

Plasticizers and Solvents

Phthalic Acid Esters

Products	Formula mol.weight	Specifications					Typical Properties			Containers	Description and Uses
		Appearance	Color APHA	Specific Gravity 20/20°C	Acid value KOH mg/g	Heating Loss % 125°C 3hrs	Boiling Point °C	Flash Point °C	Freezing Point °C (Viscosity mPa·s/25°C)		
DMP Dimethyl phthalate	$C_6H_4(COOCH_3)_2$ 194	Colorless clear liquid	30max.	1.192 ± 0.003	0.05max.	1.0max. (105°Cx5hrs)	282	156	0 (13)	220kg Drum	Plasticizer for cellulose acetate. Solvent or diluent for organic peroxides.
#10 Ethylphthalyl ethyl glycolate	$C_6H_4 \begin{matrix} /COOC_2H_5 \\ \backslash COOCH_2COOC_2H_5 \end{matrix}$ 280	Colorless clear liquid	30max.	(20/4°C) 1.180 to 1.187	0.05max.	1.0max. (105°Cx5hrs)	310	197	13 (74)	220kg Drum	Plasticizer for cellulose acetate.

Phosphoric Acid Esters

Products	Formula mol.weight	Specifications							Typical Properties				Containers	Description and Uses	
		Appearance	Color APHA	Specific Gravity 20/20°C	Acid value KOH mg/g	Heating Loss % 125°C 3hrs	Refractive Index n_D^{25}	Boiling Point °C	P %	Flash Point °C	Freezing Point °C (Viscosity mPa·s/25°C)				
TMP Trimethyl phosphate	$O=P(OCH_3)_3$ 140	Colorless clear liquid	30max.	1.215 ± 0.005	0.2max.	—	1.395 ± 0.002	(Water Content) % 0.2max.	(P%) 21.0min.	180 ~ 195	22.1	—	<-70 (2.0)	220kg Drum	Miscible with common solvents and water; compatible with many synthetic resins. Color-inhibitor for polyester resin and fiber. Polymerization catalyst.
TEP Triethyl phosphate	$O=P(OC_2H_5)_3$ 182	Colorless clear liquid	20max.	1.071 ± 0.003	0.05max.	—	1.403 ± 0.002	—	—	216	17.0	111	-56 (1.6)	210kg Drum	Miscible with common solvents and water; compatible with many synthetic resins. Polar solvent in organic synthesis. Polymerization catalyst.
TOP Tris(2-ethylhexyl) phosphate	$O=P(OC_8H_{17})_3$ 435	Colorless to light yellowish liquid	70max.	0.925 ± 0.003	0.15max.	0.8max.	—	—	—	—	7.1	204	<-70 (12)	180kg Drum	Low-temperature plasticizer for PVC and synthetic rubber. Excellent dispersant for plastisol.
TPP Triphenyl phosphate	$O=P(OC_6H_5)_3$ 326	White flake	—	—	0.03max.	—	(chloride) Not cause turbidness	(Melting Point) °C 48.5min.	—	399	9.5	225	—	25kg Paper bag *500kg	Flame retardant for phenolic resin, epoxy resin, acetate plastics, and various types of engineering plastics.
TCP Tricresyl phosphate	$O=P(OC_6H_4CH_3)_3$ 368	Colorless to light yellowish clear liquid	50max.	1.170 ± 0.010	0.05max.	0.10max.	1.557 ± 0.003	(Color after heated) APHA 60max.	(Volume resistivity) 30°C · Ωcm 5x10 ⁹ min.	420	8.4	240	-35 (58)	220kg Drum	Flame retardant plasticizer, fire-resistant hydraulic oil, and extreme pressure additives used in vinistar film sheets agricultural use, phenolic resin, epoxy resin, and all types of engineering plastic.
TXP Trixylenyl phosphate	$O=P[OC_6H_3(CH_3)_2]_3$ 410	Colorless to yellowish clear liquid	200max.	1.145 ± 0.025	0.1max.	0.15max.	1.552 ± 0.003	—	—	—	7.6	253	-15 (172)	220kg Drum	Raw material for flame retardant plasticizer, extreme pressure additives, and fire-resistant hydraulic fluid for every type of resin.
CDP Cresyl diphenyl phosphate	$O=P \begin{matrix} / (OC_6H_5)_2 \\ \backslash OC_6H_4CH_3 \end{matrix}$ 340	Colorless to light yellowish clear liquid	50max.	1.210 ± 0.005	0.05max.	0.15max.	—	—	—	—	9.1	240	-30 (36)	220kg Drum	Flame retardant plasticizer for vinistar film sheets and phenolic resin.

