

PLASTICIZERS/PVC STABILIZERS

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# ADK CIZER ADK STAB

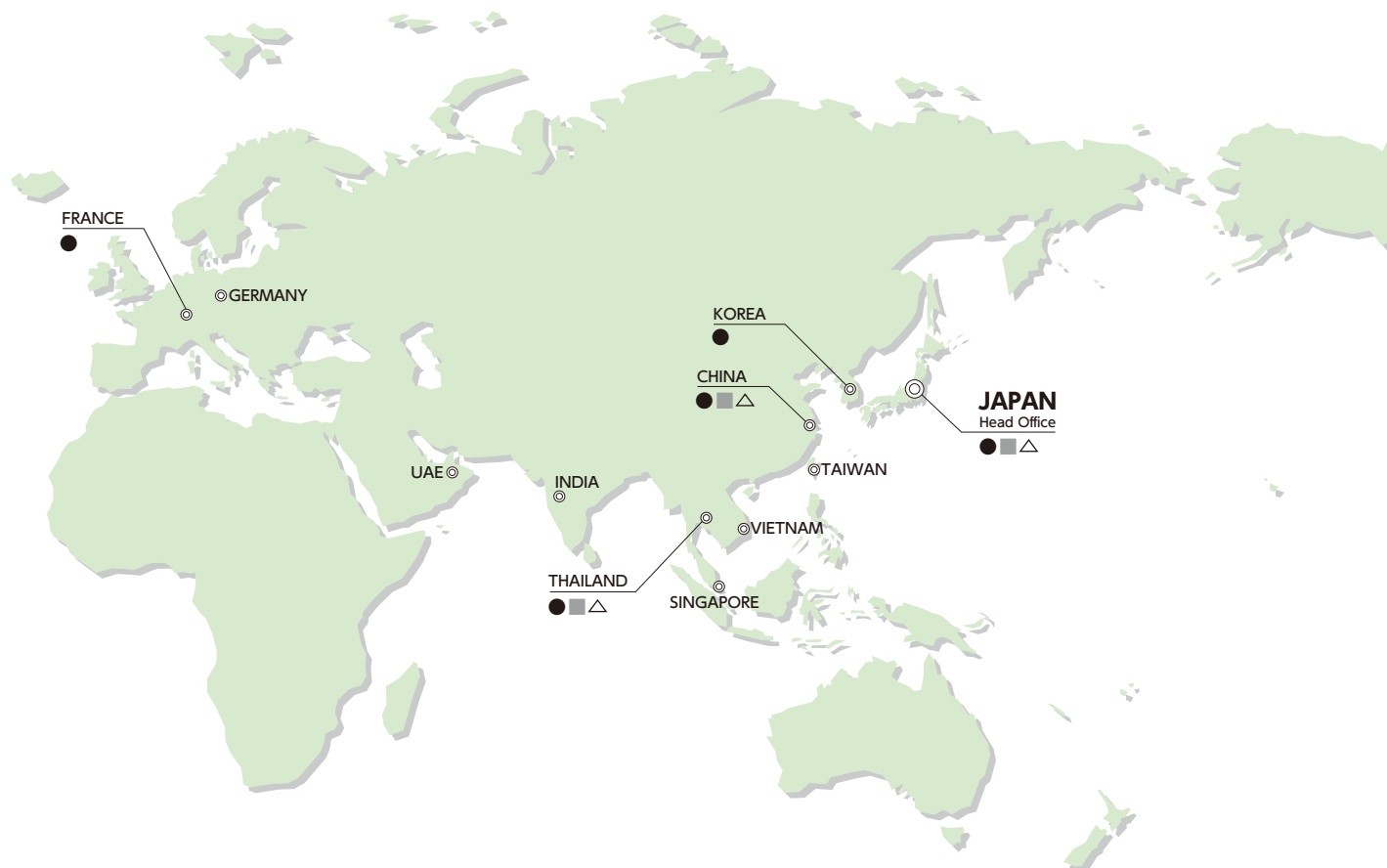
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Product list

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# ADK CIZER ADK STAB

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〈MANUFACTURING SITE〉

●=PVC STABILIZERS(Powder) ■=PVC STABILIZERS(Liquid)

△=PLASTICIZERS

ADEKA has a large variety of polymer additives.

