Handbook of PLASTIC COMPOUNDS, ELASTOMERS, AND RESINS

An International Guide by CATEGORY, TRADE NAME, COMPOSITION, and SUPPLIER

Michael Ash • Irene Ash

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Handbook of Plastic Compounds, Elastomers, and Resins

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Category, Tradename, Composition, and Supplier

Compiled by
Michael and Irene Ash

Contains over 15,000 entries
for chemical trademark products
currently sold throughout the world

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Preface

This single volume is the most current and comprehensive source of data on primary material tradename products for the plastic and rubber industries. Plastic and resin compounds, composites, alloys, and blends as well as elastomers are represented in this reference work. Detailed information is presented on specific tradename products while conveniently classifying them by major categories, specific components, and manufacturer source.

This reference work provides research and compounding technologists, purchasing agents, marketing personnel, and salespeople with critical information on currently available products in the plastic and rubber industry. Because of the dynamic nature of these industries, it is imperative to provide up-to-date, accurate data from the major manufacturers. Products are often newly developed, discontinued, substituted, or sold and a reference that tracks what is available and who produces it is essential for those who are an integral part of the international plastic and rubber manufacturing, compounding, and sales activities.

The book is divided into four sections:

Part I entitled **Tradename by Category Reference** contains a primary classification of these materials into two sections: Plastic Compounds and Resins followed by Elastomers. Some of the categories included in the Plastic Compounds and Resins group are: Acetals, Acrylics, Epoxies, Fluoropolymers, Polyethylene, Polypropylene, Silicones, Vinyl-based Resins, etc. In the Elastomers group, some of the categories are: Acrylic Elastomers, EPM Rubbers, Polychloroprene, Styrenic Elastomers, Thermoplastic Elastomers, etc. Within each of these categories are alphabetical entries of tradename products. These entries include detailed information about the product's manufacturer, chemical description, properties, function, and application.

With the increasing trend towards hybrid products satisfying more customized needs, the ability to distinguish even between a major classification of products becomes more difficult and overlap is inevitable. For example, a thermoplastic elastomer is both a rubber and a plastic and has been arbitrarily placed in the Plastic Compounds and Resins group. Within each category there are products that could be placed in more than one group, e.g., an ethylene copolymer that is also a vinyl-based resin.

Part II, **Tradename Cross Reference**, contains an alphabetical listing of all the tradename products contained in this reference and refers the user to the category in Part I that contains the description.

Part III, **Chemical Component Cross Reference**, contains a detailed chemical classification of the plastic, resin, and rubber tradename products. Wherever possible, the synonyms, CAS (Chemical Abstract Service Registry) numbers, and RD (Recognized Disclosure) numbers are provided. When products are alloys, composites, or blends, they

are listed under the appropriate designation, e.g., ABS/EVA, PPS/PTFE, PC/SMA, etc. Under each chemical component(s) is a listing of the tradename products that contain that material.

Part IV, **Chemical Manufacturers' Directory**, is a directory of all the manufacturers of products referenced in this work. There are more than five hundred companies, subsidiaries, divisions, and branch offices worldwide included in this edition. This section includes: telephone numbers (as well as 800 numbers where possible), fax numbers, full addresses, and an alphabetical listing of all the product lines that are attributed to each manufacturer.

This book is a culmination of many long hours of research and investigation. We are especially grateful to Roberta Dakan for her skill and dedication in the development and maintenance of this tradename database resource. Her talent and persistence has been instrumental in the production of this reference work.

M. & I. Ash

NOTE

The information contained in this series is accurate to the best of our knowledge; however, no liability will be assumed by the publisher for the correctness or comprehensiveness of such information. The determination of the suitability of any of the products for prospective use is the responsibility of the user. It is herewith recommended that those who plan to use any of the products referenced seek the manufacturer's instructions for the handling of that particular chemical.

Unless otherwise specified, when the temperatures are not given for properties such as viscosity, density, solubility, etc., a standard temperature of 25 C is to be assumed.

