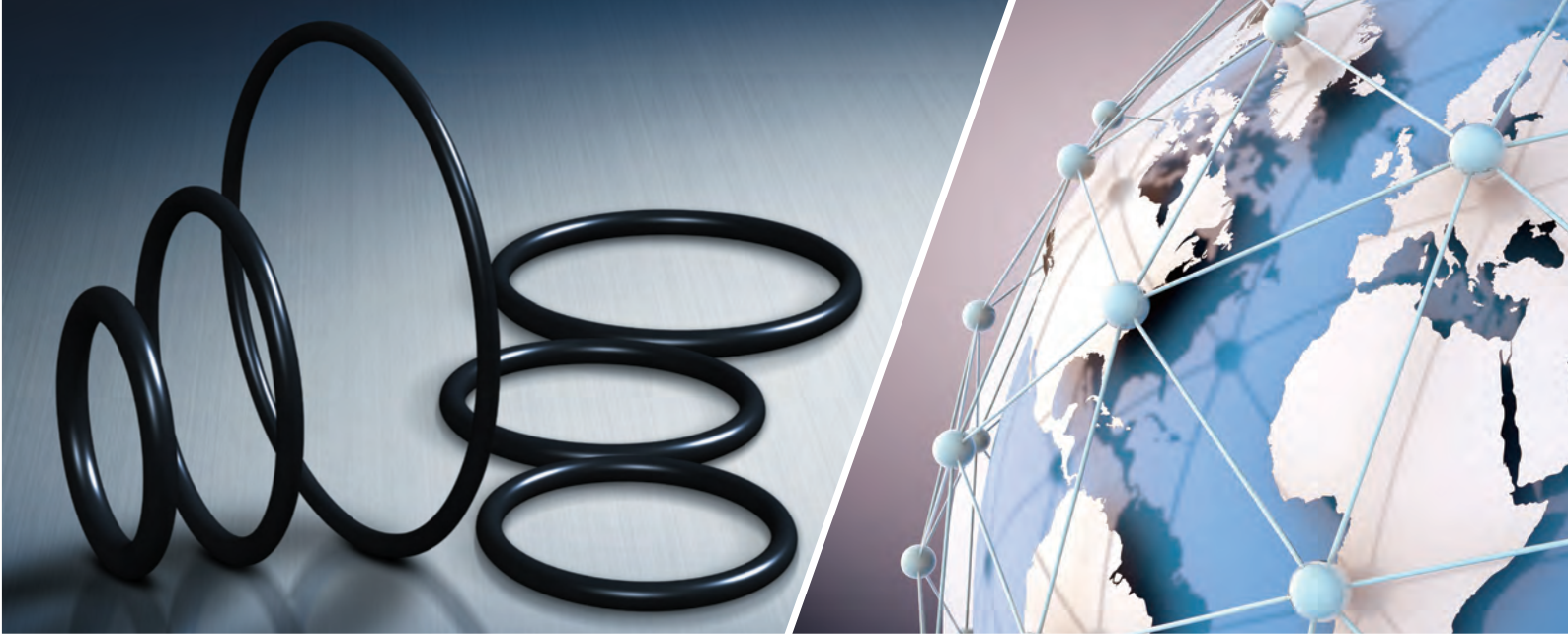




Positively Innovative



High Performance Fluoroelastomers

DAI-EL

DAIKIN INDUSTRIES, LTD.

DAI-EL fluoroelastomers stand up to harsh environments.

Fluorochemicals produced by DAIKIN INDUSTRIES, LTD. makes it easy to develop new products and applications.

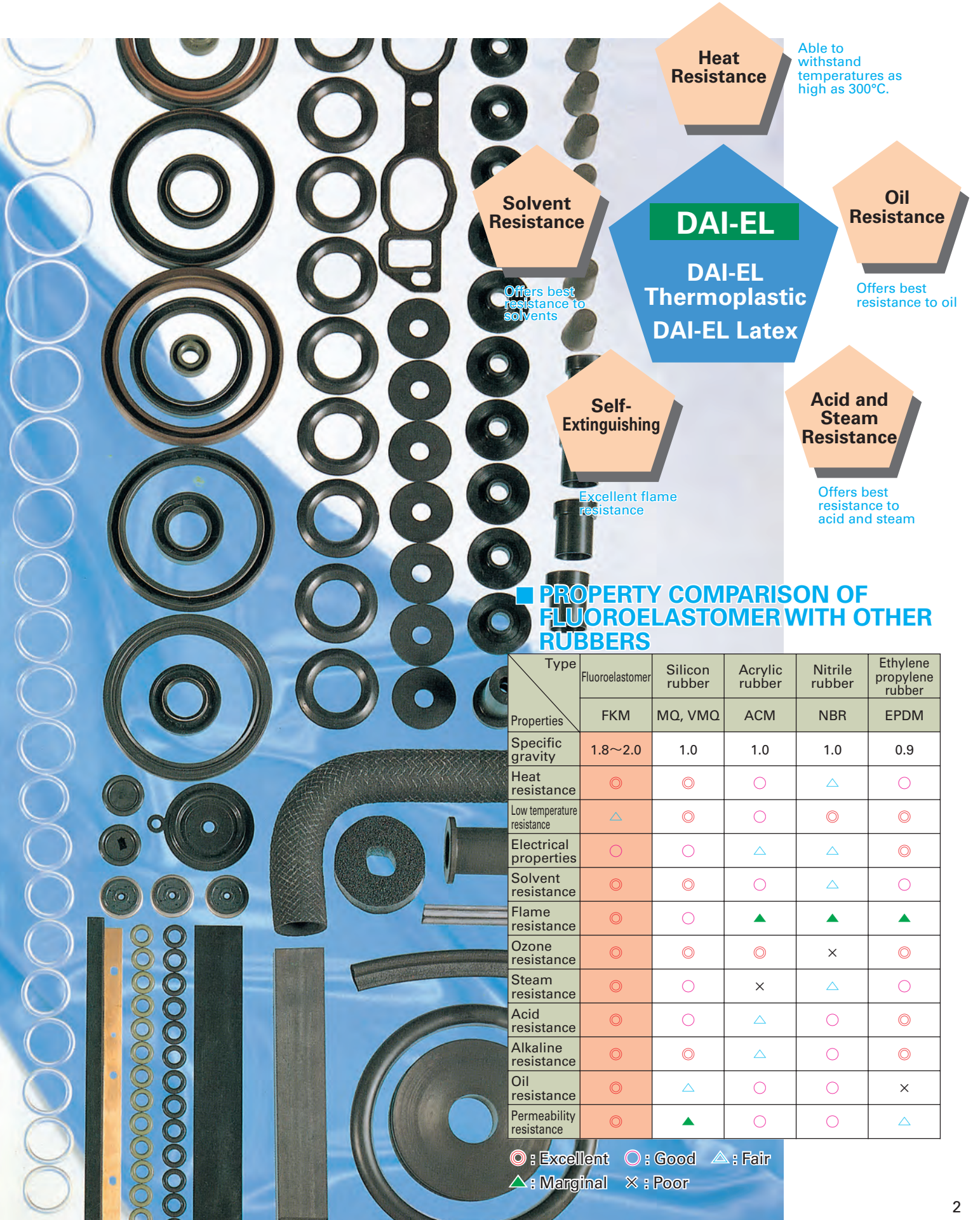
DAI-EL is a fluoroelastomer developed by DAIKIN INDUSTRIES, LTD., a pioneer in the fluorochemical industry. DAI-EL takes advantage of properties not found in other rubbers such as heat, oil and chemical resistance. DAI-EL plays an indispensable role in fast changing industries including automotive, chemical, office automation, and semiconductor manufacturing.