Please ask our sales section for more detail.

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# ADK CIZER Plasticizers

## 1 Epoxy Plasticizers

Epoxy plasticizers have both function, stabilization and plasticizing effects for PVC resin. ADK CIZER O-130P is a typical epoxidized soybean oil plasticizer used for general purpose.

ADK CIZER	Composition	Viscosity mPa · s /25°C	Specific Gravity 25/25°C	Color APHA	Acid value KOH mg/g	Oxirane Oxygen %	Flash point °C	Freezing point °C	SP	Packaging (kg)	
										C/N	D/M
<b>O-130P</b>	Epoxidized soybean oil	350	0.993	160	0.3	6.7	300	5	9.0	18	200
<b>O-180A</b>	Epoxidized linseed oil	750	1.036	140	0.3	9.1	308	-2	9.3	18	200

ADK CIZER	Selection criteria																				
	Characteristics										Applications										
	Compatibility	Plasticizing efficiency	Heat stability	Low volatility	Heat aging stability	Resistance to water extraction	Resistance to solvent extraction	Electrical insulation property	Non migration		Processability	Film and sheet	Food packing film	Agricultural film	Electric wire & cable	Medical parts	Rigid PVC	Blow bottle	Gasket	Hose/Tube	Injection molding
ABS									PS												
<b>O-130P</b>	+	+	++	++	++	+	+	+	++	+	+	++	++	++	++	+	+	++	++	+	++
<b>O-180A</b>	+	+	++	++	++	+	+	+	++	+	+	++	++	+	++	++	++		+	+	+

++ = Excellent + = Good

## 2 Heat-Resistant Plasticizers

Heat-resistant plasticizers provide excellent in heat aging stability, volatility and electrical insulation property. They are mainly used for wire & cable, automotive upholstery and etc.

ADK CIZER	Composition	Viscosity	Specific Gravity 25/25°C	SP	Acid Value (KOHmg/g)	Flash point	Packaging (kg)	
							C/N	D/M
<b>C-8</b>	Trimellitate Tri octyl	220	0.990	8.9	0.1	242	17	200
<b>C-880</b>	Trimellitate Tri n-alkyl	100	0.997	8.9	0.1	214	17	200
<b>UL-80</b>	Tetra octyl pyromellitate	450	0.993	8.6	0.2	264	17	-

## 3 Anti-static Plasticizers

Anti-static Plasticizers are suitable for flooring, curtain, hose, foot wear, and so on.

ADK CIZER	Composition	Viscosity mPa · s /25°C	Specific Gravity 25/25°C	SP	(Plasticizer : 50phr)		Packaging (kg)	
					VR (Ωcm)	SR (Ω)	C/N	D/M
<b>LV-70</b>	Anti-static agent	250	1.083	/	/	/	18	/
<b>LV-808</b>	Adipic acid ester type	18	0.996	8.8	2.2×10 <sup>8</sup>	3.1×10 <sup>8</sup>	17	190
<b>LV-848</b>	Phthalate type	50	1.01	9.1	2.2×10 <sup>9</sup>	3.6×10 <sup>9</sup>	17	200

ADK CIZER LV-70 is used in combination with ADK CIZER LV-808 or LV-848 to achieve maximum results. ADK CIZER LV-70 can be used in combination with other plasticizer.

(DOP→1.5×10<sup>12</sup> 1.0×10<sup>13</sup>)

## 4 Polymeric Plasticizers

Polymeric plasticizers provide excellent resistance to extraction by oil and solvent, excellent low volatility and high aging stability for flexible PVC. They are mainly used for heat resistance cable compounds, gasket and other applications required resistance to oil extraction.

