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Rubber Chemicals

Accelerators

Dithiocarbamates

Trade Name	Chemical Name	CAS Registration Number	Type	Cure Speed	Form	Comments
Ekaland™ TDEC	Tellurium diethyl dithiocarbamate	20941-65-5	Secondary	Ultra Fast	1	Fastest, most active dithiocarbamate particularly in IIR, can also improve reversion resistance
Ekaland™ ZDMC	Zinc dimethyl dithiocarbamate	137-30-4	Secondary	Ultra Fast	2	Next fastest dithiocarbamate
Ekaland™ ZEPC	Zinc ethyl phenyl dithiocarbamate	14634-93-6	Secondary	Ultra fast	1	Ultra-accelerator for NR and synthetic rubbers. Secondary with thiazoles. Must be used with sulfur.
Accelerator CDMC	Copper dimethyl dithiocarbamate	137-29-1	Secondary	Ultra Fast	2	Very fast, increases cure rate and improves scorch safety
Ekaland™ ZDEC	Zinc diethyl dithiocarbamate	14324-55-1	Secondary	Ultra Fast	2	Next fastest to CDMC
Ekaland™ ZDBC	Zinc dibutyl dithiocarbamate	136-23-2	Secondary	Ultra Fast	2	Next fastest to ZDEC
Ekaland™ NDBC	Nickel dibutyl dithiocarbamate	13927-77-0	Secondary	Ultra Fast	2	In addition to being an accelerator, acts as an antiozonant in elastomer systems
Ekaland™ ZBEC	Zinc dibenzyl dithiocarbamate	14726-36-4	Secondary	Ultra Fast	1,2	Slowest of all dithiocarbamates and a non-nitrosamine alternative

TDEC>ZDMC>ZEPC>CDMC>ZDEC>ZDBC>NDBC>ZBEC

Forms: 1=powder, 2=oil treated powder, 3=granule, 4=crystal, 5=crystal w/anti-caking agent, 6=liquid, 7=dispersion in water, 8=dispersion in xylene, 9=pastille

Guanidines

Trade Name	Chemical Name	CAS Registration Number	Type	Cure Speed	Form	Comments
Ekaland™ DPG	N,N'-Diphenyl guanidine	102-06-7	Secondary	Medium	1,2,3	Very slow accelerator, but can aid in reversion resistance and is a non-nitrosamine alternative
Ekaland™ DOTG	N,N'-Di-o-tolyl-guanidine	97-39-2	Secondary	Medium	2	Slower than DPG, but has higher activity and is a non-nitrosamine alternative very effective in polychloroprene
DPG>DOTG						

Quinone / Para-dinitrosobenzene

Ekaland™ BQD 30 DS	1,4-p-benzoquinone dioxime	105-11-3	Primary	Ultra Fast	1	A 30% dispersion on kaolin clay. An ultra accelerator for sulfurless vulcanization of NR, SBR, polysulfides, and butyl rubber(IIR). It is also a bonding agent for rubber to metal.
Ekaland™ BQD 30 DX	1,4-p-benzoquinone dioxime	105-11-3	Primary	Ultra Fast	8	30% dispersion in xylene
Ekaland™ BQD 50 HU	1,4-p-benzoquinone dioxime	105-11-3	Primary	Ultra Fast	7	30 % dispersion in water
Ekaland™ PPDN 30 DX	Poly para-dinitrosobenzene 30% dispersion in xylene	9003-34-3	Primary	-	8	A bonding agent. Also an activator for butyl (IIR) and an accelerator for low temperature vulcanization of polychloroprene (CR) lattices.
Ekaland™ PPDN 50 HU	Poly para-dinitrosobenze 50% dispersion in water	9003-34-3	Primary	-	7	A bonding agent. Also an activator for butyl (IIR) and an accelerator for low temperature vulcanization of polychloroprene (CR) lattices.

Sulfenamides

Accelerator CBS	N-Cyclohexyl-2-benzothiazole sulfenamide	95-33-0	Primary	Fast	1,2,3	Fastest delayed action sulfenamide and is a non-nitrosamine alternative
Accelerator TBBS	N-tert-butyl-2-benzothiazole sulfenamide	95-31-8	Primary	Fast	1,2,3,	Delayed action next safest, very active can use reduced level (10%) versus CBS non-nitrosamine alternative
Accelerator MBS	N-oxydiethylene benzothiazole-2-sulfenamide	102-77-2	Primary	Fast	3	Safest delayed action sulfenamide
CBS>TBBS>MBS						

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Thiurams (sulfur bearing, except TMTM)

Trade Name	Chemical Name	CAS Registration Number	Type	Cure Speed	Form	Comments
Accelerator TMTD	Tetramethylthiuram disulfide	137-26-8	Secondary	Fast	1,2,3	Fastest of Thiurams (sulfur donor)
Accelerator TETD	Tetraethylthiuram disulfide	97-77-8	Secondary	Fast	2,4	Next fastest Thiuram
Accelerator MET	Blend of TMTD and TETD	137-26-8, 97-77-8	Secondary	Fast	1	Medium rate vs TMTD (Blend TMTD/TETD)
Ekaland™ TMTM	Tetramethylthiuram monosulfide	97-74-5	Secondary	Fast	2,3	Next fastest of Thiurams compared to MET
Accelerator TBzTD	Tetrabenzylthiuram disulfide	10591-85-2	Secondary	Fast	2	Slowest rate versus TMTM and non-nitrosamine alternative
Accelerator TiBTD	Tetraisobutylthiuram disulfide	3064-73-1	Secondary	Fast	2	Slowest rate Thiuram that can be a partial non-nitrosamine alternative provide low level nitrosamine
Ekaland™ DPTT	Dipentamethylene thiuram hexasulfide	971-15-3	Secondary	Fast	1,2	Sulfur bearing accelerator for most polymers; enhances heat stability and aging properties
Ekaland™ DTDM	4,4'-Dithiodimorpholine	103-34-4	Secondary	Fast	1,2	Sulfur bearing ingredient
TMTD>TETD>MET>TMTM>TBzTD>TiBTD >DPTT						

