



HARWICK STANDARD
DISTRIBUTION CORPORATION

60 S. SEIBERLING ST.
P.O. BOX 9360
AKRON, OH 44305-0360
PHONE: (330) 798-9300
FAX: (330) 798-0214
TECHNICAL FAX: (330) 798-9328
SALES FAX: (330) 798-4089
WWW.HARWICKSTANDARD.COM

ISO 9001-2000
REGISTERED

COUPLING AGENTS

Harwick Standard has a series of silane coupling agents in the form of easy-to-handle, free-flowing powders. These products have different organo-functional groups and can be used in various elastomers, the choice of which depends on the type of vulcanization system in use. In addition, Harwick also offers the liquid line of Silquest Silane Coupling Agents.

Silane coupling agents are used with mineral fillers such as clay, talc, mica and silica to improve the physical properties of vulcanizates. They function by chemically coupling the filler to the backbone of the polymer during vulcanization.

The products currently available are listed below:

DRY LIQUID CONCENTRATES

<u>PRODUCT</u>	<u>ORGANO-FUNCTIONAL GROUP</u>	<u>VULCANIZATION SYSTEM</u>
A-172 DLC	Vinyl	Peroxide cured elastomer (EPR, EPDM, CPE, CSM & NBR)
A-1100 DLC	Amino	Sulfur cured elastomers (SBR, NBR, NR, EPDM, IIR) Metal oxide cured system (CSM, CR)
A-174 DLC	Methacryl	Peroxide cured elastomer (EPR, EPDM, CPE, CSM, NBR)

Continued

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COUPLING AGENTS, continued

LIQUIDS

<u>PRODUCT</u>	<u>ORGANO-FUNCTIONAL GROUP</u>	<u>VULCANIZATION SYSTEM</u>
Silquest A-172	Vinyl	Peroxide cured elastomers (EPR, EPDM, CPE, CSM & NBR)
Silquest A-189	Mercapto	Sulfur cured elastomers (SBR, NBR, NR, EPDM, IIR)
Silquest A-1100	Amino	Sulfur cured elastomers (SBR, NBR, NR, EPDM, IIR) Metal oxide cured system (CSM, CR)
Silquest A-1120	Amino	Sulfur cured elastomers (SBR, NBR, NR, EPDM, IIR) Metal oxide cured system (CSM, CR)
Silquest A-1289	Tetrasulfide	Sulfur cured systems (SBR, NBR, NR & EPDM)
Silquest A-1589	Disulfide	Sulfur cured systems (SBR, NBR, NR & EPDM)
Silquest A-1891 (low odor version of A-189)	Mercapto	Sulfur cured elastomers (SBR, NBR, NR, EPDM, IIR)
Silquest RC-1	Vinyl	Peroxide cured elastomers (EPR, EPDM, CPE, CSM & NBR)

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Featured Products

Dry Liquid Concentrates

Hard-to-Handle Liquids in free flowing powder form

PRODUCT NAME	ACTIVE INGREDIENT	FUNCTIONALITY
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CI-10 DLC-A	coumarone indene tackifier	tackifier & processing aid in rubber, adhesives, paints & coatings
CI-25 DLC-A	coumarone indene tackifier	tackifier & processing aid in rubber, adhesives, paints & coatings
CI-50 DLC-A	coumarone indene tackifier	tackifier & processing aid in rubber, adhesives, paints & coatings
Natro-Cel 1312-A	butadiene-acrylonitrile copolymer; Nipol 1312 or equivalent	plasticizer, process aid, softening agent, improves flow & knitting
Natro-Cel PE-A	low molecular weight polyethylene; AC 1702 or equivalent	internal lubricant, processing aid
Petrolatum DLC-A	USP grade petrolatum	plasticizer, lubricant
Petrolatum T DLC-A	technical grade petrolatum	plasticizer, lubricant
DOP DLC-A	dioctyl phthalate	general purpose plasticizer, softener, good aging & electrical properties
Calight® RPO DLC-A	Calight 100 sec naphthenic process oil	plasticizer/process aid with exceptionally fast incorporation
Natro-Cel® 100N-A	naphthenic petroleum oil; Stan-Plas 100 or equivalent; (fka Flexon® 641)	plasticizer, used in many non-staining applications
TEA DLC-A	triethanolamine	NR, SBR activator, neutralizes clay acidity, incorporates rapidly
Tar-Cel® 14-A	blended extracts of pine tar	aids processing, gives good green tack; non-staining plasticizer, softener in rubber reclaim
Tar-Cel 20-A	blended extract of pine tar	plasticizer, tackifier, reduces mill-time over liquid pine tar
Tar-Cel 30-A	blended extract of pine tar	plasticizer, tackifier, reduces mill-time over liquid pine tar
Tar-Cel 40-A	blended extract of pine tar	plasticizer, tackifier, reduces mill-time over liquid pine tar

