# TOMBO<sup>TH</sup> BRAND

# **Heat and Cryogenic Insulation**





# NICHIAS' Heat and Cryogenic Insulation Materials for the Energy-Saving Age

Established in 1896, we began its business activities mainly repairing boilers and steam pipes of foreign ships using diatomaceous earth heat insulation materials. Since then, we have developed products that have been adapted to each era.

With our unique technology we have contributed to Japan's core industries by developing a wide range of heat insulation materials and cryogenic insulation materials, such as calcium silicate heat insulation materials, rock wool, alkaline earth silicate (AES) wool, alumina fiber, rigid urethane foam, and nuclear heat insulation materials, that support from extremely low temperatures right up to ultra-high temperatures. At the same time, we have a long tradition and a wealth of experience in the field of thermal insulation work. This catalog is an abridged version of many of our heat and cryogenic insulation materials.

Please refer to each individual catalog for details.

\*TOMBO is a registered trademark or trademark of NICHIAS Corporation.

\*Product names with TM are trademarks of NICHIAS Corporation.



# NICHIAS Contributes to a



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# Pleasant Global Environment and Energy Saving.



# **Plant Related Thermal Insulation Materials**



There are various plants, such as thermal power, nuclear power, petroleum refining, petrochemicals, food, district heating and cooling, and in these plants various types of thermal insulation materials are used from those for extremely low temperatures to high temperatures.

We have thermal insulation materials that support plant-related equipment in all types of industries.

# **Application & Products**

Application	TOMB0 <sup>™</sup> No.	Product name
	4900	SUPERTEMP <sup>™</sup> Board
Heat insulation of general		MG MIGHTY ROLL <sup>™</sup>
equipment, various boiler tanks,		MG BOARD <sup>™</sup>
and flues		MG WIRED BLANKET <sup>TM</sup>
		FINEFLEX BIO <sup>™</sup> products
		MG MIGHTY COVER <sup>™</sup>
Heat insulation for various pipes		MG MIGHTY ROLL <sup>™</sup>
		MG WIRED BLANKET <sup>TM</sup>
Detachable heat insulation	4500	ENETHERMO™
Surface finish, fire resistance,	5535-F	HEAT RESISTANT INSULATING CEMENT $^{\mbox{\tiny TM}}$ Type F
(cement-like material)	5810-F	FREE QUICK LAG <sup>TM</sup>
Adhesive for calcium silicate heat insulation materials	9800-BF	Insulation adhesive
II	9817	THERMOCON <sup>TM</sup> H
Heat transfer cement	9818	THERMOCON <sup>TM</sup> R
	8400/8401	INSULTEX <sup>™</sup> Cloth / Tape
	8400-H	INSULTEX <sup>™</sup> Cloth H
T	8250	Silica Cloth / Tape
Lagging material	8982	Aluminized Cloth
	9832-B	Lagging Cloth B
	9832-W	Lagging Cloth W

\*For reinforcement materials such as adhesives and sealants, please see page 20.





# **Furnace and High Temperature Thermal Insulation Materials**



Various heating furnaces play a part in the fields of steelmaking, petroleum refinery, petrochemicals, municipal solid waste incinerators, etc. In the high temperature range, enhancing the heat insulation effect is required in order to make effective use of energy.

We have a wide range of high-temperature thermal insulation materials, the star of which is alkaline earth silicate (AES) wool, to meet various different needs.

