

Handbook of Cosmetic and Personal Care Additives

Second Edition
Volume 2

Compiled by
Michael and Irene Ash



Synapse Information Resources, Inc.

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Cosmetic and
Personal Care Additives
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Synapse Information Resources

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Preface

Handbook of Cosmetic and Personal Care Additives, Second Edition provides information on more than 28,000 trade names, chemicals, materials, and synonyms and serves as an essential guide to product managers, formulation scientists, quality controllers, cosmetic chemists as well as any professional associated with the cosmetic and personal care industry.

The cosmetic and personal care industry encompasses a diversity of products including: body and face lotions, creams, and salves; deodorants and antiperspirants; sunscreens and tanning aids; makeup preparations (face powder, lipstick, mascara, eye shadow, eye liner); nail products; hair preparations (shampoos, conditioners, coloring rinses and dyes, waving solutions); bath preparations and soaps; shaving preparations; oral care products; and fragrances.

Choosing optimal ingredients in the overall process of marketing and developing new and improved products is a monumental task. This reference coalesces the necessary research process into a single source and expedites material selection for the user by cross referencing trade name products by chemical composition, function, CAS number and EINECS number.

This reference contains the following sections:

Part I

Trade Name Reference contains alphabetical entries of trade name cosmetic/personal care additives with extensive profiles of each product listed. The product descriptions include: its manufacturer, chemical description/composition, CAS, and EINECS identifying numbers, general properties, applications and functions, toxicology, compliance and regulatory information as provided by the manufacturer and other sources

Part II

Chemical Component Cross-Reference contains approximately 7500 cosmetic and personal care chemicals/materials that are either contained in the trade name products profiled in Part I or are generic chemicals used as cosmetic/

personal care additive ingredients. Each entry includes, wherever possible, its synonyms, CAS number, EINECS/ELINCS number, FEMA number, UN/DOT number, molecular and empirical formulas, chemical properties, functions and applications, toxicology, precautions, use levels, regulatory information, and manufacturers and distributors of the chemical. All chemical/material synonyms are cross-referenced back to the main entry. The chemical monograph entries also contain a listing of the trade name products that are either equivalent to the chemical entry or contain this chemical as one of its ingredients.

Part III

Functional/Application Index is a powerful tool for locating the trade names and chemicals based on their function and application. By searching for key functional words related to cosmetic/personal care additives such as anticaking agents, binders, colorants, disintegrants, emulsifiers, encapsulants, fillers, fragrances, pearlescents, in specific application areas such as makeup, mouthwash, skin lotions, shampoos, sunscreens, etc., the user is directed to the trade names and/or chemicals that have that specific functional/application attribute.

Part IV

Manufacturers Directory contains detailed contact information for the more than 3100 worldwide manufacturers and their branches for the trade name products and chemical components that are referenced in this handbook. Wherever possible, telephone, telefax, toll-free numbers, e-mail and internet addresses, and complete mailing addresses are included for each manufacturer.

Appendixes

CAS Number Index contains CAS number entries followed by a listing of their trade name product and chemical equivalents in alphabetical order. The chemical name is in boldfaced type.

EINECS/ELINCS Number Index contains EINECS/ELINCS number entries followed by a listing of their trade name product and generic chemical equivalents in alphabetical order. The

chemical name is in boldfaced type.

FEMA Number Index orders chemicals contained in this reference by these numbers (assigned by the Flavor and Extract Manufacturers Association).

Glossary contains definitions of terminology associated with the cosmetics and personal care industry.

We are confident that those involved in the cosmetic/personal care industry will find this compendium an important addition to their reference library. We are also pleased to provide this reference as an electronic product.

This reference is the culmination of many years of research, investigation of product sources acquired through personal contacts and correspondences with major chemical manufacturers worldwide, as well as toxicological databases, chemical reference books, trade magazines and journals. We would especially like to express our gratitude to Roberta Dakan for her contribution to standardizing the entry format and managing the trade name and chemical database that represents the basis of this and future chemical references. Her untiring efforts have been instrumental in the production of this source book.

M. & I. Ash

NOTE:

The information contained in this reference is accurate to the best of our knowledge; however, no liability will be assumed by the publisher or the authors for the correctness or comprehensiveness of such information. The determination of the suitability of these 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 manufacturers instructions for the handling of that chemical.

Abbreviations

ABS	acrylonitrile-butadiene-styrene	Btu	British thermal unit
abs.	absolute	B.U.	Brabender units (viscosity)
absorp.	absorption	BVC	British Veterinary Codex
ACGIH	American Conference of Governmental Industrial Hygienists	BVO	brominated vegetable oil
ACN	acrylonitrile	byprod.	byproduct(s)
act.	active	C	degrees Centigrade
ADI	acceptable daily intake (FAO/WHO)	CAA	Clean Air Act
ADR	adverse drug reactions	CAB	cellulose acetate butyrate
adsorp.	adsorption	calcd.	calculated
agric.	agricultural	cap.	capillary
agrichem.	agrichemical(s)	CAP	Color Additive Petition (U.S.)
agrochem.	agrochemical	CAS	Chemical Abstracts Service
a.i.	active ingredient	CC	closed cup
alc.	alcohol	cc	cubic centimeter(s)
Am., Amer.	American	CCFAC	Codex Committee on Food Additives and Contaminants
amts.	amounts	CCl ₄	carbon tetrachloride
anhyd.	anhydrous	CD	completely denatured
ANSI	American National Standards Institute	CDA	completely denatured alcohol
APHA	American Public Health Association	CE	Council of Europe
API	Active Pharmaceutical Ingredients	CEL	corporate exposure limit
applic(s).	application(s)	CERCLA	Comprehensive Environmental Response, Compensation, & Liability Act (U.S.)
aq.	aqueous	CFC	chlorofluorocarbon
ASA	acrylic-styrene-acrylonitrile	CFN	Council on Food & Nutrition (Am. Medical Assoc.)
ASBC	Am. Society of Brewing Chemists	CFR	Code of Federal Regulations (U.S.)
ASTM	American Society for Testing and Materials	cGMP	current good manufacturing practice (U.S. FDA)
ATH	alumina trihydrate	ch.	Chapter
atm	atmosphere	char.	characteristic, characterized
at.wt.	atomic weight	chel.	chelation
autoignit.	autoignition	chem(s).	chemical(s)
aux.	auxiliary	CI	Color Index
avail.	available	CIIR	chlorobutyl rubber
avg.	average	CIR	Cosmetic Ingredient Review
a.w.	atomic weight	cks	centistoke(s)
BATF	Bureau of Alcohol, Tobacco, and Firearms (U.S.)	cl	clear
BDG	butyl diglycol	CL	ceiling concentration
BfArM	Bundesinstitut für Arzneimittel und Medizinprodukte (Federal Institute for Drugs and Medical Devices, Germany)	cm	centimeter(s)
BGA	German Federal Health Office (obsolete)	cm ³	cubic centimeter(s)
BgVV	Bundesinstitut für Gesundheitlichen Verbraucherschutz und Veterinärmedizin (Federal Institute for Consumer Health Protection and Veterinary Medicine) (Germany)	CMC	carboxymethylcellulose
BHA	butylated hydroxyanisole	CMC	critical Micelle concentration
BHT	butylated hydroxytoluene	c.m.p.	capillary melting point
biochem.	biochemical	CNS	central nervous system
biodeg.	biodegradable	CO	carbon monoxide
bldg.	building	COC	Cleveland Open Cup
blk.	black	COD	chemical oxygen demand
BMC	bulk molding compound	coeff.	coefficient
BOD	biochemical oxygen demand	COF	coefficient of friction
BP	British Pharmacopeia	compat.	compatible
b.p.	boiling point	compd(s).	compound(s)
BR	butadiene rubbers, polybutadienes	compr.	compression
B&R	Ball & Ring	conc(s).	concentrated, concentration
br., brn.	brown	conduct.	Conductive, conductivity
brnsh.	brownish	const.	constant
BS	British Standards	contg.	containing
B/S	butadiene/styrene	cosolv.	cosolvent
BSI	British Standards Institute	CP	Canadian Pharmacopeia
BSS	British Standard Sieve	cp	centipoise(s)
		CPE	chlorinated polyethylene
		cps	centipoise(s)
		CPVC	chlorinated polyvinyl chloride
		CR	chloroprene rubber, polychloroprene