Viscosity	ADK CIZER	Composition	Viscosity mPa · s/25°C	Specific Gravity 25/25°C	SP	Reflective Index 25°C	Color APHA	Freezing point	Plasticizing efficiency	Characteristics	Packaging (kg)	
											C/N	D/M
Low ↑ ↓ High	<b>PN-7650</b>	Adipic acid polyester	3,000	1.081	9.2	1.467	70	-22	1.10	Low temperature property, Oil resistance, Non migration PS	18	200
	<b>PN-1030</b>		3,000	1.064	9.0	1.464	90	-25	1.23	Weatherability, Non migration ABS/PS, Electrical resistivity	18	200
	<b>PN-1430</b>		3,000	1.061	9.0	1.467	130	-25	1.10	Low temperature property, Non migration ABS/PS	18	200
	<b>HPN-3130</b>		3,000	1.036	8.6	1.468	125	-18	1.21	Low temperature property, Non migration ABS/PS	18	200
	<b>PN-400</b>		4,000	1.078	9.3	1.465	140	5	1.22	Oil resistance	18	210
	<b>PN-280</b>		6,500	1.067	9.1	1.465	120	-17	1.28	Weatherability, Non migration ABS/PS, Electrical resistivity	18	190

Viscosity	ADK CIZER	Selection criteria																	
		Characteristics							Applications										
		Low temperature property	Low volatility	Heat aging stability	Weatherability	Oil resistance	Non migration		Anti-Migration electric wires	Anti-Migration leather	Gasket	Boots	Tape	Hose/tube	Sealant	Paints/ Adhesives	Marking film	Automotive	
							ABS	PS										exterior	Interior
Low ↑ ↓ High	<b>PN-7650</b>	+	++	++		++		++	+	++	++	+			+			++	
	<b>PN-1030</b>		+	+	+		++	++	++	++	+	+				+	+		
	<b>PN-1430</b>	+	++	++	+	++	++	++	++	++		+	+		+	+	+	+	
	<b>HPN-3130</b>	++	++	++	+	++	++	++	++	++	+		+		+	+	+	+	
	<b>PN-400</b>		++	++		++		++			+		+		++				
	<b>PN-280</b>		++	++	+	++	++	++	++	+	+		+		+	+	+		

++ = Excellent + = Good

## Plasticizers properties of composition [Composition] PVC (KV=67) 100/Ba-Zn Stabilizer 2.5/Plasticizer 50

Plasticizer		Mechanical Strength (30°C)			Plasticizing efficiency	Heat aging stability (condition-1)				Heat aging stability (condition-2)			
		100% modulus	Tensile strength	Elongation		Volatiles loss	100% modulus	Tensile strength retention	Elongation retention	Volatiles loss	100% modulus	Tensile strength retention	Elongation retention
		MPa	MPa	%		%	MPa	%	%	%	MPa	%	%
ref.	DOP	8.4	19.0	380	1.00	3.7	11.3	104	85	33.5	/	185	13
	DUP	9.3	20.1	380	1.09	0.4	9.2	100	99	6.0	13.6	126	58
	DOA	7.6	17.1	420	0.86	19.6	20.0	112	68	/	/	/	/
ADK CIZER	O-130P	9.4	20.6	380	1.10	0	10.0	100	98	3.4	22.4	115	30
ADK CIZER	O-180A	9.9	21.1	370	1.10	0	10.0	100	101	3.2	/	119	21
ADK CIZER	PN-280	12.3	22.1	340	1.28	0	12.3	97	100	6.7	15.4	93	64
ADK CIZER	PN-400	11.8	22.4	350	1.22	0	11.9	100	101	6.2	14.5	103	66
ADK CIZER	PN-1030	11.2	23.1	360	1.23	0	11.0	101	101	6.7	13.8	100	67
ADK CIZER	PN-1430	10.2	22.4	380	1.10	0	10.1	100	100	6.3	12.1	98	67
ADK CIZER	PN-7650	9.9	21.6	360	1.10	0	9.6	99	100	6.8	12.2	100	65
ADK CIZER	HPN-3130	10.2	23.0	380	1.21	0	10.0	101	101	6.2	12.1	98	67
ADK CIZER	C-8	11.3	21.8	370	1.20	0	11.4	100	100	5.7	14.0	99	85
ADK CIZER	C-880	11.4	21.3	370	1.20	0	11.4	101	101	2.0	12.3	101	96
ADK CIZER	UL-80	12.2	22.1	360	1.28	0	12.2	100	102	0.8	12.9	102	100
Notes		Tensile speed : 200mm/min Dumbel type : No.2(1mm)				Gear oven : 100°C × 120hrs				Gear oven : 136°C × 168hrs			