DAI-EL fluoroelastomers offers various types of unique products to satisfy your needs for,

- High fluorine content (71%)
- Low temperature flexibility
- Non post curing
- Thermoplastic
- Liquid for hardness modification
- Latex coating



DAI-EL Features



Heat Resistance

Able to withstand temperatures as high as 300°C.

Solvent Resistance

Offers best resistance to solvents

DAI-EL

DAI-EL Thermoplastic DAI-EL Latex

Oil Resistance

Offers best resistance to oil

Self-Extinguishing

Excellent flame resistance

Acid and Steam Resistance

Offers best resistance to acid and steam

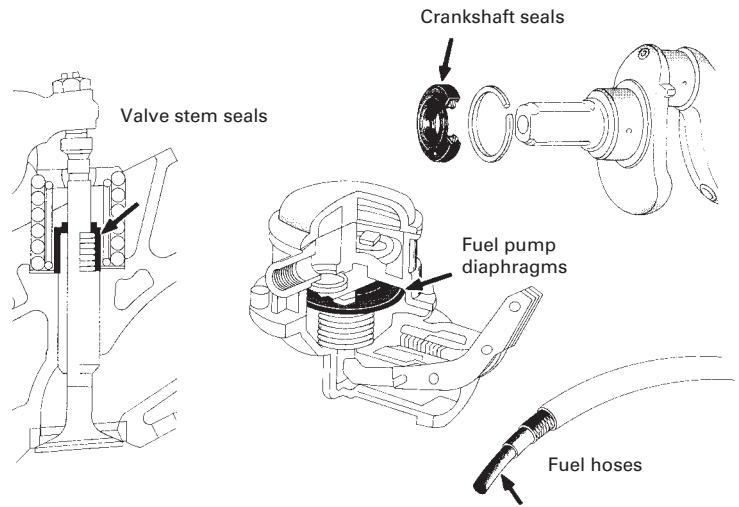
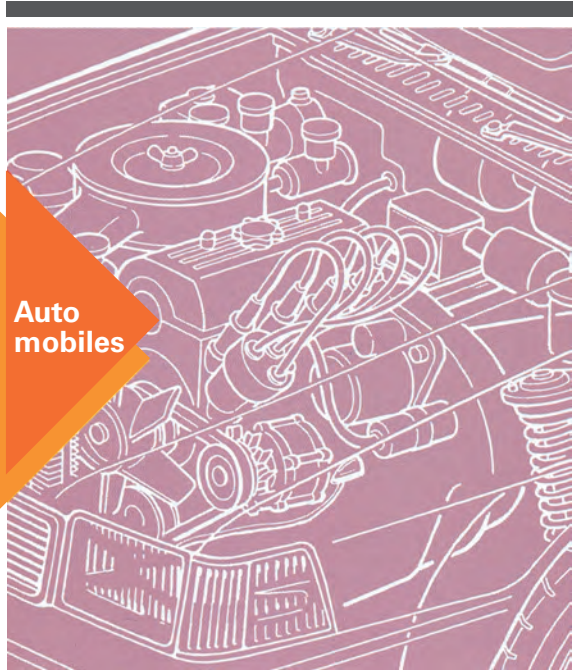
PROPERTY COMPARISON OF FLUOROELASTOMER WITH OTHER RUBBERS

Type	Fluoroelastomer	Silicon rubber	Acrylic rubber	Nitrile rubber	Ethylene propylene rubber
	FKM	MQ, VMQ	ACM	NBR	EPDM
Specific gravity	1.8~2.0	1.0	1.0	1.0	0.9
Heat resistance	◎	○	○	△	○
Low temperature resistance	△	○	○	○	○
Electrical properties	○	○	△	△	○
Solvent resistance	◎	○	○	△	○
Flame resistance	◎	○	▲	▲	▲
Ozone resistance	◎	○	○	×	○
Steam resistance	◎	○	×	△	○
Acid resistance	◎	○	△	○	○
Alkaline resistance	◎	○	△	○	○
Oil resistance	◎	△	○	○	×
Permeability resistance	◎	▲	○	○	△

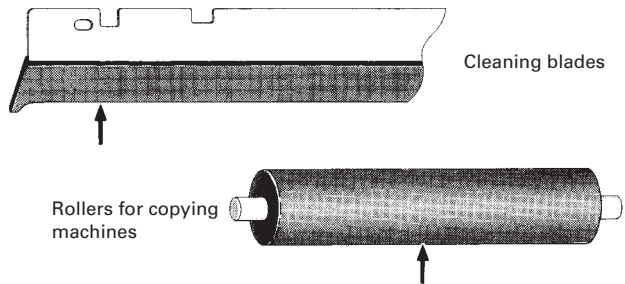
◎ : Excellent ○ : Good △ : Fair
 ▲ : Marginal × : Poor

DAI-EL's wide range of applications, including seals, hoses, electrical wire coatings, make it useful in a diverse assortment of fields.

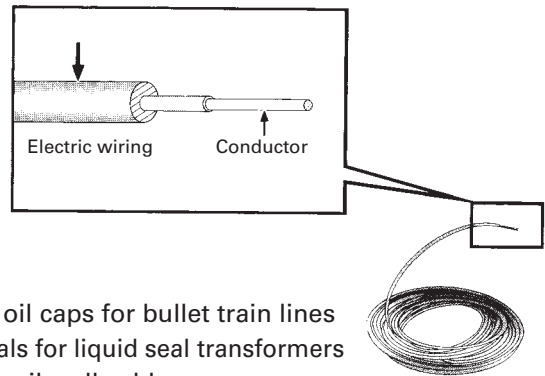
DAI-EL Application Examples



- Fuel hoses
- Fuel pump diaphragms
- Crankshaft seals
- Valve stem seals
- Bearing seals
- EGR hoses
- CAC valves
- Needle tips
- Engine wiring
- O-rings for fuel injection systems
- Filler hoses
- O-rings for car air-conditioners
- Intake gaskets



- Cleaning blades for copying machines
- Rollers for copying machines
- Computer gaskets
- Cooling hoses for main frame computers