cryst.	crystalline, crystallization	esp.	especially
cs	centistoke(s)	EU	European Union
cSt	centistoke(s)	Eur.Ph.	European Pharmacopeia
CTFA	Cosmetic, Toiletry and Fragrance Association	EVA	ethylene vinyl acetate
ctks	centistoke(s)	exc.	excellent
CWA	Clean Water Act	F	degrees Fahrenheit
cwt	hundred weight	FA	fatty acid
DAB	Deutsche. Arzneibuch	FAC	Food Advisory Committee
DAC	Deutscher Arneimittel Codex (German Pharmacopoeia Codex)	FAO	Food and Agriculture Organization (United Nations)
dc	direct current	FAP	Food Additive Petition (U.S.)
D&C	Drugs & Cosmetics	FCC	Food Chemicals Codex
DE	dextrose equivalent	FDA	Food and Drug Administration (U.S.)
DEA	diethanolamide, diethanolamine	FD&C	Foods, Drugs, and Cosmetics
dec.	decomposes	FDD	Food and Drug Directorate
decomp.	decomposition	FEMA	Flavor and Extract Manufacturers' Association (U.S.)
DEG	diethylene glycol	FEP	fluorinated ethylene propylene
deliq.	deliquescent	FFA	free fatty acid
dens.	density	FFDCA	Federal Food, Drug, and Cosmetic Act
deriv(s).	derivative(s)	FG	food grade
descrip.	description	FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act (U.S. EPA)
dg	decigram(s)	FKM	fluoroelastomer
DI	deionized	fl	fluid
diam.	diameter	flamm.	flammable, flammability
dielec.	dielectric	flex.	flexural
dil.	dilute	FNB	Food and Nutrition Board
DIN	Deutsches Institut fuer Normung (German Standards Organization)	f.p.	freezing point
disp.	dispersible, dispersion	FPC	fish-protein concentrate
dissip.	dissipation	FR	flame retardant; Federal Register
dist.	distilled	FR-ABS	flame retardant ABS
distort.	distortion	FRP	fiberglass-reinforced plastics
distrib.	distributor	F-T	Fischer-Tropsch
dk.	dark	ft	foot, feet
DMF	dimethyl formamide	f.w.	formula weight
DMF	Drug Master Files	G	giga
DMSO	dimethyl sulfoxide	g	gram(s)
D.O.	dissolved oxygen	gal	gallon(s)
DOC	dissolved organic carbon	g/d	gram/dyne
DOM	dissolved organic matter	GFRP	glass fiber-reinforced plastic
DOP	diocetyl phthalate	G-H	Gardner-Holdt
DOT	Department of Transportation (U.S.)	GI	gastrointestinal
DPG	diphenyl guanidine, dipropylene glycol	glac.	glacial
DSB	dry solids basis	GLP	good laboratory practice
DSI	Canadian Provisional Domestic Substance list	GLY	glycine
DTUL	deflection temperature under load	GMP	good manufacturing practice; guanosine monophosphate
DVB	divinylbenzene	gpd	gallons per day
DW	distilled water, deionized water	gpm	gallons per minute
DWV	drainage, waste and vent	gpt	gallons per ton
eb, EB	electron beam	gr.	gravity
EC	European Community	gran.	granules, granular
EC50	environmental concentration, 50%	GRAS	generally regarded as safe
EDTA	ethylenediamine tetraacetic acid	grn.	green
EE	epoxy equivalent	GRP	glass-reinforced plastics, glass-reinforced polyester
EEC	European Economic Community	GVS	Gardner varnish scale (color)
EED	environmental endocrine disrupter	h	hour(s)
EEW	epoxide equivalent weight	HAF	high abrasion furnace carbon black
e.g.	for example	HALS	hindered amine light stabilizer
EINECS	European Inventory of Existing Commercial Chemical Substances	HAP's	hazardous air pollutants
elec.	electrical	HB	horizontal burning
ELINCS	European List of Notified Chemical Substances	HC	hydrocarbon
elong.	elongation	HCFC	hydrochlorofluorocarbon
EMI	electromagnetic interference	HCl	hydrochloride, hydrochloric acid
EMS	electromagnetic shielding	HDPE	high-density polyethylene
ENB	5-ethylidene-2-norbornene	HDT	heat distortion (deflection) temp.
EO	ethylene oxide	HFC	hydrofluorocarbon
EP	European Pharmacopoeia	HFCS	high fructose corn syrup
EP	extreme pressure	Hg	mercury
EPA	Environmental Protection Agency (U.S.)	HIPS	high-impact polystyrene
EPDM	ethylene-propylene-diene rubber, ethylene-propylene terpolymer	HLB	hydrophilic lipophilic balance
EPR	ethylene-propylene rubber	HMIS	Hazardous Material Identification System
EPS	expandable polystyrene	HPLC	high performance liquid chromatography
equip.	equipment	hr	hour(s)
equiv.	equivalent	HTST	high temperature short-time pasteurization
ESCR	environmental stress crack resistance	HVP	hydrolyzed vegetable protein
ESD	electrostatic discharge	hyd.	hydroxyl
ESO	epoxidized soybean oil	hydrog.	hydrogenated
ESP	electrostatic protection	Hz	hertz
		IARC	International Agency for Research on Cancer (United Nations)
		i.b.p.	initial boiling point

IDLH	immediately dangerous to life and health	MID	Meat Inspection Division (USDA)
I&I	industrial and institutional	MIL	Military Specifications
IIR	isobutylene-isoprene rubber	mil	$\frac{1}{1000}$ th inch
IM	intramuscular	min	minute(s)
immisc.	immiscible	min.	mineral
IMP	inosine monophosphate	min.	minimum
in.	inch(es)	MIPA	monoisopropanolamine, monoisopropanolamide
Inc.	Incorporated	misc.	miscible, miscellaneous
inc.	increases, increased	MITI	Japanese Inventory of Chemical Substances (list)
INCI	International Nomenclature Cosmetic Ingredient	mixt(s).	mixture(s)
incl.	including	ml	milliliter(s)
incompat.	incompatible	MLD	minimum lethal dose
incorp.	Incorporated, incorporation	mm	millimeter(s)
indent.	indentation	MMW-HDPE	medium molecular weight high density polyethylene
ing.	ingestion	mN	millinewton(s)
ingred(s).	ingredient(s)	mo, mos	month(s)
inh.	inhalation	mod.	moderately
inj.	injection	mod.	modulus
inorg.	inorganic	monocl.	monoclinic
INS	International Numbering System for Food Additives	m.p.	melting point
insol.	insoluble	mPa-s	millipascal-second(s)
Int'l.	International	mppcf	million particles per cubic foot
IOFI	International Organization of the Flavor Industry	MRL	maximum residual limits
IP	intraperitoneal	MSDS	Material Safety Data Sheet
IPA	isopropyl alcohol	MSG	monosodium glutamate
IPM	isopropyl myristate	MT	medium thermal
IPP	isopropyl palmitate	mus	mouse
IR	isoprene rubber (synthetic), polyisoprene	m.w.	molecular weight
irreg.	irregular	N	normal
IU	International Unit	nat.	natural
IV	intravenous	NB	nonbreaking
J	joule	N/B	nitrile-butadiene
JCIC	Japanese Cosmetic Ingredients Codex	NBR	nitrile rubber, nitrile-butadiene rubber
JCID	Japanese Cosmetic Ingredients Dictionary	NC	nitrocellulose
JECFA	Joint Expert Committee on Food Additives	NCl	National Cancer Institute
JP	Japanese Pharmacopoeia	need.	needles
JSCI	Japanese Standard of Cosmetic Ingredients	neg.	negative
JSFA	Japan Standards for Food Additives	neut.	neutral, neutralized
k	kilo	NF	National Formulary
KB	Kauri-Butanol	NFPA	National Fire Protection Association
kg	kilogram(s)	ng	nanogram
KTPP	potassium triphosphate	NIOSH	National Institute for Occupational Safety and Health (U.S.)
KU	Krebs units	nm	nanometer
l	liter(s)	no.	number
lb	pound(s)	N ₂ O	nitrous oxide
LC50	lethal concentration 50%	NOEL	no observed effect level
LCLo	lethal concentration low	NOI	not otherwise indexed (U.S. DOT)
LD0	lethal dose 0%	nonalc.	nonalcoholic
LD50	lethal dose 50%	nonaq.	nonaqueous
LDLo	lowest published lethal dose	nonbiodeg.	nonbiodegradable
LDPE	low-density polyethylene	nonflamm.	nonflammable
LED	light-emitting diode	nonyel.	nonyellowing
lel	lower explosive level	N.O.S.	not otherwise specified (transport regulations)
lg.	large	NO _x	nitrogen oxides
liq.	liquid	NR	natural rubber, isoprene rubber (natural)
LLDPE	linear low-density polyethylene	NSF	National Sanitation Foundation, National Standards Foundation
LOEL	lowest observed effect level	NTP	National Toxicology Program (U.S.)
lt.	light	NV	nonvolatiles
Ltd.	Limited	o-	ortho
LVP	low vapor pressure	OBPA	oxybisphenoxarsine
M	mega	OC	open cup
M	mole	ODC	ozone-depleting compound
m	milli	ODP	ozone-depletion potential
m	meter(s)	OEL	occupational exposure limit
m-	meta	OEM	original equipment manufacturer
manuf.	manufacturer	OMS	odorless mineral spirits
max.	maximum	org.	organic
mbar	millibar	OSHA	Occupational Safety and Health Administration (U.S.)
MCF	methyl chloroform	OTC	over-the-counter
MCT	medium chain triglycerides	o/w	oil-in-water
MD	machine direction, mold direction	oz	ounce
MEA	monoethanolamine, monoethanolamide	p-	para
mech.	mechanical	Pa	Pascal
med.	medium	PBT	polybutylene terephthalate
MEK	methyl ethyl ketone	pbw	parts by weight
mfg.	manufacture	PC	polycarbonate
mg	milligram(s)	PCB	polychlorinated biphenyl
MIBK	methyl isobutyl ketone	pcf	pounds per cubic foot
microcryst.	microcrystalline	PCP	Pest Control Product Act, 1972 (Canada)
microgran.	microgranules, microgranular		

