



Designation: D 3853 – 97

Standard Terminology Relating to Rubber and Rubber Latices—Abbreviations for Chemicals Used in Compounding¹

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1. Scope

1.1 This terminology is a compilation of abbreviations for accelerators, vulcanizing agents, activators, anti-degradants, plasticizers, softeners, processing aids and blowing agents used in the compounding of rubber products. Abbreviations for rubbers are listed in Practice D 1418 and a numbering system for various grades of carbon blacks is described in Classification D 1765.

2. Referenced Documents

2.1 ASTM Standards:

D 1418 Practice for Rubber and Rubber Latices—Nomenclature²

D 1600 Terminology for Abbreviated Terms Relating to Plastics³

D 1765 Classification System for Carbon Blacks Used in Rubber Products²

2.2 ISO Standard:⁴

ISO 6472 Rubber Compounding Ingredients—Abbreviations

3. Significance and Use

3.1 These abbreviations are to be used in technical writing where the full chemical name of the substance is used initially, followed by the abbreviation found in this terminology. Later references to this substance may then use the abbreviation only.

4. Form and Style

4.1 Although generally accepted references^{4,5,6} for naming chemicals provide the basis for these abbreviations, common usage has dictated the particular choice for the abbreviations set forth in this terminology.

¹ This terminology is under the jurisdiction of ASTM Committee D-11 on Rubber and is the direct responsibility of Subcommittee D11.08 on Terminology.

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² *Annual Book of ASTM Standards*, Vol 09.01.

³ *Annual Book of ASTM Standards*, Vol 08.01.

⁴ Available from American National Standards Institute, 11 West 42nd St., 13th Floor, New York, NY 10036.

⁵ *IUPAC Nomenclature of Organic Chemistry*, Sections A, B, and C, 3rd ed., Butterworth, London, 1971.

⁶ Fletcher, J. H., Dermer, O. C., and Fox, R. B., eds., *Nomenclature of Organic Compounds*, *Advances in Chemistry Series No. 126*, Am. Chem. Soc., Washington, DC, 1974.

4.2 Conventions used in this terminology are:

4.2.1 The symbol B will be used for butyl in the case of accelerators and vulcanizing agents and for butylidene in the case of bisphenol materials (see 4.2.6.2).

4.2.2 The symbol Bz will be used for benzyl groups.

4.2.3 When possible, a number will be used to denote long chain hydrocarbons, that is, 5 for penta, 88 for dioctyl, etc. If the length of the hydrocarbon chain is ten or higher, the number shall be placed in parenthesis, that is (12) for dodecyl, etc. The letter “i” shall be used to denote an isostructure.

4.2.4 The chemical symbol for metallic components will be used whenever possible. This will usually occur at the beginning of the abbreviation.

4.2.5 The symbol C will be used for dithiocarbamate accelerators and for cyclohexyl in the case of sulfenamide accelerators and bisphenol antioxidants.

4.2.6 Commercial bisphenol antioxidants are made up of two alkyl/cyclohexyl substituted phenol rings linked in the ortho or para position. The following conventions will be used in this nomenclature scheme:

4.2.6.1 o—ortho

p—para

Bp—bisphenol structure

4.2.6.2 M—methylene

B—butylidene

IB—isobutylidene

IP—isopropylidene

T—thio

4.2.6.3 1—methyl

2—ethyl

4—t-butyl

9—nonyl

C—cyclohexyl

4.2.7 For diphenylamine antidegradants use numbers for the identification of alkyl substituents on the diphenylamine rings.

5. Abbreviations

ACCELERATORS AND VULCANIZING AGENTS

BA—butyraldehyde–aniline condensate.

BiDMC—bismuth dimethyldithiocarbamate.

BMTS—bis-morpholino-thiocarbamyl sulfenamide.

CBS—N-cyclohexyl-2-benzothiazolesulfenamide.

CdDEC—cadmium diethyldithiocarbamate.

