HARWICK STANDARD

ISO 9001 REGISTERED

Plasticizers & Process Oils

Harwick Standard offers a broad line of plasticizers to meet the needs of both rubber compounders and flexible PVC formulators. By offering a large range of products, we provide our customers the versatility of identifying a plasticizer family that is effective with various polymers, and gives several product options from which to choose for optimum performance characterists - from general use to most demanding requirements.

Harwick Standard's experienced technical and sales staff can assist in selecting the best plasticizer to meet your requirements.

Please contact us for assistance with your compounding needs.

Plasticizers

Adipates

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Low Temperature/ Flexibility	Low Volatitity	Low Extraction	Heat Aging Resistance	High Solvating	Miscellaneous
Polycizer® DOA	Dioctyl adipate	R-1,2/ P-1,2	103-23-1	√		√			Low water extraction, UV stability
Polycizer® DINA	Diisononyl adipate	R-1,2/ P-1,2	33703-08-01	√	√				Low volatility vs. DOA
Merrol® 4206 (DBEA)	Di(butoxyethyl) adipate	R-1,2,3/ P-2	141-18-4	√					Very good low temperature resistance
Polycizer® DBEEA	Di(butoxyethoxyethyl) adipate	R-1,2,3	141-17-3	√	√	√	√		Very good low temperature resistance

Polymer Usage Key	
(Rubber) R-1	NBR, NBR/PVC
(Rubber) R-2	CR, CPE, CSM
(Rubber) R-3	ECO, FKM, ACM, AEM
(Rubber) R-4	EPR, EPDM, NR, IR, BR, TPE, SBR, Block SBR

Polymer Usage Key	
(Plastic) P-1	PVC
(Plastic) P-2	PVAC, PS, ABS, Cellulosics
(Plastic) P-3	Engineering Resins, Polyesters, Alloys

Benzoates

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Low Temperature/ Flexibility	Low Volatitity	Low Extraction	Heat Aging Resistance	High Solvating	Miscellaneous
Benzoflex® 9-88	Dipropylene glycol dibenzoate	R-1/ P-1,2	Proprietary		√			√	Polyurethanes

Chlorinated Paraffins

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Low Temperature/ Flexibility	Low Volatitity	Low Extraction	Flame Resistance	High Solvating	Miscellaneous
Chloroflo® 42	Liquid chlorinated paraffins	R-2/ P-1	63449-39-8/ 85535-86-0		√		√		Long chain C20-C28 chlorinated paraffins, 40% Chlorine
Paroil® CW38AO	Liquid chlorinated paraffins	R-2/ P-1	63449-39-8/ 85535-86-0		√	√	√		Very long chain C24-C28 chlorinated paraffins, 39% Chlorine
Paroil® CW40AO	Liquid chlorinated paraffins	R-2/ P-1	63449-39-8/ 85535-86-0		√	√	√		Very long chain C24-C28 chlorinated paraffins, 43% Chlorine
Paroil® CW50AO	Liquid chlorinated paraffins	R-2/ P-1	63449-39-8/ 85535-86-0		√	√	√		Very long chain C24-C28 chlorinated paraffins, 47% Chlorine

Polymer Usage Key	
(Rubber) R-1	NBR, NBR/PVC
(Rubber) R-2	CR, CPE, CSM
(Rubber) R-3	ECO, FKM, ACM, AEM
(Rubber) R-4	EPR, EPDM, NR, IR, BR, TPE, SBR, Block SBR

Polymer Usage Key	
(Plastic) P-1	PVC
(Plastic) P-2	PVAC, PS, ABS, Cellulosics
(Plastic) P-3	Engineering Resins, Polyesters, Alloys

Chlorinated Paraffins (continued)

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Low Temperature/ Flexibility	Low Volatitity	Low Extraction	Flame Resistance	High Solvating	Miscellaneous
Paroil® 140	Liquid chlorinated paraffins	R-2/ P-1	63449-39-8/ 85535-86-0		√		√		Long chain C20-C28 chlorinated paraffins, 42% Chlorine
Paroil® 152	Liquid chlorinated paraffins	R-2/ P-1	63449-39-8		√		√		Mid chain C14-C17 chlorinated paraffins, 51% Chlorine
Paroil® 54 NR	Liquid chlorinated paraffins	R-2/ P-1	63449-39-8/ 85535-86-0		√		√		Mid chain C14- C17 chlorinated alkenes, 54% Chlorine
Paroil® 58 NR	Liquid chlorinated paraffins	R-2/ P-1	63449-39-8/ 85535-86-0		√		√		Mid chain C14-C17 chlorinated alkenes, 59% Chlorine