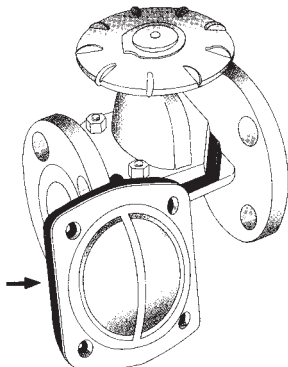


- Insulation oil caps for bullet train lines
- Venting seals for liquid seal transformers
- Jackets for oil well cables
- Oil and heat resistant electric wiring

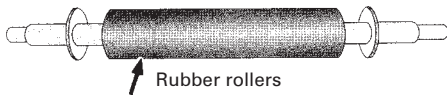
Omni-mixers
(surface coating of natural rubber)



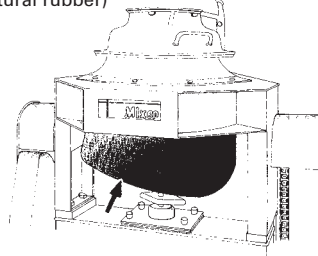
Sponge rubber



Diaphragms (applied in combination with fluorocarbon resin)



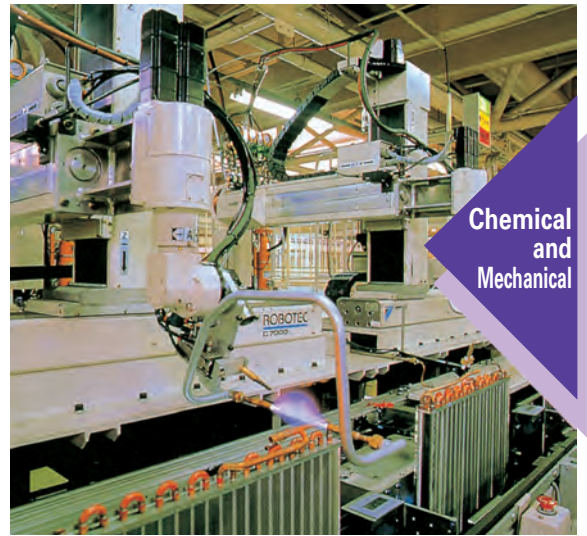
Rubber rollers



Couplers (O-ring)

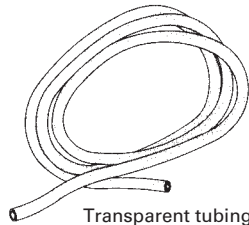
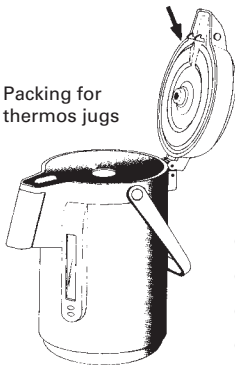
- O-rings for chemical pumps
- Seals for chemical pumps, flowmeters and piping
- Seals for gas piping
- Packing for high-temperature vacuum dryers
- Rollers for dyeing
- Coating for plating tools

- Seals for hydraulic and lubricating equipment
- Seals for dry cleaning equipment
- Seals for automatic packaging equipment
- Wringers for acid pickling
- Robot cables
- Solvent rollers



Chemical and Mechanical

Packing for thermos jugs



Transparent tubing

- Sanitary pipe packing
- Packing for thermos jugs
- Packing for pressure cookers
- Seals for plate-style heat exchangers
- Solenoid valve seals for automatic vending machines
- Seals for water boiling vessels
- Tubes



Food and Pharmaceuticals

- Stern tube seals
- Valve seats for butterfly valves
- Fuel hoses and gaskets
- Seals for rotating shafts
- Gaskets for hydraulic equipment
- Firewall seals



Ships and Aircraft

DAI-EL Types and Features

DAI-EL is available in the following raw rubber series which differ according to polymer composition and curing system.

Bisphenol Curable Grade

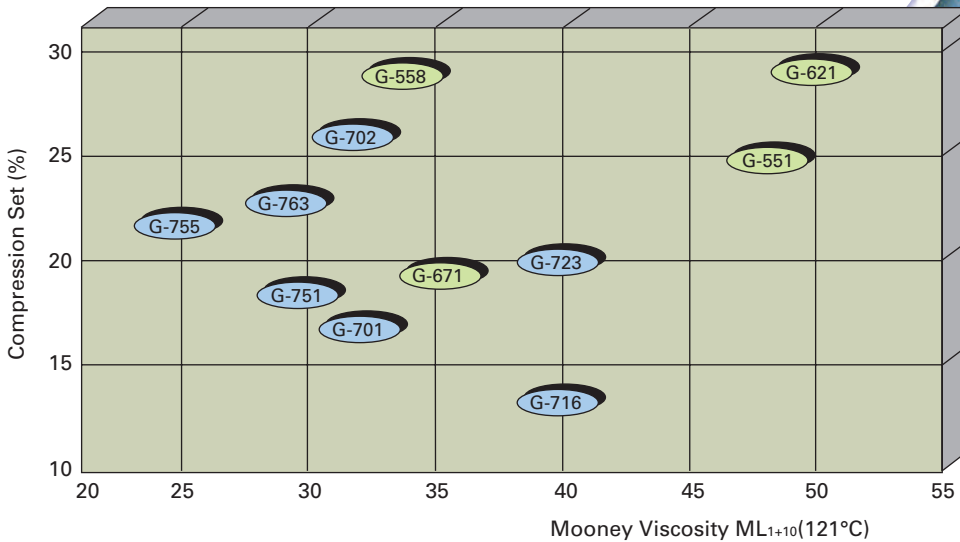
Offers minimal compression set and excellent sealing.

The copolymer type offers good compression set characteristics and the terpolymer type is able to withstand polarized solvents to realize a wide range of application.

Composition	Fluorine content (mass%)	Grade	Mooney viscosity ML ₁₊₁₀ (121°C)	Features
Copolymer	66	G-701	32	General purpose with excellent compression set
		G-702	32	General purpose with excellent elongation and tear strength
		G-716	40	Minimal compression set and fast vulcanization
		G-723	40	Excellent mold releasability, non-sticking
		G-751	30	General purpose with excellent metal bonding and compression set
		G-755	25	Extrusion of hose and tubing, etc.
Terpolymer	67	G-671	35	Excellent low-temperature sealing for O-rings
	69	G-551	48	Products with excellent balance of methanol and low-temperature resistance (G558:extrusion)
		G-555	34	Low gasoline permeability and good extrudability
		G-558	34	Low gasoline permeability and good extrudability
	71	G-621	50	General purpose with excellent solvent resistance

Above grades include curing system

Mooney Viscosity and Compression Set of Bisphenol Curable Grade



Peroxide Curable Grade

Offers excellent chemical and steam resistance. Offers good mechanical characteristics.