Plasticizer		Low Temp. property	Electrical insulation property	Oil resistance				Water resistance		Migration		Compatibility	
		Tf	VR(30°C)	Extracted volume	100% modulus	Tensile strength retention	Elongation retention	Absorbed moisture	Extracted moisture	ABS	Poly Styrene	70°C, 100%RH ×168hrs	Room Temp. 3 months
		°C	Ωcm	%	MPa	%	%	%	%				
ref.	DOP	-25	1.0×10 <sup>12</sup>	17.7	20.7	133	40	1.8	0.2	--	--	++	++
	DUP	-34	1.1×10 <sup>11</sup>	10.8	16.0	118	45	/	/	--	--	+	++
	DOA	-53	4.3×10 <sup>10</sup>	/	/	/	/	3.7	0.4	--	--	+	+
ADK CIZER	O-130P	-14	4.9×10 <sup>11</sup>	9.8	20.3	119	57	2.9	0.0	-	+	--	+
ADK CIZER	O-180A	-5	7.8×10 <sup>11</sup>	9.4	19.3	120	54	3.2	0.2	-	+	--	+
ADK CIZER	PN-280	-1	7.9×10 <sup>11</sup>	1.1	15.6	104	90	3.9	0.1	++	++	+	++
ADK CIZER	PN-400	-7	1.1×10 <sup>11</sup>	0.4	14.7	97	98	3.7	0.1	+	++	+	++
ADK CIZER	PN-1030	-6	7.5×10 <sup>11</sup>	2.1	15.4	105	83	/	/	++	++	+	++
ADK CIZER	PN-1430	-12	2.7×10 <sup>11</sup>	1.3	11.6	110	85	/	/	++	++	+	++
ADK CIZER	PN-7650	-8	1.0×10 <sup>11</sup>	0.8	11.1	104	96	/	/	+	++	+	++
ADK CIZER	HPN-3130	-15	2.5×10 <sup>11</sup>	1.1	12.1	104	83	/	/	++	++	+	++
ADK CIZER	C-8	-17	5.2×10 <sup>12</sup>	8.1	19.8	103	59	1.4	0.1	++	-	++	++
ADK CIZER	C-880	-26	5.4×10 <sup>11</sup>	11.3	21.0	102	49	1.5	0.1	+	-	+	+
ADK CIZER	UL-80	-15	9.0×10 <sup>12</sup>	6.1	17.1	102	75	1.6	1.2	++	+	+	+
Notes		Clash & berg	500 Volt	ASTM No2 oil : 100°C × 96hrs				Distilled water dipping : 100°C × 96hrs		++ : Excellent + : Good - : Average -- : Poor		++ : Excellent + : Good - : Average -- : Poor	

## 5 Plasticizers for Rubbers

Plasticizers for rubbers have good low temperature properties and high heat aging stability. They are suitable for applications such as automotive tube, hose, conveyor belt and important functional parts. Polymeric plasticizers for PVC are also used for rubbers.