Mono-Esters

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Low Temperature/ Flexibility	Low Volatitity	Low Extraction	Heat Aging Resistance	High Solvating	Miscellaneous
Polycizer® Butyl Oleate	Butyl oleate	R-2/ P-2	142-77-8	√					Primary light color plasticizer for CR (polychloroprene)
Polycizer® MO	Vegetable Oil	R-2	8001-30-7	√	√		√	√	Low & high temperature plasticizer for CR
Natro-Flex® IOT	Isooctyl tallate	R-1,2	68333-78-8	√					Low temperature aliphatic ester for CR, NBR, and PVC

Polymer Usage Key	
(Rubber) R-1	NBR, NBR/PVC
(Rubber) R-2	CR, CPE, CSM
(Rubber) R-3	ECO, FKM, ACM, AEM
(Rubber) R-4	EPR, EPDM, NR, IR, BR, TPE, SBR, Block SBR

Polymer Usage Key	
(Plastic) P-1	PVC
(Plastic) P-2	PVAC, PS, ABS, Cellulosics
(Plastic) P-3	Engineering Resins, Polyesters, Alloys

Phosphate Esters

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Low Temperature/ Flexibility	Low Volatitity	Low Extraction	Flame Resistance	High Solvating	Miscellaneous
Lindol™	Tricresyl phosphate	P-1,2	1330-78-5		√		√	√	Applications in polar elastomers and PVC
Phosflex™ 41L Merrol® 521	Isopropylated triphenyl phosphate	R-1,2/ P-1	68937-41-7/ 115-86-6				√		Applications in polar elastomers and PVC
Phosflex™ 31L	Isopropylated triphenyl phosphate	R-1,2/ P-1	68937-41-7/ 115-86-6				√		Applications in polar elastomers and PVC
Phosflex™ T-BEP	Tris(2-butoxyethyl) phosphate	R-1,2,3,4/ P-1,2	78-51-3	√			√	√	Applications in many elastomers; least polar phosphate ester
Phosflex™ 390	Diphenyl isodecyl phosphate	R-1,2,4/ P-1,2	29761-21-5/ 115-86-6				√		Applications in non-polar elastomers
Phosflex™ 362	2-ethyl hexyl diphenyl phosphate	R-1,2,4/ P-1,2	1241-94-7				√		Applications in non-polar elastomers
Phosflex™ 375	alkyl diphenyl/ triaryl mixture	R-1,2/ P-1	Proprietary				√		Excellent replacement for isopropylated phosphate

Phthalate Free

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Low Temperature/ Flexibility	Low Volatitity	Low Extraction	Heat Aging Resistance	High Solvating	Miscellaneous
Polycizer® DHIN	1,2 cyclohexane dicarboxylic acid di-isononyl ester	R-1,2/ P-1	474919-59-0		√				Performance similar to DINP, DOP in NBR compounds

Polymer Usage Key	
(Rubber) R-1	NBR, NBR/PVC
(Rubber) R-2	CR, CPE, CSM
(Rubber) R-3	ECO, FKM, ACM, AEM
(Rubber) R-4	EPR, EPDM, NR, IR, BR, TPE, SBR, Block SBR

Polymer Usage Key	
(Plastic) P-1	PVC
(Plastic) P-2	PVAC, PS, ABS, Cellulosics
(Plastic) P-3	Engineering Resins, Polyesters, Alloys

Phthalates

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Low Temperature/ Flexibility	Low Volatitity	Low Extraction	Heat Aging Resistance	High Solvating	Miscellaneous
Merrol® DAP	Diallyl phthalate	R-1,2/ P-3	131-17-9					√	Co-curing
Polycizer® DBP Merrol® DBP	Dibutyl phthalate	R-1,2/ P-1,2	84-74-2					√	Good emollient for cosmetics
Polycizer® DINP	Diisononyl phthalate	R-1,2/ P-1,2	28553-12-0		√				General purpose
Polycizer® DIDP	Diisodecyl phthalate	R-1,2/ P-1,2	26761-40-0		√				General purpose
Polycizer® DOP	Di(2-ethylhexyl) phthalate	R-1,2/ P-1,2	117-81-7						General purpose
Polycizer® DPHP	Bis(2-propylheptyl) phthalate	R-1,2/ P-1,2	53306-54-0		√		√		Good high temperature
Polycizer® DUP-E	Diundecyl phthalate	R-1,2/ P-1,2	3648-20-2	√	√		√		Low fogging

Non-Phthalate

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Low Temperature/ Flexibility	Low Volatitity	Low Extraction	Heat Aging Resistance	High Solvating	Miscellaneous
Polycizer® DOTP	Dioctyl terephthalate	R-1,2/ P-1,2	6422-86-2	√		√	√		Low level extraction when exposed to soapy water. Non-phthalate replacement