PCTFE	polychlorotrifluoroethylene	RDA	recommended daily allowances
PE	polyethylene	rdsh.	reddish
PEEK	polyetheretherketone	rec.	recommended
PEG	polyethylene glycol	redsh.	reddish
PEK	polyetherketone	ref.	refractive
PEL	permissible exposure level	reg.	registry
perc	perchloroethylene	regs.	regulations
percut.	percutaneous	REL	recommended exposure limit
PES	polyether sulfone	rep.	represents
PET	polyethylene terephthalate	resist.	resistance, resistant, resistivity
petrol.	petroleum	resp.	respectively
PFPE	perfluoropolyether	RFI	radio frequency interference
PG	propylene glycol	r.h.	relative humidity
pH	hydrogen-ion concentration	rhomb.	rhombic
Ph.	Pharmacopoeia	RIM	reaction injection molded/molding
pharm.	pharmaceutical	RO	reverse osmosis
Ph.Eur.	European Pharmacopoeia	rpm	revolutions per minute
phr	parts per hundred of rubber or resin	RQ	reportable quantity
PIB	polyisobutylene	R.T.	room temperature
PIN	product identification number	RTECS	Registry of Toxic Effects of Chemical Substances (U.S.)
PIR	polyisocyanurate	RTM	resin transfer molding
Pk	peak concentration	RTV	room temperature vulcanizing
pkg.	packaging	s	second(s)
PM, P-M	Pensky-Martens	s-	secondary
PMCC	Pensky-Martens closed cup	SADT	self accelerating decomposition temp.
PMMA	polymethyl methacrylate	SAN	styrene-acrylonitrile
PMOC	Pensky-Martens open cup	sapon.	saponification
PO	propylene oxide	SARA	Superfund Amendments & Reauthorization Act (U.S.)
POC	particulate organic carbon	sat.	saturated
POE	polyoxyethylene, polyoxyethylated	S/B	styrene/butadiene
polyunsat.	polyunsaturated	SBR	styrene/butadiene rubber
PoM	prescription-only medicine	SBS	styrene-butadiene-styrene
POM	polyoxymethylene	SD	specially denatured
POP	polyoxypropylene, polyoxypropylated	SDA	specially denatured alcohol
POP's	persistent organic pollutants	SE	self-emulsifying
powd.	powder	SEBS	styrene-ethylene/butylene-styrene
PP	polypropylene	sec.	secondary
ppb	parts per billion	semicryst.	semicrystalline
PPE	polyphenylene ether	semiliq.	semiliquid
PPG	polypropylene glycol	semisyn.	semisynthetic
pph	parts per hundred (percent)	sl.	slight, slightly
ppm	parts per million	sm.	small
PPO	polyphenylene oxide	SMA	styrene maleic anhydride
PPS	polyphenylene sulfide	SMC	sheet molding compound
ppt	parts per trillion	SMG	succinylated monoglycerides
pract.	practically	SNAP	Significant New Alternative Policy (U.S. EPA)
prep(s).	preparation(s)	soften.	softening
prod.	product(s), production	sol.	soluble, solubility
props.	properties	solid.	solidification
PS	polystyrene	sol'n.	solution
ps	poise	solv(s).	solvent(s)
psi	pounds per square inch	sp.	specific
psia	pounds per square inch absolute	spec.	specification, specialty
psig	pounds per square inch gauge	SPF	sun protection factor
pt.	point	spp.	non-specified species
Pt-Co	platinum-cobalt	SS	stainless steel
PTFE	polytetrafluoroethylene	SSU	Saybolt Universal Seconds
PTMEG	polytetramethylene ether glycol	std.	standard
PU	polyurethane	STEL	short term exposure limit
PUF	polyurethane foam	Stod.	Stoddard solvent
PUR	polyurethane	STP	standard temperature and pressure
PVA	polyvinyl alcohol	str.	strength
PVAc	polyvinyl acetate	subcut.	subcutaneous
PVAL	polyvinyl alcohol	subl.	sublimes
PVB	polyvinyl butyral	surf.	surface
PVC	polyvinyl chloride	SUS	Saybolt Universal Seconds
PVC-P	plasticized polyvinyl chloride	susp.	suspension
PVC-U	unplasticized polyvinyl chloride	syn.	synthetic
PVDC, PVdC	polyvinylidene chloride	t	tertiary
PVDF	polyvinylidene fluoride	TAPPI	Technical Association of the Pulp & Paper Industry
PVM	polyvinyl methyl ether	TBHQ	tert-butyl hydroquinone
PVM/MA	polyvinyl methyl ether/maleic anhydride	TCC	Tag closed cup
PVP	polyvinylpyrrolidone	TCLo	toxic concentration low
qt	quart	TDI	toluene diisocyanate
quat.	quaternary	TDLo	toxic dose low
R&B	Ring & Ball	TDS	total dissolved solids
rbt	rabbit	TEA	triethanolamine, triethanolamide
RCRA	Resource Conservation and Recovery Act (U.S. EPA 40CFR §261)	tech.	technical
R&D	research and development	temp.	temperature
		tens.	tensile, tension

