

Hydrocarbon Resins (Petroleum Resins)

T-REZ, Neopolymer, Neoresin



ENEOS Materials Corporation

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[Product Classification and Application]

ENEOS Materials' hydrocarbon resins (T-REZ, Neopolymer and Neoresin) are thermoplastic hydrocarbon resins produced by polymerizing unsaturated hydrocarbons like diolefins and aromatic orefins. Those are employed as tackifier or modifier for hot-melt adhesive, tire, adhesive tape, paint, traffic paint, asphalt binder and so on.

T-REZ H series include hydrogenated alicyclic hydrocarbon resins by polymerizing DCPD type monomers, and hydrogenated alicyclic/aromatic hydrocarbon resins by DCPD/aromatic type monomers.

T-REZ R series include aliphatic hydrocarbon resins by polymerizing aliphatic C5 monomers and aliphatic/aromatic hydrocarbon resins made from aliphatic/aromatic monomers.

T-REZ Premium series are hydrocarbon resins made from DCPD, aliphatic and/or aromatic type monomers and demonstrate unique characteristics for specific quality requirements.

Neopolymer series are aromatic hydrocarbon resins by polymerizing aromatic C9 type monomers.

Neopolymer Premium series are modified aromatic hydrocarbon resins by polymerizing aromatic monomers and demonstrate unique characteristic for specific quality requirements.

Neoresin Premium series are DCPD/aromatic hydrocarbon resins made from DCPD and aromatic type monomers and provide excellent performance.



Hydrogenated

T-REZ H series

T-REZ Premium series

Hydrogenated hydrocarbon resins have advantages such as water white color, heat stability, weathering resistance and less smell categorizing as a high quality hydrocarbon resin.

T-REZ H series are applicable for various types of hot melt adhesive (HMA) applications including disposable paper diaper, packaging, automobile, and assembly. Those are compatible with base polymers including SIS, SBS, SBR, SEBS, EVA, polyisobutylene, butyl rubber, APP, APAO, and wax.

T-REZ Premium series demonstrate excellent value added performance in PP film or other application.

(Package type: 20 kg paper bag, 500 kg flexible container)

Grade	Monomer Type	Applications	Attributes	Unit	Typical value						Specification			
					Softening Point	Color (YI, 50wt% toluene sol.)	Thermal Color Stability (YI @175°C, 5h)	Aromaticity	Molecular Weight		Softening Point	Color (YI, 50wt% toluene sol.)	Thermal Color Stability (YI @175°C, 5h)	Aromaticity
									Mn	Mw				
					°C			%			°C			%
				Test Method	ASTM D6090	ASTM E313	ASTM D6605	TSTM 4030	GPC	GPC	ASTM D6090	ASTM E313	ASTM D6605	TSTM 4030
HA085	DCPD	EVA-HMA SIS-HMA SEBS-HMA	Excellent color Thermal color stability Low temperature flexibility		86.3	0.6	1.1	-	330	480	80.0 - 90.0	2.2 max	21.0 max	-
HA103	DCPD	EVA-HMA SIS-HMA SEBS-HMA	Excellent color Thermal color stability Balanced adhesive properties		103.7	0.4	1.2	-	370	560	100.0 - 106.0	2.2 max	21.0 max	-
HA105	DCPD	EVA-HMA SIS-HMA SEBS-HMA	Excellent color Thermal color stability Balanced adhesive properties		104.7	0.5	0.8	-	370	570	100.0 - 110.0	2.2 max	21.0 max	-
HA125	DCPD	EVA-HMA SIS-HMA SEBS-HMA	Excellent color Thermal color stability Excellent creep resistance		124.8	0.4	0.7	-	400	610	120.0 - 130.0	2.2 max	21.0 max	-
HB103	DCPD/C9	EVA-HMA SIS-HMA SBS-HMA	Excellent color Thermal color stability Balanced adhesive properties SBS compatibility		102.8	0.6	4.1	9.9	460	720	100.0 - 106.0	2.2 max	21.0 max	8.0 - 11.0
HB125	DCPD/C9	EVA-HMA SIS-HMA, Polyolefin based HMA	Excellent color Thermal color stability Excellent creep resistance		123.8	0.3	0.9	-	410	630	120.0 - 130.0	2.2 max	21.0 max	-
OP501	DCPD	BOPP CPP	Gas barrier, Shrinkage Transparency, Stiffness		138.3	0.6	-	-	410	610	135.0 - 145.0	2.2 max	-	-
PR801	DCPD/C9	EVA, SIS, SBS and SBR modification	Excellent compatibility		90.0	0.4	4.9	10.8	450	710	87.0 - 93.0	2.2 max	21.0 max	9.5 - 12.0
PR803	DCPD/C9	Tire tread (Eco Tire)	Excellent compatibility with SBR, Balanced Wet Grip & RR performance		102.4	0.5	-	10.0	460	720	100.0 - 106.0	2.2 max	-	8.0 - 11.0

Non-hydrogenated Aliphatic

Non-hydrogenated Aliphatic/Aromatic

T-REZ R series

T-REZ Premium series

T-REZ R series are compatible with base polymers including natural rubber, SIS, SBS, EVA, metallocene polyolefin elastomer, APP, APAO, polyisoprene, polyisobutylene and butyl rubber. Widely employed in pressure sensitive adhesive (PSA) such as PSA tape, rubber goods such as tire and non-tire, hot melt adhesives for packaging, bookbinding and assembly applications.