Thiazoles

Accelerator MBT	2-mercapto benzothiazole	149-30-4	Primary	Semi-Fast	1,2,3,	Highly reactive at low temperature <142°C/284°F and is a non-nitrosamine alternative
Accelerator MBTS	2,2-Dithiobis (benzothiazole)	120-78-5	Primary	Semi-Fast	1,2,3	Slower than MBT. MBTS is used in polychloroprene for delayed action and is a non-nitrosamine alternative
Accelerator MBD	4-morpholinyl-2-benzothiazole disulfide	95-32-9	Primary	Semi-Fast	3	Slower than MBTS, safest accelerator in the thiazole group
Accelerator ZMBT	Zinc-2-mercapto benzothiazole	155-04-4	Primary	Semi-Fast	1,2	Zinc salt of MBT; lower reactivity than MBT and is a non-nitrosamine alternative
MBT>ZMBT>MBTS>MBD						

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Thioureas

Trade Name	Chemical Name	CAS Registration Number	Type	Cure Speed	Form	Comments
Ekaland™ ETU	Ethylene thiourea	96-45-7	Secondary	Medium Fast	1,2	Fastest thiourea used in polychloroprene, but can be used in EPDM as secondary
Ekaland™ DETU	N,N'-Diethylthiourea	105-55-5	Secondary	Medium Fast	4	Fast thiourea used in mercaptan modified polychloroprene and as secondary accelerator in EPDM
Ekaland™ DATU	Mixture of thioureas N,N'-dibutyl thiourea (30%); N,N' -diethylthiourea (25%) and N-butyl-N'-ethyl thiourea (45%)	109-46-6 105-55-5 32900-06-4	Secondary	Medium Fast	6	Medium fast accelerator. It is an antiozonant for synthetic rubbers and ultra-accelerator for polychloroprene (CR). It is also a corrosion inhibitor.
Ekaland™ DBTU	N,N'-Dibutylthiourea	109-46-6	Secondary	Medium Fast	5	Next fastest thiourea in polychloroprene
Ekaland™ DOTTU	Di-ortho-tolylthiourea	137-97-3	Secondary	Medium Fast	4	Slow curing ultra-accelerator comparable DPTU but slightly faster. Slightly discoloring or staining. Acts as a corrosion inhibitor.
Ekaland™ DPTU	N,N'-Diphenylthiourea	102-08-9	Secondary	Medium Fast	1	Slowest thiourea for polychloroprene
ETU>DETU>DATU>DBTU>DOTTU>DPTU						

Phenoldisulfides

Vultac® 3	Poly-tert-amylphenol disulfide	68555-98-6	Secondary	Ultra Fast	9	Nitrosamine-free vulcanizing agent
Vultac® 5	Mixture of poly-tert-amylphenoldisulfide and silica	68555-98-6 112926-00-8	Secondary	Ultra Fast	1	75% by weight of ground Vultac 3 mixed with silica gel
Vultac® 710	Mixture of poly-tert-amylphenoldisulfide and stearic acid	68555-98-6 57-11-4	Secondary	Ultra fast	9	75% by weight of ground Vultac 3 mixed with stearic acid
Vultac® TB7	Poly-tert-butylphenol disulfide	60303-68-6	Secondary	Ultra Fast	9	Nitrosamine-free vulcanizing agent
Vultac® TB710	Mixture of poly-tert-butylphenoldisulfide and stearic acid	60303-68-6 57-11-4	Secondary	Ultra Fast	9	Nitrosamine-free vulcanizing agent

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Thiadiazoles						
Trade Name	**Chemical Name**	**CAS Registration Number**	**Type**	**Cure Speed**	**Form**	**Comments**
Echo® A	A blend of esters of 2, 5-dimercapto 1,3,4-thiadiazole	Proprietary	Secondary	Fast	1	Used in halogenated compounds CPE and CSM

Insoluble Sulfurs

Insoluble Sulfurs						
Vulcanizing Agent HD-IS-7020	Insoluble Sulfur (20 % oil treated)	9035-99-8	-	-	2	Insoluble sulfur for low viscosity/durometer compounds where no bloom is required and is highly dispersible (HD)
Vulcanizing Agent HS-IS-7020	Insoluble Sulfur (20% oil treated)	9035-99-8	-	-	2	Standard grade of insoluble sulfur for stock where no bloom is required and is heat stable (HS)

Retarders

Diphenylamine						
Ekaland™ Nitroso	N-Nitrosodiphenylamine	86-30-6	-	-	7	Retarder used in high temerature vulcanization systems to control scorch. It is only organic acid retarder that can be used with sulfenamide accelerators.

Phthalimide						
Stangard® CTP	N-Cyclohexyl (thio) phthalimide	17796-82-6	-	-	2,4	True retarder as it reduces scorch, but does not effect cure rate or vulcanization properties
Stangard® PA	Phthalic Anhydride	85-44-9	-	-	1	Retarder that reduces scorch, but also reduces cure rate

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