# **Application & Products**

Application	TOMBO <sup>™</sup> No.	Product name
	5625	FINEFLEX BIO <sup>™</sup> Board
	5615	FINEFLEX BIO <sup>™</sup> Blanket
	5675	FINEFLEX BIO <sup>™</sup> CAST
	5655	FINE BLOCK <sup>TM</sup>
	5461	$RF BOARD^{TM}$
General kiln lining	5915-145H	TOMBO <sup>™</sup> Castable 5915-145H
	5915-160H	TOMBO <sup>™</sup> Castable 5915-160H
	5915-185H	TOMBO <sup>™</sup> Castable 5915-185H
	5920-150C	TOMBO <sup>™</sup> Castable 5920-150C
	5920-160C	TOMBO <sup>™</sup> Castable 5920-160C
	5935-135G	TOMBO <sup>™</sup> Castable 5935-135G
	4350-H	ROSLIM <sup>™</sup> Board H
	4350-GH	ROSLIM <sup>™</sup> Board GH
	4900	$\mathbf{SUPERTEMP}^{TM}$ Board
Dofractory backup	5615	FINEFLEX BIO <sup>™</sup> Blanket
кепастоту баскир	5900-100F	TOMBO <sup>™</sup> Castable 5900-100F
	5900-135C	TOMBO <sup>™</sup> Castable 5900-135C
	5900-140C	TOMBO <sup>™</sup> Castable 5900-140C
		MG BOARD <sup>TM</sup>
	5605	FINEFLEX BIO <sup>TM</sup> Bulk
For the filling of doors and	5685-E	FINEFLEX BIO <sup>™</sup> Braided Rope
iointe	5615	FINEFLEX BIO <sup>™</sup> Blanket
Joints	5635	FINEFLEX BIO <sup>™</sup> Paper
	5675	FINEFLEX BIO <sup>™</sup> CAST
Thermal insulation material for compact electric furnaces	5645	FINEFLEX BIO <sup>™</sup> Mold
For observation windows, burner tiles, etc.	5462	RF MOLD <sup>™</sup>





# **Building Facility Related Thermal Insulation Materials**



In recent years, there has been remarkable growth in plumbing, sanitation, and air conditioning facilities in the field of building construction. We offer a wide variety of heat insulation materials with a focus on rock wool insulation materials, which provide excellent insulation performance and economic efficiency as thermal insulation materials for general equipment, pipes, ducts and flues in building facilities.

# **Application & Products**

Application	TOMBO <sup>™</sup> No.	Product name
Thermal insulation of air		MG MIGHTY ROLL <sup>TM</sup>
(including smoke exhaust ducts)		MG BOARD <sup>TM</sup>
Thermal insulation of sanitation and air conditioning pipes		MG MIGHTY COVER <sup>TM</sup>
pipes, steam pipes, etc.		MG MIGHTY ROLL <sup>™</sup>
Thermal insulation of various		MG MIGHTY ROLL <sup>TM</sup>
equipment		MG BOARD <sup>TM</sup>
Valves and flanges, etc.		MG WIRED BLANKET <sup>TM</sup>
Parts that pass through fire compartments		MG MIGHTY COVER <sup>™</sup>
Detachable heat insulation for valves and flanges, etc.	4500	ENETHERMO™
Thermal insulation of flue parts		MG WIRED BLANKET <sup>TM</sup>
Fire prevention of kitchen exhaust ducts		MG MIGHTY ROLL <sup>TM</sup>
(for industrial and residential use)		MG MIGHTY COVER <sup>TM</sup>





# **Nuclear Power Related Thermal Insulation Materials**



In the nuclear industry, thermal insulation materials must be absolutely 100% safe and reliable from the viewpoint of protection against radiation. Our nuclear power related thermal insulation materials are labelled NU, and aim to prevent stress corrosion cracking by regulating halogen components eluted from the product.

# **Application & Products**

Application	TOMBO <sup>™</sup> No.	Product name
Heat insulation of reactor pressure containers		Steel Insulation
Various equipment inside a reactor		Steel Insulation
Heat insulation of horizontal joints of turbines		Steel Jacketed Insulation
	NU5605	NU FINEFLEX BIO <sup>TM</sup> Bulk
Freat insulation for general	NU5615	NU FINEFLEX BIO <sup>™</sup> Blanket
equipment, pipes, valves, etc.	NU5625	NU FINEFLEX BIO <sup>™</sup> Board
Radiation ( $\gamma$ -ray) shielding heat insulation		Jacketed Insulation
T	NU8200-C	NU MARINETEX <sup>TM</sup> Cloth
Lagging material	NU8200-T	NU MARINETEX <sup>™</sup> Tape





