Plasticizers and Solvents

Phthalic Acid Esters

《 》:Measurement condition

Products	Formula mol.weight	Specifications					Typical Properties			Containers	Description	Uses
		Appearance	Color APHA	Specific Gravity 20/20℃	Acid value KOH mg/g	Heating Loss % 105℃×5hrs	Boiling Point ℃	Freezing Point ℃ [Viscosity mPa·s/25℃]	Flash Point ℃			
DMP Dimethyl phthalate	$C_6H_4(COOCH_3)_2$ 194	Colorless clear liquid	≦30	1.192± 0.003	≦0.05	≦1.0	282 《101kPa》	0 [13]	156	220kg Drum	Good compatibility with nitrocellulose and acetylcellulose resin. High performance for light resistance. High volatility. Slightly soluble in water.	Plasticizer for nitrocellulose, acetylcellulose and rubber. Diluent for organic peroxides. Insect repellant.
DEP Diethyl phthalate	$C_6H_4(COOC_2H_5)_2$ 222	Colorless clear liquid	≦30	1.120± 0.003	≦0.05	≦1.0	298 《101kPa》	-5 [11]	162	220kg Drum	Good compatibility with nitrocellulose resin. High performance for light resistance. Good compatibility with general synthetic resins. Hardly soluble in water.	Plasticizer for lacquer and ceramics binder. Polyvinylacetate type adhesives. Fragrance retainer.

Dibasic Carboxylic Acid Esters

Products	Formula mol.weight	Specifications								Typical Properties			Containers	Description	Uses
		Appearance	Color APHA	Specific Gravity 20/20℃	Acid value KOH mg/g	Heating Loss % 125℃×3hrs	Refractive Index ^{25}nD	Ester Content %	Volume resistivity 30℃·Ωcm	Boiling Point ℃	Freezing Point ℃ [Viscosity mPa·s/25℃]	Flash Point ℃			
DBA Dibutyl adipate	$CH_2COOC_4H_9$ $(CH_2)_2$ $CH_2COOC_4H_9$ 258	Colorless to light yellowish clear liquid	≦50	0.962± 0.003	≦0.05	≦1.0	—	≧99.0	—	145 《0.53kPa》	-22 [4.9]	161	190kg Drum	Excellent compatibility and plasticity with polyvinylchloride, polyvinylacetate resins and various rubbers.	Various rubbers. Printing inks. Plasticizer for polyvinylchloride, and polyvinylacetate resins. Resin paints and lacquer.
DIBA Diisobutyl adipate	$CH_2COOCH_2CH(CH_3)_2$ $(CH_2)_2$ $CH_2COOCH_2CH(CH_3)_2$ 258	Colorless to light yellowish clear liquid	≦40	0.955± 0.003	≦0.05	≦1.0	—	≧99.0	—	134 《0.4kPa》	-22 [5.3]	158	190kg Drum	Excellent compatibility and plasticity with polyvinylchloride, polyvinylacetate resin, butyl rubber, nitrile rubber and neoprene rubber, etc. Maintaining the plasticity under low temperature.	Packaging film for frozen food. Adhesives. Various rubbers. Printing inks.
BXA-N Bis[2-(2-butoxyethoxy) ethyl]adipate	$CH_2COOC_2H_4OC_2H_4OC_4H_9$ $(CH_2)_2$ $CH_2COOC_2H_4OC_2H_4OC_4H_9$ 435	Colorless to light yellowish clear liquid	≦50	1.021± 0.005	≦0.5	≦0.5	1.447± 0.005	—	—	— [*0.27kPa《230~240》]	-19 [18]	207	200kg Drum	Good compatibility with natural and synthetic rubber. Maintaining plasticity under low temperature. Low volatility. High performance for heat resistance.	Plasticizer with cold resistance for natural and synthetic rubber and vinyl-type resins. Plasticizer for polyurethane elastomer. Especially, highly suitable plasticizer for nitrile rubber.
BXA-R Bis[2-(2-butoxyethoxy) ethyl]adipate	$CH_2COOC_2H_4OC_2H_4OC_4H_9$ $(CH_2)_2$ $CH_2COOC_2H_4OC_2H_4OC_4H_9$ 85% $n\text{-}C_4H_9(OCH_2CH_2)_2OH$ 15% 394	Colorless to light yellowish clear liquid	≦100	1.014± 0.010	≦1.0	≦2.5	1.445± 0.005	—	—	—	-24 [15]	145	200kg Drum	Good compatibility with natural and synthetic rubber. Maintaining plasticity under low temperature. Especially, high performance for cold resistance and gasoline resistance.	
DOZ Bis(2-ethylhexyl) azelate	$CH_2COOC_8H_{17}$ $(CH_2)_5$ $CH_2COOC_8H_{17}$ 413	Colorless to light yellowish clear liquid	≦80	0.918± 0.003	≦0.08	≦0.10	—	—	≧1.0×10^{12}	220~245 《0.53kPa》	-60 [16]	211	180kg Drum	High cold resistance. Low volatility. High performance for heat resistance. Improves touch when added in polyvinylchloride.	Plasticizer with cold resistance for polyvinylchloride film and leather.
DBS Dibutyl sebacate	$CH_2COOC_4H_9$ $(CH_2)_6$ $CH_2COOC_4H_9$ 314	Colorless clear liquid	≦30	0.938± 0.003	≦0.05	≦0.20	—	≧99.0	—	345 《101kPa》	-9 [7.5]	190	190kg Drum	Tasteless and odorless. High performance for cold resistance. Bringing higher processability of polyvinylchloride. Good compatibility with synthetic rubber.	Plasticizer for food packaging material such as polyvinylidenechloride. High grade insulating oil.
DOS Bis(2-ethylhexyl) sebacate	$CH_2COOC_8H_{17}$ $(CH_2)_6$ $CH_2COOC_8H_{17}$ 427	Colorless clear liquid	≦30	0.915± 0.003	≦0.05	≦0.10	—	—	≧1.0×10^{12}	377 《101kPa》	-62 [18]	222	180kg Drum	Higher performance for cold resistance than DOZ. Low volatility. High performance for migration resistance and electrical properties. Compatibility with synthetic rubber, too.	Plasticizer with cold resistance for polyvinylchloride such as electric wire covering material and films. High grade lubricating oil.
DESU Diethyl succinate	$CH_2COOC_2H_5$ $CH_2COOC_2H_5$ 174	Colorless clear liquid	≦20	1.042± 0.003	≦0.2	—	—	≧99.0	—	217.7 《101kPa》	— [2.5]	105	200kg Drum	Excellent solvent for resins and fragrances.	Fragrance retainer.