*Flexible container bag

Plasticizers and Solvents

Dibasic Carboxylic Acid Esters

Products	Formula mol.weight	Specifications								Typical Properties			Containers	Description and Uses
		Appearance	Color APHA	Specific Gravity 20/20°C	Acid value KOH mg/g	Heating Loss % 125°C 3hrs	Refractive Index n _D ²⁵	Ester Content %	Volume resistivity 30°C · Ω·cm	Boiling Point °C	Flash Point °C	Freezing Point °C (Viscosity mPa·s/25°C)		
DBA Dibutyl adipate	$\begin{array}{c} \text{CH}_2\text{COOC}_4\text{H}_9 \\ \\ (\text{CH}_2)_2 \\ \\ \text{CH}_2\text{COOC}_4\text{H}_9 \end{array}$ 258	Colorless to light yellowish clear liquid	50max.	0.962 ± 0.003	0.05max.	1.0max.	—	99.0min.	—	—	161	-22 (4.9)	190kg Drum	High performance plasticizer for PVC, vinyl acetate resins and synthetic rubbers. Used for synthetic rubbers and printing ink.
DIBA Diisobutyl adipate	$\begin{array}{c} \text{CH}_2\text{COOCH}_2 \cdot \text{CH}(\text{CH}_3)_2 \\ \\ (\text{CH}_2)_2 \\ \\ \text{CH}_2\text{COOCH}_2 \cdot \text{CH}(\text{CH}_3)_2 \end{array}$ 258	Colorless to light yellowish clear liquid	40max.	0.955 ± 0.003	0.05max.	1.0max.	—	99.0min.	—	—	158	-22 (5.3)	190kg Drum	Plasticizer for PVAc. Fixative and extender for perfume. Dispersant for pigment.
BXA Bis(butylidiglycol) adipate	$\begin{array}{c} \text{CH}_2\text{COOC}_2\text{H}_4\text{OC}_2\text{H}_4\text{OC}_4\text{H}_9 \\ \\ (\text{CH}_2)_2 \\ \\ \text{CH}_2\text{COOC}_2\text{H}_4\text{OC}_2\text{H}_4\text{OC}_4\text{H}_9 \end{array}$ 435	Colorless to light yellowish clear liquid	50max.	1.021 ± 0.005	1.0max.	0.5max.	1.447 ± 0.005	—	—	—	207	-19 (18)	200kg Drum	Excellent cold resistant plasticizer for synthetic rubbers such as nitrile rubber and plasticizer for urethane elastomer.
BXA-R Bis(butylidiglycol) adipate	$\begin{array}{c} \text{CH}_2\text{COOC}_2\text{H}_4\text{OC}_2\text{H}_4\text{OC}_4\text{H}_9 \\ \\ (\text{CH}_2)_2 \\ \\ \text{CH}_2\text{COOC}_2\text{H}_4\text{OC}_2\text{H}_4\text{OC}_4\text{H}_9 \\ \\ \text{n-C}_4\text{H}_9(\text{OCH}_2\text{CH}_2)_2\text{OH} \end{array}$ 85% 15%	Colorless to light yellowish clear liquid	100max.	1.014 ± 0.010	1.0max.	2.5max.	1.445 ± 0.005	—	—	—	145	-24 (15)	200kg Drum	Plasticizer for nitrile rubber, urethane rubber and other synthetic rubber.
DOZ Bis(2-ethylhexyl) azelate	$\begin{array}{c} \text{CH}_2\text{COOC}_8\text{H}_{17} \\ \\ (\text{CH}_2)_5 \\ \\ \text{CH}_2\text{COOC}_8\text{H}_{17} \end{array}$ 413	Colorless to light yellowish clear liquid	80max.	0.918 ± 0.003	0.08max.	0.10max.	—	—	1.0x10 ¹² min.	—	211	-60 (16)	180kg Drum	Plasticizer for PVC and synthetic rubber. Synthetic lubricant.
DBS Dibutyl sebacate	$\begin{array}{c} \text{CH}_2\text{COOC}_4\text{H}_9 \\ \\ (\text{CH}_2)_6 \\ \\ \text{CH}_2\text{COOC}_4\text{H}_9 \end{array}$ 314	Colorless clear liquid	30max.	0.938 ± 0.003	0.05max.	0.20max.	—	99.0min.	—	345	190	-9 (7.5)	190kg Drum	Plasticizer for PVC and PVDC-food wrapping film. Approved by FDA.
DOS Bis(2-ethylhexyl) sebacate	$\begin{array}{c} \text{CH}_2\text{COOC}_8\text{H}_{17} \\ \\ (\text{CH}_2)_6 \\ \\ \text{CH}_2\text{COOC}_8\text{H}_{17} \end{array}$ 427	Colorless clear liquid	30max.	0.915 ± 0.003	0.05max.	0.10max.	—	—	1.0x10 ¹² min.	—	222	-62 (18)	180kg Drum	Plasticizer for PVC and synthetic rubber. Synthetic lubricant. Dispersant for pigment.
DESU Diethyl succinate	$\begin{array}{c} \text{CH}_2\text{COOC}_2\text{H}_5 \\ \\ \text{CH}_2\text{COOC}_2\text{H}_5 \end{array}$ 174	Colorless clear liquid	20max.	1.042 ± 0.003	0.2max.	—	—	99.0min.	—	217.7	105	—	200kg Drum	Fixative for perfume.
MAR-N Methyl acetyl ricinoleate	$\begin{array}{c} \text{OCOCH}_3 \\ \\ \text{HC}-\text{CH}_2\text{CH}(\text{CH}_2)_5\text{CH}_3 \\ \\ \text{HC}-(\text{CH}_2)_7\text{COOCH}_3 \end{array}$ 355	Colorless to yellowish clear liquid	250max.	0.938 ± 0.005	5max.	0.35max.	1.453 ± 0.003	—	—	—	198	-30 (15)	190kg Drum	Plasticizer for PVC and synthetic rubber imparting low-temperature flexibility.