# **Standards & Performance**

	TOMBO <sup>™</sup> No.	Product name	Maximum working temperature	Dansity (kg/m²)	
		MG WIRED BLANKET <sup>TM Note 3</sup>	Temperature for 10% shrinkage	60, 80, 100, 120, 150	
Rock Wool Heat In		MG BOARD <sup>TM Note 3</sup>		40, 60, 80, 100, 120, 150	
sulation Materials		MG MIGHTY COVER <sup>TM Note 3</sup>	600 or more <sup>Note 4</sup>	90, 100, 120, 128	
		MG MIGHTY ROLL <sup>TM Note 3</sup>		40, 60, 80, 100	
High Performance He	4350-Н	ROSLIM™ Board H	1000	250	
eat-Insulation Materials	4350-GH ROSLIM™ Board GH		1000	250	
Calcium Silicate Heat Insulation Materials	4900	SUPERTEMP™ Board	1000	210	

Note 1: Reference W/(m·K) = 0.86 kcal / (m·h·°C)

Note 2: It is our actual measurement value, and is not a standard value.

Note 3: Made in Indonesia mainly for Indonesia. Please contact us for specifications for Japan.

Note 4: The temperature for 10% shrinkage under heat and compression is in accordance with JIS A 9504.

Properties		Corresponding Standard
Thermal conductivity $\lambda$ [W (m·K)] Note 1, Note 2	Feature	JIS
70°C 0.044 max. (Density:60-80) 70°C 0.043 max. (Density:120)	<ol> <li>We have some with adhesive decorated surfaces.</li> <li>We have some that offer water repellency.</li> <li>Rock wool heat insulation materials</li> </ol>	
400°C 0.027 600°C 0.032 800°C 0.040	1) Compressive strength (10% compression strain) ROSLIM Board H 0.54 MPa ROSLIM Board GH 1.02 MPa	
400°C 0.032 600°C 0.037 800°C 0.044	2) Innovative thermal insulation material with ultra-low thermal conductivity and improved strength and less dust generation	
300°C 0.076 500°C 0.110	<ol> <li>Bending strength 1.0 MPa</li> <li>Xonotlite-type, high-strength calcium silicate heat insulation material</li> </ol>	

# **Standards & Performance**

	TOMBO <sup>™</sup> No.	Product name	Maximum heat resistant temperature (°C)	Density (kg/m <sup>°</sup> )	
Alumina fit Alkaline ea	5605	FINEFLEX BIO™ Bulk	1300		
oer rth silicate (AES)	5615	FINEFLEX BIO™ Blanket	1300	100, 130, 160	
) wool	5625	FINEFLEX BIO™ Board	1300	250	
ry and thermal in	5655	FINE BLOCK™	1300, 1600	130, 160, 170	
sulation material	5675	FINEFLEX BIO™ CAST	1300	400–700	
S.	5461	RF BOARD™	1600, 1700, 1800	200, 400, 500	

Reference W/(m·K) = 0.86 kcal / (m·h·°C) (The value for thermal conductivity is our measured value.)

				Movimum Working		Properties
	Туре	TOMBO <sup>™</sup> No.	Product name Temperature (°C)	Bending strength (MPa) Note 1, Note 2	Feature	
		5915-145H	TOMBO <sup>™</sup> Castable 5915-145H	1450	5.0 (1300°C)	It has sufficient abrasion resistance, water resistance,
	Refractory	5915-160H	TOMBO <sup>™</sup> Castable 5915-160H	1600	15 (1500°C)	and spalling resistance for general use.
		5915-185H	TOMBO™ Castable 5915-185H	1850	15 (1500°C)	Used as a lining for general kilns.
Castable	Dense	5920-150C	TOMBO™ Castable 5920-150C	1500	10 (1300°C)	It has excellent fluidity while maintaining the heat resistance of refractory castables.
		5920-160C	TOMBO™ Castable 5920-160C	1600	14 (1500°C)	The molded body is dense and has excellent hot properties, especially excellent abrasion resistance.
	Acid Resistant	5935-135G	TOMBO™ Castable 5935-135G	1400	14 (1250°C)	This has excellent acid resistance, used as a lining for chimneys and ducts through which exhaust gases pass.
		5900-100F	TOMBO <sup>™</sup> Castable 5900-100F	1000	0.5 (1000°C)	
	Lightweight	5900-135C	TOMBO <sup>™</sup> Castable 5900-135C	1350	2.0 (1300°C)	It is lightweight and has excellent insulation properties.
		5900-140C	TOMBO <sup>™</sup> Castable 5900-140C	1400	4.9 (1400°C)	Used as a backup for refractories.

