

Elastomer for High Concentration Chemicals and Ozone

ARCURY™ Series

1. Introduction

In the manufacturing process of various products, all materials used are required to be highly functional and clean. Particularly in the manufacture of high-performance parts, the cleaning chemicals and ozone used are required to be of increasingly higher purity. At the same time, the control of particulates, metal contamination and organic matter generated from cleaning wetted parts is becoming more stringent.

In response to these increasing demands, we have developed a lineup of sealing materials with excellent chemical resistance and ozone resistance as well as excellent purity. In this report, the outline and features of each product are introduced.

2. Product Overview

Table1 Basic properties of ARCURY™

Product name	ARCURY-AD (arcley AD)	ARCURY-AL (arcurea AL)	ARCURY-OZT (arcurea OZT)	ARCURY-OZW (arcley OZW)
Features	It is excellent in purity because of its excellent resistance to acidic solutions and reduced amount of elution of metals and organics.	Resistance to alkaline solutions such as ammonia, which has been difficult to use with conventional fluororubber, is excellent.	It is excellent in purity because of its excellent resistance to ozone gas and ozone water and its reduced amount of elution of metals and organic substances.	Resistance to ozone gas and ozone water is excellent. Compared with OZT, the heat resistance is improved.
Appearance color	Dark amber transparent	Black	Transparent	White
Hardness (Shore A)	67	75	60	68
Tensile strength (MPa)	12.0	23.8	17.0	13.0
Elongation (%)	190	220	580	230
100% stress (MPa)	3.3	7.5	1.7	3.4
Compressive Set (%)	25 *1)	31 *2)	48 *2)	37 *1)

All values in the table are measured values, not standard values.

*1)Compression set: 200°C for 72hrs, Compression of25%, AS568-214 Using O-rings *2)Compression set: 150°C for 72hrs, Compression of25%, AS568-214 Using O-rings



ARCURY – AD



ARCURY – AL



ARCURY – OZT



ARCURY – OZW

Figure1 Photographs of ARCURY™ products

3. Product Features

3-1) Purity

Table2 Amount of eluted metal elements in fluoric acid and ultrapure water

Fluoric acid (25 °C×30 days) (ng/ml)

Metallic element	ARCURY-AD	FFKM of Company A	FFKM of Company B
Na	0.6	1.6	1.3
K	0.6	2.8	0.4
Ca	0.9	<0.5	0.7
Mg	0.9	0.6	0.5
Al	6.7	13	21
Fe	2.0	5.8	3.5
Cu	<0.5	<0.5	<0.5
Pb	<0.5	<0.5	<0.5
Meter	<12.7	<25.3	<28.4

Ultrapure water (80°C ×30days) (ng/ml)

Metallic element	ARCURY-AD	FFKM of Company A	FFKM of Company B
Na	0.6	2.1	0.5
K	0.6	1.8	<0.5
Ca	0.6	0.6	<0.5
Mg	<0.5	0.9	<0.5
Al	<0.5	9.8	18
Fe	<0.5	3.4	0.6
Cu	<0.5	<0.5	<0.5
Pb	<0.5	<0.5	<0.5
Meter	<4.3	<19.6	<21.6