PR802 (T-REZ Premium series) is applied for improving specific rubber compounds.

(Package type: 20 kg paper bag, 500 kg flexible container)

Grade	Monomer Type	Main Applications	Attributes	Unit	Typical value					Specification		
					Softening Point	Color (Gardner, 50wt% toluene sol.)	Acid Value	Molecular Weight		Softening Point	Color (Gardner, 50wt% toluene sol.)	Acid Value
								Mn	Mw			
					°C		mgKOH/g			°C		mgKOH/g
				Test Method	ASTM D6090	ASTM D6166	TSTM 4021	GPC	GPC	ASTM D6090	ASTM D6166	TSTM 4021
RA100	C5	Tires, Rubber compounds	Green Tack		99.4	3.2	< 0.1	-	-	95.0 - 105.0	9.0 max	-
RB093	C5	NR-PSA SIS-PSA	General purpose		93.0	3.5	< 0.1	1050	2060	88.0 - 98.0	4.5 max	-
RB100	C5	NR-PSA	General purpose		99.0	3.0	< 0.1	1230	3070	95.0 - 105.0	9.0 max	-
RC093	C5	NR-PSA SIS-PSA	High compatibility Low temperature tack		93.0	3.4	< 0.1	890	1300	88.0 - 98.0	7.0 max	-
RC100	C5	NR-PSA SIS-PSA	High compatibility Balanced PSA performance		97.2	4.1	< 0.1	880	1310	95.0 - 105.0	7.0 max	-
RC115	C5	NR-PSA SIS-PSA	High compatibility High temperature shear strength		113.7	4.7	< 0.1	1080	2070	110.0 - 120.0	9.0 max	-
RD104	C5/C9	NR, SBR, SIS, SBS-PSAs EVA-HMA	Excellent compatibility with various base polymers		103.5	7.2	< 0.1	830	2460	99.0 - 109.0	10.0 max	-
RE100	C5	Hot melt traffic paint	Fluidity Thermal stability		98.7	3.5	0.70	1220	2900	95.0 - 103.0	5.0 max	0.50 - 0.90*1
PR802	C5/C9	Tire tread	High compatibility with SBR, Balanced Wet Grip & RR performance		88.1	5.5	-	730	1370	84.0 - 95.0	-	-

* 1 This specification is valid for product testing at the time of production.

Non-hydrogenated Aromatic

Neopolymer series

Neopolymer series are applicable for a wide range of fields, such as paints, printing inks, asphalt modifiers, adhesives, and rubber compounds. Those are soluble in various solvents and compatible with various substances including alkyd resins, rosins, SBS, SBR, and EVA.

(Package type: 25 kg paper bag, 500 kg flexible container)

Grade	Monomer Type	Main Applications	Attributes		Typical value					Specification		
					Softening Point	Color(Sol.) Gardner	Acid Value	Bromine Number	Molecular Weight (Mw)	Appearance	Softening Point	Color(Sol.) Gardner
					Unit	℃	mgKOH/g	g/100g			℃	
					Test Method	JXE6010	JXE6020	JIS K2501	JXE6060	JXE6200	JXE6022	JXE6010
L-90	C9	Tire, Rubber compounds	General purpose		95	4	< 0.1	15	1000	Pale yellow pellet	90 - 100	6 max
120	C9	Paints, Printing inks, Adhesives Asphalt modifiers	General purpose		120	3	< 0.1	15	1400	Pale yellow pellet	115 - 125	4 max
130	C9	Paints, Printing inks, Adhesives	General purpose		130	3	< 0.1	15	1600	Pale yellow pellet	125 - 135	4 max
140	C9	Paints, Printing inks, Adhesives Asphalt modifiers	General purpose		143	2	< 0.1	15	2100	Pale yellow pellet	140 - 150	3 max
150	C9	Printing ink, Asphalt modifiers	High softening point		154	2	< 0.1	15	2300	Pale yellow flake	150 - 160	3 max
170S	C9	Printing ink, Asphalt modifiers	High softening point		160	4	< 0.1	20	2200	Pale yellow flake	157 - 167	7 max