OTHER BOOKS BY MICHAEL AND IRENE ASH

A Formulary of Paints and Other Coatings, Volumes I and II
A Formulary of Detergents and Other Cleaning Agents
A Formulary of Adhesives and Sealants
A Formulary of Cosmetic Preparations
The Thesaurus of Chemical Products, Volumes I and II
Encyclopedia of Plastics, Polymers and Resins, Volumes I—IV
Vol. I, What Every Chemical Technologist Wants to Know About...Emulsifiers and Wetting Agents
Vol. II, What Every Chemical Technologist Wants to Know About...Dispersants, Solvents, and Solubilizers
Vol. III, What Every Chemical Technologist Wants to Know About...Plasticizers, Stabilizers, and Thickeners
Vol. IV, What Every Chemical Technologist Wants to Know About...Conditioners, Emollients, and Lubricants
Vol. V, What Every Chemical Technologist Wants to Know About...Resins
Vol. VI, What Every Chemical Technologist Wants to Know About...Polymers and Plastics
The Condensed Encyclopedia of Surfactants
Chemical Products Desk Reference
Handbook of Industrial Chemical Additives

ABBREVIATIONS

@ ..... at
ABS ..... acrylonitrile-butadiene-styrene
absorp. ..... absorption
ACN ..... acrylonitrile
act. ..... active
adsorp. ..... adsorption
AEB ..... average extent of burning
agric. ..... agricultural
a.i. ..... active ingredient
anhyd. ..... anhydrous
APHA ..... American Public Health Association
applic(s). ..... application(s)
aq. ..... aqueous
ASA ..... acrylic-styrene-acrylonitrile
ASTM ..... American Society for Testing and Materials
ATB ..... average time of burning
aux. ..... auxiliary
avail. ..... available
avg. ..... average
BP ..... benzoyl peroxide
BHA ..... butylated hydroxyanisole
BHT ..... butylated hydroxytoluene
biodeg. ..... biodegradable
bk., blk. ..... black
BMC ..... bulk molding compound
b.p. ..... boiling point
BR ..... butadiene rubbers, polybutadienes
B&R ..... Ball & Ring
br., brn. ..... brown
brnsh. ..... brownish
B/S ..... butadiene-styrene
C ..... degrees Centigrade
CAB ..... cellulose acetate butyrate
cap ..... capillary
CAS ..... Chemical Abstracts Service
CC ..... closed cup
cc ..... cubic centimeter(s)
CCl_4 ..... carbon tetrachloride
char. ..... characteristic
cm ..... centimeter(s)
cm^3 ..... cubic centimeter(s)
CMC ..... carboxymethylcellulose
CMD ..... cross machine direction
COC ..... Cleveland Open Cup
COF ..... coefficient of friction
compd. ..... compound
compr. ..... compression
conc. ..... concentrated, concentration
cps ..... centipoise(s)
CPVC ..... chlorinated PVC
CR ..... chloroprene rubber, polychloroprene
cryst. ..... crystalline, crystallization

cs or cSt ..... centistoke(s)
CTFA ..... Cosmetic, Toiletry and Fragrance Association
DCBP ..... 2,4-dichlorobenzoyl peroxide
DCP ..... recrystallized dicumyl peroxide
DCPD ..... dicyclopentadiene
DDS ..... diaminodiphenyl sulfone
DEA ..... diethanolamine, diethanolamide
decomp. ..... decomposes
DEG ..... diethylene glycol
dens. ..... density
deriv. ..... derivative(s)
dg ..... decigram(s)
diam. ..... diameter
dielec. ..... dielectric
disp. ..... dispersible, dispersion
dist. ..... distilled
distort. ..... distortion
dk. ..... dark
DMBPH ..... 2,5-dimethyl, 2,5-di(t-butylperoxy) hexane
DOT ..... Department of Transportation
ECTFE ..... ethylene/chlorotrifluoroethylene copolymer
EDTA ..... ethylene diamine tetraacetic acid
EEW ..... epoxide equivalent weight
elec. ..... electrical
elong. ..... elongation
EMI ..... electromagnetic interference
ENB 5-ethylidene-2-norbornene
EP ..... extreme pressure
EPDM ..... ethylene-propylene-diene rubbers
EPM ..... ethylene-propylene rubbers
equip. ..... equipment
ESCR ..... environmental stress crack resistance
esp. ..... especially
ETFE ..... ethylene tetrafluoroethylene
EVA ..... ethylene vinyl acetate
EVCL ..... ethylene-vinyl chloride
exc. ..... excellent
F ..... degrees Fahrenheit
FD ..... flow direction
FDA ..... Food and Drug Administration
flamm. ..... flammable, flammability
flex. ..... flexural
f.p. ..... freezing point
FRP ..... fiberglass-reinforced plastics
ft ..... foot, feet
F-T ..... Fischer-Tropsch
G ..... giga
g ..... gram(s)
G-H ..... Gardner-Holdt
gal ..... gallon(s)
gr. ..... gravity
gran. ..... granules, granular
grn. ..... green
GRP ..... glass-reinforced polyester
h ..... hour(s)
HAF ..... high abrasion furnace carbon black

