

Regarding effects on mixed refrigerant polymer material

The compatibility of mixed refrigerants and their structural components with various polymer materials is shown below.

Generally, polymer materials have very different characteristics depending on their compounding ratio, type and weight of additives, processing conditions and the like.

Furthermore, it is necessary to consider the materials that coexist with the refrigerant such as lubricants and the like. Therefore, for actual use, it is necessary to confirm the reliability beforehand.

Compatibility with elastomers

(50°Cx5 days: Effect Weight change rate (%) /Volume change rate (%))

	R-410A	R-407C	R-404A	R-507A	R-22
Isobutylene isoprene rubber	1/1	0/0	1/1	1/1	0/-2
Natural rubber	2/4	2/3	2/2	2/2	-3/-9
Urethane rubber	18/19	17/14	12/11	12/11	26/23
Chlorosulfonated polyethylene rubber	2/2	1/0	1/0	1/1	-1/-4
Polysulfide rubber	1/0	0/-1	-2/-3	-2/-4	9/9
Silicone rubber	1/1	1/1	0/0	0/0	3/4
Fluoroelastomer	22/84	20/34	16/30	16/45	17/28

(50°Cx5 days: Effect Weight change rate (%) /Volume change rate (%))

	R-32	R-125	R-134a	R-143a	R-22
Isobutylene isoprene rubber	3/1	2/3	-2/-3	1/2	0/-2
Natural rubber	2/-2	2/5	1/1	2/2	-3/-9
Urethane rubber	21/28	18/16	25/25	9/9	26/23
Chlorosulfonated polyethylene rubber	3/5	2/6	1/0	-2/6	-1/-4
Polysulfide rubber	4/6	1/-2	1/1	-2/-13	9/9
Silicone rubber	8/42	1/-2	6/13	14/25	3/4
Fluoroelastomer	31/129	7/22	43/159	29/69	17/28

(50°Cx5 days: Effect Weight change rate (%) /Volume change rate (%))

Refrigerant	Lubricant	Nitril rubber	Hydrogenated nitril rubber	EPDM	Polychloroprene
R-410A	POE	2/4	13/14	-8/-9	0/1
	None	-1/-1	9/9	2/1	0/4
R-407C	POE	2/1	5/4	-8/-11	0/-2
	None	2/1	12/10	1/1	1/1
R-404A	POE	-4/-7	5/4	-4/-6	0/-3
	None	1/0	3/2	2/2	1/6
R-507A	POE	0/1	0/-2	-8/-10	-1/-2
	None	4/4	2/0	2/1	1/2
R-22	Mineral oil	24/33	24/28	59/70	24/42
	None	59/65	135/140	14/17	5/6

	R-410A	R-407C	R-507A	R-507A POE	R-134a
Ethylene-propylene rubber	S	S	S	S	S
Chlorosulfonated polyethylene	S	S	S	U	S
Isoprene rubber			D	U	S
Chlorinated polyethylene rubber	D	D	S	U	Su
Polychloroprene	S	S	S	D	S
Epichlorohydrin	D	D	D	U	S
Fluoroelastomer	U	U	U	U	U
Silicone rubber	D	D	U	U	Us
Urethane rubber	D	D	D	D	S
Nitril rubber	D	D	D	D	Su
Hydrogenated nitril rubber	D	D	D	S	S
Isobutylene isoprene rubber	D	D	D	S	S
Polysulfide rubber	S	S	S	U	S

S: Compatible Su: Compatible (with exceptions)

U: Not compatible Us: Not compatible (with exceptions)

D: Compatibility depends on compounding ratio