



SURFACE VEHICLE RECOMMENDED PRACTICE

J3078™/2

APR2021

Issued

2021-04

Off-Road Self-Propelled Work Machines Operator Enclosure Environment Part 2: Air Filter Element Test Method

RATIONALE

This SAE filter test standard provides two uniform test methods, one for filters classified for general use and one for use when classification for more efficient filtration is required.

ISO 11155-1 and ISO 29463 are fractional efficiency test methods which address a wide variety of filter media types, filter shapes, efficiency requirements, and airflow ranges that are utilized in modern operator enclosures.

Tests were performed to determine a correlation between the ISO 5011 gravimetric test method (the testing method used by SAE J1533) and the ISO 11155-1 fractional efficiency test method. Filters with an efficiency $\geq 96\%$, under ISO 5011, were tested under ISO 11155-1. They were found to be approximately 92 to 98% efficient on particles from 5.50 to 10 μm in size. ISO 11155-1 tests for filtration efficiency using a fractional efficiency test method; however, it does not produce a filter classification.

ISO 29463 is to be applied when specifications require high efficiency filtration. Specification for filtration efficiency shall be correlated to the appropriate classification as found in ISO 29463-1:2017 Section 5, for example: ISO 15 E, ISO 20 E, ISO 25 E, ISO 35 H. This document will replace SAE J1533.

1. SCOPE

SAE J3078/2 specifies two uniform test methods to determine performance levels for fresh and recirculation air filters used in operator enclosures with an air ventilation system. It is not applicable for testing vapor and gas filters. The category of machines covered include off-road self-propelled work machines as defined in SAE J1116 and tractors and machinery for agriculture and forestry as defined in ANSI/ASAE S390.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 ISO Publications

Copies of these documents are available online at <http://webstore.ansi.org/>.

ISO 11155-1 Air filters for passenger compartments - Part 1: Test for particulate filtration

ISO 29463-1 High efficiency filters and filter media for removing particles from air - Part 1: Classification, performance, testing and marking

SAE Executive Standards Committee Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2021 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
http://www.sae.org

SAE WEB ADDRESS:

Full document details: SAE J3078_2_202104

For more information on this standard, visit
https://www.sae.org/standards/content/J3078/2_202104

Documents
Document Sharing Hub

ISO 29463-2	High efficiency filters and filter media for removing particles from air - Part 2: Aerosol production, measuring equipment and particle-counting statistics
ISO 29463-3	High efficiency filters and filter media for removing particles from air - Part 3: Testing flat sheet filter
ISO 29463-4:2011	High efficiency filters and filter media for removing particles from air - Part 4: Test method for determining leakage of filter elements - Scan method
ISO 29463-5	High efficiency filters and filter media for removing particles from air - Part 5: Test method for filter elements

3. TESTING METHODS

Testing method 3.1 is used for filters classified for general use. Tests were performed to determine a correlation between the ISO 5011 gravimetric test method (the testing method used by SAE J1533) and the ISO 11155-1 fractional efficiency test method. Filters with an efficiency $\geq 96\%$, under ISO 5011, were tested under ISO 11155-1. They were found to be approximately 92 to 98% efficient on particles from 5.50 to 10 μm in size. ISO 11155-1 tests for filtration efficiency using a fractional efficiency test method; however, it does not produce a filter classification.

Testing method 3.2 is to be applied when specifications require high efficiency filtration. Specification for filtration efficiency shall be correlated to the appropriate classification as found in ISO 29463-1:2017 Section 5, for example: ISO 15 E, ISO 20 E, ISO 25 E, ISO 35 H

3.1 ISO 11155-1, the Following Parameters Shall Apply

Average efficiency is determined using two channels, 5.5 to 7.0 μm and 7.0 to 10.0 μm .

Filter ID	Differential Pressure (kPa)	Efficiency % (microns)		Average Efficiency % (microns)
		5.5-7.0	7.0-10.0	
A	<0.1	90.6	93.8	92.2

Figure 1 - Example of filter test data showing the two test channels and the average efficiency at 5.50 to 10 μm

3.2 ISO 29463 -1, -2, -3, -5 and ISO 29463-4:2011, F.1-F.5

3.3 Filter Labeling for Filters Tested under 3.2

a. All filters classified according to ISO 29463-1:

1. Shall be marked with their filter classification (refer to ISO 29463-1:2017 Section 5, Tables 1 and 2).
2. Filter labelling information as found in ISO 29463-1:2017 Section 9.1 a), b), c), d), e), and f). If applicable, ISO 29463-5 Annex B, B.5 shall be included as a separate document in the filter packaging.
3. Use of a machine-readable optical label (e.g., matrix barcode) on the filter label is recommended to allow for retrieval of the filter label information.