Designation: ~~D1600 – 14~~ D1600 – 18

Standard Terminology for Abbreviated Terms Relating to Plastics[1]

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 (ε) 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.[2]

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:*[3]

D883 Terminology Relating to Plastics

D1418 Practice for Rubber and Rubber Latices—Nomenclature

D1972 Practice for Generic Marking of Plastic Products (Withdrawn 2014)[4]

[1] 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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[2] "Report on Nomenclature in the Field of Macromolecules," *Journal of Polymer Science*, Vol VIII, 1952, pp. 257–277.

[3] 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.

[4] The last approved version of this historical standard is referenced on www.astm.org.

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

E176 Terminology of Fire Standards

2.2 *ISO Standards:*[5]

~~ISO 472:1988 Plastics—Vocabulary~~

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

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.~~

3.1 *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 ~~that markedly retards the propagation of a flame. (See ISO 472.)~~ 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 ~~(external~~(additive flame retardant) or as chemical groups in the base polymer by use of reactive intermediates in the polymerization process ~~(internal~~(reactive flame retardant). The code numbers in Section 7 of this standard are restricted to ~~external~~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:*[6]

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
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

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

[6] To prevent any confusion with or misuse of the registered trademark, PET® Milk, the guidelines of 8.1 shall be followed.

Term	Abbreviated Term
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	GPPS
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
Poly(cyclohexylenedimethylene terephthalate), acid comonomer	PCTA
Poly(cyclohexylenedimethylene terephthalate), glycol	PCTG
Poly(diallyl phthalate)	PDAP
Poly(ester urethane)	PAUR
Poly(ether block amide)	PEBA
Poly(ether sulfone)	PES
Poly(ether urethane)	PEUR
Poly(ethylene furanoate)	PEF
Poly(ethylene oxide)	PEOX
Poly(ethylene terephthalate)	PET[6]
Poly(ethylene terephthalate) acid comonomer	PETA
Poly(ethylene terephthalate) glycol comonomer	PETG
Poly(lactic acid)	PLA
Poly(methyl methacrylate)	PMMA
Poly(methyl methacrylimide)	PMMI
Poly(methyl-α-chloroacrylate)	PMCA
Poly(phenyl sulfone)	PPSU
Poly(phenylene ether) (or Poly(phenylene oxide), a deprecated term)	PPE
Poly(phenylene sulfide)	PPS
Poly(phenylene sulfone)	PPSU
Poly(propylene oxide)	PPOX
Poly(vinyl acetate)	PVAC
Poly(vinyl alcohol)	PVOH
Poly(vinyl butyral)	PVB
Poly(vinyl carbazole)	PVK
Poly(vinyl chloride)	PVC
Poly(vinyl chloride-acetate)	PVCA
Poly(vinyl fluoride)	PVF

