OE-3 document, to notify users that this filter model has been successfully requalified.

### RECOMMENDATION

DOE program offices should ensure their respective contractors, who use these types of filters, have received notification and are informed of the successful requalification information.

Questions related to this OE-3 document should be directed to Subir Sen at [subir.sen@hq.doe.gov](mailto:subir.sen@hq.doe.gov).

This OE-3 document requires no follow-up report.

  
Glenn S. Podonsky  
Chief Health, Safety and Security Officer  
Office of Health, Safety and Security





531 Flanders Filters Road  
Washington, NC 27889  
252-946-8081

4 December 2013

Colette Broussard, Director  
Office of Quality Assurance, HS-33  
Office of Health, Safety and Security  
Department of Energy  
1000 Independence Ave., SW  
Washington, DC 20585

Ms. Broussard,

In keeping with the requirements of Section 6.1.1 of DOE-STD-3020-2005 and Price Anderson Amendments Act, this letter is submitted to advise you that Flanders Model T-007-W-43-05-NU-51-23-GG-FU5 recently failed requalification testing at Edgewood Chemical Biological Center. Therefore, Flanders will not be offering this Model as a qualified product until requalification of the Model has been accomplished.

We are currently investigating the failure to include review of the materials, manufacturing and testing methods used internally, as well as questions and concerns that Flanders has regarding recent modifications to the Test Rig at ECBC.

Based upon the historical performance of this product we are confident in the performance of the product in actual operating conditions. However, since we do not have detailed knowledge of each Customer's specific application, the Customer will need to evaluate their individual application to determine if the result of this Test is something that could create a substantial safety hazard.

Upon completion of our evaluation of this recent failure, we will submit the product for re-qualification and notify you of results.

Please feel free to contact me with any questions you may have.

A handwritten signature in black ink that reads "Eric Deal". The signature is written in a cursive style with a large, sweeping "E" and "D".

Eric Deal  
VP of Quality  
Flanders Corporation  
252-948-3325  
[edeal@flanderscorp.com](mailto:edeal@flanderscorp.com)



531 Flanders Filters Road  
Washington, NC 27889  
252-946-8081

To: Colette Broussard, Director  
Office of Quality Assurance, HS-33  
Office of Health, Safety and Security  
Department of Energy  
1000 Independence Ave., SW  
Washington, DC 20585

Date: March 7, 2014

Subject: Qualification of Flanders Model – T-007-W-43-05-NU-51-23-GG-FU5

Ms. Broussard,

In follow up to our previous notification of a requalification test failure at ECBC, we are pleased to inform you that Flanders Model T-007-W-43-05-NU-51-23-GG-FU5 was successfully tested and passed requalification testing on February 20, 2014.

Flanders had concern as to the validity of the original requalification testing because of suspected changes that had been made to the ECBC Test Rig. Through our investigations, Flanders learned that the location and arrangement of the spray nozzles had been changed in the summer of 2013 and just after our test failure in November 2013, ECBC made an additional modification to the Test Rig by installing devices to improve airflow uniformity.

Results of these modifications indicate that airflow velocity readings in the Test Duct ranged by an average of 188 fpm prior to installation of the modification and only 17 fpm after the modification. This is an improvement of ~90% based upon their raw data.

The type and location of spray nozzles and a lack of airflow uniformity were our primary concerns when we learned of the original requalification test failure. Knowing that airflow uniformity had been corrected, Flanders resubmitted filters manufactured to the same specifications as the original requalification filters, and as they have been manufactured for many years. The follow up test proved to be successful and the Filter Model is now qualified.

The noted significant difference in this test versus the original requalification test was that ECBC had installed devices in the Test Duct to improve airflow uniformity. Based upon our investigation and testing, it is our conclusion that the lack of airflow uniformity during the original requalification testing was the most likely cause of the failure.

We apologize for any inconveniences caused by the initial notification and will resume offering this model as a Qualified Product immediately.

For your convenience, a copy of the latest QPL showing the approval of this model is attached.

Feel free to contact me with any questions you may have.

Sincerely,

Eric Deal  
VP of Quality  
Flanders Corporation  
252-948-3325  
edeal@flanderscorp.com



Test, Reliability & Evaluation Branch  
Engineering Test Division  
Edgewood Chemical Biological Center



RDCB-DET-T

6 March 2014

Current TREB Qualified Products List (QPL)

High Efficiency Particulate Air (HEPA) Filter & Media  
IAW ASME, AG-1, Section FC-5000 & FC-I-4000