Note 1: Bending strength is the velue after calcination, and the value in the parethiesis ( ) is the calcination temperature.

Note 2: It is our actual measurement value, and is not a standard value.

Pronerties		
Fei	ature	Certifications and regulations
Bulk		
Blanket	Alkaline earth silicate wool-based fire-resistant thermal	Non-inflammable certification NM-2860
Lined boards		
Blanket laminate	insulation material	
Paste-form amorphous fire-resistant material		
Lined boards		

## High Performance Heat-Insulation Materials

ROSLIM Board H and GH are innovative products with ultra-low thermal conductivity, improved strength, and less dust generation. By greatly improving its strength, it is now possible to process complex shapes.

The handling and installation workability have also been greatly improved, making it easy to handle.



ROSLIM Board GH was awarded the Energy Conservation Center, Japan (ECCJ) Chairman's Award in the Product and Business Model Category of the 2015 Energy Conservation Grand Prize hosted by ECCJ (supported by the Ministry of Economy, Trade and Industry).

# TOMBO<sup>™</sup> No.4350-H,GH ROSLIM<sup>™</sup> Board H, GH



### Feature

- 1. Excellent thermal insulation properties that far exceed conventional thermal insulation materials
- 2. Excellent handling
- 3. Excellent workability without the need for special tools





\*Calculation conditions: ambient temperature =  $25^{\circ}$ C, emissivity = 0.9, wind speed = 0 m/s \*This is a calculated value and does not guarantee performance.

and ROSLIM Board GH are actual values measured by NICHIAS Corporation. The values for calcium silicate boards and still air are theoretical values.

Precautions for use

• Store the ROSLIM Board in a well-ventilated room where it is free from rain and any water leakage.

Contact with water will damage the shape of the ROSLIM Board and reduce its performance significantly.

## High Temperature & High Thermal Insulation Materials

A lightweight, high heat-resistant and high heatinsulating thermal insulation material with calcium silicate as its main component.

# TOMBO<sup>™</sup> No.4900 SUPERTEMP<sup>™</sup> Board



It has excellent machinability and is widely used for industrial equipment applications.

## Feature

- 1. High heat resistance
- 2. High thermal insulation
- 3. Excellent machinability

# Detachable thermal insulation material

ENETHERMO is a detachable heat insulation material that is ideal for valves and flanges, and can be used repeatedly. A silicone-coated glass cloth is used for the jacket, and a glass mat is used for the thermal insulation material.

### Feature

- 1. Detachable
- 2. Can be used repeatedly
- 3. Other materials can also be used according to operating temperature and conditions

## **Application**

- 1. Thermal insulation and heat insulation of valves and flanges
- 2. Thermal insulation and heat insulation of heat exchangers and tanks
- 3. Thermal insulation of heat dissipation equipment
- 4. Thermal insulation and heat insulation of regularly repaired and maintained parts

# TOMBO<sup>™</sup> No.4500 ENETHERMO<sup>™</sup>



# Rock wool heat insulation materials

# **MG Products**

Rock wool is inorganic spun fibers made from natural rocks and minerals bonded by organic binder.

We call our rock wool heat insulation material products MG Products.

Depending on the application, we have products that are shaped into felt, boards, pipes and so on, and are further processed with wire mesh, white screen, or aluminum craft (ALK) to make them easier to use.

Rock wool is excellent for thermal insulation, heat retention, and sound absorption, and is used for a wide number of applications in various industrial fields.

### Feature

•non-combustible

- •suitable for insulation
- •fire protection
- •sound absorption/noise reduction





MG BOARD™

MG BOARD is suitable for general insulation purpose on the application industrial and commercial buildings. MG BOARD can be supplied with a glued aluminum craft (ALK) on one side.





## MG MIGHTY ROLL<sup>™</sup>

MG MIGHTY ROLL is flexible blanket insulation suitable for general application. MG MIGHTY ROLL can be supplied with a glued white screen or aluminum craft (ALK) on one side.

## MG WIRED BLANKET<sup>™</sup>

MG WIRED BLANKET is flexible insulation which galvanized wire mesh of hexagonal pattern is stitched by wire on one side.