Below grades are for non-post cure

Composition	Fluorine content (mass%)	Grade	Mooney viscosity ML ₁₊₁₀ (121°C)	Features
Copolymer	66	G-801	37	Good low-temperature and elasticity characteristics
	69	G-952	40	Good solvent resistance and low-temperature characteristics
Terpolymer	71	G-901	48	Excellent solvent resistance
		G-902	19	Excellent solvent resistance, good mold flow
		G-912	56	Excellent solvent resistance, good compression set

Low Temperature Grade

Grade	Fluorine content (mass%)	Mooney viscosity ML ₁₊₁₀ (121°C)	Features
LT-302	64	30	Flexible up to -30°C, excellent low-temperature sealing

Diamine Curable Grade

Composition	Fluorine Content	Grade	ML ₁₊₁₀ (121C)	Features
Terpolymer	68	G-501NK	74	Good mechanical characteristics

Liquid Fluoroelastomer

Grade	Application
G-101	Processing aid / Hardness modification

Thermoplastic Elastomer

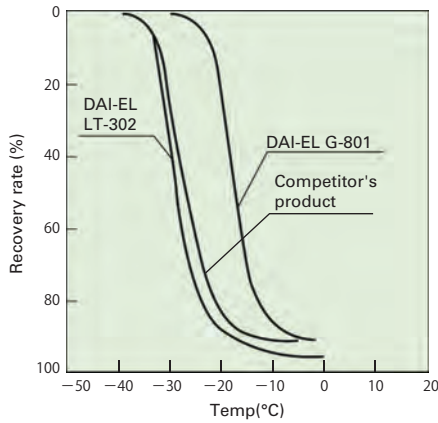
Grade	Melting Point	Features
T-530	220~230°C	Excellent transparency and chemical resistance

Fluoroelastomer with excellent low-temperature sealing characteristics

DAI-EL LT-302

DAI-EL LT-302 is a peroxide-curable fluoroelastomer with superior compression set. DAI-EL LT-302 offers improved low-temperature characteristics.

TR Test



Mechanical Characteristics of Cured FKM

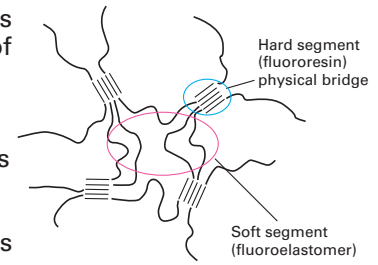
Item	Product type	LT-302	Competitor's Product
Fluorine content (mass%)		64	64
Specific gravity		1.80	1.80
100% tensile stress (MPa)		3.7	3.9
Tensile strength (MPa)		18.9	19.1
Elongation (%)		260	250
Hardness Shore A		67	67
Tearing strength (kN/m)		24	21
Low-temperature characteristics			
TR test TR10 (°C)		-31	-31
Gehman torsion test T50 (°C)		-32	-31
Compression set -30°Cx70h (%)		39	67
Fuel resistance (%)	(40°Cx70h volumetric increase)		
Fuel-C		13	13
Fuel-C+15% MeOH		37	40
Fuel-C+10% MTBE		19	19

Thermoplastic fluoroelastomer

DAI-EL Thermoplastic

DAI-EL Thermoplastic is a polymer consisting of fluoroelastomer and fluoroelastomer.

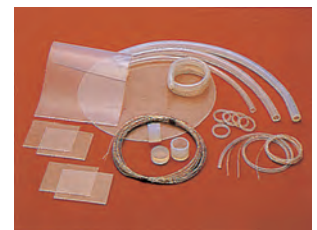
A unique feature of DAI-EL thermoplastic is that it can be formed like a thermoplastic while having properties similar to those of a fluoroelastomer.



DAI-EL Thermoplastic Concept Drawing

Features

- Good transparency
- Excellent chemical resistance
- Low extractable substance
- Recyclable



Application examples

Fluoroelastomer Latex

DAI-EL Latex

DAI-EL Latex takes advantages of superior DAI-EL characteristics such as resistance to heat, chemicals, oils and weather. DAI-EL latex provides effective protection for metal and surface improvement for textile binders and ordinary rubber. It can be applied by impregnation and spray-coating techniques.

Features

- Film coating provides same resistance to heat, chemicals, oils and weather.
- Grades are available for self lubrication and non-adhesive application.



Application examples

DAI-EL Properties

1 Heat Resistance

DAI-EL can withstand atmospheric temperatures as high as 230°C for an extended period of time or 300°C for a limited period of time. Elongation and tensile strength change at temperatures ranging from 200 to 280°C after 70 hours of heat treatment are shown in figures 1 and 2. Bisphenol-cured G-701 can withstand continued use at temperatures up to 230°C, while peroxide-cured G-902 can withstand up to 200°C.

Fig. 1

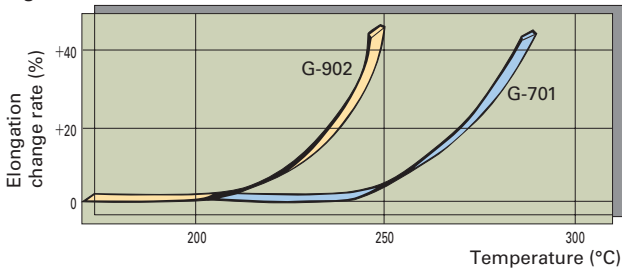
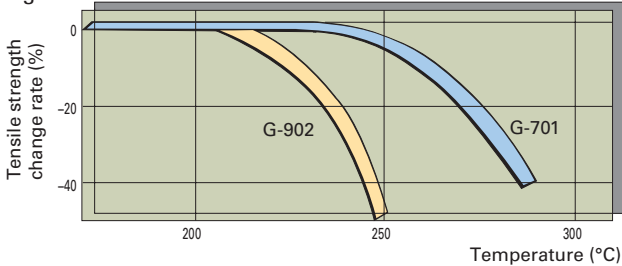


Fig. 2



2 Mechanical Properties

Figures 3 through 5 show tensile strength, elongation and hardness variations according to temperature.

Fig. 3

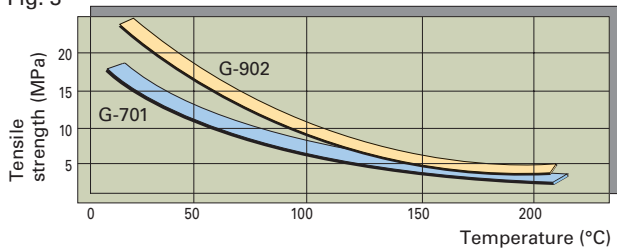


Fig. 4

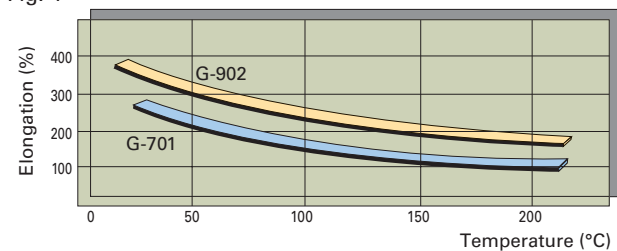
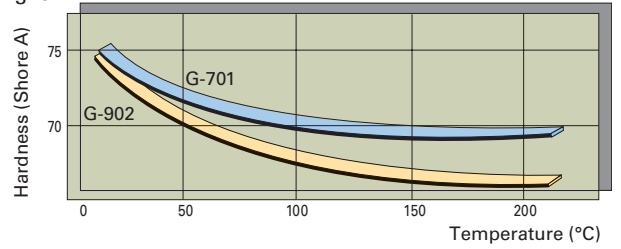