Plasticizers and Solvents

Acetic Acid Ester

Products	Formula mol.weight	Specifications								Typical Properties			Containers	Description and Uses
		Appearance	Color APHA	Specific Gravity 20/20°C	Acid value KOH mg/g	Heating Loss % 125°C 3hrs	Refractive Index n_D^{25}	Ester Content %	Water Content %	Boiling Point °C	Flash Point °C	Freezing Point °C (Viscosity mPa·s/25°C)		
TRIACETIN Glyceryl triacetate	$\begin{array}{c} \text{CH}_2\text{OOCCH}_3 \\ \\ \text{CHOOCCH}_3 \\ \\ \text{CH}_2\text{OOCCH}_3 \end{array}$ 218	Colorless clear liquid	20max.	1.160 ± 0.003	0.05max.	—	—	99.0min.	0.15max.	258	144	-62 (77)	220kg Drum	Plasticizer for cellulose acetate. Fixative for perfume and flavor.

Boric Acid Esters

Products	Formula mol.weight	Specifications				Typical Properties			Containers	Description and Uses
		Appearance	Specific Gravity 20/4°C	Purity %	Water Content %	Boiling Point °C	Flash Point °C	Freezing Point °C		
TMB Trimethyl borate	$\begin{array}{c} \text{B}(\text{OCH}_3)_3 \\ \\ \text{CH}_3\text{OH} \end{array}$ 70%min. 30%max. 104	Colorless clear liquid	0.89 ± 0.01	70.0min.	—	53~69	-7	0.45	150kg Drum	Brazing and soldering flux. Intermediate for alkylborane, boron hydride and boroxine.
TMB-R Trimethyl borate	$\text{B}(\text{OCH}_3)_3$ 104	Colorless clear liquid	(0.92)	98.0min.	0.5max.	62~69	-7	0.45	180kg Drum	Intermediate for synthesizing of fine chemicals.
TBB Tributyl borate	$\text{B}(\text{OC}_4\text{H}_9)_3$ 230	Colorless clear liquid	(0.86) (20/20°C)	(99)	—	232	93	-70	150kg Drum	Intermediate for synthesizing of fine chemicals.