

“NASBIS” Insulating Sheet

Type: EYGY

“NASBIS” is a heat insulating sheet, which is composed of silica aerogel and fiber sheet, created through impregnation process. Pore size of silica aerogel is 10 to 60nm, which means it has smaller space than the mean free path of the air, 68nm. Air molecules do not collide against each other inside the pores, and thus the component shows excellent heat insulation performance.

Furthermore, combining NASBIS and PGS Graphite Sheet enables controlling the direction of heat. Composite type provides greater heat insulating performance.



Features

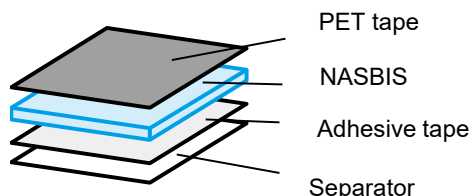
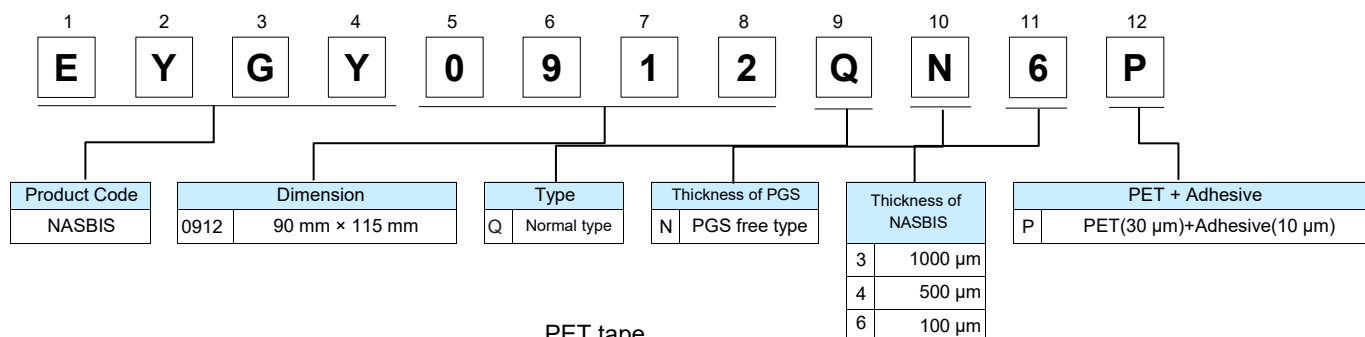
- Low thermal conductivity : 0.020 W/m · K typ.
- Created thin-film sheet ; Thickness : 100 μm to 1000 μm
- Various proposals are available when combined with PGS Graphite sheet
- RoHS compliant

Recommended applications

- Smartphone, Wearable equipment, Digital Still Camera, Notebook PCs, Tablet PCs

Explanation of Part Numbers

- NASBIS Pouch Type (EYGY*****P)



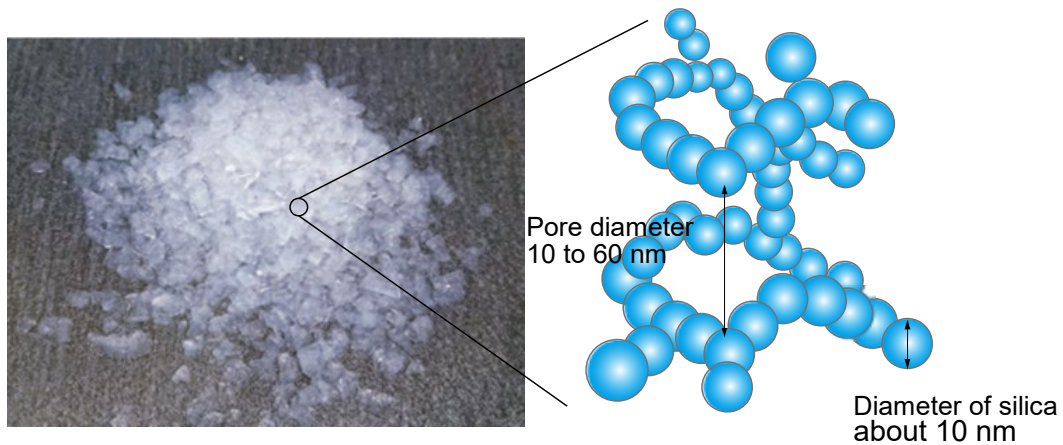
* Please consult the other configurations separately.

Characteristics of NASBIS

Thickness	100 μm	500 μm	1000 μm
Thermal conductivity (W/(m·K))	0.018 to 0.026	0.018 to 0.026	0.018 to 0.026
Operating temperature limit (°C)	−20 to 100	−20 to 100	−20 to 100
Size / Laminate pouch (mm)	90 × 115	90 × 115	90 × 115
Heatproof temperature (°C)	100	100	100

Typical values, not guaranteed.