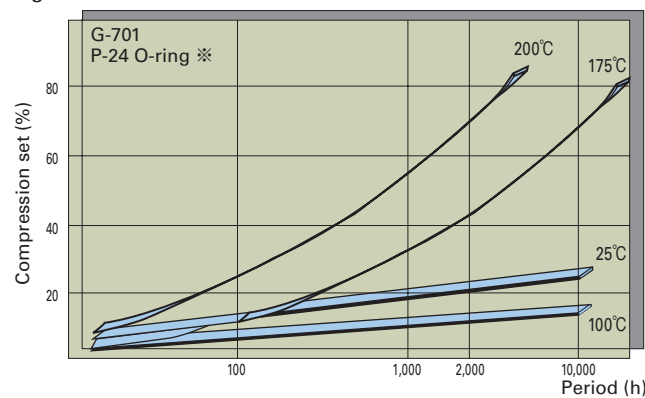
Fig. 5



3 Compression Set

Fig. 6 shows the correlation of compression set and heat treatment time. DAI-EL maintains sufficient sealing for a minimum of 2,000 continuous hours at 200°C.

Fig. 6

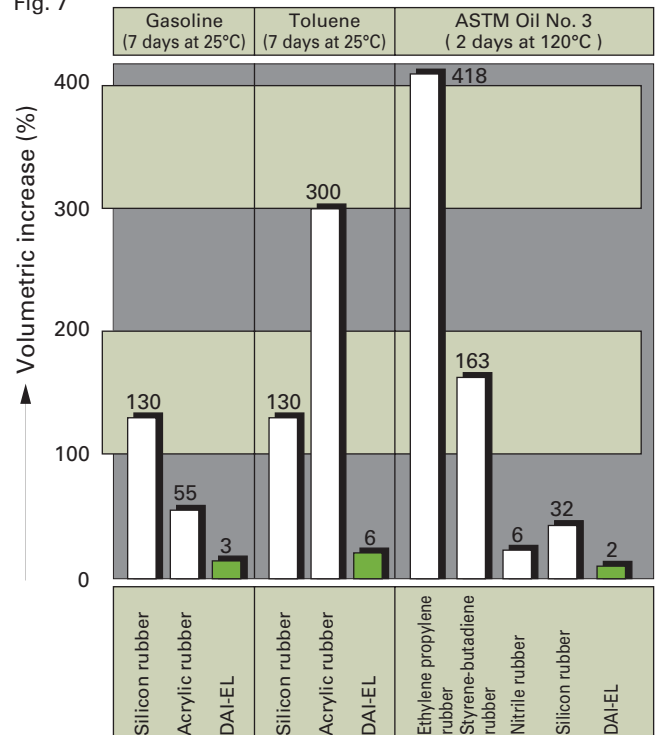


※ ID=24.5mm φ, Cross section 3.5mm φ

4 Oil and Solvent Resistance

DAI-EL offers superior resistance to oil and solvents. Fig. 7 gives a comparison of oil resistance with other heat resistant rubbers.

Fig. 7



5 Chemical Resistance

As indicated by table 1, DAI-EL exhibits strong resistance to alkalines and inorganic acids such as hydrochloric and sulfuric acid. Peroxide-cured products of G-800 and G-900 series exhibit strong resistance to steam and inorganic acids.

Table 1 Volumetric increase (%)

	DAI-EL G-801	DAI-EL G-902	DAI-EL G-701
Hydrochloric acid (37%) 80°Cx70h	1.0	0.9	34
Nitric acid (60%) 80°Cx70h	3.1	1.4	4.5
Sulfuric acid (98%) 80°Cx70h	0.8	0.5	4.0
Caustic soda (20%) 80°Cx70h	0.3	1.2	Surface dissolution
Glacial acetic acid 25°Cx70h	121	42	120
Water vapor 150°Cx70h	3.2	2.5	8.2

6 Steam Resistance

DAI-EL G-800 and G-900 Series offer superior resistance to steam. Fig. 8 shows tensile strength change rate, and fig. 9 volumetric change rate in comparison with silicon rubber.

Fig. 8 Tensile strength change rate for 165°C steam

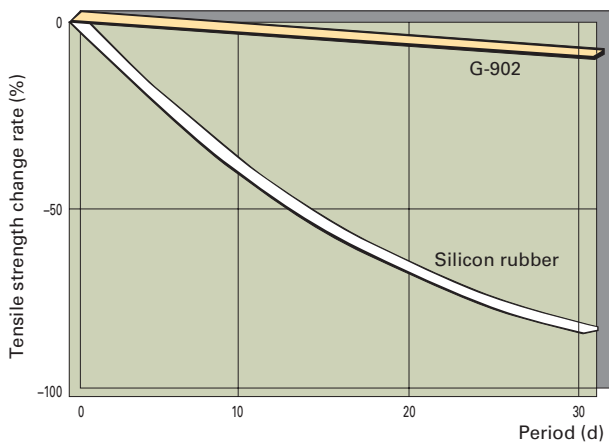
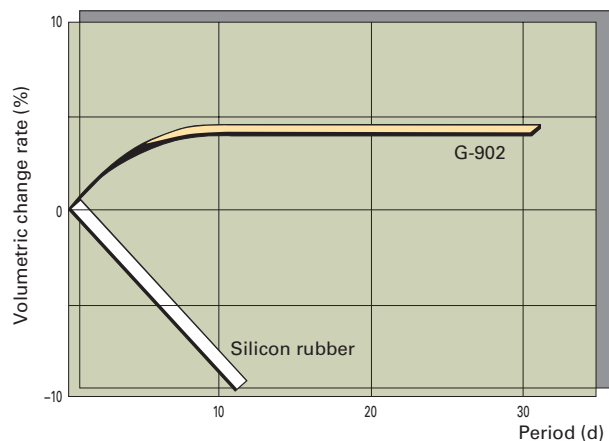


Fig. 9 Volumetric change rate for 190°C steam



7 Oil and Chemical Resistance

Volumetric change rates for various liquids are given in table 2.