tert	tertiary	VdC, VDC	vinylidene chloride
THF	tetrahydrofuran	veg.	vegetable
thru	through	visc.	viscous, viscosity
TIPA	triisopropanolamine	VM&P	Varnish Makers and Painters
TKPP	tetrapotassium pyrophosphate	VOC	volatile organic compounds
TLV	Threshold Limit Value	vol.	volume
TLV-CL	Threshold Limit Value/ceiling limit	v/v	volume by volume
TLV-STEL	Threshold Limit Value/short term exposure limit	WFC	World Food Council
TLV-TWA	Threshold Limit Value/time weighted average	wh.	white
TMC	thick molding compound	WHMIS	Workplace Hazardous Materials Information System (Canada)
TOC	Tag open cup, total organic carbon	WHO	World Health Organization (United Nations)
TPE	thermoplastic elastomer	wks	weeks
TPU	thermoplastic polyurethane	w/o	water-in-oil
TRI	Toxic Release Inventory	wt.	weight
TSCA	Toxic Substances Control Act	w/v	weight by volume
tsp	teaspoon	w/w	weight by weight
TSS	total suspended solids	XLPE	crosslinked polyethylene
TWA	time weighted average	X-PE	crosslinked polyethylene
TWC	time weighted concentration	yel.	yellow
typ.	typical	ylsh.	yellowish
uel	upper explosive limits	yr	year
UF	urea formaldehyde	#	number
UHF	ultra high frequency	%	percent
UHMW	ultra high molecular weight	±	plus or minus
UHMWPE	ultra high molecular weight polyethylene	<	less than
UHT	ultra high temperature	>	greater than
UL	Underwriter's Laboratory	≤	less than or equal to
UN No.	United Nations Substance Identification Number (for transport purposes)	≥	greater than or equal to
unsat.	unsaturated	@	at
UPVC	unplasticized polyvinyl chloride	α	alpha
USDA	U.S. Department of Agriculture	β	beta
USFA	United States Food Additives	δ, Δ	delta
USP	United States Pharmacopeia	ε	epsilon
uv, UV	ultraviolet	γ	gamma
V	volt	ω	omega
VA	vinyl acetate	μ	micron, micrometer
VAE	vinyl acetate ethylene	μg	microgram
VC	vinyl chloride	≈	approximately equal to

Part II
Chemical Component Cross-Reference
D – Z

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D

DAA. See Diacetone alcohol

2,4-DAA. See 4-Methoxy-m-phenylenediamine

2,4-DAA sulfate. See 2,4-Diaminoanisole sulfate trihydrate

Dactin. See 1,3-Dichloro-5,5-dimethyl hydantoin

pDADMAC. See Polyquaternium-6

DADTDG. See Diammonium dithiodiglycolate

DAHQ. See Diamylhydroquinone

Dalmatian sage oil. See Sage (*Salvia officinalis*) oil

Damascia. See Methyl isobutyl carbonyl crotonate

Dandelion extract. See Dandelion (*Taraxacum officinale*) extract

Dandelion fluid extract. See Dandelion (*Taraxacum officinale*) extract

Dandelion root. See Dandelion (*Taraxacum officinale*) root

Dandelion root extract, solid. See Dandelion (*Taraxacum officinale*) extract

Dandelion (*Taraxacum officinale*) extract (INCI)

CAS 68990-74-9; 84775-55-3; 977038-71-3; EINECS/ELINCS 273-624-6

FEMA 2357, 2358

Synonyms: Dandelion extract; Dandelion fluid extract; Dandelion root extract, solid; *Taraxacum* extract; *Taraxacum officinale*; *Taraxacum officinale* extract

Definition: Extract of rhizomes and roots of *Taraxacum officinale*

Properties: Bitter tonic, aromatic

Uses: Natural flavoring agent in foods and pharmaceuticals; stimulant; botanical, soothing agent, skin conditioner in cosmetics

Regulatory: FDA 21CFR §182.20, GRAS; FEMA GRAS

Manuf./Distrib.: Bio-Botanica; Chart; Frutarom Meer

Dandelion (*Taraxacum officinale*) root (INCI)

Synonyms: Dandelion root; *Taraxacum*; *Taraxacum officinale*; *Taraxacum officinale* root

Definition: Dried rhizome and roots of *Taraxacum officinale*

Properties: Bitter tonic, aromatic

Uses: Natural flavoring agent in foods; skin conditioner in cosmetics

Regulatory: FDA 21CFR §182.20, GRAS

Manuf./Distrib.: Am. Ingreds.; Frutarom Meer; Herbarium; Maypro Ind.; Stryka Botanics; Whole Herb

DATM. See Diacetyl tartaric acid esters of mono- and diglycerides

Daucus carota. See Carrot (*Daucus carota*) extract; Carrot (*Daucus carota sativa*) juice; Carrot (*Daucus carota sativa*) oil; Carrot (*Daucus carota*) seed extract

Daucus carota extract. See Carrot (*Daucus carota*) seed extract

Daucus carota juice. See Carrot (*Daucus carota sativa*) juice

Daucus carota sativa extract. See Carrot (*Daucus carota*) extract

Daucus carota sativa juice. See Carrot (*Daucus carota sativa*) juice

Daucus oil. See Carrot (*Daucus carota sativa*) oil

DBP. See Dibutyl phthalate

DBPC. See BHT

DBS. See Dibutyl sebacate

DCA. See Dicapryl adipate

D&C Blue No. 1. See Basic blue 9

D&C Blue No. 3. See Acid blue 7

D&C Blue No. 4 (INCI)

CAS 2650-18-2; 37307-56-5; 6371-85-3

Synonyms: Acid blue 9 ammonium salt; Alphazurine; Ammonium, ethyl(4-(p-(ethyl-(m-sulfobenzyl) amino)- α -(o-sulfophenyl) benzylidene)-2,5-cyclohexadien-1-ylidene(m-sulfobenzyl)-, hydroxide, inner salt, diammonium salt; CI 42090 (ammonium salt); Erioglaucine; Food blue 1

Classification: Triphenylmethane color

Definition: Ammonium salt of FD&C Blue No. 1

Empirical: $C_{37}H_{42}N_4O_6S_3$

Formula: $C_{37}H_{42}N_4O_6S_3 \cdot 2H_2N$

Properties: M.w. 783.01

Toxicology: LDLo (IV, human) 33 μ g/kg; human poison by IV route; human systemic effects (muscle contractions, dyspnea); questionable carcinogen; experimental

neoplastigen, tumorigen; mutagenic data; TSCA listed

Hazardous Decomp. Prods.: Heated to decomp., emits very toxic fumes of NH_3 , NO_x , and SO_x

Uses: Colorant in external cosmetics, pharmaceuticals

Regulatory: FDA 21CFR §74.1104, 74.2104, 82.1104; subject to certification, permanently listed

Manuf./Distrib.: Org. Dyestuffs; Rainbow; Spectra Colors; Tricon Colors

See also Acid blue 9; FD&C Blue No. 1

D&C Blue No. 6

CAS 482-89-3; EINECS/ELINCS 207-586-9

Synonyms: 1H,1'H-[2,2'-Bindolydene-3,3'-dione; CI 73000; Indigo; Pigment blue 66; Vat blue 1

Classification: Indigoid color

Empirical: $C_{16}H_{10}N_2O$

Properties: M.w. 246.28

Toxicology: LD50 (oral, mouse) > 32 g/kg, (IP, mouse) 2200 mg/kg; irritant; mutagen; TSCA listed

Uses: Colorant in cosmetics, pharmaceuticals (FDA delisted); colorant for surgical sutures

Regulatory: FDA 21CFR §74.3106, subject to certification, limits in regulation, permanently listed for use in medical devices; FDA delisted for cosmetics and pharmaceuticals

Manuf./Distrib.: Aldrich; Fluka; Ruger; Sigma

See also Indigo

D&C Blue No. 9

CAS 130-20-1; EINECS/ELINCS 240-980-2

Synonyms: Carbanthrene blue; CI 69825; CI vat blue 6; 7,16-Dichloro-6,15-dihydro-5,9,14,18-anthrazinetetrone; Dichloroindanthrone; 3,3'-Dichloroindanthrone; 7,16-Dichloroindanthrone; 7,16-Dichloro-6,15-indanthrone; Pigment blue 64; Vat blue 6

Classification: Anthraquinone color

Empirical: $C_{28}H_{12}Cl_2N_2O_4$

Formula: $C_{28}H_{12}N_2O_4Cl_2$

Properties: M.w. 511.32

Toxicology: LD50 (oral, rat) > 10 g/kg, (oral, mouse) 1800 mg/kg, (skin, mouse) 25 g/kg; mod. toxic by ing.; mildly toxic by skin contact; TSCA listed

Hazardous Decomp. Prods.: Heated to decomp., emits toxic vapors of NO_x and Cl^-

Uses: Colorant in cosmetics, surgical sutures

Use Level: 2.5% max. (sutures)