Appearance of silica aerogel and its nanostructure



Composition example

● NASBIS Pouch Type

Type		Y - P type
Structure		PET 30 μm
		NASBIS*
		Adhesive 10 μm
Heatproof temperature		100 °C
100 μm*	Part No.	EYGY0912QN6P
	Thickness (μm)	140
500 μm*	Part No.	EYGY0912QN4P
	Thickness (μm)	540
1000 μm*	Part No.	EYGY0912QN3P
	Thickness (μm)	1040

* Above listed Part No. are examples for evaluation and selection, not for mass production.
Customized service available for mass production spec.

■ Minimum order 10 pcs

Safety and Legal Matters to Be Observed

Product specifications and applications

- Please be advised that this product and product specifications are subject to change without notice for improvement purposes. Therefore, please request and confirm the latest delivery specifications that explain the specifications in detail before the final design, or purchase or use of the product, regardless of the application. In addition, do not use this product in any way that deviates from the contents of the company's delivery specifications.
- Unless otherwise specified in this catalog or the product specifications, this product is intended for use in general electronic equipment (AV products, home appliances, commercial equipment, office equipment, information and communication equipment, etc.).
When this product is used for the following special cases, the specification document suited to each application shall be signed/sealed (with Panasonic and the user) in advance..These include applications requiring special quality and reliability, wherein their failures or malfunctions may directly threaten human life or cause harm to the human body (e.g.: space/aircraft equipment, transportation/traffic equipment, combustion equipment, medical equipment, disaster prevention/crime prevention equipment, safety equipment, etc.).

Safety design and product evaluation

- Please ensure safety through protection circuits, redundant circuits, etc., in the customer's system design so that a defect in our company's product will not endanger human life or cause other serious damage.
- This catalog shows the quality and performance of individual parts. The durability of parts varies depending on the usage environment and conditions. Therefore, please ensure to evaluate and confirm the state of each part after it has been mounted in your product in the actual operating environment before use.
If you have any doubts about the safety of this product, then please notify us immediately, and be sure to conduct a technical review including the above protection circuits and redundant circuits at your company.

Laws / Regulations / Intellectual property

- The transportation of dangerous goods as designated by UN numbers, UN classifications, etc., does not apply to this product. In addition, when exporting products, product specifications, and technical information described in this catalog, please comply with the laws and regulations of the countries to which the products are exported, especially those concerning security export control.
- Each model of this product complies with the RoHS Directive (Restriction of the use of hazardous substances in electrical and electronic equipment) (2011/65/EU and (EU) 2015/863). The date of compliance with the RoHS Directive and REACH Regulation varies depending on the product model.
Further, if you are using product models in stock and are not sure whether or not they comply with the RoHS Directive or REACH Regulation, please contact us by selecting "Sales Inquiry" from the inquiry form.
- During the manufacturing process of this product and any of its components and materials to be used, Panasonic does not intentionally use ozone-depleting substances stipulated in the Montreal Protocol and specific bromine-based flame retardants such as PBBs (Poly-Brominated Biphenyls) / PBDEs (Poly-Brominated Diphenyl Ethers). In addition, the materials used in this product are all listed as existing chemical substances based on the Act on the Regulation of Manufacture and Evaluation of Chemical Substances.
- With regard to the disposal of this product, please confirm the disposal method in each country and region where it is incorporated into your company's product and used.
- The technical information contained in this catalog is intended to show only typical operation and application circuit examples of this product. This catalog does not guarantee that such information does not infringe upon the intellectual property rights of Panasonic or any third party, nor imply that the license of such rights has been granted.

Panasonic Industry will assume no liability whatsoever if the use of our company's products deviates from the contents of this catalog or does not comply with the precautions. Please be advised of these restrictions.

Precautions on the whole

- Do not use the products beyond the descriptions in this catalog.
- This catalog guarantees the quality of the products as individual components.
Before you use the products, please make sure to check and evaluate the products in the circumstance where they are installed in your product.
- This product was designed and manufactured for standard applications such as general electronics devices, office equipment, information and communications equipment, measuring instruments, household appliances and audio-video equipment.
For applications in which special quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or cause threat of personal injury (such as for aircraft and aerospace equipment, traffic and transport equipment, combustion equipment, medical equipment, accident prevention and anti-theft devices, and safety equipment), please be sure to consult with our sales representative in advance and to exchange product catalog which conform to such applications.