MARKETED BY
HARWICK STANDARD
 DISTRIBUTION CORPORATION
 60 S. Seiberling Street • Akron, Ohio 44305

Phone (912) 236-4464

Fax (912) 236-1919

web: www.natrochem.com



Coupling Agents

Vinyl, Amino, Methacryl, and Mercapto

PRODUCT NAME	ACTIVE INGREDIENT	FUNCTIONALITY
A-172 DLC [®]	vinyl-tris(2-methoxyethoxy) silane	vinyl functional; promotes adhesion to inorganic substrates
A-174 DLC [®]	methacryloxypropyltrimethoxy silane	use in peroxide, sulfur & metal oxide cure systems
A-1100 DLC	aminopropyltriethoxy silane	amino silane coupling agent
SILANE NX DLC	Thiocarboxylate silane	coupling agent for highly-filled compounds

Co-Curing Agents (for Peroxide Cures)

Allylic, Methacrylates

PRODUCT NAME	ACTIVE INGREDIENT	FUNCTIONALITY
Natro-Cel [®] 35-A	trimethyl propane trimethacrylate; SR 350 or equivalent	vulcanizing co-agent for peroxide cure; plasticizer during mixing, hardens on cure
Natro-Cel [®] TATM-A	triallyl trimellitate	co-agent for peroxide cure, activator
SR 206 DLC [®] -A	ethylene dimethacrylate	vulcanizing co-agent for peroxide cure; plasticizer; hardener
TAC DLC [®] -A	triallyl cyanurate	EPM accelerator, peroxide-cured EP polymer co-agent
TAIC DLC [®] -A	triallyl isocyanurate	co-agent for peroxide vulcanization, enhances cure rate & state
Saret [®] 500 DLC-A	TMPTMA with retarder	scorch-free, peroxide cure acrylic cross-linking agent
Saret [®] 515 DLC-A	TMPTMA with retarder	scorch-free, peroxide cure acrylic cross-linking agent
Saret [®] 517 DLC-A-75	TMPTMA with retarder – 75% actives	scorch-free, peroxide cure acrylic cross-linking agent

Plasticizers

Pine Tar Derivatives

PRODUCT NAME	ACTIVE INGREDIENT	FUNCTIONALITY
Tarene [™] 14	blended extracts of pine tar – Visc. 120-140 (SFS@ 122°F)	non-staining plasticizer/softener aids processing; gives good green tack
Tarene 20	blended extracts of pine tar – Visc. 150 (SFS@ 122°F)	non-staining plasticizer/softener aids processing; gives good green tack
Tarene 30	blended extracts of pine tar – Visc. 175 (SFS@ 122°F)	non-staining plasticizer/softener aids processing; gives good green tack
Tarene 40	blended extracts of pine tar – Visc. 200 (SFS@ 122°F)	non-staining plasticizer/softener aids processing; gives good green tack



POWDERS (DLC®)