Polymer Usage Key	
(Rubber) R-1	NBR, NBR/PVC
(Rubber) R-2	CR, CPE, CSM
(Rubber) R-3	ECO, FKM, ACM, AEM
(Rubber) R-4	EPR, EPDM, NR, IR, BR, TPE, SBR, Block SBR

Polymer Usage Key	
(Plastic) P-1	PVC
(Plastic) P-2	PVAC, PS, ABS, Cellulosics
(Plastic) P-3	Engineering Resins, Polyesters, Alloys

Polymerics

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Low Temperature/ Flexibility	Perme-ability	Migration Resistance	Low Extraction	Heat Aging	Miscellaneous
Admex™ 334F	Fatty acid capped glycol adipate	R-1/ P-1,2	Proprietary				√		Excellent compatibility, critical applications
Admex™ 523	Dibasic acid glycol polyester phthalate	R-1/ P-1,2	Proprietary			√	√		Widely compatible with low fusion temperature
Merrol® P-6320	Dibasic acid glycol polyester adipate	R-1,2/ P-1	Proprietary	√		√			Solvent & oil resistance, low temperature flexibility
Polycizer® P-6400	Fatty acid capped glycol adipate	P-1,2	Proprietary		√	√			Excellent for humidity aging and dielectric properties
Merrol® P-6420	Dibasic acid glycol polyester adipate	P-1	63149-79-1			√			Good color

Sebacates

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Low Temperature/ Flexibility	Low Volatitity	Low Extraction	Heat Aging Resistance	High Solvating	Miscellaneous
Polycizer® DBS	Dibutyl sebacate	R-1,2/ P-1,2	109-43-3	√				√	FDA 21 CFR 175.105, 175.300, and 177.2600
Polycizer® DOS	Dioctyl sebacate	R-2/ P-1,2	122-62-3	√		√			Low temperature greases and caulks

Polymer Usage Key	
(Rubber) R-1	NBR, NBR/PVC
(Rubber) R-2	CR, CPE, CSM
(Rubber) R-3	ECO, FKM, ACM, AEM
(Rubber) R-4	EPR, EPDM, NR, IR, BR, TPE, SBR, Block SBR

Polymer Usage Key	
(Plastic) P-1	PVC
(Plastic) P-2	PVAC, PS, ABS, Cellulosics
(Plastic) P-3	Engineering Resins, Polyesters, Alloys

Specialty

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Low Temperature/ Flexibility	Perme-ability	Migration Resistance	Low Extraction	Heat Aging	Miscellaneous
Plasticizer SC-B	Triethylene glycol dicaprate/caprylate	R-1,2,3	Proprietary	√				√	FDA 21CFR 177.2600(c)(4)(iv)
Plasticizer SC-E	Triethylene glycol di(2-ethylhexanoate)	R-1,2,3	94-28-0	√					Flexibilitity over a wide temperature range
CalEster 600	Pentaerythritol ester of fatty acids	R-1,2	Proprietary	√	√	√	√	√	Excellent low and high temperature
Plas-Chek® 775	Epoxidized soybean oil	R-1/ P-1,2,3	8013-07-8		√	√		√	Good heat stabilizer

Trimellitates

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Low Temperature/ Flexibility	Perme-ability	Migration Resistance	Low Extraction	Heat Aging	Miscellaneous
Polycizer® TOTM, Polycizer® TOTM-E	Trioctyl trimellitate	R-1,2/ P-1,2	3319-31-1		√		√	√	Excellent water resistance
Merrol® 810TM-E	Tri(n-octyl, n-decyl) trimellitate	R-2	67989-23-5	√	√		√	√	Excellent oxidation and water resistance
Polycizer® TINTM	Triisononyl trimellitate	R-1,2/ P-1,2	53894-23-8		√	√	√	√	Extreme low volatility

Polymer Usage Key	
(Rubber) R-1	NBR, NBR/PVC
(Rubber) R-2	CR, CPE, CSM
(Rubber) R-3	ECO, FKM, ACM, AEM
(Rubber) R-4	EPR, EPDM, NR, IR, BR, TPE, SBR, Block SBR

Polymer Usage Key	
(Plastic) P-1	PVC
(Plastic) P-2	PVAC, PS, ABS, Cellulosics
(Plastic) P-3	Engineering Resins, Polyesters, Alloys

Process Oils

Aromatic Petroleum Process Oils

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Viscosity SUS @ 40°C 100°F-secs.	Color-ASTM D-1500	Aniline Point °C/°F	Volatility 22 hrs 107/225 °C/°F	Flash Point COC °C/°F	Miscellaneous
Stan-Flux LV-1	Aromatic oil	R-4	64742-05-8	300	8.0	38/101	0.8	214/420	Dark color, good for SBR, NR, and CR