Non-hydrogenated Aromatic

Neopolymer Premium series

Neopolymer Premium series are aromatic hydrocarbon resins and demonstrate unique characteristics for specific quality requirements. Those are designed for excellent performance in printing inks, paints, asphalt modifiers, EVA base hot melt adhesives and engineering plastics. (Package type: 25 kg paper bag, 500 kg flexible container)

Grade	Monomer Type	Main Applications	Attributes		Typical value					Specification				
					Softening Point	Color(Sol.) Gardner	Acid Value	Bromine Number	Molecular Weight (Mw)	Appearance	Softening Point	Color(Sol.) Gardner	Acid Value	Hydroxyl Value
					Unit	°C	mgKOH/g	g/100g			°C		mgKOH/g	mgKOH/g
				Test Method	JXE6010	JXE6020	JIS K2501	JXE6060	JXE6200	JXE6022	JXE6010	JXE6020	JXE6070	JXE6390
160	C9	Gravure inks Offset inks, Engineering plastic modifier	Acid modified type High dye dispersibility Print gloss, Excellent drying performance		165	6	30*2	20	2500	Yellowish orange flake	160 - 170	7 max	25 - 35	-
E-100	C9	Engineering plastic modifier, Modified epoxy resin paints	Introduced polar group(-OH) High compatibility with epoxy and urethane resins		95	5	< 0.1	15	700	Yellowish brown flake	90 - 100	8 max	-	72 - 82
E-130	C9	Engineering plastic modifier, Modified epoxy resin paints	Introduced polar group(-OH) High compatibility with epoxy and urethane resins		125	5	< 0.1	15	900	Pale brown flake	120 - 130	8 max	-	40 min
M-1	C9	Offset inks	High solubility in AF solvents		135	9	< 0.1	40	1350	Pale brown flake	133 - 143	11 max	-	-
S	C9	EVA- HMA Asphalt binders SBS, SIS, SBR -PSAs	Excellent compatibility with various base polymer Heat stability		92	8*3	< 0.1	15	1100	Pale yellow pellet	90 - 97	9 max*3	-	-
S100	C9	EVA- HMA SBS, SIS, SBR -PSAs	Excellent compatibility with various base polymer Heat stability		102	6*3	< 0.1	15	1200	Pale yellow pellet	98 - 110	9 max*3	-	-
120S	C9	EVA-HMA SIS, SBS, SBR-PSAs	Light Color, Heat stability		120	1	< 0.1	15	1400	Pale yellow pellet	115 - 125	1 max	-	-
130S	C9	EVA-HMA	Excellent compatibility with various base polymer Heat stability		128	8*3	< 0.1	15	1300	Pale yellow pellet	123 - 133	9 max*3	-	-
120P	C9	Paint, Ink	Excellent compatibility with alkyd resins and solubility with various solvents		121	2	< 0.1	15	1250	Pale yellow pellet	115-125	4 max	-	-

*2 Test method JXE6070

*3 Color (Melt) Gardner

Non-hydrogenated Alicyclic/Aromatic

Neoresin Premium series

Neoresin Premium series have unique properties such as low molecular weight & high softening point.

It enhances Cut& Chip performance for OTR / Truck Bus / Construction tire.

(Package type: 20 kg paper bag, 500 kg flexible container)

Grade	Monomer Type	Main Applications	Attributes		Typical value				Specification	
					Softening Point	Acid Value	Iodine Number	Molecular Weight(Mw)	Appearance	Softening Point
					Unit	℃	mgKOH/g	g/100g		℃
				Test Method	JXE6010	JIS K0070	JXTG029	JXE6200	JXE6022	JXE6010
EP-140	DCPD/C9	Giant Tire tread, Rubber compounds	Cut & Chip performance		140	< 0.1	164	1320	Yellow brown flake	134 - 146

T-REZ Compatibility

		T-REZ R series								T-REZ H series						T-REZ Premium series			
Grade		RA100	RB093	RB100	RC093	RC100	RC115	RD104	RE100	HA085	HA103	HA105	HA125	HB103	HB125	OP501	PR801	PR802	PR803
Elastomer	Natural rubber	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	IR	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	IIR	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	EPDM	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Polybutene	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	SIS	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	SBS	PC	PC	PC	PC	PC	PC	C	PC	PC	PC	PC	PC	C	PC	PC	C	C	C
	SEBS	C	C	C	C	C	C	PC	C	C	C	C	C	PC	C	C	PC	PC	PC
	SBR	PC	PC	PC	PC	PC	PC	C	PC	PC	PC	PC	PC	C	PC	PC	C	C	C
	CR	I	I	I	I	I	I	PC	I	I	I	I	I	PC	I	I	PC	PC	PC
	NBR	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
EVA	EVA (high VA)	PC	PC	PC	PC	PC	PC	C	PC	PC	PC	PC	PC	C	C	PC	C	C	C
	EVA (low VA)	PC	PC	PC	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Natural tackifier	Rosin ester	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Terpene resin	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Polyolefin	PE	C	C	C	C	C	C	PC	C	C	C	C	C	PC	C	C	PC	PC	PC
	PP	C	C	C	C	C	C	PC	C	C	C	C	C	PC	C	C	PC	PC	PC
	APP	C	C	C	C	C	C	PC	C	C	C	C	C	PC	C	C	PC	PC	PC
	APAO	C	C	C	C	C	C	PC	C	C	C	C	C	PC	C	C	PC	PC	PC
Vinyl resin	PS	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Polyvinyl chloride	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Wax	Paraffin wax	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Microcrystalline wax	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	PE wax	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Sasol wax	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