PRODUCT NAME	ACTIVE INGREDIENT	FUNCTIONALITY
A-172 DLC®	vinyl-tris(2-methoxyethoxy) silane	vinyl functional; promotes adhesion to inorganic substrates
A-174 DLC	methacryloxypropyltrimethoxy silane	use in peroxide, sulfur & metal oxide cure systems
A-187 DLC	glycidoxypropyltrimethoxy silane	use in peroxide, sulfur & metal oxide cure systems
A-1100 DLC	aminopropyltriethoxy silane	superior bonds between inorganic substrates and organic polymers
A-1120 DLC	Amino silane	promotes adhesion of reactive resins to inorganic fillers
B-3000 DLC-A-70	1,2-polybutadiene	resin reforming agent for EPDM & electro-deposit coatings
BBP DLC-A	butyl benzyl phthalate	highly solvating general purpose ester plasticizer
Butyl Oleate DLC-A	butyl oleate	low-temp plasticizer, softener
Butyl Tuads DLC-A	tetrabutylthiuram disulfide	sulfur donor & secondary accelerator for soluble cure systems
Calight® RPO DLC-A	Calight 100 sec naphthenic process oil	plasticizer/process aid with exceptionally fast incorporation
CI-9 DLC-A	coumarone indene tackifier	tackifier & processing aid in rubber, adhesives, paints & coatings
CI-10 DLC-A	coumarone indene tackifier	tackifier & processing aid in rubber, adhesives, paints & coatings
CI-25 DLC-A	coumarone indene tackifier	tackifier & processing aid in rubber, adhesives, paints & coatings
CI-50 DLC-A	coumarone indene tackifier	tackifier & processing aid in rubber, adhesives, paints & coatings
DAP DLC-A	diallyl phthalate	plasticizer; electrical and electronic applications in long-term, adverse environmental conditions
DBP DLC-A	dibutyl phthalate	plasticizer; fast incorporation; high solvation; moderate permanence; plasticity
DBS DLC-A	dibutyl sebacate	plasticizer; improves processing; low-temp flexibility
DEA DLC-A	diethanolamine	activator for CR, NBR & SBR, neutralizes clay acidity
DEG DLC-A	diethylene glycol	used to adjust cure of processing
DER 331 DLC-A	DER 331 epoxy resin	excellent mechanical, adhesive, electrical & chemical resistance properties
DIDP DLC-A	diisodecyl phthalate	low volatility plasticizer in PVC electrical compounds
DOA DLC-A	dioctyl adipate	low-temp flexibility; good electrical properties & weather resistance
DOP DLC-A	dioctyl phthalate	general purpose plasticizer, softener, good aging & electrical properties
DOS DLC-A	dioctyl sebacate	low-temp plasticizer for CR, NBR & various plastics
Epon® 828 DLC-A	Epon 828 epoxy resin	adhesive curing agent, tackifier
Flexricin® P4 DLC-A	Flexricin P4 – methyl acetyl ricinoleate	plasticizer, softener, processing aid
Flexricin P8 DLC-A	Flexricin P8 – glyceryl triacetyl ricinoleate	plasticizer & processing aid
Harflex® 330 DLC-A	Harflex 330 - polyester	permanent flexible plasticizer
Indopol® H-300-A	Indopol H-300 - polybutene	plasticizer/tackifier; also for pressure-sensitive & hot-melt adhesives; impact modifier for plastics
LP-2C DLC-A	organic liquid polysulfide	used in adhesives, sealants and coatings
LP-31 DLC-A	organic liquid polysulfide	excellent adhesion; outstanding resistance to harsh environmental conditions