## MG MIGHTY COVER<sup>™</sup>

MG MIGHTY COVER is pre-formed sectional pipe insulation. Snap-on type having split is supplied. MG MIGHTY COVER can be supplied with a glued aluminum craft (ALK) on one side.

# Alkaline Earth Silicate Wool Fireproof and Thermal Insulation Materials

FINEFLEX BIO is an alkaline earth silicate (AES) wool with excellent heat resistance developed in response to increasing awareness of being more environmentally friendly. Silica, magnesia, and calcia are the main components of this product. As a thermal insulation material, sealing material, packing material, or sound-absorption material, it can be used in a wide range of fields, such as with iron and steel, nonferrous metals, petrochemicals, and ceramics.

## Feature

- 1. Excellent heat resistance
- 2. Resistant to thermal shock
- 3. Low thermal conductivity and excellent thermal insulation effect
- 4. Lightweight and excellent workability
- 5. Low heat accumulation and excellent energy saving effect



FINEFLEX BIO Paper



FINEFLEX BIO Mold

# **FINEFLEX BIO**<sup>™</sup>



## •TOMBO<sup>™</sup> No.5625 FINEFLEX BIO<sup>™</sup> Board

This is a product made by adding an inorganic and organic binder to alkaline earth silicate (AES) wool and forming it into a board by way of suction molding. It can be used as a general high-temperature thermal insulation material, kiln thermal insulation lining, backup material, etc.

## •TOMBO<sup>™</sup> No.5635 FINEFLEX BIO<sup>™</sup> Paper

This product is made by adding an organic binder to alkaline earth silicate (AES) wool and using a paper manufacturing machine to make it into a paper form. It can be used as a gasket material for combustion equipment and warm water boilers.

## •TOMB0<sup>™</sup> No.5645 FINEFLEX BIO<sup>™</sup> Mold

This is a product made by adding an inorganic and organic binder to alkaline earth silicate (AES) wool and forming it into various shapes by way of suction molding. It can be used for a wide variety of applications such as a thermal insulation material within compact electric furnaces or with burner tiles.

## •TOMBO<sup>™</sup> No.5615 FINEFLEX BIO<sup>™</sup> Blanket

This product is made by continuously layering alkaline earth silicate (AES) wool, forming it into a blanket-like shape, and subjecting it to needle processing.

It can be used for general high-temperature thermal insulation materials, the lining of kiln furnace ceilings and walls, as a backup material, furnace-expansion-allowance material, gas sealing material, etc.

## •TOMB0<sup>™</sup> No.5655 FINE BLOCK<sup>™</sup>

This is a block-shaped product in which a blanket is cut into a predetermined width, a block laminated with adhesive and a dedicated support bracket are integrated and compressed, and then the outside is fixed with a side plate and a band. It can be used for furnace walls such as heating furnaces, heat treatment furnaces, calcination furnaces, and decomposition furnaces.

\*For further details, please refer to each product catalog.

# **Other Thermal Insulation Materials and Related Products**

## **Steel Insulation**



For the metal heat insulation material, a stainless steel board is used for the casing and stainless steel stamped into a special shape is inserted in the internal space, thereby giving it thermal insulation properties through the radiation of foil. It can be attached and detached with its buckle-type fastener and reused many times. It can also be cleaned and used semi-permanently.

### Application

 Heat insulation of nuclear power equipment and pipes

## TOMBO<sup>™</sup> No.5535-F

HEAT RESISTANT INSULATING CEMENT<sup>™</sup> TYPE F



This is a heat insulation cement containing a heat-resistant inorganic powder compound of rock wool fiber, diatomaceous earth, etc.

### Properties

•Density 500 kg/m<sup>3</sup> or less (after drying)

•Mixing water amount (mass ratio) / Product : water = 1 : 2 to 1 : 2.5

Packaging: paper bag 20 kg/bag

# FREE QUICK LAG<sup>™</sup>

TOMB0<sup>™</sup> No.5810-F



Quick Lag is a surface finishing cement that combines glass fiber with a hardening agent such as an inorganic powder, cement, etc.