Regulatory: FDA 21CFR §74.1109, subject to certification, permanently listed for use

in medical devices

Manuf./Distrib.: Ruger

See also Indanthrene blue

D&C Brown No. 1

CAS 1320-07-6; EINECS/ELINCS 215-296-9

Synonyms: Acid orange 24; Benzenesulfonic acid, 4-[[3-[(2,4-dimethylphenyl) azo]-2,4-dihydroxyphenyl] azo]-, monosodium salt; CI 20170; 4-[[3-[(2,4-dimethylphenyl) azo]-2,4-dihydroxyphenyl] azo] benzenesulfonic acid, monosodium salt; Resorcin brown

Classification: Diazo color

Uses: Colorant in external cosmetics, pharmaceuticals

Regulatory: FDA 21CFR §74.2151

See also Acid orange 24

DCDMH. See 1,3-Dichloro-5,5-dimethyl hydantoin

D&C Green No. 1. See Acid green 1

D&C Green No. 5. See Acid green 25

D&C Green No. 6 (INCI)

CAS 128-80-3; EINECS/ELINCS 204-909-5

Synonyms: 9,10-Anthracenedione, 1,4-bis [(4-methylphenyl) amino]-; 1,4-Bis [(4-methylphenyl)-amino-9,10-anthracenedione; 1,4-Bis (p-tolylamino) anthraquinone;

CI 61565; 1,4-Di-p-toluidinoanthraquinone; Green No. 2; Quinizarin green SS
Classification: Anthraquinone color
Empirical: $C_{28}H_{22}N_2O_2$
Properties: Dk. green cryst. or powd.; sol. in C_6H_6 or acids; insol. in water, ethanol; m.w. 418.50
Toxicology: LD50 (oral, rat) 3660 mg/kg; mod. toxic by ing.; eye irritant; TSCA listed
Hazardous Decomp. Prods.: Heated to decomp., emits toxic fumes of NO_x
Uses: Colorant in external cosmetics, pharmaceuticals, surgical sutures, haptics, contact lenses
Regulatory: FDA 21CFR §74.1206, 74.2206, 74.3206, 82.1206; FDA approved for external drugs/cosmetics, permanently listed; subject to certification, limits in regulation for use in medical devices
See also Solvent green 3

D&C Green No. 8 (INCI)

CAS 6358-69-6; EINECS/ELINCS 228-783-6
Synonyms: CI 59040; 8-Hydroxy-1,3,6-pyrenetrisulfonic acid trisodium salt; Pyranine conc.; Solvent green 7
Classification: Pyrene color
Empirical: $C_{16}H_7Na_3O_{10}S_3$
Formula: $C_{16}H_{10}O_{10}S_3 \cdot 3Na$
Properties: Ylsh. grn.; m.w. 524.37
Toxicology: LD50 (IV, mouse) 105 mg/kg; irritant; TSCA listed
Uses: Colorant in external cosmetics, pharmaceuticals
Use Level: 0.01% max. (external pharmaceuticals/cosmetics)
Regulatory: FDA 21CFR §74.1208, 74.2208; subject to certification, permanently listed
Manuf./Distrib.: Aldrich; Costec; Fluka; Noveon; Ruger; Sigma; Warner-Jenkinson
See also CI 59040; Solvent green 7

DCM. *See* Methylene chloride

D&C Orange No. 2. *See* Solvent orange 2

D&C Orange No. 3. *See* Acid orange 10; Acid orange 20

D&C Orange No. 4 (INCI)

CAS 633-96-5; EINECS/ELINCS 211-199-0
Synonyms: Acid leather orange extra; Acid orange 7 monosodium salt; Benzenesulfonic acid, 4-[(2-hydroxy-1-naphthalenyl) azo]-, monosodium salt; Betanaphthol orange; CI 15510; 4-[(2-Hydroxy-1-naphthalenyl) azo] benzenesulfonic acid monosodium salt; 4-(2-Hydroxy-1-naphthylazo) benzenesulfonic acid sodium salt; p-[(2-Hydroxy-1-naphthyl) azo] benzenesulfonic acid sodium salt; Naphthalene Orange G; Naphthol orange; β -Naphthol orange; β -Naphthyl orange; Orange II; Persian orange; Sodium 4-[(2-hydroxy-1-naphthyl) azo] benzenesulfonate
Classification: Monoazo color
Empirical: $C_{16}H_{12}N_2NaO_5S$
Formula: $C_{16}H_{12}N_2O_5S \cdot Na$
Properties: M.w. 351.35
Toxicology: TDLo (oral, male rat, 43 wks) 150 g/kg; irritating to eyes, skin, respiratory system; may cause liver and blood changes; experimental reproductive effects; mutagenic data; TSCA listed
Hazardous Decomp. Prods.: Heated to decomp., emits toxic vapors of NO_x and SO_x
Uses: Dye for wool, silk, polyamide, and paper; colorant for external cosmetics, hair dyes, external pharmaceuticals; biological stain; pH indicator
Regulatory: FDA 21CFR §74.1254, 74.2254, 82.1254; subject to certification, permanently listed
Manuf./Distrib.: Aldrich; Fluka; Noveon; Ruger; Sigma
See also Acid orange 7

D&C Orange No. 5 (INCI)

CAS 596-03-2; EINECS/ELINCS 209-876-0
Synonyms: 4',5'-Dibromo-3',6'-dihydroxyspiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one; Dibromofluorescein; CI 45370; 1; Acid orange 11; Solvent red 72
Classification: Fluorant color
Empirical: $C_{20}H_{10}Br_2O_5$
Properties: Reddish-orange; m.w. 490.10
Toxicology: TSCA listed
Uses: Colorant in external pharmaceuticals, ingested mouthwashes and dentifrices
Use Level: ≤ 5 mg/day
Regulatory: FDA 21CFR §74.1255, 74.2255, 81.25, 82.1255; subject to certification, permanently listed
Manuf./Distrib.: Aldrich; Costec; Fluka; Sigma; Warner-Jenkinson
See also Acid orange 11; Solvent red 72

D&C Orange No. 10 (INCI)

CAS 518-40-1; 38577-97-8
Synonyms: CI 45425; 1; 3',6'-Dihydroxy-4',5'-diiodospiro [isobenzofuran-1(3H),9'-[9H] xanthen]-3-one; Diiodofluorescein; Solvent red 73
Classification: Fluorant color
Empirical: $C_{20}H_{10}I_2O_5$
Properties: Orange-red powd.; m.w. 584.10
Toxicology: TSCA listed
Uses: Colorant in external cosmetics, pharmaceuticals
Regulatory: FDA 21CFR §74.1260, 74.2260, 82.1260; subject to certification, per-

manently listed

See also Solvent red 73

D&C Orange No. 11 (INCI)

CAS 33239-19-9; EINECS/ELINCS 251-419-2
Synonyms: Acid red 95; CI 45425 (sodium salt); 3',6'-Dihydroxy-4',5'-diiodospiro [isobenzofuran-1(3H),9'-[9H] xanthen]-3-one, disodium salt; Erythrosine yellowish NA
Classification: Xanthene color
Definition: Sodium salt of D&C Orange No. 10
Empirical: $C_{20}H_{10}I_2NaO_5$
Formula: $C_{20}H_{10}I_2O_5 \cdot 2Na$
Properties: Clear red; m.w. 628.07
Uses: Colorant in external cosmetics, pharmaceuticals
Regulatory: FDA 21CFR §74.1261, 74.2261, 82.1261; subject to certification, permanently listed
See also Acid red 95

D&C Orange No. 15. *See* Alizarin

D&C Orange No. 17

CAS 3468-63-1
Synonyms: CI 12075; Dinitroaniline red; 1-(2,4-Dinitrophenylazo)-2-naphthol; DNA Orange; Orange 2G; Permanent orange; Permanent red 2G; Permatone orange; Pigment orange 5
Classification: Monoazo color
Empirical: $C_{16}H_{10}N_4O_5$
Properties: Bright orange; m.w. 338.28
Toxicology: Mutagen; TSCA listed
Uses: Colorant in external cosmetics, pharmaceuticals (FDA delisted); pigment for paints, printing inks
Regulatory: FDA delisted, no longer authorized for use in U.S.
Manuf./Distrib.: Fabricolor; Rainbow; Sun Chem./Pigments; Trade-Search Assoc.