T-REZ/Polymer = 50/50 (wt.%/wt.%)

C : Compatible

PC : Partially Compatible

I : Incompatible

Neopolymer Compatibility

		Grade	Neopolymer series					Neopolymer Premium series								
			L-90	120	130	140	150	170S	160	E-100	E-130	M-1	S	S100	120S	130S
Elastomer	Natural rubber	C	C	C	PC	PC	PC	I	C	C	C	PC	PC	C	C	C
	SBR	C	C	C	C	PC	PC	I	C	C	C	C	C	C	C	C
	CR	C	C	C	C	PC	PC	I	C	C	C	C	C	C	C	C
	Chlorinated rubber	C	C	C	C	C	C	I	C	C	C	C	C	C	C	C
Drying oil	linseed oil	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Soybean oil	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Safflower oil	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Tall oil	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Castor oil	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Wood oil	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Alkyd resin	Short to long oil type soybean oil-modified resin	C	C	PC	PC	I	I	I	C	C	C	C	C	C	C	C
	Short oil type linseed oil-modified resin	C	C	PC	PC	I	I	PC	C	C	C	PC	PC	C	PC	C
	Medium to long type linseed oil-modified resin	C	C	C	C	I	I	PC	C	C	C	C	C	C	C	C
	Short oil type safflower oil-modified resin	C	PC	PC	PC	I	I	PC	C	C	C	PC	PC	PC	PC	C
	Medium oil type safflower oil-modified resin	C	C	C	C	I	I	PC	C	C	C	PC	PC	C	PC	C
	Phenol modified resin	C	C	C	C	I	I	PC	C	C	C	PC	PC	C	PC	C
Rosin	Wood rosin WW	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Hardened rosin	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Ester gum	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Rosin modified maleic acid resin	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Rosin modified phenolic resin	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Plasticizer	Dibutyl phthalate	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Diocetyl phthalate	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Butyl benzyl phthalate	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Tricresyl phosphate	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Chlorinated paraffin	C	C	C	C	C	C	PC	C	C	C	C	C	C	C	C

Neopolymer/Polymer = 50/50 (wt%/wt%)

C : Compatible

PC: Partially Compatible

I : Incompatible

Neopolymer Solubility

	Grade	Neopolymer series						Neopolymer Premium series								
		L-90	120	130	140	150	170S	160	E-100	E-130	M-1	S	S100	120S	130S	120P
Aromatic	Benzene	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	Toluene	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	Xylene	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Aliphatic	n-Hexane	S	S	S	PS	PS	PS	I	S	S	S	S	S	S	S	S
	n-Heptane	S	S	S	PS	PS	PS	I	S	S	S	S	S	S	S	S
	Mineral sprit	S	S	S	S	S	S	I	S	S	S	S	S	S	S	S
Cycloaliphatic	Cyclohexane	S	S	S	S	S	S	I	S	S	S	S	S	S	S	S
	Tetralin	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ketone	Acetone	S	S	S	PS	PS	PS	S	S	S	S	S	S	S	S	S
	MIBK	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	MEK	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	Cyclohexanone	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Alcohol	Methanol	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Ethanol	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	IPA	I	I	I	I	I	I	I	PS	I	I	I	I	I	I	I
	Butanol	I	I	I	I	I	I	I	S	I	I	I	I	I	I	I
Ester	Methyl acetate	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	Ethyl acetate	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	Butyl acetate	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ether	Ethyl ether	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	Ethyl cello solve	S	PS	PS	PS	PS	PS	PS	S	S	S	S	S	PS	S	S
	Butyl cello solve	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Glycol	Ethylene glycol	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Propylene glycol	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Others	Nitropropane	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	Aniline	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	Diethyl amine	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	Monoethanolamine	I	I	I	I	I	I	I	PS	I	I	I	I	I	I	I
	Nitrobenzene	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	Carbon tetrachloride	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	Tetrachloride ethylene	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	Acetic acid	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I

Neopolymer/Solvent = 50/50 (wt%/wt%)

S : Soluble

PS : Partially Soluble

I : Insoluble

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