HB ..... horizontal burining
HC ..... hydrocarbon
HCl ..... hydrochloric acid
HDDA ..... hexanediol diacrylate
HDI ..... hexamethylene diisocyanate
HDPE ..... high-density polyethylene
Hg ..... mercury
HLB ..... hydrophilic lipophilic balance
hyd. ..... hydroxyl
hydrog. ..... hydrogenated
i.b.p. ..... initial boiling point
IIR ..... isobutylene-isoprene rubber
in. ..... inch(es)
incl ..... including
indent. ..... indentation
ingred. ..... ingredient(s)
inj. ..... injection
insol. ..... insoluble
IPA ..... isopropyl alcohol, isopropanol
IPDI ..... isophorone diisocyanate
IPM ..... isopropyl myristate
IPP ..... isopropyl palmitate
IR ..... isoprene rubber (synthetic)
J ..... joule
k ..... kilo
kg ..... kilogram(s)
KU ..... Krebs units
l ..... liter(s)
lb ..... pound(s)
LD ..... longitudinal direction
LDPE ..... low-density polyethylene
liq. ..... liquid
LLDPE ..... linear low-density polyethylene
lt. ..... light
M ..... mega
m ..... milli or meter(s)
max. ..... maximum
MBCA ..... 4,4′-methylene bis (orthochloroaniline)
MD ..... machine direction, mold direction
MDA ..... methylene dianiline
MDI ..... methylene diphenylene isocyanate
MDPE ..... medium density polyethylene
MEA ..... monoethanolamine, monoethanolamide
med. ..... medium
MEK ..... methyl ethyl ketone
mfg. ..... manufacture
mg ..... milligram(s)
MIBK ..... methyl isobutyl ketone
MIL ..... Military Specifications
min ..... minute(s), mineral, minimum
MIPA ..... monoisopropanolamine, monoisopropanolamide
misc. ..... miscible
mixt. ..... mixture(s)
ml ..... milliliter(s)
mm ..... millimeter(s)
mN ..... millinewton(s)