### Properties

- •Density 900 kg/m<sup>3</sup> or less (after drying)
- •Mixing water amount (mass ratio) / Product : water = 1 : 0.8 to 1 : 0.9
- Packaging: paper bag 25 kg/bag

# **Heat-Resistant Cloth**

The outer covering material (lagging material) is often used for surface finishing when installing heat insulation materials. We have a variety of heat resistant cloths available.

### **TOMBO<sup>™</sup> No.8200**

# **MARINETEX<sup>™</sup> Cloth**



MARINETEX Cloth is a thermal insulation cloth made of extra-fine glass fibers. It is flexible, stretchy, and can be easily installed even in the most complicated of places.

•Working temperature: 550°C or less

### TOMBO<sup>™</sup> No.8400/8400-H



INSULTEX Cloth is a thick thermal insulation cloth made of woven glass fibers. It is heatresistant and flexible, maintaining its strength even at high temperatures. It is suitable for applications that require a cloth that is thicker than our MARINETEX Cloth. We also have INSULTEX Cloth-H that is woven with a bulky yarn.

•Working temperature: 550°C or less

### **TOMBO<sup>™</sup> No.8250**



Silica Cloth is a cloth with high heat resistance made of high-purity silica fiber.

•Working temperature: 700°C or less, 1000°C or less

TOMB0<sup>™</sup> No.8300-S/-SW

# Fire-Proof Cloth-S Fire- Proof Cloth-SW



Our Fire-Proof Cloth is an inorganic fiber cloth dedicated to preventing sparks such as spatter and slag during welding and fusing. There is no need to worry about combustion thanks to the excellent heat resistance of the inorganic fibers. In addition to our general-purpose Fire-Proof Cloth S, we also have Fire-Proof Cloth SW that has improved performance and fiber scattering prevention properties through the use of special resin processing.

•We have conducted the JIS A 1323 Class A Test.

# **Reinforcement Materials (Adhesives, Surface Treatment Agents)**

Adhesives, surface treatment materials, and reinforcement materials are required to maintain the performance of heat insulation and cryogenic insulation materials for many years in hot and cold insulation work. As a leading manufacturer of heat insulation and cryogenic insulation materials, we have researched and developed products for reinforcement materials, and have accumulated many years of experience and a vast track record in doing so.

### As a reinforcement material

TOMBO<sup>™</sup> No.9832 Lagging Cloth is also available.



	TOMBO <sup>™</sup> No.	Product name	Working Temperature (°C)	Application
	9861-FF	FF Adhesive	-1700	Adhesive between high-temperature thermal insulation wool
	9861-FC	FC Adhesive	-1400	High-temperature thermal insulation wool and adhesive for general furnace walls
Adhesiv	9861-FM	FM Adhesive	-600	High-temperature thermal insulation wool and adhesive for iron plates
e [heat ins	9861-TM	TOMBO™ Fire-Proof Mortar S-40	-1400	Adhesive between firebricks
sulation]	9800-BF	Insulation Adhesive	-1000	Adhesive materials such as calcium silicate heat insulation materials and inorganic fire-proofing covering materials
	9824	MARINE BOND™ M	-550	
	9825	MARINE BOND™ K-1	-250	riigh temperature adhesive used for vitreous (giassy) cioth
	9884-SG	Silicone Sealant #30 [Gray]		
Sil	9884-SW	Silicone Sealant #30 [White]	(0 120	
icone Seala	9884-SC	Silicone Sealant #30 [Clear]	-10 - 120 Oxinc-type sincone clastic scalant	Oxime-type sincone etasuc seatant
ant	9884-SS	Silicone Sealant #30 [Silver]		
	9884-SH	Silicone sealant #30 for high temperatures	-55 - 250	Silicone sealant #30 high-temperature type It can be used up to 250°C.
Coatii	9840-A	ELASTNERT™ A	-40 - 85	Two-part polyurethane coating material It offers excellent flexibility, weather resistance, and seawater resistance.
ng material	9871	Spray Coat	-1500	Spraying on the surface of FINEFLEX BIO lining improves resistance to wind speed, scale, dust, and alkali.
Heat Transfer Cement	9817	THERMOCON™ H	40 - 500	Heat transfer cement that can efficiently transfer heat from the pipe tracing to the main body (tank or pipe).
	9818	THERMOCON™ R	-70 - 200	THERMOCON H is an air-hardened product for high temperature applications. THERMOCON R is a thermosetting product.



