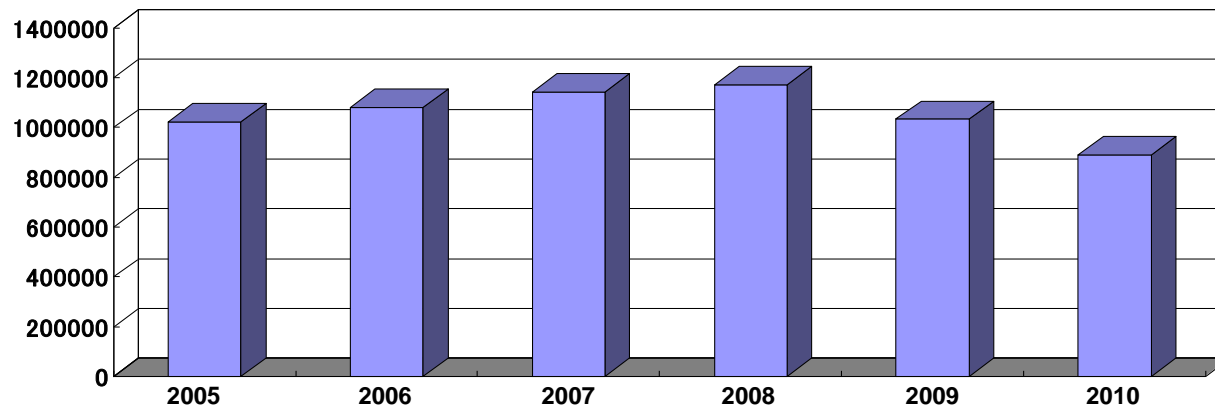


# Water-based Adhesion Technology “CYGNUS” and Derived Products

The logo for CYGNUS features the word "CYGNUS" in a bold, black, sans-serif font with a white outline. The text is centered and flanked by two blue, curved lines that sweep upwards and outwards, resembling wings or a stylized 'C' shape.

# Company Profile of Koyo Sangyo Co., Ltd.

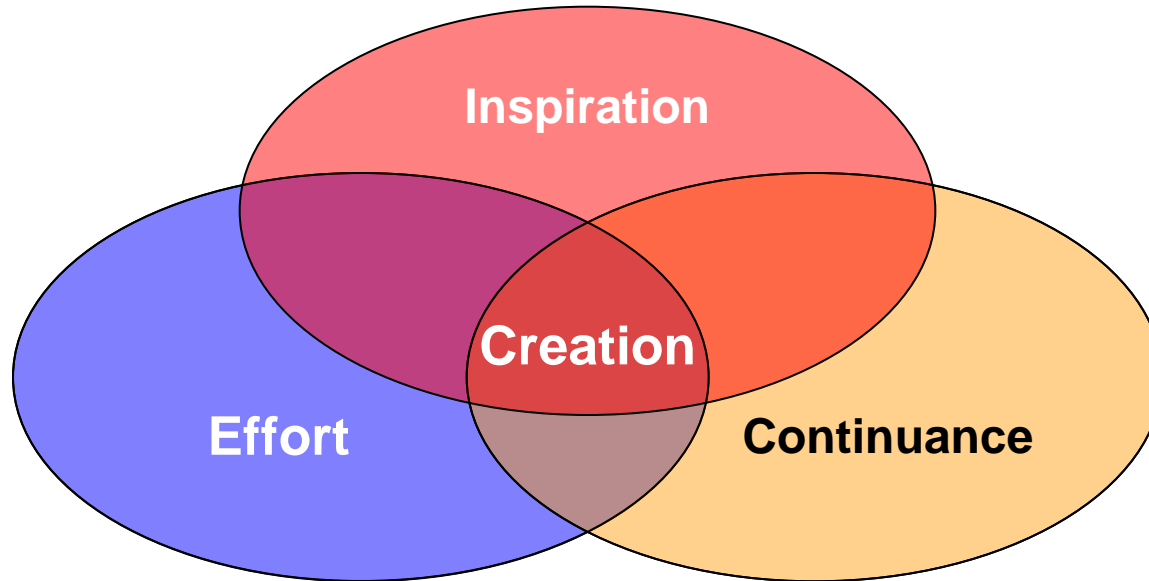
Head Office : Ishikawa LK-Building 1-9-9, Kaji-cho, Chiyoda-ku, Tokyo, Japan  
Foundation : April 2, 1958  
Representatives : Representative Director Tsugane Tanaka  
Representative Director and President Soichi Funayama  
Capital : JPY 180 million  
Number of employees : 159  
Fiscal year-end : February (once a year)  
Sales