Term	Abbreviated Term
Poly(vinyl formal)	PVFM
Poly(vinyl pyrrolidone)	PVP
Poly(vinylidene chloride)	PVDC
Poly(vinylidene fluoride)	PVDF
Poly(ε-caprolactone)	PCL
Poly-4-methylpentene-1	PMP
Poly-α-methylstyrene	PMS
Poly-p-oxybenzoate	POB
Polyacrylonitrile	PAN
Polyamide (nylon)	PA
Polyamide 10	PA10
Polyamide 1010	PA1010
Polyamide 11	PA11
Polyamide 12	PA12
Polyamide 1212	PA1212
Polyamide 46	PA46
Polyamide 410	PA410
Polyamide 6	PA6
Polyamide 610	PA610
Polyamide 612	PA612
Polyamide 66	PA66
Polyamide 69	PA69
Polyamide 6I	PA6I
Polyamide 6T	PA6T
Polyamide-imide	PAI
Polyarylate	PAR
Polyaryl amide	PARA
Polyarylether	PAE
Polyarylsulfone	PAS
Polybutadiene-acrylonitrile	PBAN
Polybutadiene-styrene	PBS
Polybutene-1	PB
Polycarbonate	PC
Polychlorotrifluoroethylene	PCTFE
Polyester alkyd (or polyacrylate)	PAK
Polyetheretherketone	PEEK
Polyetheretherketoneketone	PEEKK
Polyetherketonetherketoneketone	PEKEKK
Polyetherketoneketone	PEKK
Polyetherimide	PEI
Polyetherketone	PEK
Polyethylene	PE
Poly(ethylene naphthalate)	PEN
Polyhydroxy butyrate	PHB
Polyimide	PI
Polyimidesulfone	PISU
Polyisobutylene	PIB
Polyisocyanurate	PIR
Polyketone	PK
Polymethacrylimide	PMI
Polyoxymethylene, polyacetal	POM
Polyphenylene	PPH
Polyphthalamide	PPA
Polypropylene	PP
Homopolymer polypropylene	HPP
Random copolymer polypropylene	RPP
Impact copolymer polypropylene	CPP
Polystyrene	PS
Polysulfone	PSU
Polytetrafluoroethylene	PTFE
Polyurethane	PUR
Saturated polyester plastic	SP
Silicone plastics	SI
Styrene-α-methylstyrene plastic	SMS
Styrene-acrylonitrile plastic	SAN
Styrene-butadiene plastic	SB
Styrene-butadiene-styrene block copolymer	SBS
Styrene-ethylene/butylene-styrene block copolymer	SEBS
Styrene-ethylene/propylene-styrene block copolymer	SEPS
Styrene-isoprene-styrene block copolymer	SIS
Styrene-maleic anhydride plastics	S/MA
Styrene-rubber plastics	SRP
Thermoplastic elastomer	TPE
Thermoplastic elastomer, ether-ester	TEEE

Term	Abbreviated Term
Thermoplastic elastomer, fully crosslinked elastomer alloy	FCEA
Thermoplastic elastomer, highly crosslinked thermoplastic vulcanizate	HCTPV
Thermoplastic elastomer, olefinic	TEO
Thermoplastic elastomer, polyether block amide	PEBA
Thermoplastic elastomer, styrenic	TES
Thermoplastic elastomer styrenic, saturated	TESS
Thermoplastic elastomer styrenic, unsaturated	TESU
Thermoplastic polyester	TPES
Thermoplastic polyester:	
Copolyester [poly(aryl terephthalate)]	ARP
Polyarylate [poly(aryl terephthalate)]—liquid crystal polymer	PAT
Thermoplastic polyurethane	TPU
Thermoplastic polyurethane, reinforced	RTPU
Thermoplastic starch	TPS
Thermoset polyurethane	TSPU
Ultra-high molecular weight polyethylene	UHMWPE
Unsaturated polyester	UP
Urea-formaldehyde resin	UF
Vinyl chloride-ethylene resin	VCE
Vinyl chloride-ethylene-methyl acrylate resin	VCEMA
Vinyl chloride-ethylene-vinyl acetate resin	VCEVAC
Vinyl chloride-methyl acrylate resin	VCMA
Vinyl chloride-methyl methacrylate resin	VCMMA
Vinyl chloride-octyl acrylate resin	VCOA
Vinyl chloride-vinyl acetate resin	VCVAC
Vinyl chloride-vinylidene chloride resin	VCVDC
Vinylidene fluoride	VDF

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
Acrylonitrile-butadiene-styrene plastics+polytetrafluoroethylene	ABS+PTFE
Acrylonitrile-butadiene-styrene plastics+styrene maleic anhydride	ABS+SMA
Acrylonitrile-butadiene-styrene plastics+thermoplastic polyurethane	ABS+TPU
Acrylonitrile-butadiene-styrene plastics+polyamide	ABS+PA
Acrylonitrile-butadiene-styrene plastics+polycarbonate	ABS+PC
Acrylonitrile-styrene-acrylate plastics+poly(methyl methacrylate)	ASA+PMMA
Acrylonitrile-styrene-acrylate plastics+polycarbonate	ASA+PC
Fully crosslinked elastomeric alloy	FCEA
Poly(butylene terephthalate)+poly(ethylene terephthalate)	PBT+PET[6]
	Abbreviated
Poly(butylene terephthalate)+rubber	PBT+RBR
Poly(ethylene naphthalate)	PEN
Poly(ethylene terephthalate)+poly(methyl methacrylate)	PET[6] +PMMA
Poly(ethylene terephthalate)+poly(phenylene sulfone)	PET[6] +PPSU
Poly(ethylene terephthalate)+rubber	PET[6] +RBR
Poly(phenylene ether)+impact resistant polystyrene	PPE+IPS
Poly(phenylene sulfide)+polytetrafluoroethylene	PPS+PTFE
Poly(vinyl chloride)+chlorinated polyethylene	PVC+CPE
Poly(vinyl chloride)+nitrile-butadiene rubber	PVC+NBR
Poly(vinyl chloride)+poly(methyl methacrylate)	PVC+PMMA
Poly(vinyl chloride) plastics+polyurethane	PVC+PUR
Polyamide (amorphous) blend	PA +