ADK CIZER	Composition	M.N	Viscosity mPa · s /25°C	Specific Gravity 25/25°C	Color APHA	Flash point °C	Freezing point °C	SP	Characteristics	Packaging (kg)	
										C/N	D/M
<b>RS-107</b>	Adipic acid ester type	434	20	1.020	60	215	-47	9.2	General use	18	200
<b>RS-700</b>	Polyetherester type	approx. 550	30	1.005	80	221	-53	8.9	Low temperature property Heat resistance	17	200
<b>RS-735</b>	Polyetherester type	approx. 850	80	1.043	120	252	-8	9.2	Low temperature property Super heat resistance	18	200
<b>RS-830</b>	Polyetherester type	510	136	1.155	120	260	-24	9.9	Super heat resistance Oil resistance	18	200

ADK CIZER	Selection criteria												
	Characteristics					Rubber							
	Heat resistance	Low temperature property	Oil resistance	Resistance to water extraction	Electrical resistivity	Nitrile rubber	Chloroprene rubber	Epichlorohydrin rubber	Acrylic rubber	Hydration NBR	Chlorination Polyethylene	Chlorosulfonic PE	Polyurethane
<b>RS-107</b>	-	+	--	--	-	+	+	+	+	+	+	+	+
<b>RS-700</b>	+	+	--	--	-	+	+	+	+	+	+	+	+
<b>RS-735</b>	++	+	-	--	-	+	/	+	+	/	/	/	/
<b>RS-830</b>	+	-	+	+	-	+	/	+	++	+	+	+	+

++ = Excellent    + = Good    - = Average    -- = Poor

### Plasticizers based on Rubbers' properties

[Composition-1] NBR (AN=41%) 100/Carbon (FEF) 50/ZnO 5/Sulfur 0.3/Stearic acid 1/Accelerator 3.5/Plasticizer 20

Plasticizer		Mechanical Strength				Heat aging stability				Low Tmp. flexibility
		Hardness	100% modulus	Tensile strength	Elongation	Volatile loss	Hardness change	Tensile strength retention	Elongation retention	Brittle Temperature
		JIS A	MPa	MPa	%	%		%	%	°C
<i>ref.</i>	w.o Plasticizer	74	3.2	23.6	560	-1.4	+5	86	64	-26
	DOP	61	1.5	20.7	680	-9.8	+14	107	59	-31
ADK CIZER	<b>RS-107</b>	60	1.4	20.6	680	-3.2	+8	103	68	-40
ADK CIZER	<b>RS-700</b>	60	1.4	20.6	670	-2.7	+6	110	77	-38
Notes		Cure condition : 150°C × 20min Tensile speed : 500mm/min Dumbel type : JIS No.3(2mm)				Gear oven : 120°C × 168hrs				

Plasticizer		Oil resistance (condition-1)				Oil resistance (condition-2)				Compatibility
		Extracted volume	Hardness change	Tensile strength retention	Elongation retention	Extracted volume	Hardness change	Tensile strength retention	Elongation retention	Room Temp.
		%		%	%	%		%	%	°C
<i>ref.</i>	w.o Plasticizer	-0.9	0	102	89	10.8	-7	94	95	Good
	DOP	-12.1	10	104	68	-1.6	3	101	86	Good
ADK CIZER	<b>RS-107</b>	-11.4	8	102	72	-1.6	3	102	89	Good
ADK CIZER	<b>RS-700</b>	-11.7	9	103	77	-1.7	3	93	88	Good
Notes		JIS No.1 Oil : 100°C × 70hrs				JIS No.3 Oil : 100°C × 70hrs				

Plasticizer		Mechanical Strength				Heat aging stability				Low Temp. flexibility
		Hardness	100% modulus	Tensile strength	Elongation	Volatile loss	Hardness change	Tensile strength retention	Elongation retention	Brittle Temperature
		JIS A	MPa	MPa	%	%		%	%	°C
<i>ref.</i>	<b>w.o Plasticizer</b>	75	5.4	15.7	230	-1.2	+5	95	96	-20
ADK CIZER	<b>RS-107</b>	73	5.5	13.5	220	-7.8	+8	99	78	-36
ADK CIZER	<b>RS-700</b>	71	4.4	13.4	240	-3.8	+6	90	92	-34
ADK CIZER	<b>RS-735</b>	72	4.4	13.1	230	-1.5	+4	95	100	-33
Notes		Cure condition : 175°C × 15min + 170°C × 240min Tensile speed : 500mm/min				Gear oven : 150°C × 70hrs				

