



Designation: D1600 – 18

## Standard Terminology for Abbreviated Terms Relating to Plastics<sup>1</sup>

This standard is issued under the fixed designation D1600; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the U.S. Department of Defense.*

### 1. Scope\*

1.1 The purpose of this terminology is to provide uniform contractions of terms relating to plastics. Abbreviated terminology has evolved through widespread common usage. This compilation has been prepared to avoid both the occurrence of more than one abbreviated term for a given plastics term and multiple meanings for abbreviated terms.

1.2 The scope of these abbreviated terms includes plastics terms pertaining to composition and relating to type or kind according to mode of preparation or principle distinguishing characteristics. Also included are abbreviated terms for terms relating to copolymers, blends and alloys of plastics, and additives such as plasticizers, fillers, etc.

NOTE 1—A code relating to the composition of rubbers is given in Practice D1418.

1.3 No attempt is made here to systematize formally a shorthand terminology for polymers. Terminology, including nomenclature, codes, symbols, and formula designations for use in scientific literature in the field of natural and synthetic polymers, are being studied and standardized by the International Union of Pure and Applied Chemistry.<sup>2</sup>

1.4 These abbreviated terms are by no means all-inclusive of plastics terminology. They represent, in general, those terms that have come into established use. Since it is recognized that abbreviated terms serve no useful purpose unless they are generally accepted and used, no attempt has been made to establish a rigorous code for devising standard abbreviated terms. This would result in awkward departures from established usage of existing and accepted abbreviated terms and lead to cumbersome combinations in the future, which would not be likely to receive widespread acceptance. The abbreviated terms now in use have grown naturally out of the need for convenient, readily comprehended shorthand for long chemical names. This process can be expected to continue along the

natural lines of least resistance and will serve as a basis for further standardization as the need arises. A general guide for the preparation of abbreviated terms appears desirable, however, to facilitate more organized and uniform standardization in the future. An appendix is attached, which suggests a uniform way to prepare abbreviated terms.

1.5 Note that the uppercase letter F should be used to designate phosphate and that other elements may also be designated F.

1.6 An abbreviated term (FR) and code numbers are provided to identify classes of materials used as flame retardants added to plastics. The system is provided for use in situations where marking of plastics products is desired.

NOTE 2—Many of the abbreviated terms, codes, numbers, and symbols in ISO 1043 parts 1 through 4 and in ISO/DIS 1043-4 are the same as the corresponding item in ASTM D1600. D1600 includes a number of abbreviated terms that are not in ISO 1043.

1.7 *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.*

### 2. Referenced Documents

2.1 *ASTM Standards*:<sup>3</sup>

D883 Terminology Relating to Plastics

D1418 Practice for Rubber and Rubber Latices—Nomenclature

D1972 Practice for Generic Marking of Plastic Products (Withdrawn 2014)<sup>4</sup>

E176 Terminology of Fire Standards

2.2 *ISO Standards*:<sup>5</sup>

ISO 1043-1:2001 Plastics—Symbols—Part 1: Basic Polymers and Their Special Characteristics

<sup>1</sup> This terminology is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.92 on Terminology.

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<sup>2</sup> "Report on Nomenclature in the Field of Macromolecules," *Journal of Polymer Science*, Vol VIII, 1952, pp. 257–277.

<sup>3</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>4</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

<sup>5</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

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

ISO 1043-2:2000 Plastics—Symbols—Part 2: Fillers and Reinforcing Materials

ISO 1043-3:1996 Plastics—Symbols—Part 3: Plasticizers

ISO 1043-4:1998 Plastics—Symbols and Abbreviated Terms—Part 4: Flame Retardants

### 3. Terminology

#### 3.1 Definitions:

3.1.1 For definitions of general terms, see Terminology D883.

#### 3.2 Definitions of Terms Specific to This Standard:

3.2.1 *flame retardant, FR, n*—a substance which, when added to a combustible material, inhibits flame spread of the resulting substance or material when exposed to flame impingement. (E176)

3.2.1.1 *Discussion*—Flame retardants may be incorporated in plastics as additives (additive flame retardant) or as chemical groups in the base polymer by use of reactive intermediates in the polymerization process (reactive flame retardant). The code numbers in Section 7 of this standard are restricted to additive flame retardants.