DCP-0. *See* Calcium phosphate dibasic

DCP-2. *See* Calcium phosphate dibasic dihydrate

DCPC. *See* 1,2-Dicaproyl-sn-glycerol(3) phosphatidylcholine

D&C Red No. 2. *See* Amaranth

D&C Red No. 5. *See* Acid red 26

D&C Red No. 6 (INCI)

CAS 5858-81-1; EINECS/ELINCS 227-497-9
Synonyms: CI 15850; 3-Hydroxy-4-[(4-methyl-2-sulphophenyl) azo]-2-naphthalenecarboxylic acid disodium salt; Lithol rubin B; 2-Naphthalenecarboxylic acid, 3-hydroxy-4-[(4-methyl-2-sulphophenyl) azo]-, disodium salt; Pigment red 57
Classification: Monoazo color
Empirical: $C_{18}H_{14}N_2Na_2O_6S$
Formula: $C_{18}H_{14}N_2O_6S \cdot 2Na$
Properties: Med. red; m.w. 432.38
Toxicology: LD50 (oral, rat) > 10,800 mg/kg; very low toxicity by ing.; TSCA listed
Hazardous Decomp. Prods.: Heated to decomp., emits toxic vapors of NO_x and SO_x
Uses: Colorant in cosmetics, pharmaceuticals; topical antiseptic
Use Level: 5 mg/day max. combined total with D&C Red No. 7 (drugs)
Regulatory: FDA 21CFR §74.1306, 74.2306, 82.1306; subject to certification, permanently listed
Manuf./Distrib.: Costec; Noveon; Ruger; Warner-Jenkinson
See also CI 15850

D&C Red No. 7 (INCI)

CAS 5281-04-9; EINECS/ELINCS 226-109-5
Synonyms: CI 15850; 1; 3-Hydroxy-4-[(4-methyl-2-sulphophenyl) azo]-2-naphthalenecarboxylic acid calcium salt; Lithol rubin B Ca; Pigment red 57:1
Classification: Monoazo color
Definition: Calcium salt of D&C Red No. 6
Empirical: $C_{18}H_{14}CaN_2O_6S$
Formula: $C_{18}H_{14}N_2O_6S \cdot Ca$
Properties: Bluish red; m.w. 426.45
Toxicology: TSCA listed
Uses: Pigment for plastics, printing inks; colorant for cheese rind, cosmetics, pharmaceuticals, food-contact polymers; topical antiseptic
Use Level: 5 mg/day max. combined total with D&C Red No. 6 (drugs)
Regulatory: FDA 21CFR §74.1307, 74.2307, 82.1307, 178.3297; subject to certification, permanently listed
Manuf./Distrib.: Avesia Pigments/Addit.; Paramount; Rainbow; Sun Chem./Pigments; Trade-Search Assoc.

D&C Red No. 8

CAS 2092-56-0
Synonyms: Benzenesulfonic acid, 5-chloro-2-[(2-hydroxy-1-naphthalenyl) azo]-4-methyl, monosodium salt; Bright red; Bronze orange; 5-Chloro-2-[(2-hydroxy-1-naphthalenyl) azo]-4-methylbenzenesulfonic acid sodium salt; 1-(4-Chloro-o-sulfo-5-tolylazo)-2-naphthol monosodium salt; CI 15585; Lake red C; Pigment red 53
Classification: Monoazo color
Empirical: $C_{17}H_{12}ClN_2NaO_5S$
Properties: M.w. 398.80

Toxicology: LD50 (oral, mouse) > 12 g/kg; low toxicity by ing.; mutagen; carcinogenic in animals; TSCA listed

Hazardous Decomp. Prods.: Heated to decomp., emits toxic vapors of NO_x, SO_x, and Cl⁻

Uses: Colorant in external cosmetics, pharmaceuticals (FDA delisted)

Regulatory: FDA delisted, no longer authorized for use in U.S.

D&C Red No. 9

CAS 5160-02-1

Synonyms: Bright red; Brilliant red; 5-Chloro-2-((2-hydroxy-1-naphthalenyl) azo)-4-methylbenzene sulfonic acid, barium salt (2:1); 5-Chloro-2-((2-hydroxy-1-naphthyl) azo)-p-toluene sulfonic acid, barium salt; 1-(4-Chloro-o-sulfo-5-tolylazo)-2-naphthol barium salt; 1-(4-Chloro-o-sulfo-5-tolylazo)-2-naphthol monobarium salt; CI 15585:1; Lake red C; Pigment red 53:1

Classification: Monoazo color

Definition: Barium salt of D&C Red No. 8

Empirical: C₁₇H₁₂ClN₂O₄S • ½Ba

Properties: M.w. 444.46

Toxicology: TDLo (oral, rat, 91 days continuously) 27,300 mg/kg; carcinogenic in animals; tumorigen; mutagen; TSCA listed

Hazardous Decomp. Prods.: Heated to decomp., emits very toxic fumes of SO_x, NO_x, and Cl⁻

Uses: Colorant in cosmetics, lipsticks, mouthwashes, dentifrices, pharmaceutical topicals

Regulatory: FDA delisted, no longer authorized for use in U.S.

Manuf./Distrib.: Fabricolor; Greenwood Prods.; Paramount; Rainbow; Sun Chem./Pigments

D&C Red No. 15. See Ponceau 3R

D&C Red No. 17

CAS 85-86-9; EINECS/ELINCS 201-638-4

Synonyms: Benzeneazobenzeneazo-β-naphthol; CI 26100; Oil red; Oil scarlet; 1-[[4-(Phenylazo) phenyl] azo]-2-naphthalenol; 1-((p-Phenylazo) phenyl) azo-2-naphthol; Sudan III; Tetrazobenzene-β-naphthol; Toney red

Classification: Diazo color

Empirical: C₂₂H₁₆N₄O

Properties: Dk. red cryst. powd.; sol. in alkalis, ethanol, benzene; insol. in water; m.w. 352.40; m.p. 199 °C (dec.)

Toxicology: LDLo (IP, rabbit) 250 mg/kg, (subcut., rabbit) 1000 mg/kg; poison by IP route; mod. toxic by subcut. and intrapleural routes; questionable carcinogen; mutagenic data; TSCA listed

Hazardous Decomp. Prods.: Heated to decomp., emits toxic fumes of NO_x

Uses: Colorant in external cosmetics, pharmaceuticals, contact lenses; stain for zoological, pathological, and vegetable objects like wax, cutin, resin

Regulatory: FDA 21CFR §74.1317, 74.2317, 74.2320, 82.1317; subject to certification, permanently listed for use in medical devices

See also Solvent red 23

D&C Red No. 19

CAS 81-88-9; EINECS/ELINCS 201-383-9

Synonyms: Ammonium, (9-(o-carboxyphenyl)-6-(diethylamino)-3H-xanthen-3-ylidene) diethyl-, chloride; 9-o-Carboxyphenyl-6-diethylamino-3-ethylimino-3-isoxanthene 3-ethochloride; (9-(o-Carboxyphenyl)-6-(diethylamino)-3H-xanthen-3-ylidene) diethylammonium chloride; N-[9-Carboxyphenyl]-6-(diethylamino)-3H-xanthen-3-ylidene]-N-ethylethanaminium chloride; CI 45170; Diethyl-m-aminophenolphthalein hydrochloride; 3-Ethochloride of 9-o-carboxyphenyl-6-diethylamino-3-ethylimino-3-isoxanthene; FD&C Red No. 19; Food red 15; Rhodamine B; Rhodamine, tetraethyl-; Tetraethylidamino-o-carboxyphenyl xanthenyl chloride; Tetraethylrhodamine

Classification: Xanthene color

Empirical: C₂₈H₃₁ClN₂O₃

Properties: Greenish cryst. or yel. powd.; turns violet in sol'n.; strong odor; sol. in water, ethanol; sl. sol. in HCl, NaOH; m.w. 479.02; vapor pressure negligible; m.p. 210-211 °C

Toxicology: LD50 (oral, mouse) 887 mg/kg, (IP, rat) 112 mg/kg, (IV, rat) 89 mg/kg, (subcut., mouse) 180 mg/kg; harmful by ing., inh., skin contact; handle with gloves; possible risk of irreversible effects; may cause changes in liver/kidney wt., wt. loss; carcinogen; tumorigen; mutagen; experimental reproductive effects; TSCA listed

Hazardous Decomp. Prods.: Heated to decomp., emits very toxic fumes of NO_x, NH₃, and Cl⁻

Storage: Store in cool, dry place in tightly closed container

Uses: Colorant in external cosmetics, pharmaceuticals (FDA delisted); biological stain

Regulatory: FDA delisted; permanently listed in 1988; ruling reversed, no longer authorized for use in U.S.

