INTERNATIONAL UNION OF
PURE AND APPLIED CHEMISTRY

DIVISION OF APPLIED CHEMISTRY
PLASTICS AND HIGH POLYMERS SECTION

RECOMMENDATIONS FOR ABBREVIATIONS OF TERMS RELATING TO PLASTICS AND ELASTOMERS

LONDON
BUTTERWORTHS

DIVISION OF APPLIED CHEMISTRY

PLASTICS AND HIGH POLYMERS SECTION*†

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1. The purpose of the abbreviations

The purpose of these abbreviations is to provide uniform contractions of terms relating to plastics and elastomers. Abbreviated terminology has evolved through widespread common usage. This compilation of abbreviated nomenclature has been prepared primarily to promote the use of one rather than several abbreviations for a given material and to avoid the use of the same abbreviation for more than one material.

2. Scope of the abbreviations

These abbreviations are by no means all inclusive of plastics and elastomers terminology. They represent, in general, those abbreviations which have come into established use. Since it is recognized that abbreviations serve no useful purpose unless they are generally accepted and used, no attempt has been made to establish a rigorous code for devising standard abbreviations. This would result in awkward departures from established usage of existing and accepted abbreviations and lead to cumbersome combinations in the future, which would be unlikely to receive widespread acceptance. The abbreviations 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 and will serve as a basis for further standardization as the need arises.

3. Recommendation for use in printed documents

When using abbreviations in publications or other written matter, their first occurrence in the text should be enclosed in parentheses and preceded by the written word or words being abbreviated. Subsequent references to such words in the article can then be made by the appropriate abbreviations.

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†In November 1967 a new division of IUPAC came into existence replacing the Macromolecular Commission of the Physical Chemistry Division and the Plastics and High Polymers Section of the Applied Chemistry Division.

‡Great reluctance was felt concerning the publication of these recommendations because, although the contractions might be useful in this special field, they might conflict with more generally accepted abbreviations. Any comments on these recommendations may be sent to Dr. R. Morf, IUPAC Secretary General, Post Office Box 165, 8058 Zürich Airport, Switzerland.

4. A general guide for the preparation of abbreviations

This guide is presented in the Appendix to facilitate uniform and systematic practice in the future. In addition, attention is directed to the activities of the IUPAC Macromolecular Commission[1,2] and the Technical Committee on Plastics of the International Organization for Standardization (ISO/TC 61)[3] in the development and standardization of terminology, definitions, and symbols in the field of plastics and high polymers.

5. Recommended abbreviations by classes of materials

5.1 *Plastics*

ABS	Acrylonitrile–butadiene–styrene
CA	Cellulose acetate
CAB	Cellulose acetate butyrate
CAP	Cellulose acetate propionate
CF	Cresol–formaldehyde
CMC	Carboxymethyl cellulose
CN	Cellulose nitrate
CP	Cellulose propionate
CS	Casein
EC	Ethyl cellulose
EP	Epoxide; epoxy
MF	Melamine–formaldehyde
PA	Polyamide
PC	Polycarbonate
PCTFE	Polychlorotrifluoroethylene
PDAP	Poly(diallyl phthalate)
PE	Polyethylene
PETP	Poly(ethylene terephthalate)
PF	Phenol–formaldehyde
PIB	Polyisobutylene
PMMA	Poly(methyl methacrylate)
POM	Polyoxymethylene (polyformaldehyde; also generically a polyacetal)
PP	Polypropylene
PS	Polystyrene
PTFE	Polytetrafluoroethylene
P3FE	Polytrifluoroethylene
PUR	Polyurethane
PVAC	Poly(vinyl acetate)
PVAL	Poly(vinyl alcohol)
PVB	Poly(vinyl butyral)
PVC	Poly(vinyl chloride)
PVCA	Poly(vinyl chloride co vinyl acetate)
PVDC	Poly(vinylidene chloride)
PVDF	Poly(vinylidene fluoride)
PVF	Poly(vinyl fluoride)
PVFM	Poly(vinyl formal)
SAN	Styrene–acrylonitrile