PRODUCT NAME	ACTIVE INGREDIENT	FUNCTIONALITY
LP-32C DLC-A	organic liquid polysulfide	excellent adhesion; outstanding resistance to weathering oxidation, ozone & high & low temp conditions
Natro-Cel [®] 100N-A	naphthenic petroleum oil; Stan-Plas 100 or equivalent; (fka Flexon [®] 641)	plasticizer, used in many non-staining applications
Natro-Cel 100N-A-75	naphthenic petroleum oil - 75% actives	plasticizer, used in many non-staining applications
Natro-Cel 1312-A	butadiene-acrylonitrile copolymer; Nipol 1312 or equivalent	plasticizer, process aid, softening agent, improves flow & knitting
Natro-Cel 150-A	Sunpar [®] 150 or equivalent paraffinic oil	plasticizer & extender oil
Natro-Cel 200-A-65	mixed diaryl p-phenylene diamine	persistent long-term antiozonant for diene polymers. fka Wingstay 200 DLC-A-65
Natro-Cel 35-A	trimethyl propane trimethacrylate; SR 350 or equivalent	vulcanizing co-agent for peroxide cure; plasticizer during mixing, hardens on cure
Natro-Cel 93P-A	naphthenic/tall oil blend	plasticizer and extender
Natro-Cel 97-A	aromatic hydrocarbon; Sundex [®] 790 or equivalent	plasticizer & extender; aids filler dispersion
Natro-Cel 508-A	acrylic crosslinking agent	coagent for peroxide curing; replacement for hexane diol diacrylate
Natro-Cel 519-A	acrylic crosslinking agent	coagent for peroxide curing
Natro-Cel 759-A	TEG monobutyl ether adipate; Merrol 4426/TP 759 or equivalent	optimum low-temp flexibility; excellent property retention after heat aging, no effect on cure
Natro-Cel 6102-A	rosin oil/gum rosin blend	tackifier & softener
Natro-Cel ACP-A	oxidized polyethylene wax	mixing, processing & dispersion aid & release agent
Natro-Cel AL	ammonium salts of alkyl phosphate; Darvan [®] L or equivalent (on ABS)	mold lubricant, inhibits corrosion, removes tack
Natro-Cel BCA-A	di-butoxyethoxyethyl adipate; DBEEA, TP-95 or equivalent	low-temp plasticizer, rapid incorporation, aids filler dispersion
Natro-Cel BCF-A	di-butoxyethoxyethyl formal; TP-90 or equivalent	low-temp plasticizer, rapid incorporation, aids filler dispersion
Natro-Cel C60-A	chlorinated isoparaffin	plasticizer, flame retardant additive
Natro-Cel C70-A	chlorinated isoparaffin	plasticizer & flame retardant additive
Natro-Cel IOT-A	aliphatic ester; Merrol [®] 818-T or equivalent	low-temp plasticizer
Natro-Cel PE-A	low molecular weight polyethylene; AC 1702 or equivalent	internal lubricant, processing aid
Natro-Cel R-A	sulfonated petroleum/mineral oil blend	plasticizer/process aid; used for open-roll mill mixing
Natro-Cel Tack 10-A	liquid aliphatic C5 hydrocarbon resin	used in pressure sensitive hot melts & sealants
Natro-Cel TATM-A	triallyl trimellitate	co-agent for peroxide cure, activator
PE-314 DLC-A	polyester plasticizer	good dimensional stability in heat, cold & solvents
Permapol P875 DLC-A	mercaptan terminated polythioether polymer	low temp curing for sealants, coatings and adhesives
Petrolatum DLC-A	USP grade petrolatum	plasticizer, lubricant
Petrolatum T DLC-A	technical grade petrolatum	plasticizer, lubricant
Plasticizer OLN DLC-A	oleyl nitrile	plasticizer/softener; good low-temp properties; reduces nerve & modulus
Plasticizer SC DLC-A	diester of triethylene glycol (Plasticizer SC-E)	plasticizer, gives low-temp flexibility, improves processing
Polyester G 25 DLC-A	polyester sebacate	non-extractable plasticizer; good UV stability & heat aging; low-temp flexibility
Polyester G 41 DLC-A	high molecular weight polyester	non-extractable plasticizer; aids filler dispersion; good UV stability; used in fuel hose & electrical tape
Polyester G 50 DLC-A	polyester adipate	general purpose polymeric plasticizer; low extraction; low migration; good heat resistance
Polygard HR DLC-A	tris phosphite	antiozonant; antiblock
Rapeseed Oil DLC-A	rapeseed oil	plasticizer/softener/extender, process aid
SF96-350 DLC-A	dimethyl polysiloxane silicone fluid	mold & internal lubricant for NR, SR & resins
SR 203 DLC-A	tetrahydrofurfuryl methacrylate	vulcanizing co-agent for peroxide cure
SR 206 DLC-A	ethylene dimethacrylate	vulcanizing co-agent for peroxide cure; plasticizer; hardener

