



April 00, 2023

Taiyo Nippon Sanso Corporation

RASIRC, Inc.

## Notice Regarding the Sales of BRUTE<sup>®</sup>-Hydrazine, an Anhydrous Hydrazine Material

Taiyo Nippon Sanso Corporation (“TNSC”) has been supplying an anhydrous hydrazine material called BRUTE<sup>®</sup>-Hydrazine manufactured by RASIRC, Inc.\*1 (“RASIRC”) to the semiconductor industry. TNSC hereby announces that we will sell this product with even lower moisture content than that of the conventional product.

### 1. Background

Contamination with impurities such as moisture during the semiconductor manufacturing process negatively affects the semiconductor crystal quality and electrical characteristics, which directly impact the semiconductor device characteristics and product yield. To resolve these issues, RASIRC has succeeded in reducing the water concentration in the vapor phase of BRUTE<sup>®</sup>-Hydrazine from 1/10 to 1/100 of that in conventional products\*2 by improving the purification technology.

### 2. BRUTE<sup>®</sup>-Hydrazine Summary

BRUTE<sup>®</sup>-Hydrazine is a liquid material that improves safety by mixing liquid anhydrous hydrazine with RASIRC's original organic solvents as stabilizers. Hydrazine vaporizes in the vessel headspace and is delivered to the point of use by carrier gases or vacuum transfer.

Compared with ammonia, which is a common nitridation source, hydrazine is more reactive and lowers the temperature of the deposition process, thus improving deposition rate and electrical properties. In addition, hydrazine can be applied not only as a nitridation source for film deposition but also for surface cleaning and film modification by taking advantage of its excellent reducing properties.



Filling volume 1000g



Filling volume 250g

External view of BRUTE<sup>®</sup>-Hydrazine vessel

### 3. BRUTE<sup>®</sup>-Hydrazine Specifications

The latest specifications of BRUTE<sup>®</sup>-Hydrazine are shown in the table below.

Model	Filling volume	H <sub>2</sub> O conc in the N <sub>2</sub> H <sub>4</sub> gas phase
	(g)	(ppb)
Version 7.0	250, 1000	<100
Version 8.0	250	<10

### 4. Future Plans

Going forwards, TNSC will expand the sales of BRUTE<sup>®</sup>-Hydrazine, mainly for the semiconductor manufacturing process. The results of the SiN film deposited via ALD using BRUTE<sup>®</sup>-Hydrazine will be reported at the 23rd International Conference on Atomic Layer Deposition (ALD/ALD 2023) to be held in Seattle.

#### 【Reference】

- ※1. RASIRC, Inc. (CEO : Jeffrey Spiegelman, Head office : California, U.S.A.) is TNSC's group company and provides new materials and vaporizers for semiconductor manufacturing processes, which are increasingly miniaturized, using its advanced membrane separation technology.
- ※2. Due to the change in product specifications, sales of the existing product will be discontinued.

#### 【TiN deposition results using BRUTE<sup>®</sup>-Hydrazine by TNSC】

[大陽日酸技報 No.39 \(2020\). "Atomic Layer Deposition Process of Titanium Nitride Using an Ultra-Dry Hydrazine Gas"](#)

### 5. Inquiry

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