SB	Styrene–butadiene
SI	Silicone
UF	Urea–formaldehyde
UP	Unsaturated polyester

5.2 *Elastomers*

5.2.1 *Homopolymers*

BR	Butadiene rubbers
CR	Chloroprene rubbers
IR	Isoprene rubbers, synthetic
NR	Isoprene rubber, natural

5.2.2 *Copolymers*

ABR	Acrylate–butadiene rubbers
IIR	Isobutylene–isoprene rubbers
NBR	Nitrile–butadiene rubbers
NCR	Nitrile–chloroprene rubbers
PBR	Pyridine–butadiene rubbers
SBR	Styrene–butadiene rubbers
SCR	Styrene–chloroprene rubbers
SIR	Styrene–isoprene rubbers

5.3 *Plasticizers*

DBP	Dibutyl phthalate
DCP	Dicapryl phthalate
DIDA	Diisodecyl adipate
DIDP	Diisodecyl phthalate
DIOA	Diisooctyl adipate
DIOP	Diisooctyl phthalate
DNP	Dinonyl phthalate
DOA	Dioctyl adipate
DOP	Dioctyl phthalate
DOS	Dioctyl sebacate
DOZ	Dioctyl azelate
TCP	Tricresyl phosphate
TOP	Trioctyl phosphate
TPP	Triphenyl phosphate

6. Recommended abbreviations (alphabetical list)

ABR	Acrylate–butadiene rubbers
ABS	Acrylonitrile–butadiene–styrene plastics
BR	Butadiene rubbers
CA	Cellulose acetate
CAB	Cellulose acetate butyrate
CAP	Cellulose acetate propionate
CF	Cresol–formaldehyde
CMC	Carboxymethyl cellulose
CN	Cellulose nitrate

CP	Cellulose propionate
CR	Chloroprene rubbers
CS	Casein
DBP	Dibutyl phthalate
DCP	Dicapryl phthalate
DIDA	Diisodecyl adipate
DIDP	Diisodecyl phthalate
DIOA	Diisooctyl adipate
DIOP	Diisooctyl phthalate
DNP	Dinonyl phthalate
DOA	Dioctyl adipate
DOP	Dioctyl phthalate
DOS	Dioctyl sebacate
DOZ	Dioctyl azelate
EC	Ethyl cellulose
EP	Epoxide plastics; epoxy plastics
IR	Isoprene rubbers, synthetic
IIR	Isobutylene–isoprene rubbers
MF	Melamine–formaldehyde plastics
NBR	Nitrile–butadiene rubbers
NCR	Nitrile–chloroprene rubbers
NR	Isoprene rubber, natural
PA	Polyamide
PBR	Pyridine–butadiene rubbers
PC	Polycarbonate
PCTFE	Polychlorotrifluoroethylene
PDAP	Poly(diallyl phthalate)
PE	Polyethylene
PETP	Poly(ethylene terephthalate)
PF	Phenol–formaldehyde
PIB	Polyisobutylene
PMMA	Poly(methyl methacrylate)
POM	Polyoxymethylene (polyformaldehyde; also generically a polyacetal)
PP	Polypropylene
PS	Polystyrene
PTFE	Polytetrafluoroethylene
P3FE	Polytrifluoroethylene
PUR	Polyurethane
PVAC	Poly(vinyl acetate)
PVAL	Poly(vinyl alcohol)
PVB	Poly(vinyl butyral)
PVC	Poly(vinyl chloride)
PVCA	Poly(vinyl chloride co vinyl acetate)

PVDC	Poly(vinylidene chloride)
PVDF	Poly(vinylidene fluoride)
PVF	Poly(vinyl fluoride)
PVFM	Poly(vinyl formal)
SAN	Styrene–acrylonitrile plastics
SB	Stryrene–butadiene plastics
SBR	Styrene–butadiene rubbers
SCR	Styrene–chloroprene rubbers
SI	Silicone plastics
SIR	Styrene–isoprene rubbers
TCP	Tricresyl phosphate
TOP	Trioctyl phosphate
TPP	Triphenyl phosphate
UF	Urea–formaldehyde plastics
UP	Unsaturated polyester