#### Head Office

6-1, Hatchobori 1-chome, Chuo-ku, Tokyo 104-8555, Japan International Marketing and Sales Group Phone: 81-3-4413-1132 Fax: 81-3-3552-6108 Web Site: https://www.nichias.co.jp/

Overseas Sales Companies

#### Indonesia PT. NICHIAS SUNIJAYA

Seguis Tower Level 19 Suite 1&2. Jl. Jend Sudirman Kav. 71, Jakarta 12190, Indonesia Phone: +62-21- 2277-6101 Fax: +62-21- 2793-8033 Malaysia

#### NICHIAS SOUTHEAST ASIA SDN. BHD.

Suite A1102, 11th Floor, West Wing, Wisma Consplant 2, No. 7, Jalan SS 16/1, 47500 Subang Jaya, Selangor Darul Ehsan, Malaysia. Phone: +60-3-5636-4067 Fax: +60-3-5636-4078

#### Singapore

#### NICHIAS SINGAPORE PTE. LTD.

25 International Business Park, #01-15/17 German Centre, Singapore 609916 Phone: +65-6571-0830/0838 Fax: +65-6265-7681

Vietnam

### NICHIAS VIETNAM CO., LTD

Room 709, Elite Business Center, 7th Floor Diamond Flower Building, 48 Le Van Luong Street, Nhan Chinh Ward, Thanh Xuan District, Hanoi, Vietnam

Phone: + 84-24-6664-3136 Fax: + 84-24-6666-8168

### Thailand

#### NICHIAS (THAILAND) CO., LTD.

85 Moo 1, Wellgrow Industrial Estate T. Homsin, A. Bangpakong Chachoengsao 24180, Thailand

Phone: +66-38-570-600 Fax: +66-38-570-601

### THAI NICHIAS INTERNATIONAL CO., LTD.

Unit 1107, 11th Floor, AIA Capital Center 89 Ratchadaphisek Road, Dindaeng, Dindaeng, Bangkok 10400 Thailand Phone: +66-2-001-2060 Fax: +66-2-001-2062

#### China

#### NICHIAS (SHANGHAI) TRADING CO., LTD.

霓佳斯(上海)贸易有限公司 Room 1701, THE PLACE, Tower A, No. 100 Zun Yi Road, Changning District, Shanghai, P.R.China Postcode 200051 中国上海市长宁区遵义路100号虹桥南丰城A栋1701室 邮编200051 Phone: +86-21-6236-1783 Fax: +86-21-6236-1781

#### NICHIAS (SHANGHAI) TRADING CO., LTD. Guangzhou Branch 霓佳斯(上海)贸易有限公司 广州分公司

17F-G, Gold Sun Building, No.109 Tiyu West Road, Guangzhou, Guang Dong Province, 510620, P.R.China 中国广东省广州市天河区体育西路109号高盛大厦17楼G室 邮编 510620 Phone: +86-20-3879-1640 Fax: +86-20-3879-1647

#### NICHIAS (SHANGHAI) AUTOPARTS TRADING CO., LTD. 霓佳斯(上海)汽车零部件贸易有限公司

Room 1702, THE PLACE, Tower A, No. 100 Zun Yi Road, Changning District, Shanghai, P.R.China Postcode 200051 中国上海市长宁区遵义路100号虹桥南丰城A栋1702室 邮编200051 Phone: +86-21-6236-2668 Fax: +86-21-6236-2667

#### 🕂 Cautions

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Overseas Construction Companies Malavsia NICHIAS SOUTHEAST ASIA SDN. BHD. Suite A1102, 11th Floor, West Wing, Wisma Consplant 2, No. 7, Jalan SS 16/1, 47500 Subang Jaya, Selangor Darul Ehsan, Malaysia. Phone: +60-3-5636-4067 Fax: +60-3-5636-4078 Thailand THAI-NICHIAS ENGINEERING CO., LTD. 45 Huaypong-Nongbon Road, Huaypong, Muang Rayong, Rayong Province 21150, Thailand

Phone: +66-38-682-242 Fax: +66-38-691-156

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