*Vapor pressure

Plasticizers and Solvents

Phosphoric Acid Esters

《 》:Measurement condition

Products	Formula mol.weight	Specifications Appearance	Color APHA	Specific Gravity 20/20℃	Acid value KOH mg/g	Heating Loss % 125℃×3hrs	Refractive Index n_D^{25}			Typical Properties Boiling Point ℃	Freezing Point ℃ [Viscosity mPa·s/25℃]	P %	Flash Point ℃	Containers	Description	Uses
TPP Triphenyl phosphate	$O=P(OC_6H_5)_3$ 326	White flake	—	—	≦0.03	—	—	Chloride Not cause turbidness	Melting Point ℃ ≧48.5	399 《101kPa》	—	9.5	225	25kg Paper bag ＊1 500kg	Flaky solid material. Good compatibility with various synthetic resins and polyvinylchloride. Low volatility. Bringing water resistance and oil resistance. High performance for flame retarding due to high phosphorus content.	Flame retarding plasticizer for phenolic resin, epoxy resin, various engineering plastics, acetate plastics and synthetic rubber.
TCP Tricresyl phosphate	$O=P(OC_6H_4CH_3)_3$ 368	Colorless to light yellowish clear liquid	≦50	1.170± 0.010	≦0.05	≦0.10	1.557± 0.003	Color after heated 150℃×1hr·APHA ≦60	Volume resistivity 30℃·Ωcm ≧5×10^9	241~255 《0.53kPa》	≦-20 [58]	8.4	240	220kg Drum	Flame retarding. Bringing heat resistance and high insulation property. High lubricating property, especially for extreme pressure.	Plasticizer with flame retarding for agricultural polyvinylchloride film, phenolic resin, epoxy resin and various engineering plastics. Non-flammable hydraulic oil. Additive for extreme pressure lubricating oil.
TXP Trixylenyl phosphate	$O=P[OC_6H_3(CH_3)_2]_3$ 410	Colorless to yellowish clear liquid	≦200	1.145± 0.025	≦0.1	≦0.15	1.552± 0.003	—	—	— [＊2 0.27kPa] 《240~260》	-15 [172]	7.6	253	220kg Drum	Low volatility. High performance for water resistance. Flame retarding. Good extreme pressure lubrication same as TCP.	
CDP Cresyl diphenyl phosphate	$O=P\begin{matrix}(OC_6H_5)_2\\OC_6H_4CH_3\end{matrix}$ 340	Colorless to light yellowish clear liquid	≦50	1.210± 0.005	≦0.05	≦0.15	—	—	—	— [＊2 0.53kPa] 《245》	-30 [36]	9.1	240	220kg Drum	Effective in gelling for polyvinylchloride Bringing cold resistance and stain resistance. Lower viscosity and better flame retarding than TCP.	Plasticizer with flame retarding for polyvinylchloride, phenolic resin, epoxy resin and various engineering plastics.