Company Name	Product Type	Product Code	Evaluation Completion Date	Comments
Camfil Farr	HEPA Filters Stainless Frame	FA1560N-05-03-15/22	4/9/2009	**2000CFM
Camfil Farr	HEPA Filters Stainless Frame	FA1570N-05-03-08/09/15	4/9/2009	**2000CFM
Flanders Filters, Inc.	HEPA Filters Stainless Steel, Gel Seal	T-007-U-43-05-NU-51-23-GG-FU5	6/11/2009	**1500CFM
Flanders Filters, Inc.	HEPA Media	ME-PN703, ME-PN 700, ME-PN 710, ME-AG 700, ME-AG 703	7/13/2009	NA
Flanders Filters, Inc.	HEPA Media	ME-AG710	4/23/2010	NA
Camfil Farr	HEPA Filters Stainless Frame	02EH-24Z24Z12-FD-3-F-M-6B-A/00	11/18/2010	*1500 CFM
Lydall Filtration	HEPA Media	3398	9/23/2010	NA
Lydall Filtration	HEPA Media	AX3398	11/22/2010	NA
AAF International	HEPA Filter Wood Frame/Gasket Seal	1332345	4/15/2011	**1500 CFM
AAF International	HEPA Filter Stainless Frame/Gasket Seal	1413244	4/15/2011	**1500 CFM
AAF International	HEPA Filter Stainless Frame/Gel Seal	1689868	5/27/2011	**1500 CFM
AAF International	HEPA Filter Wood Frame/Gel Seal	1690833	5/27/2011	**1500 CFM
Flanders Filters, Inc.	HEPA Filters	0-007-U-42-03-NU-11-23-GG-FU5	12/19/2011	*1500 CFM
Vokes Air Limited	HEPA Filters	728103	3/27/2012	*2000 CFM
Flanders Filters, Inc.	HEPA Filter	0-007-C-04-00-NU-11-13-GG-FU5	6/13/2012	**1000 CFM
Flanders Filters, Inc.	HEPA Filter	T-007-W-04-05-NU-51-23-GG-FU5	7/18/2012	**1500 CFM
Flanders Filters, Inc.	HEPA Filter	0-007-C-42-03-NU-11-13-GG-FU5	5/21/2013	**1250 CFM

Idaho Treatment Group, LLC (ITG) Advanced Mixed Waste Treatment Project (AMWTP) <sup>1</sup>	Radial HEPA Filter	Vokes-P/N 5451300303 (Product Type: 470 L/SEC)	7/3/2013	**1000 CFM
Hollingsworth & Vose	HEPA Media	HB-5451	7/23/2013	roll 0203, lot# 3010155
Flanders Filters, Inc.	HEPA Filter	T-007-K-43-VF-NU-51-23-GG-FU5	1/15/2014	*2000 CFM
Flanders Filters, Inc.	HEPA Filter	T-007-W-43-05-NU-51-23-GG-FU5	2/27/2014	**1500CFM

**Recommended for Re-Certification**

Company Name	Product Type	Product Code	Evaluation Completion Date	Comments
Camfil Farr	HEPA Filter Gelatinous Seal	855011009	9/27/2006	*2000 CFM-recommended for recertification
Camfil Farr	HEPA Filters Stainless Frame	02EH-24Z24Z12-BD-3-F-M-6B-0/00	8/22/2008	**1500CFM-recommended for recertification
Camfil Farr	HEPA Filters Stainless Frame	02ES-24Z24Z06-BD-2-F-M-6B-0/00	12/2/2008	**500CFM-recommended for recertification
Camfil Farr	HEPA Filters Stainless Frame	02ES-24Z24Z06-FD-2-F-M-6B-A/00	8/22/2008	**500CFM
Solti Co. Ltd	HEPA Filters Stainless Frame	7082, SHLNU-6062SA	1/22/2008	**1500CFM

**Notes:**

1. Idaho Treatment Group, LLC (ITG) Advanced Mixed Waste Treatment Project (AMWTP) is qualified under ASME-AG-1 Table FK-5000-1 Groups I & II.

\* FC-5150 Resistance to Heated Air and FC-5160 Resistance to Spot Flame tests certification reports were NOT provided to ECBC.

\*\* FC-5150 Resistance to Heated Air and FC-5160 Resistance to Spot Flame tests certification reports were provided to ECBC.

- Filter designs and media shall be re-qualified at least every five (5) years or when any modification to the configuration is made.

- To remain on the Qualified Products List, the production of this filter configuration shall not deviate from the manufacturing techniques and materials of construction used in manufacturing the final configuration submissions tested.
- If there are any changes to the manufacturing process on the filters/ media or the materials, it is required to resubmit samples for re-certification testing prior to the next production.
- For more information on qualified products testing please contact, Do Nguyen, Edgewood Chemical Biological Center, Engineering Services Office: ATTN: RDCB-DET-T, Webster Rd, Bldg E 5165, Edgewood Area, Aberdeen Proving Ground, MD 21010-5424, Telephone (410) 436-4237/8088, Fax (410) 436-4804, Email: [do.p.nguyen.civ@mail.mil](mailto:do.p.nguyen.civ@mail.mil)