CdDMC—cadmium dimethyldithiocarbamate.
 Cd5MC—cadmium pentamethylenedithiocarbamate.
 CEA—cyclohexylethylamine.
 CuDIP—copper diisopropyldithiophosphate.
 CuDMC—copper dimethyldithiocarbamate.
 CuMBT—copper 2mercaptobenzothiazole
 DBA—dibutylamine.
 DBQD—*p,p'*-dibenzoyl-*p*-benzoquinone dioxime or quinone dioxime dibenzoate.
 DBTU—1,3-dibutylthiourea.
 DBXD—dibutyl xanthogen disulfide.
 DBzA—dibenzylamine.
 DCBS—*N,N*-dicyclohexyl-2-benzothiazyl sulfenamide.
 DEPTD—sym. diethyldiphenylthiuram disulfide *N,N'*-diethyl-*N,N'*-diphenylthiuram disulfide.
 DETU—1,3-diethylthiourea.
 DIBS—*N,N*-diisopropyl-2-benzothiazyl sulfenamide.
 DMPTD—dimethyl diphenyl thiuram disulfide.
 DOTG—di-tolylguanidine.
 DPG—diphenylguanidine.
 DPTD—dipentamethylenethiuram disulfide.
 DPTH—dipentamethylenethiuram hexasulfide.
 DPTM—dipentamethylenethiuram monosulfide.
 DPTT—dipentamethylene thiuram tetrasulfide
 DPTU—*N,N*-diphenylthiourea (thiocarbanelide).
 DTDM—dithiodimorpholine.
 DTTU—*N,N'*-di-*o*-tolylthiourea.
 EFA—ethyl chloride, formaldehyde, and ammonia reaction product.
 ETU—ethylene thiourea.
 HMD—hexamethylene diamine.
 HMDC—hexamethylenediamine carbamate.
 HMMA—*N,N'*-hexamethylene-bis-methacrylamide.
 HMT—hexamethylenetetramine.
 MBSS—4-morpholinyl-2-benzothiazyl disulfide.
 MBS—2-(morpholiniothio)benzothiazole.
 MBSS—2-benzothiazole-*N*-morpholydisulfide.
 MBT—2-mercaptobenzothiazole.
 MBTS—benzothiazyl disulfide.
 M-*o*-CA—4-4'-methylene-bis-(chloroaniline).
 m-PBM—*N, N'*-*m*-phenylene-bis-maleimide.
 MPTD—*N,N'*-dimethyl-*N,N'*-diphenylthiuram disulfide.
 MTT—3-methyl-thiazolidine-thione-2.
 NaDMC—sodium dimethyldithiocarbamate.
 NaDBC—sodium dibutyldithiocarbamate.
 NaDEC—sodium diethyldithiocarbamate.
 NaIX—sodium isopropylxanthate.
 OTBG—*o*-tolylbiguanide.
 OTOS—*N*-oxydiethylene thiocarbamyl-*N'*-oxydiethylene sulfenamide.
 PbDAC—lead diamyldithiocarbamate.
 PbDMC—lead dimethyldithiocarbamate.
 PBQD—*p*-benzoquinone dioxime.
 P5MC—piperidinium pentamethylenedithiocarbamate.
 SeDEC—selenium diethyldithiocarbamate.
 SeMDC—selenium dimethyldithiocarbamate.
 TAC—triallyl cyanurate.
 TAIC—triallyl isocyanurate.

TBBS—*N*-butyl-benzothiazolesulfenamide.
 TBSI—*t*-butyl-2-benzothiazole sulfenimide
 TBTD—tetrabutylthiuram disulfide.
 TBTU—1,1,3-tributylthiourea.
 TBzTD—tetrabenzylthiuram disulfide.
 TCT—tricrotonylidenetetramine.
 TeDEC—tellurium diethyldithiocarbamate.
 TeDMC—tellurium dimethyldithiocarbamate.
 TIBTD—tetrakisobutylthiuram disulfide
 TETD—tetraethylthiuram disulfide.
 TMTD—tetramethylthiuram disulfide.
 TMTM—tetramethylthiuram monosulfide.
 TU—thiourea.
 ZnBX—zinc butylxanthate.
 ZnDBC—zinc dibutyldithiocarbamate.
 ZnDBP—zinc dibutyldithiophosphate.
 ZnDBzC—zinc dibenzylthiocarbamate.
 ZnDEC—zinc diethyldithiocarbamate.
 ZnDIBC—zinc diisobutyldithiocarbamate
 ZnDMC—zinc dimethyldithiocarbamate.
 ZnEHBP—zinc ethylhexyl-*n*-butyldithiophosphate.
 ZnEPC—zinc ethylphenylthiocarbamate.
 ZnEX—zinc ethylxanthate.
 ZnIX—zinc isopropylxanthate.
 ZnMBT—zinc-2-mercaptobenzothiazole.
 Zn5MC—zinc pentamethylenedithiocarbamate.

ANTIDEGRADANTS (ANTIOXIDANTS AND ANTIOZONANTS)

AANA—aldol- α -naphthylamine.
 ADPA—acetone diphenylamine condensation product
 APPD—*N*-alkyl-*N'*-phenyl-*p*-phenylenediamine.
 p-BBp14—4,4'-butylidene-bis-(6-*t*-butyl-*m*-cresol).
 BHA—butylated hydroxyanisole.
 BHT—2, 6-di-butyl-4-methylphenol (butylated hydroxy toluene).
 CPPD—*N*-cyclohexyl-*N'*-phenyl-*p*-phenylenediamine.
 DAHQ—2,5-di-*amyl*hydroquinone.
 DBHQ—2,5-di-*tert*-butylhydroquinone.
 DLTPD—dilauryl thiodipropionate.
 i88PD—*N,N'*-bis-(1-methylheptyl)-*p*-phenylenediamine.

NOTE 1—This is a specific isomer of *N,N'*-dioctyl-*p*-phenylenediamine (see ISO 6472).

DNPD—*N,N'*-di-2-naphthyl-*p*-phenylenediamine.
 DOPD—dioctyl-*p*-phenylenediamine.
 DPA—diphenylamine.
 DPPD—*N,N'*-diphenyl-*p*-phenylenediamine.
 DSTDP—distearylthiodipropionate
 DTPD—*N,N'*-ditolyl-*p*-phenylenediamine.
 ETMQ—6-ethoxy-1,2-dihydro-2,2,4-trimethylquinoline.
 o-IBBp11—2,2'-isobutylidene-bis-(4,6-di-methylphenol).
 p-IPBp(4)_n—polybutylated bisphenol A.
 IPPD—*N*-isopropyl-*N'*-phenyl-*p*-phenylenediamine.
 MBI—2-mercaptobenzimidazole.
 o-MBp1C—2,2'-methylene-bis-(4-methyl-6-cyclohexylphenol).
 o-MBp1(1C)—2,2'-methylene-bis-[6-(1-methylcyclohexyl)-*p*-cresol].