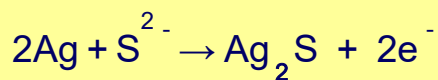


Sulfuration is a phenomenon that the inner electrodes (**Ag/Pd-type material**) of chip resistors react with **sulfur gas** which creates silver sulfide. As sulfuration proceeds, the conduction of the inner electrode will be lost and the chip resistor gets disconnected.

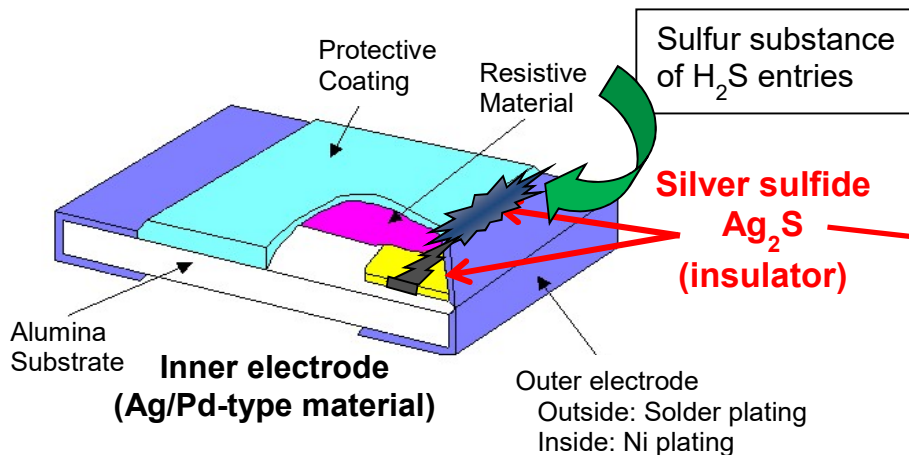
## Sulfuration Phenomenon of Standard Chip Resistors

### <Chemical Reaction of Silver and Sulfur>



### Needle crystal of $\text{Ag}_2\text{S}$

Needle crystals appeared outside of chip resistor



## ■ Examples of Critical Environment

- Oil or grease for machine tools and gears sometimes includes sulfur substances
- Oil with high amount of impurities and exhaust gas after combusting the oil contains sulfur gas
- Rubber products or areas near rubber manufacturing plants
- Where fossil fuels are handled or used
- In case a PCB is molded by rubber sealing which includes sulfur
- In case components which generate sulfur are mounted in the surrounding (e.g. molded coatings which includes sulfur)
- Areas where volcanic gases are emitted
- Areas of biological gas cracking plants
- Near waste dumps / waste disposal sites

For more information, please contact:

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# Anti Sulfuration Resistors



**NEW:  
Expanded Line-up**

KOA's special anti-sulfuration resistors are intended to be used under harsh environment with a high level of sulfur contamination.

A high reliable material with extremely high sulfuration-proof characteristics is used in the inner top electrodes.

Thanks to technical know-how of sulfuration-proof material, KOA has been able to achieve an extremely high level of sulfuration-proof performance.

## KOA's Anti-Sulfur Resistors Line-up

Resistors use anti-sulfur material for inner top electrodes

General Purpose	High Precision	High Reliability	Anti-Surge	High Power (Wide Terminal)	High Voltage
<b>RK73B-RT</b> <b>RK73H-RT</b> <b>RK73Z-RT</b> (01005...2512)	<b>RK73G-RT</b> (0402...1206)	<b>RS73-RT</b> (0603, 0805, 1206) <span style="color: red;">new</span>	<b>SG73_RT</b> (0603...2512) <b>SG73S/P-RT</b> (High precision) (0402...1210)	<b>WK73S-RT</b> <b>WK73R-RT</b> (0508...1225)	<b>HV73-RT</b> (0603...2512) <b>HV73V-RT</b> (0603...1206)
<b>Low ohm resistors (Current Detection)</b>					
			<b>SR73-RT</b> (0402...1210)	<b>WK73S-RT</b> (0612, 1020, below 1 Ω)	
			<span style="color: red;">new</span>		

KOA's standard types RK73 and SG73 have equivalent anti-sulfuration characteristics as our competitors "Slow Sulfuration" products.

⇒ **Anti-sulfuration: RK73\_RT series**      **Slow-sulfuration: RK73 series**

If it's intended to use products under harsh environment (under high density of sulphur), KOA recommends using the "Anti-Sulfuration Flat Chip Resistors" as a perfect measure.

### Product Features

- Excellent anti-sulfuration characteristic due to using high-sulfuration-proof inner top electrode material
- Available for several standard product series (like RK73, SG73, WK73)
- Intended for use under harsh environment

### Application Examples

- Industrial control systems
- Automotive
- Electric instrumentation
- Power meter / conditioner
- Solar / wind inverter circuits
- Avionics

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