



Designation: D5260 – 22

Standard Classification for Chemical Resistance of Poly(Vinyl Chloride) (PVC) Homopolymer and Copolymer Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds¹

This standard is issued under the fixed designation D5260; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This classification covers the method for determining and classifying the resistance of poly(vinyl chloride) (PVC) homopolymer and copolymer compounds, and chlorinated poly(vinyl chloride) (CPVC) compounds in chemicals by simple immersion testing of unstressed specimens.

1.2 This classification is applicable to any PVC or CPVC compound as defined in Specifications [D1784](#), [D4216](#), [D4396](#), or [D4551](#).

1.3 The values stated in SI units are to be regarded as standard.

1.4 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of this standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

NOTE 1—There are no ISO standards covering the subject matter of this classification.

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This classification is under the jurisdiction of ASTM Committee [D20](#) on Plastics and is the direct responsibility of Subcommittee [D20.15](#) on Thermoplastic Materials.

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2. Referenced Documents

2.1 ASTM Standards:²

[D543](#) Practices for Evaluating the Resistance of Plastics to Chemical Reagents

[D883](#) Terminology Relating to Plastics

[D1600](#) Terminology for Abbreviated Terms Relating to Plastics

[D1784](#) Classification System and Basis for Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

[D4216](#) Specification for Rigid Poly(Vinyl Chloride) (PVC) and Related PVC and Chlorinated Poly(Vinyl Chloride) (CPVC) Building Products Compounds

[D4396](#) Specification for Rigid Poly(Vinyl Chloride) (PVC) and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds for Plastic Pipe and Fittings Used in Nonpressure Applications

[D4551](#) Specification for Poly(Vinyl Chloride) (PVC) Plastic Flexible Concealed Water-Containment Membrane

3. Terminology

3.1 Definitions and Abbreviations:

3.1.1 For definitions of terms pertaining to plastics used in this test method, refer to Terminology [D883](#). For abbreviations used in this test method, refer to Terminology [D1600](#), unless otherwise indicated.

4. Significance and Use

4.1 Reference this chemical resistance classification for any PVC/CPVC material compound specification wherein a level of resistance to specific chemicals is required for satisfactory product performance.

4.2 Listing of a chemical in the annex does not imply PVC/CPVC compatibility or resistance to the chemical. Some

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

*A Summary of Changes section appears at the end of this standard

of the chemicals listed could be deleterious to a specific compound, causing radical changes in the physical properties. Resistance to these chemicals is not intended to be a practical requirement in a specification.

4.3 For resistance to mixtures of chemicals, it is suggested that the blend be tested rather than accepting the resistance of the individual chemicals because of a possible solvency enhancement of the combined chemicals.

4.4 The specimens tested in this classification are unstressed. When service conditions include stress or other factors, or both, test chemical resistance of the PVC/CPVC compound under actual service conditions.

5. Basis of Classification

5.1 The chemical resistance of a PVC or CPVC compound is composed of the cell classifications specified from Table 1. For example, the resistance of PVC to 25 % acetic acid at ambient temperature would be written as a cell classification of A05231:

	Class
Chemical (acetic acid from annex)	A05
Concentration of 25 %	2
Temperature of 23°C	3
Resistance	1

NOTE 2—The cell-type format provides the means of classifying chemical resistance. This type of format is subject to possible misapplication in classifying a chemical resistance that is unobtainable with commercially available materials. Consult the manufacturer regarding this classification.

6. Performance Requirements

6.1 The chemical resistance shall be for a compound that meets the physical property and processing requirements of the application.

7. Sampling

7.1 A batch or lot shall be considered as a unit of manufacture and is permitted to consist of a blend of two or more production runs of material.

7.2 Sample using a statistically acceptable procedure.

8. Test Methods

8.1 Determine the chemical resistance of a compound following the procedure of Test Method D543 except the exposure period shall be for 30 days. Note the chemical, concentration, test temperature, and resistance in accordance with 8.1.1 – 8.1.4. This data is compiled in Table 1 and comprises the six digits of the chemical resistance cell.

8.1.1 The test chemical is designated from the alphanumeric list of chemicals in the annex. This alphanumeric designation is the first three digits of the chemical resistance cell.

8.1.2 The concentration of the chemical from row two of Table 1 is designated as the fourth digit of the chemical resistance cell.

8.1.3 The test temperature from row three of Table 1 is designated as the fifth number of the chemical resistance cell.

8.1.4 The resistance of a compound from row four of Table 1 is designated as the sixth number of the chemical resistance cell. Grade a compound for its resistance to the testing of 8.1.1 – 8.1.3 as follows:

	Resistant	Marginally Resistant	Non-Resistant
Linear Swelling	0 %	<5 %	>5 %
Change in Weight	<1 %	<10 %	>10 %
Change in Shore Hardness	no change	<5 units	>5 units

9. Rejection

9.1 Product that fails to conform to the requirements of this classification shall not be certified as meeting the requirements of this classification.

10. Keywords

10.1 chemical resistance; chlorinated poly(vinyl chloride) polymers; poly(vinyl chloride) copolymers; poly(vinyl chloride) polymers

TABLE 1 Chemical Resistance of a Compound

Designation Order Number	Property and Unit	Cell Limits							
		0	1	2	3	4	5	6	7
1 to 3	chemical	unspecified			use number of chemical from annex				
4	concentration, %	unspecified	0 to 19	20 to 39	40 to 59	60 to 79	80 to 99	100	
5	temperature, °C	unspecified	<0	0 to 19	20 to 39	40 to 59	60 to 79	80 to 100	>100
6	resistance	unspecified	R	MR	NR				