3.2.2 *flame retardant, adj*—not a defined term. Use only as a modifier with defined compound terms: flame-retardant chemical, flame-retardant coating, and flame-retardant treatment. (E176)

### 4. Terms and Abbreviated Terms

#### 4.1 Plastics and Resins:<sup>6</sup>

Term	Abbreviated Term
Acrylonitrile/butadiene plastics	AB
Acrylonitrile-butadiene-acrylate plastics	ABA
Acrylonitrile-butadiene-styrene plastics	ABS
Acrylonitrile-chlorinated polyethylene-styrene plastics	ACPES
Acrylonitrile-ethylene-styrene plastics	AES
Acrylonitrile-methyl acrylate-acrylonitrile-butadiene rubber	AMAB
Acrylonitrile-methyl methacrylate plastics	AMMA
Acrylonitrile-styrene-acrylate plastics	ASA
Acrylonitrile/ethylene-propylene-diene/styrene	AEPDMS
Aromatic polyester	ARP
Carboxymethyl cellulose	CMC
Casein	CS
Caseine-formaldehyde resin	CSF
Cellulose acetate	CA
Cellulose acetate-butyrate	CAB
Cellulose acetate propionate	CAP
Cellulose formaldehyde	CEF

Term	Abbreviated Term
Cellulose nitrate	CN
Cellulose plastics, general	CE
Cellulose propionate	CP
Cellulose triacetate	CTA
Chlorinated poly(vinyl chloride)	CPVC
Chlorinated polyethylene	CPE
Cresol-formaldehyde resin	CF
Epoxy, epoxide	EP
Ethyl cellulose	EC
Ethylene acrylate	EA
Ethylene-chlorotrifluoroethylene copolymer	E-CTFE
Ethylene-ethyl acrylate plastics	EEA
Ethylene-methacrylic acid plastics	EMA
Ethylene-propylene polymer	EPM
Ethylene-propylene-diene plastics	EPD
Ethylene-tetrafluoroethylene copolymer	ETFE
Ethylene-vinyl acetate plastics	EVA
Ethylene-vinyl alcohol copolymer	EVOH
Fluorocarbon perfluoromethoxy	MPA
Furan formaldehyde resin	FF
General purpose polystyrene	GPSS
High density polyethylene plastics	HDPE
High impact-resistant polystyrene	HIPS
Impact resistant polystyrene	IPS
Linear low density polyethylene plastics	LLDPE
Linear medium density polyethylene plastics	LMDPE
Liquid crystal polymer	LCP
Low density polyethylene plastics	LDPE
Medium density polyethylene plastics	MDPE
Melamine-formaldehyde resin	MF
Melamine/phenol-formaldehyde resin	MPF
Methacrylate-butadiene-styrene plastics	MBS
Methyl cellulose	MC
Methyl methacrylate-acrylonitrile-butadiene-styrene resin	MMABS
Nylon (see also polyamide)	PA
Perfluoro(alkoxy alkane)	PFA
Perfluoro(ethylene-propylene) copolymer	FEP
Perfluoromethoxy resin	MFA
Phenol-formaldehyde resin	PF
Phenol-furfural resin	PFF
Poly(acrylic acid)	PAA
Poly(allyl diglycol carbonate)	PADC
Poly(aryl ether ketone)	PAEK
Poly(butyl acrylate)	PBA
Poly(butylene adipate-co-succinate)	PBAS
Poly(butylene adipate-co-terephthalate)	PBAT
Poly(butylene succinate)	PBS
Poly(butylene terephthalate)	PBT
Poly(cyclohexylenedimethylene cyclohexandicarboxylate), glycoland acid comonomer	PCCE
Poly(cyclohexylenedimethylene terephthalate)	PCT

<sup>6</sup> To prevent any confusion with or misuse of the registered trademark, PET<sup>®</sup> Milk, the guidelines of 8.1 shall be followed.