3-2) Chemical resistance

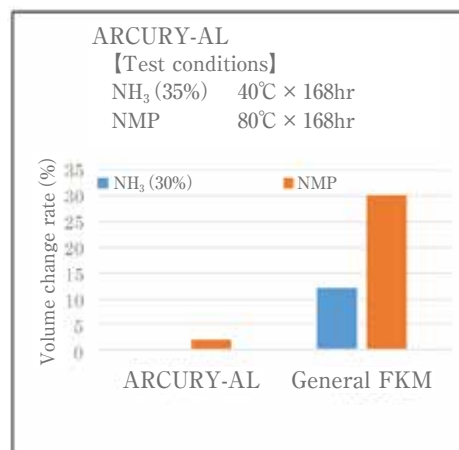
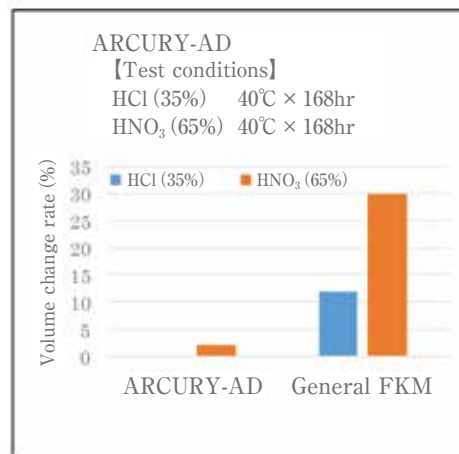


Figure2 Rates of change in volume after immersion in each solution

3-3) Surface condition after ozone gas exposure test

Table3 Photographs of the surface before and after exposure to ozone gas

	ARCURY-OZT	ARCURY-OZW	Black FKM A	Black FFKM A
Before the test				
After the test Exposure time : 2000 hours Concentration : 160g/Nm ³ Temperature : 20°C				

3-4) Surface condition after ozone water immersion test

Table4 Photographs of the surface before and after exposure to ozone water

	ARCURY-OZT	ARCURY-OZW	Black FKM A	Black FFKM A
Before the test				
After the test Immersion time : 2000 hours Concentration : 40mg/ℓ Temperature : 20°C				

3-5) Change in hardness

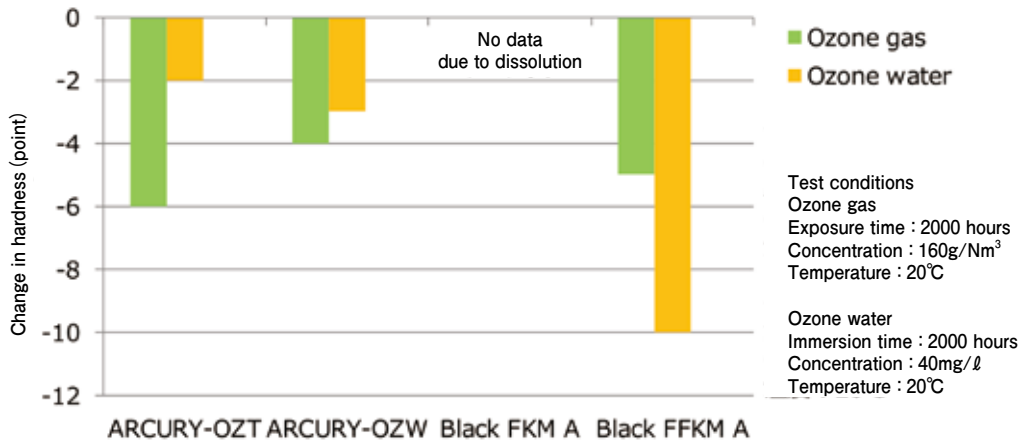


Figure3 Change in hardness after exposure to ozone gas and immersion in ozone water

4. Product Applications

The ARCURY™ Series is expected to be used for the following applications:

- 1) Seals for flange pipes, chemical containers and pipe joints of cleaning lines in chemical plants.
- 2) Seals for equipment such as ozone generators and ozone cleaning equipment.

5. Conclusion

It is anticipated that sealing materials will be required to meet ever higher requirements. The ARCURY™ series, introduced here, has excellent chemical and ozone resistance, and we hope that it will be used in the future

to solve the problems which existing products have.

6. References

- 1) Tatsuhiko Oshita: *Valqua Technology News*, No.4, 15-16 (2002)
- 2) VALQUA: *Elastomer Product Catalogue*, No.MA06, 9 (2020)



※ "ARCURY" is a trademark of VALQUA, Ltd.

Hiromasa Muraki
Technical Solution Group
H&S Sales Division