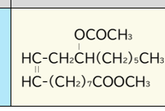
＊2 Vapor pressure

＊1 Flexible container bag

Plasticizers and Solvents

Ricinolic Acid Ester

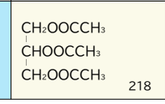
《 》:Measurement condition

Products	Formula / mol.weight	Specifications: Appearance	Color APHA	Specific Gravity 20/20℃	Acid value KOH mg/g	Heating Loss % 125℃×3hrs	Refractive Index $^{25}_{D}$ nD	Ester Content %	Typical Properties: Boiling Point ℃	Freezing Point ℃ [Viscosity mPa·s/25℃]	Flash Point ℃	Containers	Description	Uses
MAR-N Methyl acetyl ricinoleate	 355	Colorless to yellowish clear liquid	≦250	0.938± 0.005	≦5	≦0.35	1.453± 0.003	—	190~220 《0.67kPa》	-30 [15]	198	190kg Drum	High performance for cold resistance, and improving film properties Slow gelling in spite of outstanding plasticizing efficiency.	Most suitable for plastisol and organosol. Plasticizer for synthetic rubber.

Adipic Acid Polyester

Products	Formula / mol.weight	Specifications: Appearance	Color APHA	Specific Gravity 20/20℃	Acid value KOH mg/g	Heating Loss % 125℃×3hrs	Refractive Index $^{25}_{D}$ nD	Typical Properties: Boiling Point ℃	Freezing Point ℃ [Viscosity mPa·s/25℃]	Flash Point ℃	Containers	Description	Uses
BAA-15 Poly(1,3-butanediol adipate)	— av.1500	Colorless to yellowish brown clear liquid	≦500	1.126± 0.003	≦2.0	≦0.2	—	—	-23 [4,250]	283	220kg Drum	High performance for cold resistance, oil resistance and migration resistance. Low toxicity.	Plasticizer for polyvinylchloride such as packaging film for food.

Acetic Acid Ester

Products	Formula / mol.weight	Specifications: Appearance	Color APHA	Specific Gravity 20/20℃	Acid value KOH mg/g	Heating Loss % 125℃×3hrs	Refractive Index $^{25}_{D}$ nD	Ester Content %	Water Content %	Typical Properties: Boiling Point ℃	Freezing Point ℃ [Viscosity mPa·s/25℃]	Flash Point ℃	Containers	Description	Uses
TRIACETIN Glyceryl triacetate	 218	Colorless clear liquid	≦20	1.160± 0.003	≦0.05	—	—	≧99.0	≦0.15	258 《101kPa》	-62 [17]	144	220kg Drum	Good compatibility with acetylcellulose. Soluble in water partially as well as in organic solvent.	Plasticizer for acetylcellulose, Lacquer. Inkpad seal stamp. Fragrance retainer.

Adipic Acid Ester

Products	Formula / mol.weight	Specifications: Appearance	Color APHA	Specific Gravity 20/20℃	Acid value KOH mg/g	Heating Loss % 125℃×3hrs	Refractive Index $^{25}_{D}$ nD	Ester Content %	Typical Properties: Boiling Point ℃	Freezing Point ℃ [Viscosity mPa·s/25℃]	Flash Point ℃	Containers	Description	Uses
DAIFATTY-101 Adipic acid ester	—	Colorless to light yellowish clear liquid	≦100	1.105	≦0.5	—	—	—	293 《101kPa》	<-20 [19]	218	200kg Drum	Very good compatibility with poly-lactic acid. High performance for plasticity, bleeding resistance and water resistance. Good compatibility with other biodegradable plastics, too.	Plasticizer for poly-lactic acid mainly. Crystallization accelerating agent in poly-lactic acid.