Manuf./Distrib.: Aldrich; Fluka; Sigma

D&C Red No. 21 (INCI)

CAS 15086-94-9; EINECS/ELINCS 239-138-3

Synonyms: Bromeosin; Bromofluoresceic acid; CI 45380:2; Eosin; Eosine; Solvent red 43; 2',4',5',7'-Tetrabromo-3',6'-dihydroxy-3,6'-difluorandiol; Tetrabromofluorescein

Classification: Fluoran color

Empirical: C₂₀H₆Br₄O₅

Properties: Bluish-pink stain; sol. in alkalis; sl. sol. in ethanol; insol. in water; m.w. 647.90

Toxicology: LDLo (subcut, mouse) 450 mg/kg; mutagenic data; TSCA listed

Precaution: Incompat. with reducing agents

Hazardous Decomp. Prods.: Heated to decomp., emits very toxic fumes of Br⁻

Uses: Colorant in cosmetics, pharmaceuticals

Regulatory: FDA 21CFR §74.1321, 74.2321, 82.1321; subject to certification, permanently listed

Manuf./Distrib.: Aldrich; Costec; Noveon; Sigma; Warner-Jenkinson

See also Solvent red 43

D&C Red No. 22 (INCI)

CAS 548-26-5; 17372-87-1; EINECS/ELINCS 208-953-6

Synonyms: Acid red 87; Bromofluoresceic acid; CI 45380; Eosin disodium; Eosine; Eosine G; Eosin YS; 2',4',5',7'-Tetrabromo-3',6'-dihydroxy-3,6'-difluorandiol; 1(3H),9'-[9H] xanthen]-3-one disodium salt; Tetrabromofluorescein

Classification: Indelible xanthene color

Definition: Disodium salt of eosin

Empirical: C₂₀H₆Br₄Na₂O₅

Properties: Red cryst. with bluish tinge or brnsh. red powd.; freely sol. in water; m.w. 693.90

Toxicology: TSCA listed

Uses: Dye for red inks, wool, stains; colorant for cosmetics, pharmaceuticals

Regulatory: FDA 21CFR §74.1322, 74.2122, 82.1322; FDA approved for orals; subject to certification, permanently listed

See also Acid red 87

D&C Red No. 27 (INCI)

CAS 13473-26-2; EINECS/ELINCS 236-747-6

Synonyms: CI 45410:1; Solvent red 48; 2',4',5',7'-Tetrabromo-4,5,6,7-tetrachloro-3',6'-dihydroxy-3,6'-difluorandiol; 1(3H),9'-[9H] xanthen]-3-one; Tetrabromotetrachlorofluorescein; Tetrachlorotetrabromofluorescein

Classification: Fluoran color

Empirical: C₂₀H₂Br₄Cl₄O₅

Properties: Deep bluish red stain; m.w. 785.68

Toxicology: TSCA listed

Uses: Colorant in cosmetics, pharmaceuticals

Regulatory: FDA 21CFR §74.1327, 74.2327, 82.1327; subject to certification, permanently listed

Manuf./Distrib.: Costec; Noveon; Sun Chem./Pigments; Warner-Jenkinson

See also Solvent red 48

D&C Red No. 28 (INCI)

CAS 18472-87-2; EINECS/ELINCS 242-355-6

Synonyms: 2',4',5',7'-Tetrabromo-4,5,6,7-tetrachloro-3',6'-dihydroxy-3,6'-difluorandiol; 1(3H),9'-[9H] xanthen]-3-one; Phloxine B; Acid red 92; CI 45410

Classification: Xanthene color

Definition: Sodium salt of D&C Red No. 27

Empirical: C₂₈H₂Br₄Cl₄Na₂O₅

Formula: C₂₈H₂Br₄Cl₄O₅ • 2Na

Properties: M.w. 829.64

Toxicology: TSCA listed

Uses: Colorant in cosmetics, pharmaceuticals

Regulatory: FDA 21CFR §74.1328, 74.2328, 82.1328; subject to certification, permanently listed

Manuf./Distrib.: Aldrich; Costec; Fluka; Noveon; Ruger; Sigma; Warner-Jenkinson

See also Acid red 92; CI 45410

D&C Red No. 30 (INCI)

CAS 2379-74-0; EINECS/ELINCS 219-163-6

Synonyms: 6-Chloro-2-(6-chloro-4-methyl-3-oxobenzo [b] thien-2(3H)-ylidene)-4-methylbenzo [b] thiophen-3(2H)-one; CI 73360; Helindone pink CN; Vat red 1

Classification: Indigoid color

Empirical: C₁₈H₁₀Cl₂O₂S₂

Properties: Bluish pink; m.w. 393.30

Toxicology: TSCA listed

Uses: Colorant in cosmetics, pharmaceutical orals

Regulatory: FDA 21CFR §74.1330, 74.2330; FDA approved for orals; subject to certification, permanently listed

Manuf./Distrib.: Noveon; Ruger

See also Vat red 1

D&C Red No. 31

CAS 6371-76-2; EINECS/ELINCS 228-899-7

Synonyms: Brilliant lake red R; CI 15800:1; 3-Hydroxy-4-(phenylazo)-2-naphthalenecarboxylic acid calcium salt; Pigment red 64:1

Classification: Monoazo color

Empirical: C₁₇H₁₂N₂O₃ • ½Ca

Properties: M.w. 311.33

Toxicology: TSCA listed

Uses: Colorant in external cosmetics, pharmaceuticals

Regulatory: FDA 21CFR §74.1331, 74.2331, 82.1331; subject to certification, permanently listed

D&C Red No. 33 (INCI)

CAS 3567-66-6; EINECS/ELINCS 222-656-9

Synonyms: Acid fuchsine; Acid red 33; 5-Amino-4-hydroxy-3-(phenylazo)-2,7-naphthalenedisulfonic acid disodium salt; CI 17200

Classification: Monoazo color

Empirical: $C_{16}H_{13}N_3O_7S_2$

Formula: $C_{16}H_{13}N_3O_7S_2 \cdot 2Na$

Properties: Dull bluish red; m.w. 469.42

Toxicology: TSCA listed

Uses: Colorant in cosmetics, lipsticks, mouthwashes, dentifrices, pharmaceuticals

Use Level: 3% max. (lipstick on wt. of finished prod.); 0.75 max. mg/day (ingested drugs other than mouthwashes and dentifrices)

Regulatory: FDA 21CFR §74.1333, 74.2333, 82.1333; subject to certification, permanently listed

Manuf./Distrib.: Costec; Noveon; Ruger; Spectrum Quality Prods.; Warner-Jenkinson
See also Acid red 33; CI 17200

D&C Red No. 34 (INCI)

CAS 6417-83-0; EINECS/ELINCS 229-142-3

Synonyms: CI 15880-1; 3-Hydroxy-4-[(1-sulfo-2-naphthalenyl)azo]-2-naphthalenecarboxylic acid calcium salt (1:1); Lake bordeaux B; Pigment red 63:1; Red no. 22 Japan

Classification: Monoazo color

Empirical: $C_{21}H_{14}CaN_2O_6S$

Properties: M.w. 462.48

Toxicology: TSCA listed

Uses: Pigment for paints, enamels, lacquers, resins, printing inks, vinyl plastics; colorant for external cosmetics and pharmaceuticals

Regulatory: FDA 21CFR §74.1334, 74.2334, 82.1334; subject to certification, permanently listed

Manuf./Distrib.: Ruger

D&C Red No. 36 (INCI)

CAS 2814-77-9; EINECS/ELINCS 220-562-2

Synonyms: 1-[(2-Chloro-4-nitrophenyl)azo]-2-naphthalenol; CI 12085; Flaming red; Pigment red 4; Tiger orange; Vulcan red R

Classification: Monoazo color

Empirical: $C_{16}H_{10}ClN_2O_3$

Properties: M.w. 327.73

Toxicology: TSCA listed

Uses: Colorant in cosmetics, lipsticks, mouthwashes, dentifrices, pharmaceutical orals and topicals

Use Level: 1.7 max. mg/day (ingested drugs other than mouthwashes and dentifrices, if taken continuously for < 1 yr), ≤ 1.0 mg/day (if taken continuously for > 1 yr); ≤ 3% (lipsticks, on wt. of prod.)