Table 2

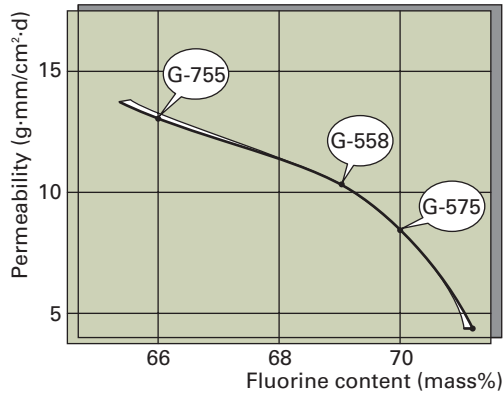
Liquid type and impregnation conditions	G-701	G-902
<Acids> 40°C x 70h		
Hydrochloric acid (35%)	A	A
Sulfuric acid (98%)	A	A
Phosphoric acid (85%)	A	A
Hydrofluoric acid (50%)	A	A
Glacial acetic acid	D	D
<Alkaline aqueous solutions> 40°C x 70h		
Sodium hydroxide (50%)	A	A
Ammonia (28%)	A	A
Sodium hypochlorite (10%)	A	A
<Ketones> 40°C x 70h		
Acetone	D	D
Methyl ethyl ketone	D	D
Methyl isobutyl ketone	D	D
<Chlorine solvents> 40°C x 70h		
Carbon tetrachloride	A	A
Trichloroethylene	A	A
Trichloroethane	B	A
Chloroform	C	B
Methylene chloride	D	B
<Aromatic solvents> 40°C x 70h		
Benzene	C	A
Toluene	C	A
Xylene	B	A
Monochloro benzene	C	A
<Ethers> 40°C x 70h		
Ethyl ether	D	D
MTBE (methyl-t-butyl ether)	D	D
<Alcohols> 40°C x 70h		
Methanol	D	A
Ethanol	A	A
Isopropyl alcohol	A	A
t-butyl alcohol	A	A
Metyl Cellosolve	D	A
Etyl Cellosolve	D	A
Butyl Cellosolve	C	A
Glycerine	A	A
Ethylene glycol	A	A
<Fuels> 40°C x 70h		
Fuel A	A	A
Fuel B	A	A
Fuel C	A	A
Fuel D	A	A
Gasoline	A	A
White kerosene	A	A
Fuel C + methanol (10%)	C	B
Fuel C + methanol (20%)	D	B
Fuel C + ethanol (10%)	B	A
Fuel C + ethanol (20%)	C	A
Fuel C + MTBE (10%)	B	A
Fuel C + MTBE (20%)	C	B
<Hydraulic fluids> 100°C x 70h		
Mineral oils	A	A
Ethylene glycol water	A	A
Phosphoric ester	A	A
<Lubrication oils> 175°C x 70h		
JIS No.1 oil	A	A
ASTM No. 3 oil	A	A
Stauffer Blend 7700	B	A
Silicon oil	A	A

Volumetric change: A: 0 - 10%, B:10 -20%, C:20 -30%, D: 30% or more

8 Gasoline permeability

Gasoline permeability has a correlation with the fluorine content. The higher the fluorine content is, the better the barrier effect (low permeability) is.

Fig. 10 Gasoline permeability (Fuel C, 40°C)



9 Low-Temperature Properties

Low-temperature characteristics generally improve proportionally as fluorine content decreases. Fig. 10 shows DAI-EL performance in the TR test, and fig. 11 shows the results of the Gehman torsion test.

Fig. 11 TR Test

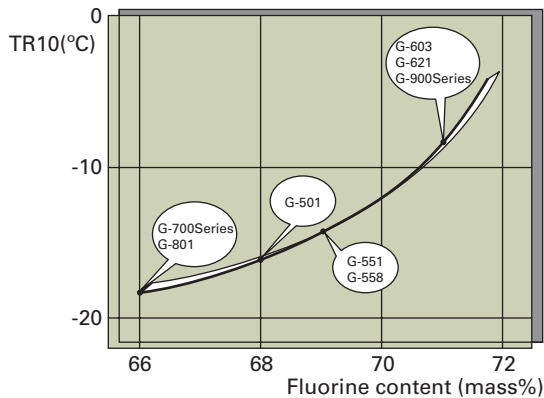
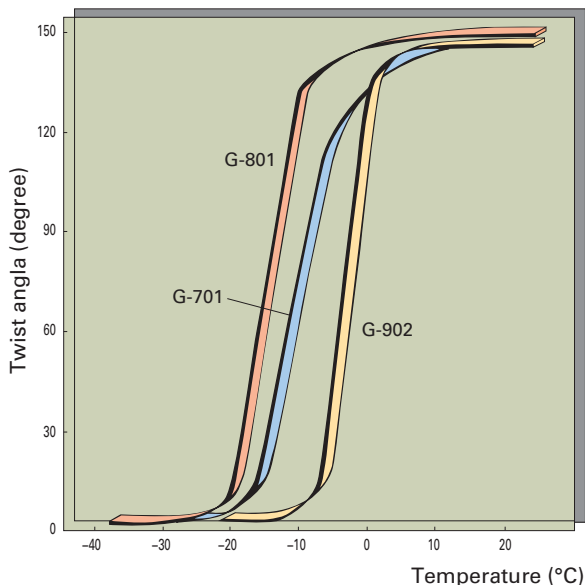


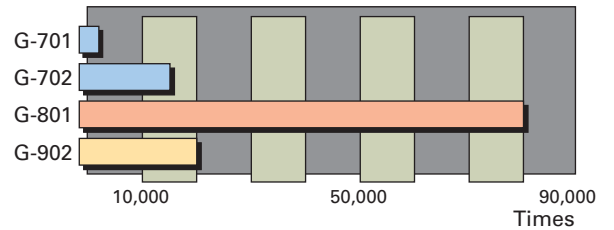
Fig. 12 Gehman Torsion Test



10 Flex-cracking Resistance

De Mattia flex test results are shown in fig. 13.

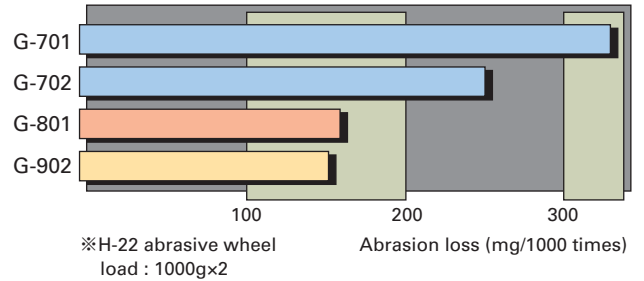
Fig. 13



11 Abrasion Resistance

Fig. 14 shows the results of the Taber abrasion test.

Fig. 14



12 Gas Permeability

DAI-EL offers excellent resistance to gas permeation (see table 3), and is widely used for sealing in high-vacuum equipment with $10^{-6} \sim 10^{-9}$ Torr.

Table 3

Gas	Gas permeability (cm ³ ·mm / m ² ·24h·atm)	
	DAI-EL G-501	DAI-EL G-902
O ₂	88	118
N ₂	59	48
CO ₂	93	109
He	876	1900
H ₂	295	—

13 Electrical Properties

G-701 offers volume resistive of $10^{13} \Omega/\text{cm}$ and G-902 offers $10^{14} \Omega/\text{cm}$. Applications include electrical wire sheathing that requires resistance to heat, oil and steam.

