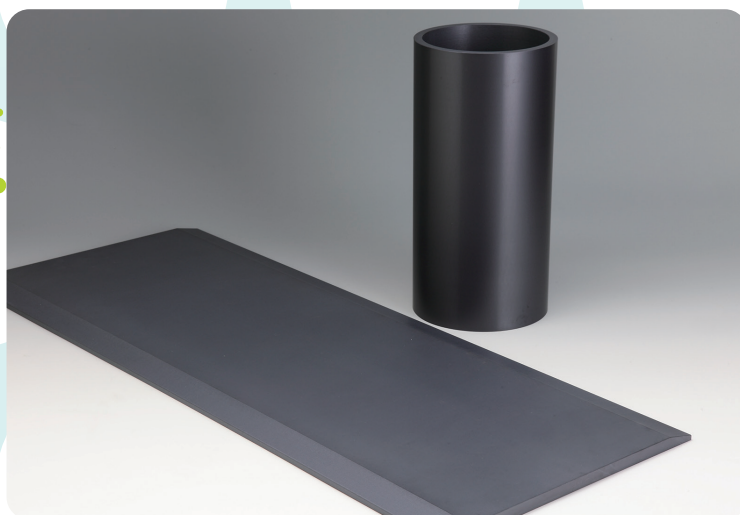


We are Always on the Safe Side for Worker's Health Protection

Health and Safety Requirement-Compliant **ITO Sputtering Target**

- All members of JSNM are totally committed to preventing health impairment of sputtering target production workers.
They are the source of safe and secure ITO sputtering target.
- Indium compounds are categorized not only as notifiable substances under the Industrial Safety and Health Act, but also as Group-2 control substances of specified chemical substances and/or as specified control substances.
- Any work that does not cause the worker's body to be exposed to dust of indium compounds corresponds to none of the regulated handling operations. Therefore, such work is beyond the scope of the above-mentioned laws and regulations.





Every target manufacturer belonging to JSNM follows the Japanese Government's strict regulations on Indium compounds.

Regulatory Information

1 In January 2013, the Japanese Government designated Indium compounds as a regulated chemical substance **for the first time in the world**. [Specified Chemical Substance (Industrial Safety and Health Act)]

Regulatory Items: "Labeling (label) on the Container/Package"; "Notification Based on SDS Documents"; "Health Examinations"; "Displaying and Posting the Safety Precautions in the Workplace"; "Preserving Work Records"; "Removing the Extraneous Material from Skin/Clothing"; "Measures for Inhibiting Dust Generation"; "Working Environment Measurement"; "Wearing Respiratory Protection Equipment"; "Cleaning of the Work Floor (Once/Day)"; and "Appointment of Operation Chief".

Information on Health Impairment

2 Designation of Indium compounds as a controlled substance is based on the fact that the Japanese Government identified cases of health impairment from Indium compounds, which serve as a material for, for example, ITO and IGZO.

Many cases of health problems involving Indium have been published in the following journals.

2003 J Occup Health

2005 Eur Resp J

2006 AJRS

2007 Occupational Health Journal

2006 The Japanese Respiratory Society

2010 NIOSH Indium workshop

Information on the Prevention of Health Impairment

3 In order to prevent such health impairments as reported in the above journals, it is necessary to ensure: the strict control of the working environment; the obligation of workers to wear masks depending on the working environment; and proper management of workers' health.

Results of Working Environment Measurement	Respiratory Protection Equipment to be Selected (must be the following equipment or equipment with an equivalent performance)
300 μ g/m ³ or higher	<ul style="list-style-type: none">• Full-face, pressure-demand type air breathing apparatus• Full-face, positive pressure, compressed-oxygen type oxygen breathing apparatus
30 μ g/m ³ or higher	<ul style="list-style-type: none">• Full-face, respiratory protection equipment with an electric fan (Particle Collection Efficient: 99.97% or higher) (whose leak rate stipulated in JIS Standards has been confirmed to be Class S and whose protection factor for each worker (wearer) to be 1000 or higher)• Full-face, pressure-demand type airline mask
15 μ g/m ³ or higher	<ul style="list-style-type: none">• Full-face, respiratory protection equipment with an electric fan (Particle Collection Efficient: 99.97% or higher)• Half-face, respiratory protection equipment with an electric fan (whose leak rate stipulated in JIS Standards has been confirmed to be Class A and whose protection factor for each worker (wearer) to be 100 or higher)• Full-face, constant air flow type airline mask
7.5 μ g/m ³ or higher	<ul style="list-style-type: none">• Half-face, respiratory protection equipment with an electric fan (Particle Collection Efficient: 99.97% or higher)• Full-face, replaceable dust mask (Particle Collection Efficient: 99.9% or higher)
3 μ g/m ³ or higher	<ul style="list-style-type: none">• Hood or face-shield type respiratory protection equipment with an electric fan (Particle Collection Efficient: 99.97% or higher)
3 μ g/m ³ or higher	<ul style="list-style-type: none">• Half-face, replaceable dust mask (Particle Collection Efficient: 99.9% or higher)
Less than 0.3 μ g/m ³	None specified

Countermeasures Taken By JSNM Member Companies

4 Every JSNM member company has been devoted to manage its work and working environment, which accelerates the improvement of the working environment. Shown below is an example of the countermeasures taken by JSNM member companies.

(1) Measures for Inhibiting Dust Generation	Member companies take the following measures to prevent workers from being exposed to indium dust or fumes: 1. Measures for inhibiting dust generation in the indoor workplace 2. Performance requirements, inspection, and notification of a local exhaust system and a push-pull type ventilator 3. Installation of dust collectors.
(2) Working Environment Measurement	Periodic working environment measurement (at least, once/6 months) is undertaken by a working environment measurement expert. Appropriate improvements are made depending on the results of the measurement.
(3) Medical Examination	All workers who are continuously engaged in producing/handling ITO sputtering targets are subjected to periodic medical examinations (at least, once/6 months) on the specified items (including the measurement of the level of Indium in serum and KL-6 in serum).
(4) Wearing Respiratory Protection Equipment	On the basis of the results of the working environment measurement, member companies use respiratory protection equipment that complies with the standards provided by the Minister of Health, Labour and Welfare.
(5) Other Countermeasures	1. Displaying and posting the safety precautions in the workplace, 2. Preserving work records, 3. Removing the extraneous material from skin/clothing, 4. Cleaning out the work floor by washing (daily).