Regulatory: FDA 21CFR §74.1336, 74.2336, 82.1336; FDA approved for orals, topicals; subject to certification, permanently listed

See also 1-[(2-Chloro-4-nitrophenyl)azo]-2-naphthalenol

D&C Red No. 37

CAS 6363-07-5

Synonyms: CI 45170-1; 3-Ethostearate of 9-o-carboxyphenyl-6-diethylamino-3-ethylimino-3-isoxanthene; Rhodamine B stearate

Classification: Xanthene color

Empirical: $C_{26}H_{36}N_2O_5$

Properties: M.w. 727.04

Uses: Colorant in external cosmetics, pharmaceuticals (FDA delisted)

Regulatory: FDA delisted, banned in 1988 in U.S.

D&C Red No. 30 aluminum lake

CAS 2379-74-0

Synonyms: Thioindigoid pink R

Classification: Thioindigoid color

Uses: Colorant in pharmaceutical orals

Regulatory: FDA approved for orals

Manuf./Distrib.: Costec; Warner-Jenkinson

Trade Names Containing: Confetti™ II RG Red

D&C Red No. 7 calcium lake (INCI)

Definition: Insoluble pigment composed of the calcium salt of D&C Red No. 7 extended on appropriate substrate

Uses: Colorant in foods, cosmetic lip and face prods., pharmaceuticals

Regulatory: FDA 21CFR §81.1, 82.1051

Manuf./Distrib.: Costec; Warner-Jenkinson

Trade Names: Cellin® Red

D&C Violet No. 1. See Acid violet 49**D&C Violet No. 2 (INCI)**

CAS 81-48-1; EINECS/ELINCS 201-353-5

Synonyms: Alizuril purple SS; CI 60725; Anthraquinone, 1-hydroxy-4-(p-toluidino); CI 60725; Disperse blue 72; N-(4-Hydroxy-1-anthraquinonyl)-4-methylaniline; N-

(4-Hydroxy-1-anthraquinonyl)-p-toluidine; 1-Hydroxy-4-[(4-methylphenyl) amino]-9,10-anthracenedione; Solvent violet 13; N-(p-Tolyl)-4-hydroxy-1-anthraquinonylamine

Classification: Anthraquinone color

Empirical: $C_{21}H_{13}NO_3$

Properties: Dull bluish violet; m.w. 329.35

Toxicology: LD50 (intratracheal, rat) 250 mg/kg; TSCA listed

Uses: Colorant in external cosmetics, pharmaceuticals, sun tan oils; colorant for absorbable sutures, polymethylmethacrylate intraocular lens haptics, absorbable meniscal tacks made from poly (L-lactic acid)

Use Level: 0.2% max. (intraocular lens haptics); 0.15% max. (meniscal tacks)

Regulatory: FDA 21CFR §74.1602, 74.2602, 74.3602, 82.1602; subject to certification, permanently listed for external drugs/cosmetics; permanently listed for use in medical devices

Manuf./Distrib.: Costec; Noveon; Ruger; Salor; Sigma; Warner-Jenkinson

See also CI 60725; Disperse blue 72

D&C Yellow No. 5. See FD&C Yellow No. 5; Tartrazine**D&C Yellow No. 7 (INCI)**

CAS 2321-07-5; EINECS/ELINCS 219-031-8

Synonyms: Acid yellow 73; CI 45350-1; 3',6'-Dihydroxy-9-oxo-9H-xanthen-3-one; Fluorescein; Solvent yellow 94

Classification: Fluorant color

Empirical: $C_{20}H_{12}O_5$

Properties: Ylsh.-red powd.; freely sol. in water; water-absorbing; fluorescence disappears when sol'n. is made acid and reappears when made neutral; m.w. 332.31

Toxicology: Believed to be nontoxic to humans; TSCA listed

Uses: Colorant in external cosmetics, pharmaceuticals

Regulatory: FDA 21CFR §74.1707, 74.2707, 82.1707; subject to certification, permanently listed

Manuf./Distrib.: Aldrich; Fluka; Ruger; Sigma

See also Fluorescein

D&C Yellow No. 8 (INCI)

CAS 518-47-8; EINECS/ELINCS 208-253-0

Synonyms: Acid yellow 73 sodium salt (INCI); 9-o-Carboxyphenyl-6-hydroxy-3-isoxanthone, disodium salt; CI 45350; 3',6'-Dihydroxy-9-oxo-9H-xanthen-3-one disodium salt; Disodium fluorescein; Disodium-6-hydroxy-3-oxo-9-xanthene-o-benzoate; Fluorescein sodium salt; Naphthol yellow S; Resorcinol phthalein sodium; Sodium fluorescein; Soluble fluorescein; Uranine

Classification: Xanthene color

Empirical: $C_{20}H_{10}Na_2O_5$

Formula: $C_{20}H_{12}O_5 \cdot 2Na$

Properties: Orange-red powd.; sol. in water; sl. sol. in alcohol; m.w. 376.28

Toxicology: LD50 (oral, rat) 6721 mg/kg, (IP, mouse) 1800 mg/kg; mod. toxic by IP route; mildly toxic by ing.; human systemic effects by IV route (arrhythmias, eye hemorrhage, nausea, vomiting); experimental reproductive effects, tumorigen; questionable carcinogen; mutagenic data; TSCA listed

Hazardous Decom. Prods.: Heated to decomp., emits toxic fumes of Na_2O

Storage: Hygroscopic

Uses: Colorant in external cosmetics, pharmaceuticals

Regulatory: FDA 21CFR §74.1708, 74.2708, 82.1708; subject to certification, permanently listed

See also Fluorescein sodium

D&C Yellow No. 10 (INCI)

CAS 8004-92-0

Synonyms: Acid yellow 3; CI 47005; Quinoline yellow; Quinoline yellow WS

Classification: Quinoline color

Definition: Mixt. of the disodium salt of the mono- and disulfonic acids of 2-(2-quinoly)-1H-indene-1,3(2H)-dione

Empirical: $C_{18}H_{13}NNa_2O_6S_2$

Properties: Brn. greenish yel.; m.w. 454.21

Toxicology: Potential allergen; TSCA listed

Uses: Colorant in cosmetics, pharmaceuticals

Regulatory: FDA 21CFR §74.1710, 74.2710, 82.1710; FDA approved for dentals, implants, orals, rectals, sublinguals, topicals; subject to certification, permanently listed

Manuf./Distrib.: Aldrich; Costec; Fluka; Noveon; Ruger; Sigma; Spectrum Quality Prods.; Warner-Jenkinson

See also Acid yellow 3

D&C Yellow No. 11 (INCI)

CAS 8003-22-3; EINECS/ELINCS 232-318-2

Synonyms: CI 47000; 2-(2-Quinoly)-1,3-indandione; Quinoline yellow SS; Quinoline yellow spirit soluble; Solvent yellow 33

Classification: Quinoline color

Empirical: $C_{18}H_{11}NO_2$

Properties: Bright greenish yel.; m.w. 273.29

Toxicology: TSCA listed

Uses: Colorant in external cosmetics, pharmaceuticals, suntan oils

Regulatory: FDA 21CFR §74.1711, 74.2711; subject to certification, permanently