APPENDIX 1

A suggested guide for preparing abbreviations for names of plastics and elastomers:

A1. Use capital letters for the main components in the order in which they occur in the term being abbreviated, for example:

Poly(vinyl chloride) = PVC

A2. Where duplication occurs or where confusion may otherwise result, use two capital letters for a given component, not necessarily in the order in which they occur in the term being abbreviated, for example:

Poly(vinyl acetate) = PVAC
Poly(vinyl alcohol) = PVAL
Poly(vinyl formal) = PVFM

A3. Use figures to designate polymers prepared from various condensation units in a homologous series, for example:

Poly(hexamethylene adipamide) = PA 66

where PA indicates a polyamide, the first figure refers to the number of carbon atoms in the amine and the second figure refers to the number of carbon atoms in the acid.

A4. Use a figure in place of a letter where necessary to avoid duplication or confusion, for example:

Polytrifluoroethylene = P3FE
Polytetrafluoroethylene = PTFE

A5. Use symbols for components of copolymers in the order in which they occur in the term being abbreviated, for example:

Acrylonitrile–butadiene–styrene = ABS
Styrene–butadiene = SB

A6. The following compilations of symbols used for component parts of abbreviated terms in this document will assist in future selection of abbreviations for plastics and elastomers terms.

A6.1 *List of symbols*

Letter	*Used in recommended abbreviations for*
A	acetate, acrylate, acrylonitrile, adipate, allyl, amide
AC	acetate
AL	alcohol
AN	acrylonitrile
B	butadiene, butyl, butylene, butyral, butyrate
C	capryl, carbonate, carboxy, cellulose, chloride, chloro, chloroprene, cresol, cresyl
CS	casein
D	decyl, di
E	ethyl, ethylene
EP	epoxide, epoxy
F	fluoride, fluoro, formaldehyde
FM	formal
I	iso, isobutylene, isoprene
M	melamine, meth, methyl, methylene
N	natural, nitrate, nitrile, nonyl
O	octyl, oxy
P	phenol, phenyl, phosphate, phthalate, poly, polyester, propionate, propylene, pyridine
R	rubber
S	sebacate, styrene
SI	silicone
T	tere, tetra, tri
U	unsaturated, urea
UR	urethane
V	vinyl
VD	vinylidene
Z	azelate
3	tri

A6.2 *List of components of terms*

Component	*Symbol*	*Component*	*Symbol*
Acetate	A,AC	Acrylonitrile	A
Acrylate	A	Adipate	A

Component	*Symbol*
Alcohol	AL
Allyl	A
Amide	A
Azelate	Z
Butadiene	B
Butyl	B
Butylene	B
Butyral	B
Butyrate	B
Capryl	C
Carbonate	C
Carboxy	C
Casein	CS
Cellulose	C
Chloride	C
Chloro	C
Chloroprene	C
Cresol	C
Cresyl	C
Decyl	D
Di	D
Epoxide	EP
Epoxy	EP
Ethyl	E
Ethylene	E
Fluoride	F
Fluoro	F
Formal	FM
Formaldehyde	F
Iso	I
Isobutylene	I
Isoprene	I
Melamine	M
Meth	M
Methyl	M
Methylene	M
Natural	N
Nitrate	N
Nitrile	N
Nonyl	N
Octyl	O
Oxy	O
Phenol	P
Phenyl	P
Phosphate	P
Phthalate	P
Poly	P
Polyester	P
Propionate	P
Propylene	P
Pyridine	P
Rubber	R
Sebacate	S
Silicone	SI
Styrene	S
Tere	T
Tetra	T
Tri	T,3
Unsaturated	U
Urea	U
Urethane	UR
Vinyl	V
Vinylidene	VD

References

[1] Report on nomenclature in the field of macromolecules, *J. Polymer Sci.* **8**, 257–277 (1952).
[2] Report on nomenclature dealing with steric regularity in high polymers, *J. Polymer Sci.* **56**, 153–161 (1962).
[3] ISO Recommendation R 194 (ISO/R 194–1961), List of equivalent terms used in the plastics industry. Other relevant ISO documents are under consideration as Draft Proposals and Draft ISO Recommendations.