Naphthenic Petroleum Process Oils

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Viscosity SUS @ 40°C 100°F-secs.	Color-ASTM D-1500	Aniline Point °C/°F	Volatility 22 hrs 107/225 °C/°F	Flash Point COC °C/°F	Miscellaneous
Stan-Plas 100/105	Naphthenic oil	R-1,4	64742-52-5/ 64742-53-6	105	1.5	75/170	10.0	151/305	General Processability
Stan-Plas 101C	Naphthenic oil	R-1,4	64742-52-5/ 64742-53-6	105	1.5	75/170	10.0	151/305	General Processability, meets 21CFR 178.3620(c)
Stan-Plas 150	Naphthenic oil	R-1,4	64742-52-5	155	2.0	75/170	6.0	170/335	General Processability
Stan-Plas 1200	Naphthenic oil	R-1,4	64742-52-5	1200	2.0	90/195	0.2	230/450	General Processability
Stan-Plas 2000	Naphthenic oil	R-1,4	64742-52-5	2000	3.5	95/205	0.08	250/480	General Processability

Polymer Usage Key	
(Rubber) R-1	NBR, NBR/PVC
(Rubber) R-2	CR, CPE, CSM
(Rubber) R-3	ECO, FKM, ACM, AEM
(Rubber) R-4	EPR, EPDM, NR, IR, BR, TPE, SBR, Block SBR

Polymer Usage Key	
(Plastic) P-1	PVC
(Plastic) P-2	PVAC, PS, ABS, Cellulosics
(Plastic) P-3	Engineering Resins, Polyesters, Alloys

Paraffinic Petroleum Process Oils

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Viscosity SUS @ 40°C 100°F-secs.	Color-ASTM D-1500	Aniline Point ° C/°F	Volatility 22 hrs 107/225 °C/°F	Flash Point COC °C/°F	Miscellaneous
Stan-Lube 10	Paraffinic oil	R-4	64742-54-7	80	1.5	100/212	0.8	200/590	Light color, good for EPR & EPDM
Stan-Lube 60	Paraffinic oil	R-4	64742-54-7	500	2.0	115/240	0.2	270/520	Light color, good for EPR & EPDM
Stan-Lube 80	Paraffinic oil	R-4	64742-01-4	2500	7.0	127/260	0.01	310/590	Light color, good for EPR & EPDM

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Viscosity SUS @ 40°C 100°F-secs.	Viscosity cSt @ 40°C	Color-Sayboldt D-156	Pour Point °C/°F	Flash Point COC °C/°F	Miscellaneous
Technical White Oil Grades: Meets the requirements of U.S. FDA regulation 21 CFR 178.3620(b)									
Renoil™ 500-T	White mineral oil	R-4	8042-47-5	500	105	plus 25	-12 / 10	267 / 512	Very light color, technical grade white mineral oil

Tradename(s)	Chemical Name	Polymer Usage	CAS #	Viscosity SUS @ 40°C 100°F-secs.	Viscosity cSt @ 40°C	Color-Sayboldt D-156	Pour Point °C/°F	Flash Point COC °C/°F	Miscellaneous
White Mineral Oil Food Grades: Exceeds requirements for U.S. FDA regulations 21 CFR 172.878 and 21 CFR 178.3620(a) and is Certified to ANSI/NSF Standard 60.									
Renoil™ 90W	White mineral oil	R-4	8042-47-5	90	17	plus 30	-15 / 5	177 / 350	Very light color, food and NF grade, good for EPR & EPDM
Renoil™ 350W	White mineral oil	R-4	8042-47-5	350	68	plus 30	-12 / 10	230 / 446	Very light color, food and NF grade, good for EPR & EPDM

Polymer Usage Key	
(Rubber) R-1	NBR, NBR/PVC
(Rubber) R-2	CR, CPE, CSM
(Rubber) R-3	ECO, FKM, ACM, AEM
(Rubber) R-4	EPR, EPDM, NR, IR, BR, TPE, SBR, Block SBR

Polymer Usage Key	
(Plastic) P-1	PVC
(Plastic) P-2	PVAC, PS, ABS, Cellulosics
(Plastic) P-3	Engineering Resins, Polyesters, Alloys

Disclaimer of Liability

The information and recommendations contained herein are based upon data that are believed to be accurate and reliable to be the best of Harwick's knowledge and belief. Application and performance information are provided only as a guide, since the conditions of use are beyond Harwick's control. No warranty is made of the merchantability or fitness for a particular purpose, and Harwick Standard Distribution Corporation shall not be liable for any cost, loss, damage, or liability arising from the failure to achieve a particular result by the application of any method or that is recommended herein

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