

ISO 5011:2025-09 (E)

Inlet air cleaning equipment for internal combustion engines and compressors - Performance testing

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Terms, definitions and symbols	1
3.1	Terms and definitions	1
3.2	Symbols	3
4	Measurement accuracy and standard conditions	4
4.1	Measurement accuracy and precision	4
4.2	Standard conditions	4
5	Test materials and test conditions	4
5.1	Test dust	4
5.1.1	Grade	4
5.1.2	Preparation	5
5.2	Test oil for oil bath air cleaners	5
5.3	Absolute filter materials	5
5.3.1	Filter media	5
5.3.2	Validation of absolute filter media efficiency, E_a	5
5.4	Absolute filter mass	6
5.4.1	Validation of the absolute filter weighing method	6
5.5	Temperature and humidity	6
6	Test procedure for dry-type single-stage air cleaners	6
6.1	General	6
6.2	Test equipment	6
6.3	Restriction and differential pressure test	8
6.4	Efficiency test	8
6.4.1	Purpose	8
6.4.2	Types	8
6.4.3	Test procedure -- Absolute filter method	9
6.4.4	Test procedure -- Direct weighing method	10
6.5	Capacity test	10
6.6	Filter element pressure collapse test	11
6.7	Variable airflow test	11
6.8	Presentation of data	12
7	Test procedure for dry-type multi-stage air cleaners	12
7.1	General	12
7.2	Test equipment	12
7.3	Restriction and differential pressure test	13
7.4	Initial efficiency test procedure -- Absolute filter method	13
7.5	Full-life efficiency and capacity test	14
7.5.1	Air cleaner dust capacity	14
7.5.2	Test procedure -- Absolute filter method	14
7.5.3	Test procedure -- Direct weighing method	15
7.6	Presentation of data	16
7.7	Variations for scavenged airflow performance testing	16

7.7.1	General	16
7.7.2	Additional equipment	16
7.7.3	Restriction and differential pressure test	17
7.7.4	Full-life efficiency and capacity test	17
7.7.5	Presentation of data	17
7.8	Precleaner performance test	17
7.8.1	Precleaner dust removal	17
7.8.2	Precleaner efficiency	18
7.8.3	Presentation of data	18
7.9	Secondary element test procedure	18
7.9.1	General	18
7.9.2	Specific efficiency test	18
7.9.3	Expression of results	19
8	Test procedure for oil bath air cleaners	19
8.1	General	19
8.2	Test equipment and conditions	19
8.3	Restriction and differential pressure test	20
8.4	Oil carry-over test	20
8.5	Full life efficiency and capacity test	20
8.6	Recovery test	21
8.7	Presentation of data	21
Annex A (normative)	Explanation of restriction, differential pressure and pressure loss of an air cleaner	22
Annex B (normative)	Test equipment	24
Annex C (informative)	Report sheet on performance testing of air cleaner equipment according to ISO 5011--Dry-type single-stage air cleaners	36
Annex D (informative)	Report sheet on performance testing of air cleaner equipment according to ISO 5011--Dry-type multi-stage air cleaners	38
Annex E (informative)	Presentation of results -- Air cleaner restriction/differential pressure versus flow	40
Annex F (informative)	Presentation of results -- Air cleaner capacity	41
Annex G (normative)	Airflow and resistance correction to standard conditions	42
Annex H (normative)	Penetration sensitivity	43
Bibliography	50