Term	Abbreviated Term	Term	Abbreviated Term
Poly(cyclohexylenedimethylene terephthalate), acid comonomer	PCTA	Polyisobutylene	PIB
Poly(cyclohexylenedimethylene terephthalate), glycol	PCTG	Polyisocyanurate	PIR
Poly(diallyl phthalate)	PDAP	Polyketone	PK
Poly(ester urethane)	PAUR	Polymethacrylimide	PMI
Poly(ether block amide)	PEBA	Polyoxymethylene, polyacetal	POM
Poly(ether sulfone)	PES	Polyphenylene	PPH
Poly(ether urethane)	PEUR	Polyphthalamide	PPA
Poly(ethylene furanoate)	PEF	Polypropylene	PP
Poly(ethylene oxide)	PEOX	Homopolymer polypropylene	HPP
Poly(ethylene terephthalate)	PET <sup>6</sup>	Random copolymer polypropylene	RPP
Poly(ethylene terephthalate) acid comonomer	PETA	Impact copolymer polypropylene	CPP
Poly(ethylene terephthalate) glycol comonomer	PETG	Polystyrene	PS
Poly(lactic acid)	PLA	Polysulfone	PSU
Poly(methyl methacrylate)	PMMA	Polytetrafluoroethylene	PTFE
Poly(methyl methacrylimide)	PMMI	Polyurethane	PUR
Poly(methyl- $\alpha$ -chloroacrylate)	PMCA	Saturated polyester plastic	SP
Poly(phenyl sulfone)	PPSU	Silicone plastics	SI
Poly(phenylene ether) (or Poly(phenylene oxide), a deprecated term)	PPE	Styrene- $\alpha$ -methylstyrene plastic	SMS
Poly(phenylene sulfide)	PPS	Styrene-acrylonitrile plastic	SAN
Poly(phenylene sulfone)	PPSU	Styrene-butadiene plastic	SB
Poly(propylene oxide)	PPOX	Styrene-butadiene-styrene block copolymer	SBS
Poly(vinyl acetate)	PVAC	Styrene-ethylene/butylene-styrene block copolymer	SEBS
Poly(vinyl alcohol)	PVOH	Styrene-ethylene/propylene-styrene block copolymer	SEPS
Poly(vinyl butyral)	PVB	Styrene-isoprene-styrene block copolymer	SIS
Poly(vinyl carbazole)	PVK	Styrene-maleic anhydride plastics	S/MA
Poly(vinyl chloride)	PVC	Styrene-rubber plastics	SRP
Poly(vinyl chloride-acetate)	PVCA	Thermoplastic elastomer	TPE
Poly(vinyl fluoride)	PVF	Thermoplastic elastomer, ether-ester	TEEE
Poly(vinyl formal)	PVFM	Thermoplastic elastomer, fully crosslinked elastomer alloy	FCEA
Poly(vinyl pyrrolidone)	PVP	Thermoplastic elastomer, highly crosslinked	HCTPV
Poly(vinylidene chloride)	PVDC	thermoplastic vulcanizate	
Poly(vinylidene fluoride)	PVDF	Thermoplastic elastomer, olefinic	TEO
Poly( $\epsilon$ -caprolactone)	PCL	Thermoplastic elastomer, polyether block amide	PEBA
Poly-4-methylpentene-1	PMP	Thermoplastic elastomer, styrenic	TES
Poly- $\alpha$ -methylstyrene	PMS	Thermoplastic elastomer styrenic, saturated	TESS
Poly-p-oxybenzoate	POB	Thermoplastic elastomer styrenic, unsaturated	TESU
Polyacrylonitrile	PAN	Thermoplastic polyester	TPES
Polyamide (nylon)	PA	Thermoplastic polyester:	
Polyamide 10	PA10	Copolyester [poly(aryl terephthalate)]	ARP
Polyamide 1010	PA1010	Polyarylate [poly(aryl terephthalate)]—liquid crystal	PAT
Polyamide 11	PA11	polymer	
Polyamide 12	PA12	Thermoplastic polyurethane	TPU
Polyamide 1212	PA1212	Thermoplastic polyurethane, reinforced	RTPU
Polyamide 46	PA46	Thermoplastic starch	TPS
Polyamide 410	PA410	Thermoset polyurethane	TSPU
Polyamide 6	PA6	Ultra-high molecular weight polyethylene	UHMWPE
Polyamide 610	PA610	Unsaturated polyester	UP
Polyamide 612	PA612	Urea-formaldehyde resin	UF
Polyamide 66	PA66	Vinyl chloride-ethylene resin	VCE
Polyamide 69	PA69	Vinyl chloride-ethylene-methyl acrylate resin	VCEMA
Polyamide 6I	PA6I	Vinyl chloride-ethylene-vinyl acetate resin	VCEVAC
Polyamide 6T	PA6T	Vinyl chloride-methyl acrylate resin	VCMA
Polyamide-imide	PAI	Vinyl chloride-methyl methacrylate resin	VC MMA
Polyarylate	PAR	Vinyl chloride-octyl acrylate resin	VCOA
Polyaryl amide	PARA	Vinyl chloride-vinyl acetate resin	VCVAC
Polyarylether	PAE	Vinyl chloride-vinylidene chloride resin	VCVDC
Polyarylsulfone	PAS	Vinylidene fluoride	VDF
Polybutadiene-acrylonitrile	PBAN		
Polybutadiene-styrene	PBS		
Polybutene-1	PB		
Polycarbonate	PC		
Polychlorotrifluoroethylene	PCTFE		
Polyester alkyd (or polyacrylate)	PAK		
Polyetheretherketone	PEEK		
Polyetheretherketoneketone	PEEKK		
Polyetherketoneetherketoneketone	PEKEKK		
Polyetherketoneketone	PEKK		
Polyetherimide	PEI		
Polyetherketone	PEK		
Polyethylene	PE		
Poly(ethylene naphthalate)	PEN		
Polyhydroxy butyrate	PHB		
Polyimide	PI		
Polyimidesulfone	PISU		

#### 4.2 Blends and Alloys of Plastics:

Term	Abbreviated Term
Acrylonitrile-butadiene-acrylate plastics + poly(methyl methacrylate)	ABA+PMMA
Acrylonitrile-butadiene-acrylate plastics+poly(vinyl chloride)	ABA+PVC
Acrylonitrile-butadiene-acrylate plastics+polycarbonate	ABA+PC
Acrylonitrile-butadiene-styrene plastics+poly(vinyl chloride)	ABS+PVC
Acrylonitrile-butadiene-styrene plastics+polyphenylene sulfone	ABS+PPSU