MOCA ..... methylene bis-orthochloroaniline
mod. ..... modulus, moderately
m.p. ..... melting point
MT ..... medium thermal
MVTR ..... moisture vapor transmission rate
m.w. ..... molecular weight
MWD ..... molecular weight distribution
nat. ..... natural
NBR ..... (acrylo)nitrile-butadiene rubber
NC ..... nitrocellulose
NCR ..... nitrile-chloroprene rubber
NEMA ..... National Electrical Manufacturers Association
NF ..... National Formulary
NMA ..... nadic methyl anhydride
NMP ..... N-methyl pyrrolidone
no. ..... number
nonflam. ..... nonflammable
NPG ..... neopentyl glycol
NR ..... isoprene rubber (natural)
NV ..... nonvolatiles
OC ..... open crucible
OPP ..... oriented polypropylene
org. ..... organic
o/w ..... oil-in-water
Pa ..... Pascal
PAN ..... polyacrylonitrile
PC ..... polycarbonate
pcf ..... pounds per cubic foot
PCT ..... polycyclohexylene terephthalate
PE ..... polyethylene
PEEK ..... polyetheretherketone
PEG ..... polyethylene glycol
PES ..... polyethersulfone
PET ..... polyethylene terephthalate
petrol ..... petroleum
pH ..... hydrogen-ion concentration
phr ..... parts per hundred of rubber or resin
pkg. ..... packaging
P-M ..... Pensky-Martens
PMCC ..... Pensky-Martens closed cup
powd. ..... powder
PP ..... polypropylene
PPS ..... polyphenylene sulfide
pract. ..... practically
prep. ..... preparation(s)
prod. ..... product(s), production
props. ..... properties
PS ..... polystyrene
psi ..... pounds per square inch
pt. ..... point
PTFE ..... polytetrafluoroethylene
PTMEG ..... polytetramethylene ether glycol
PU ..... polyurethane
PVAc ..... polyvinyl acetate
PVAL ..... polyvinyl alcohol
PVC ..... polyvinyl chloride

PVDC ..... polyvinylidene chloride
PVDF ..... polyvinylidene fluoride
PVF ..... polyvinyl fluoride
quat. ..... quaternary
R&B ..... Ring & Ball
RD ..... Recognized Disclosure
rdsh. ..... reddish
ref ..... refractive
resist ..... resistivity, resistant, resistance
resp. ..... respectively
RFI ..... radio frequency interference
RIM ..... reaction injection molded/molding
rpm ..... revolutions per minute
R.T. ..... room temperature
RTM ..... resin transfer molding
s ..... second(s)
SAN ..... styrene-acrylonitrile
sapon ..... saponification
sat. ..... saturated
S/B ..... styrene/butadiene
SBR ..... styrene-butadiene rubber
SBS ..... styrene-butadiene-styrene
SCR ..... styrene-chloroprene rubber
SE ..... self-emulsifying
S-EB-S ..... styrene-ethylene/butylene-styrene
sec. ..... secondary
sm. ..... small
SMA ..... styrene maleic anhydride
SMC ..... sheet molding compound
SMD ..... surface mounted device
soften. ..... softening
sol'n. ..... solution
sol. ..... soluble, solubility
solid. ..... solidification
solv(s) ..... solvent(s)
sp. ..... specific
spec. ..... specification
SS ..... stainless steel
S/S ..... step-by-step
S/T ..... short term
std. ..... standard
Stod. ..... Stoddard solvent
str. ..... strength
surf. ..... surface
SUS ..... Saybolt Universal Seconds
syn. ..... synthetic
t ..... tertiary
TCC ..... Taggart closed cup
TD ..... transverse direction
TDI ..... toluene diisocyanate
TEA ..... triethanolamine
tech. ..... technical

temp. ..... temperature
tens. ..... tension or tensile
tert. ..... tertiary
THF ..... tetrahydrofuran
thru ..... through
TMA ..... trimellitic anhydride
TMC ..... thick molding compounds
TMPEOTA ..... trimethylolpropane ethoxy triacrylate
TMPTA ..... trimethylolpropane triacrylate
TMTD ..... tetramethyl thiuram disulfide
TPGDA ..... tripropylene glycol diacrylate
typ. ..... typical
UL ..... Underwriter's Laboratory
unsat. ..... unsaturated
USP ..... United States Pharmacopeia
uv ..... ultraviolet
VA ..... vinyl acetate
VAE ..... vinyl acetate-ethylene copolymer
VdC, VDC ..... vinylidene chloride
veg. ..... vegetable
visc. ..... viscous, viscosity
VOC ..... volatile organic compounds
vol. ..... volume
wh. ..... white
w/o ..... water-in-oil
wt. ..... weight
WVTR ..... water vapor transmission rate
yel. ..... yellow
ylsh. ..... yellowish
..... number
% ..... percent
< ..... less than
> ..... greater than
≈ ..... approximately

CONTENTS

PART I
Tradename by Category Reference

SECTION I

Plastic Compounds and Resins