Safety and Design considerations

- We are trying to improve the quality and the reliability, but the durability differs depending on the use environment and the use conditions. On use, be sure to confirm the actual product under the actual use conditions.
- Install the following systems for a failsafe design to ensure safety if these products are to be used in equipment where a defect in these products may cause the loss of human life or other signification damage, such as damage to vehicles (automobile, train, vessel), traffic lights, medical equipment, aerospace equipment, electric heating appliances, combustion/ gas equipment, rotating equipment, and disaster/crime prevention equipment.
 - The system is equipped with a protection circuit and protection device.
 - The system is equipped with a redundant circuit or other system to prevent an unsafe status in the event of a single fault.
 - The system is equipped with an arresting the spread of fire or preventing glitch.
- When a dogma shall be occurred about safety for this product, be sure to inform us rapidly, operate your technical examination.
- The temperature of this product at the time of use changes depending on mounting conditions and usage conditions, therefore, please confirm that the temperature of this product is the specified temperature after mounting it.
- This product does not take the use under the following special environments into consideration. Accordingly, the use in the following special environments, and such environmental conditions may affect the performance of the product; prior to use, verify the performance, reliability, etc. thoroughly.
 - 1) Use in liquids such as water, oil, chemical, and organic solvent.
 - 2) Use under direct sunlight, in outdoor or in dusty atmospheres.
 - 3) Use in places full of corrosive gases such as sea breeze, Cl_2 , H_2S , NH_3 , SO_2 , and NO_x .
 - 4) Use the product in a contaminated state.
 - 5) Use in the point being adhered to organic solvent (thinner, alcohol, xylene etc.) or chemical substances (oils, acids, alkali etc.), or being possible to contact with their.
And use under their gas atmosphere.
 - 6) Use in an environment in contact with silicone resin.
 - 7) Use with ultrasonic and high frequency wave applied.
 - 8) Use under reduced pressure or vacuum.

Precaution of installation

- Do not reuse this product after removal from the mounting board.
- Do not drop this product on the floor. If this product is dropped, it can be damaged mechanically.
Avoid using the dropped product.
- Do not touch this product with bare hands.
- This product is soft, do not rub or touch it with rough and sharp-edged materials to avoid scratching it.
- Lines or folds in this product may affect thermal insulation.
- Never touch a this product during use because it may be extremely hot.

- Use protective materials when handling and/or applying this product, do not use items with sharp edges as they might tear or puncture this product.
- The NASBIS shall not be modified and done additional work such as cutting, drilling, nailing, eyelets, screwing, pinning, riveting, polishing, embossing, water cleaning, solvent cleaning, ozone cleaning, plasma exposure, ultraviolet irradiation, plating, painting, printing, deposition, etching, sputtering, heat treatment, surface treatment.
- The NASBIS shall not be reused, repaired and recycled.

Precaution on storage conditions

- Storage period is less than one year after our shipping inspection is completed.
Please use within the period.
- If the product is stored in the following environments and conditions, the performance may be badly affected, avoid the storage in the following environments.
 - (1) Storage in places full of corrosive gases such as sea breeze, Cl_2 , H_2S , NH_3 , SO_2 , and NO_x .
 - (2) Storage in places exposed to ultraviolet light. *Recommended storage in the dark.
 - (3) Store at a temperature outside the storage temperature range specified by this catalog.
 - (4) Storage under a load.
- In the case of a product configuration that assumes bonding, please use after checking the adhesiveness of the product when the storage period is over.

Precaution specific to this product

- NASBIS sheet may release silica powder (electric non-conduct).
- The adhesion between laminate film and NASBIS is very weak, so some parts may be un-bonded depending on the handling.
- The performance of thermal insulation is dependent on the way it is used. Test the adaptability of NASBIS to your application before use.
- The dimension of NASBIS sheet will change when the humidity changes. If you need a precise size we suggest that the NASBIS sheet should be controlled at a certain stored condition and period, and measured at the same conditions.
ex) The dimensions of NASBIS are assured when stored and measured at 23 ± 2 °C, 50 ± 20 %RH.
- The appearance is conducted based on internal standard. When suspicion arises, contact promptly us.

Applicable laws and regulations, others

- No ODCs or other ozone-depleting substances which are subject to regulation under the Montreal Protocol are used in our manufacturing processes, including in the manufacture of this product.
- This product complies with the RoHS Directive (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (DIRECTIVE 2011/65/EU and (EU)2015/863) .
- All the materials used in this part are registered material under the Law Concerning the Examination and Regulation of Manufactures etc. of Chemical substances.
- If you need the notice by letter of "A preliminary judgment on the Laws of Japan foreign exchange and Foreign Trade control", be sure to let us know.
- These products are not dangerous goods on the transportation as identified by UN(United Nations) numbers or UN classification.
- As to the disposal of the module, check the method of disposal in each country or region where the modules are incorporated in your products to be used.
- The technical information in this catalog provides examples of our products typical operations and application circuits. We do not guarantee the non-infringement of third party's intellectual property rights and we do not grant any license, right, or interest in our intellectual property.

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<u>EYG-N0912QF3S</u>	<u>EYG-N0912QG6S</u>	<u>EYG-N0912QD6S</u>	<u>EYG-N0912QG3S</u>	<u>EYG-N0912QG4S</u>	<u>EYG-N0912QE3S</u>
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