14 Ozone Resistance

DAI-EL offers superior weather resistance. No cracking was noticed even after 300 hours of continuous exposure in 150 ppm of ozone at 60°C.

DAI-EL Grades and Their Properties

DAI-EL	Diamine	Bisphenol cure system									
	Terpolymer	Copolymer									
	G-501NK	G-701	G-702	G-704	G-716	G-717	G-723F	G-751	G-755	G-763F	
Fluorine content (mass%)	68.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0
Mooney viscosity											
ML ₁₊₁₀ ·100°C	110	55	54	47	65	65	63	52	45	52	
ML ₁₊₁₀ ·121°C	74	35	35	28	40	40	41	31	27	31	
Compound mooney viscosity											
ML ₁₊₁₀ ·100°C	136	100	100	90	110	110	120	90	75	90	
Curing properties											
Temperature (°C)	160	170	160	170	170	170	170	170	160	170	
Curelasterometer, T90 (min)	5.0	4.5	4.0	3.5	3.5	3.0	2.5	3.0	11.5	4.0	
MDR, T90 (min)	6.0	6.5	5.0	4.5	4.0	4.0	3.0	4.0	15.0	4.5	
Physical properties											
Specific gravity	1.93	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	
100% moduus (MPa)	4.1	5.3	3.4	3.4	4.5	3.2	4.2	5.1	2.4	3.3	
Tensic strength (MPa)	17.4	15.0	17.7	14.0	13.9	13.1	15.0	15.0	14.2	14.5	
Elongation (%)	280	190	290	240	200	250	220	190	340	240	
Hardness (peak) (SHORE A)	75	73	68	72	72	69	71	72	65	69	
Hardness (3sec) (SHORE A)	69	70	65	66	68	64	67	68	60	63	
Tear strength (angle type) (kN/m)	45	30	40	32	33	34	32	30	36	33	
Compression set P-24 Oring											
25°C×70hours (%)	65	7	22	15	7	11	13	9	13	13	
50°C×70hours (%)	45	6	21	14	6	10	12	10	12	12	
100°C×70hours (%)	28	5	14	9	5	5	7	6	8	8	
150°C×70hours (%)	35	6	14	7	5	6	8	7	9	9	
175°C×70hours (%)	50	11	20	13	8	10	11	11	12	12	
200°C×70hours (%)	65	17	27	22	13	15	20	16	21	20	
Low temperature properties											
Embrittlement tempereture (°C)	-31	-17	-25	-21	-18	-21	-21	-17	-21	-21	
TR test											
TR ₁₀ (°C)	-16	-18	-18	-18	-18	-18	-18	-18	-18	-18	
TR ₇₀ (°C)	-8	-10	-10	-10	-10	-10	-10	-10	-10	-10	
Gehman torsion test											
T ₂ (°C)	-9	-7	-8	-8	-7	-8	-8	-7	-9	-8	
T ₁₀ (°C)	-15	-14	-16	-15	-15	-15	-15	-13	-15	-15	
Air aging test 230°C×70hours											
Tensile strength change rate (%)	-15	-2	-5	-3	5	5	-5	3	-5	2	
Elongation change rate (%)	10	-7	-3	4	-5	-5	-3	5	4	-15	
Hardness change (peak)	1	0	0	1	0	0	0	0	1	0	
Air aging test 250°C×70hours											
Tensile strength change rate (%)	-35	-6	-2	1	7	5	3	6	-10	0	
Elongation change rate (%)	-5	-4	-5	6	0	5	3	5	10	-5	
Hardness change (peak)	4	-2	-1	-1	0	0	0	0	0	1	
Air aging test 275°C×70hours											
Tensile strength change rate (%)	-41	-20	-39	-30	-12	-15	-23	-38	-28	-33	
Elongation change rate (%)	-13	14	30	26	10	12	20	10	23	20	
Hardness change (peak)	6	-1	1	0	1	0	0	0	0	1	
Oil and chemical resistance volume change rate(%)											
IRM903oil 175°C×70hours	2	2	2	3	2	2	2	3	3	2	
Methanol 40°C×70hours	25	72	125	95	70	95	100	77	116	115	
Ethanol 40°C×70hours	3	4	5	4	4	4	4	4	4	5	
Toluene 40°C×70hours	15	18	23	20	17	19	20	19	23	21	
Fuel-C 40°C×70hours	12	13	14	13	13	13	13	13	14	13	

* Peak value

DAI-EL	Cure system	Bisphenol							
	Copolymer	G-701, G-704, G-716, G-717, G-723F, G-751, G-763F		G-702		-		G-755	
	Terpolymer	G-551, G-562, G-671, G-621		-		G-555		G-557, G-558	
	Special	-		-		-		-	
Formulation	Polymer	100	Polymer	100	Polymer	100	Polymer	100	
	N990 carbon black *1	20	N774 carbon black *4	15	N774 carbon black	13	N774 carbon black	15	
	Ca(OH) ₂ *2	6	Ca(OH) ₂	6	Ca(OH) ₂	6	Ca(OH) ₂	6	
	MgO *3 (High activity)	3	MgO (High activity)	3	MgO (High activity)	3	MgO (High activity)	3	
Curing condition	Press	170°C×10min		160°C×10min		160°C×45min		160°C×45min	
	Oven	230°C×24hours		200°C×24hours		230°C×24hours *9		230°C×24hours *9	