PRODUCT NAME	ACTIVE INGREDIENT	FUNCTIONALITY
SR 350W DLC-R-60	TMPTMA 60% actives on Hi-Sil 233	gives high crosslink density in peroxide cure systems
SR 351 DLC-A	TMPTA	co-agent for peroxide cure systems
Saret [®] 500 DLC-A	TMPTMA with retarder	scorch-free, peroxide cure acrylic cross-linking agent
Saret 515 DLC-A	TMPTMA with retarder	scorch-free, peroxide cure acrylic cross-linking agent
Saret 517 DLC-A-75	TMPTMA with retarder – 75% actives	scorch-free, peroxide cure acrylic cross-linking agent
Saret 518 DLC-A	Saret 518 coagent	low color, low staining, scorch-retarding aid
Saret 521 DLC-A	Saret 521 – difunctional acrylic esters	improves mechanical & performance properties
Stan-Mask 21600 DLC-A	blended aromatics – lemon	reodorant for NR, SR, latex & blown sponge adhesives
Silane NX DLC	S-(3-triethoxysilyl)propyl ester, thiocarboxilate silane	higher temp mixing without viscosity increase or premature vulcanization.
Silane NX-10 DLC	thiocarboxilate silane	organosilane for reduced emissions
Silane 400 DLC	organoalkoxy silane	improvement on vinyl silane
Stan-Mask 21622 DLC-A	blended aromatics – baby powder	reodorant for rubber stocks & blown sponge adhesives
Stan-Mask 21711 DLC-A	blended aromatics - cinnamon	reodorant for rubber stocks & blown sponge adhesives
Stan-Mask 25243 DLC-A	blended aromatics - vanilla	reodorant for rubber stocks & blown sponge adhesives
Sunpar [®] 2280 DLC-A	sunpar 2280 paraffinic process oil	paraffinic plasticizer & extender
TAC DLC-A	triallyl cyanurate	EPM accelerator, peroxide-cured EP polymer co-agent
TAIC DLC-A	triallyl isocyanurate	co-agent for peroxide vulcanization, enhances cure rate & state
TCP DLC-A	tricresyl phosphate	flame retardant plasticizer
TEA DLC-A	triethanolamine	NR, SBR activator, neutralizes clay acidity, incorporates rapidly
TEPA DLC-A	triethylenepentamine	crosslinking agent in polymer systems containing active hydrogens; monomer; additive
TP-95 DLC-A	di-butoxyethoxyethyl adipate	plasticizer, softener,
Tar-Cel [®] 14-A	blended extracts of pine tar	aids processing, gives good green tack; non-staining plasticizer, softener in rubber reclaim
Tar-Cel 20-A	blended extract of pine tar	plasticizer, tackifier, reduces mill-time over liquid pine tar
Tar-Cel 30-A	blended extract of pine tar	plasticizer, tackifier, reduces mill-time over liquid pine tar
Tar-Cel 40-A	blended extract of pine tar	plasticizer, tackifier, reduces mill-time over liquid pine tar
Trilene [®] 65 DLC-A	ethylene propylene terpolymer	non-extractable, non-migrating, reactive process aid for peroxide or sulfur cure
Trilene CP-80 DLC-A	ethylene-propylene copolymer	excellent process aid for EPDM, BR, NR, & SBR
Trimene [®] Base DLC-A	ethyl chloride, formaldehyde & ammonia reaction	high-temp accelerator with medium to long curing range
Vulkanol OT DLC-A	ether thioether	plasticizer; yields vulcanizates with good low-temp properties
Wingstay [®] 29 DLC-A	diphenylamine derivative	amine-type stabilizer/antioxidant; gives resistance to heat degradation
Wintergreen 1200-30	methyl salicylate on clay – 30% actives	reodorant for rubber stocks, blown sponge & adhesives
Zeonet PB DLC-A	butyl phosphonium benzotriazolate	adhesion promoter for fluoropolymer systems

SOLIDS

PRODUCT NAME	CHEMICAL NAME	FUNCTIONALITY
Atlas Burgundy Pitch	gum rosin/naphthenic oil blend	tackifier, plasticizer
Galex [®] G-75	disproportionated rosin	tackifier, plasticizer; used in surgical & industrial tapes
Extra Hard Pitch	gum rosin	tackifier & softener for elastomers and coatings

LIQUIDS

PRODUCT NAME	CHEMICAL NAME	FUNCTIONALITY
189 Retar	proprietary tall oil blend	plasticizer, softener
Natro-Flex [™] 6102	proprietary rosin oil/gum rosin blend	tackifier & softener
Natro-Flex IOT		
Natro-Rez [™] 10	coumarone-indene tackifier	widely used in rubber, adhesives, paints & coatings
Natro-Rez 25	coumarone-indene tackifier	widely used in rubber, adhesives, paints & coatings
Natro-Tar [™] 588	pine tar	process aid; waterproofing medium; preservative & fiber lubricant
NP 335	synthetic pine tar	naphthenic process oil for high rosin acid content for strength
Tarene [™] 14	blended extracts of pine tar – Visc. 120-140 (SFS@ 122°F)	non-staining plasticizer/softener aids processing; gives good green tack
Tarene 20	blended extracts of pine tar – Visc. 150 (SFS@ 122°F)	non-staining plasticizer/softener aids processing; gives good green tack
Tarene 30	blended extracts of pine tar – Visc. 175 (SFS@ 122°F)	non-staining plasticizer/softener aids processing; gives good green tack
Tarene 40	blended extracts of pine tar – Visc. 200 (SFS@ 122°F)	non-staining plasticizer/softener aids processing; gives good green tack

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