Term	Abbreviated Term
Polyamide plastics+ethylene-methacrylic acid (ionomer)	PA+EMA
Polyamide+poly(phenylene ether)	PA+PPE
Polyamide+polyethylene	PA+PE
Polyamide+rubber	PA+RBR
Polyamide+styrene-acrylonitrile plastics	PA+SAN
Polycarbonate+poly(butylene terephthalate)	PC+PBT
Polycarbonate+poly(ethylene terephthalate)	PC+PET[6]
Polycarbonate+polyethylene	PC+PE
Polycarbonate+styrene-maleic anhydride	PC+SMA
Polycarbonate+thermoplastic polyurethane	PC+TPU
Polyoxymethylene+polytetrafluoroethylene	POM+PTFE
Polyoxymethylene+rubber	POM+RBR
Polyurethane+polyisocyanate	PUR+PIR
Styrene-maleic anhydride plastics+impact resistant polystyrene	SMA+IPS
Thermoplastic elastomer-chlorinated ethylene alloy	TECEA

NOTE 3—In general, blends and alloys of plastics shall be identified as Abbreviation 1+ Abbreviation 2 + ….. Abbreviation n, where abbreviation n represents the abbreviation for component n, and the percentage, by weight, of component 1> the percentage, by weight of component 2> the percentage, by weight of component n.

4.3 *Plastic and Resin Additives:*

Term	Abbreviated Term
Alkylsulfonic acid ester	ASE
Benzyl butyl phthalate	BBP
Benzyl octyl adipate (benzyl 2-ethylhexyl adipate)	BOA
Benzyl octyl phthalate (benzyl 2-ethylhexyl phthalate)	BOP
Di-n-octyl phthalate	DNOP
Dibutylphthalate	DBP
Dibutyl sebacate	DBS
Dicapryl phthalate	DCP
Dicylohexyl phthalate	DCHP
Didecyl phthalate	DDP
Diethyl phthalate	DEP
Diheptyl phthalate	DHP
Dihexyl phthalate	DHXP
Diisobutyl phthalate	DIBP
Diisodecyl adipate	DIDA
Diisodecyl phthalate	DIDP
Diisoheptyl phthalate	DIHP
Diisohexyl phthalate	DIHXP
Diisononyl adipate	DINA
Diisononyl phthalate	DINP
Diisooctyl adipate	DIOA
Diisooctyl phthalate	DIOP
Diisopentyl phthalate	DIPP
Diisotridecyl phthalate	DITDP
Dimethyl phthalate	DMP
Dinonyl phthalate	DNP
Dioctyl adipate	DOA
Dioctyl azelate	DOZ
Dioctyl isophthalate (di-2-ethylhexyl isophthalate)	DOIP
Dioctyl phthalate	DOP
Dioctyl sebacate	DOS
Dioctyl terephthalate (di-2-ethylhexyl terephthalate)	DOTP
Diphenyl octyl phosphate	DPOF
Diphenyl cresyl phosphate	DPCF
Diphenyl 2-ethylhexyl phosphate	DPOF
Diundecyl phthalate	DUP
Epoxidized linseed oil	ELO
Epoxidized soya bean oil	ESO
Heptyl nonyl undecyl adipate	HNUA
Heptyl nonyl undecyl phthalate	HNUP
Hexyl octyl decyl adipate	HXODA
Hexyl octyl decyl phthalate	HXODP
n-Octyl decyl trimellitate	ODTM
Nonyl undecyl adipate	NUA
Nonyl undecyl phthalate	NUP