Bisphenol cure system								Peroxide cure system								
Terpolymer								Copolymer		Terpolymer				Special		
G-555	G-551	G-557	G-558	G-562	G-621	G-671		G-801	G-802	G-901	G-902	G-912	G-952	LT-252	LT-302	LT-304
69.0	68.5	69.0	69.0	68.5	70.5	66.0		66.0	66.0	70.5	70.5	70.5	69.0	67.0	64.5	65.0
43	86	42	45	77	88	60		66	45	97	50	76	78	40	65	50
35	54	34	32	47	53	39		40	21	53	21	58	40	30	45	26
62	135	70	65	130	155	120		52	33	62	32	50	51	42	67	51
160	170	160	160	170	170	170		160	160	160	160	160	160	160	160	160
7.0	3.5	4.0	8.0	3.0	4.0	3.0		2.5	2.5	3.0	3.0	2.5	2.5	2.0	2.0	2.0
5.5	5.0	6.5	13.0	4.5	7.0	4.0		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
1.89	1.88	1.89	1.89	1.88	1.91	1.85		1.80	1.80	1.87	1.87	1.87	1.84	1.82	1.80	1.80
2.7	4.4	1.7	2.5	2.6	3.7	5.1		2.0	1.9	2.8	3.1	8.0	2.3	1.8	1.6	2.0
12.7	14.2	11.3	11.6	14.7	16.2	15		21.5	21.0	22.0	22.0	20.0	21.7	13.5	14.8	15.0
330	220	440	310	330	280	200		450	400	320	320	160	320	280	320	250
73	73	66	68	71	76	71		67	67	70	70	74	67	63	62	63
63	70	62	58	64	69	68		61	61	67	67	70	63	58	57	58
30	31	36	31	38	41	31		43	40	35	39	40	38	43	46	43
28	18	40	30	35	20	10		21	19	13	13	7	10	8	8	6
25	18	38	30	35	17	9		20	18	13	13	6	10	8	8	6
17	11	32	20	22	18	7		16	14	13	12	6	9	10	9	7
18	11	31	22	23	19	8		16	14	13	12	8	9	13	12	8
21	19	33	25	28	20	10		22	16	17	15	11	16	17	12	10
29	23	44	35	40	30	19		30	25	32	28	16	30	28	22	15
-26	-21	-27	-26	-25	-15	-23		-25	-25	-26	-26	-20	-26	-30	-38	-35
-14	-14	-14	-14	-14	-8	-20		-19	-19	-8	-8	-8	-14	-27	-31	-30
-7	-8	-8	-8	-8	-2	-12		-11	-11	-2	-2	-2	-8	-21	-25	-20
-4	-7	-4	-4	-7	-2	-9		-11	-11	-1	-1	-2	-8	-21	-25	-20
-14	-12	-15	-14	-13	-5	-15		-17	-17	-5	-5	-5	-13	-26	-30	-29
1	1	4	2	1	5	8		-23	-10	-11	-13	-13	-10	-19	-16	-5
1	-1	5	1	-1	-2	-5		9	-1	13	14	12	10	9	4	5
0	0	1	0	0	0	-1		-1	1	-1	2	0	1	-1	0	0
-10	-3	-20	-15	-7	-1	5		-45	-48	-67	-62	-25	-65	-62	-25	-15
13	5	10	13	5	3	5		31	4	66	107	51	70	63	12	10
1	1	1	1	0	1	0		-2	0	-3	0	-2	-3	-3	-1	-1
-35	-35	-40	-38	-35	-33	-30										
50	36	35	47	30	26	33										
2	0	2	2	-1	1	-2										
3	2	2	2	2	2	2		2	2	2	2	2	2	2	2	2
15	15	17	15	17	3	75		119	110	3	4	4	13	8	95	80
3	3	3	3	3	1	3		2	2	1	1	1	2	3	7	5
13	13	15	13	15	8	19		23	21	7	7	7	16	15	22	16
11	11	12	11	12	7	13		13	8	8	5	5	10	10	13	11

Peroxide		Diamine	
G-801, G-802		-	
G-901, G-902, G-912, G-952		G-501NK	
-		LT-252, LT-302, LT-304	
Polymer	100	Polymer	100
N990 carbon black	20	N990 carbon black	20
TAIC ※5	4	TAIC	1
Peroxide ※6	1.5	Peroxide	1
		MgO ※7	15
		(Low activity)	
		Curing agent V-3 ※8	3
160°C×10min		160°C×10min	
180°C×4hours		180°C×4hours	
		160°C×20min	
		200°C×24hours	

- ※1 "Thermax N-990" Cancarb Ltd.
- ※2 "CALDIC-2000" Ohmi Chemical Industry, Ltd.
- ※3 "MA150" Kyowa Chemical Industrial Co., Ltd
- ※4 "SeastS" Tokai Carbon Co., Ltd
- ※5 "TAIC" Nippon kasei Chemical Co. mLtd
- ※6 "Perhexa25B" NOF Co., Ltd
- ※7 "MA30" Kyowa Chemical Industrial Co., Ltd
- ※8 "Curing agent V-3" DAIKIN Industries, Ltd
- ※9 No oven wer for physical properties.

Safe handling

- 1. Compounding agent and facility**

The common fillers and facilities for commodity rubber can be used for DAI-EL. The mixing mill needs to be cooled. Finely divided metallic powder or filler, such as aluminum and magnesium, or amine compounds of more than 10% should not be used as compounding agents for DAI-EL because such materials are known to decompose vigorously at moderately elevated temperature.
- 2. Storage and remixing**

Store the compound in a tightly closed package in a cool and dry place. Another milling before use is recommended when the compound is left for more than three days. Too tight a nip between the rolls in the mixing mill may cause scorching. Be sure to cool the rolls well whenever the compound is milled with tight nip.
- 3. Molding / Curing**

The work area should be adequately ventilated at all times because a small amount of toxic gases (e. g. HF, acetone, methanol, acetaldehyde, methyl iodide and carbon monoxide) may be evolved during curing.
- 4. Material handling**

A slight amount of hydrogen fluoride vapor may be produced during use at high temperatures (above 200°C). The room should be well ventilated. Do not smoke in the work areas as harmful vapors may be inhaled when cigarettes are exposed to the powder of DAI-EL. After handling the powder of DAI-EL, knock off any dust from your hair or clothing and wash your face and hands thoroughly before smoking.
- 5. Disposal**

Do not incinerate DAI-EL as this can produce harmful vapors. Disposal should be done in accordance with local laws and regulations.

- Read the "Material Safety Data Sheet" before use.

IMPORTANT NOTICE: The information contained herein is based on technical data and tests we believe to be reliable and is intended for use by persons having technical knowledge and skill, solely at their own discretion and risk. Since conditions of use are outside of control, we assume no responsibility for results obtained or damages incurred through application of the data given; and the publication of the information herein shall not be understood as permission or recommendation for the use of our fluorocarbon compounds in violation of any patent or otherwise. We only warrant that the product conforms to description and specification, and our only obligation shall be to replace goods shown to be defective or refund the original purchase price thereof.

MEDICAL USE: This product is not specifically designed or manufactured for use in implantable medical and/or dental devices. We have not tested it for such application and will only sell it for such use pursuant to contract containing specific terms and conditions required by us.

• DAIKIN INDUSTRIES,LTD., DAIKIN AMERICA,INC.and DAIKIN CHEMICAL NETHERLANDS B.V. have obtained the ISO 14001(*1) certification for the environmental management system, and the ISO 9001(*2) certification for the quality management system in our fluorochemical plants.

(*1) ISO 14001 is a standard established by the ISO (International Organization for Standardization) which applies to environmental preservation activities. Activities, products and services of our company have been certified as being environmentally sound by an internationally recognized certification body.

(*2) ISO 9001 is a standard established by the ISO and applied to quality management system. DAIKIN INDUSTRIES, LTD. Chemical Division, DAIKIN AMERICA, INC. and DAIKIN CHEMICAL EUROPE GmbH have been certified by an internationally recognized certification organization for our ability to consistently provide products, which satisfy customer's demand and applicable regulatory requirements.

DAIKIN INDUSTRIES, LTD.

Umeda Center Bldg.,
2-4-12, Nakazaki-Nishi, Kita-ku,
Osaka 530-8323, Japan.
Phone:+81-6-6374-9355
Facsimile:+81-6-6373-4281
URL:www.daikin.co.jp/chm

Oct. 2016 ERC-1d NA
Printed in Japan