Plasticizer		Oil resistance (condition-1)				Oil resistance (condition-2)				Compatibility
		Extracted volume	Hardness change	Tensile strength retention	Elongation retention	Extracted volume	Hardness change	Tensile strength retention	Elongation retention	Room Temp.
		%		%	%	%		%	%	
<i>ref.</i>	<b>w.o Plasticizer</b>	-2.6	-1	101	91	19.8	-15	87	109	Good
ADK CIZER	<b>RS-107</b>	-7.5	9	102	92	8.8	-10	92	110	Good
ADK CIZER	<b>RS-700</b>	-7.6	8	96	83	9.0	-9	96	108	Good
ADK CIZER	<b>RS-735</b>	-6.6	6	97	91	10.3	-8	92	109	Good
Notes		JIS No.1 Oil : 150°C × 70hrs				JIS No.3 Oil : 150°C × 70hrs				

## ADK STAB PVC stabilizers

### 1 General purpose stabilizers

ADK STAB	Composition	Appearance	Characteristics and Applications
<b>AC-series</b>	Ba-Zn	Liquid	Can be used from transparent to CaCO <sub>3</sub> filled formulations
<b>AP-series</b>	Ba-Zn	Powder	

### 2 Stabilizers for wire and cable

ADK STAB	Composition	Appearance	Characteristics and Applications
<b>NPS-309T</b>	Ba-Zn	Powder	For wires required excellent migration resistance using polymeric plasticizer
<b>RUP-100 series</b>	Ca-Mg-Zn	Powder	For wire and cables, Excellent electrical properties and superior heat stability to Lead stabilizers

### 3 Stabilizers for automotive upholstery

ADK STAB	Appearance	Characteristics and Applications
<b>CPL-series</b>	Liquid	Improvement of long term heat stability at moderate temperature
<b>CPS-series</b>	Powder	



## 4 Stabilizers for rigid PVC

ADK STAB	Composition	Appearance	Characteristics and Applications
RX-200 series	Ca-Zn	Powder	For rigid PVC by extrusion, Good heat stability as same as lead stabilizer
RX-300 series			For rigid PVC by injection moldings, Good heat stability and process ability

## 5 Stabilizers for PVC foam

ADK STAB	Composition	Appearance	Characteristics and Applications
OF-series	Ba-Zn	Powder	For general purpose
FL-series	Ba-Zn	Liquid	
BAP-series	—	Liquid	Cell-control agents for foaming

## 6 Stabilizers for dispersion PVC for wall paper

ADK STAB	Composition	Appearance	Characteristics and Applications
FL-series	K-Zn	Liquid	For PVC foam at low expansion for high filler formulations
FL-series	Ba-Zn		Quick expansion and excellent color(Whiteness)

## 7 Stabilizers for dispersion PVC for floorings

ADK STAB	Composition	Appearance	Characteristics and Applications
AC-300 series	Ba-Zn	Liquid	Excellent weatherability and prevent losing transparency in water absorption

## 8 Stabilizers for food approved & medical applications

ADK STAB	Composition	Appearance	Characteristics and Applications
SC-series	Ca-Zn	Liquid	Excellent initial color and transparency for general plastcized formulation
SP-series	Mg-Zn	Powder	For general purpose, Excellent performance as well as Ba-Zn stabilizers
30-series	Ca-Zn	Paste	Excellent initial color and transparency for general plastcized formulation

## 9 Organo Tin stabilizers

ADK STAB	Composition	Appearance	Characteristics and Applications
465L	Mercaptide	Liquid	Excellent heat stability,initial color and transparency
OT-1	Laurate		For rigid sheet and blow bottles

## NOTES

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Review SAFETY DATA SHEET(SDS) before using ADEKA products.

The data containing in this brochure are based on specific method and typical analysis.

The data containing in this brochure may be changed without notice.

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※Please ask our R&D or sales section for more detail.

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