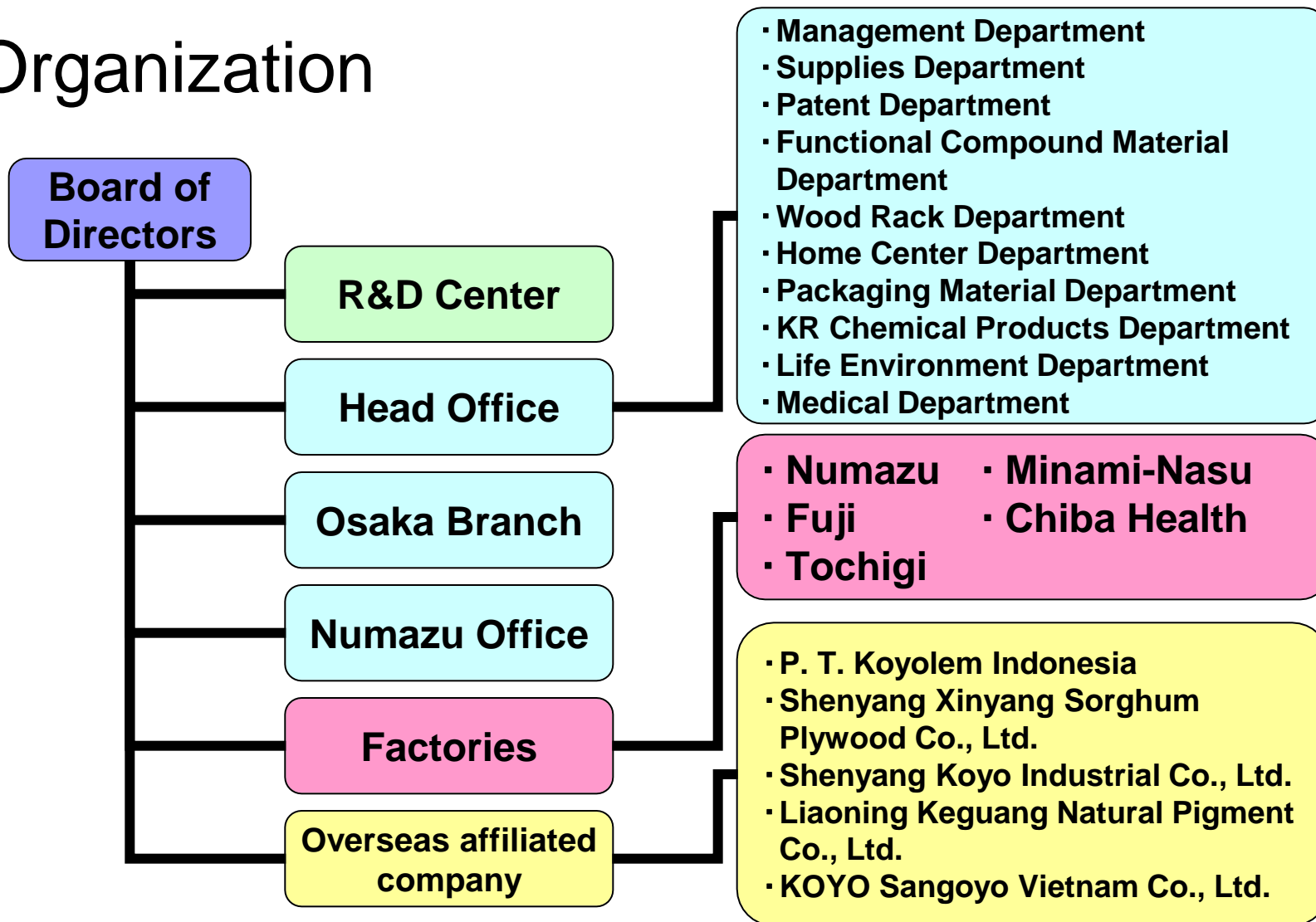
# Corporate Philosophy

**“Effort + Inspiration + Continuance = Creation”**

“**Inspiration**” organically combined with “**Constant effort**” and “**Continuous accumulation of technology**” aimed at creating products that contribute to society



# Organization



# Factories



**Numazu Factory** (Numazu-shi)  
Adhesion processing



**Fuji Factory** (Fuji-shi)  
KR bonding



**Chiba Health Factory**  
(Yamatake-shi)  
Medical and health-care products



**Tochigi Complex Factory**  
(Shimotsuga-gun)  
Polystyrene panel processing



**Tochigi Molding Product  
Factory** (Shimotsuga-gun)  
Food containers and  
packaging products



**Minami-Nasu Factory**  
(Nasukarasuyama-shi)  
Tatami mats and panels  
Distribution center

# Features of “CYGNUS” Water-based Adhesion Technology

## Non-use of organic solvent

No organic solvents such as toluene and xylene are used.



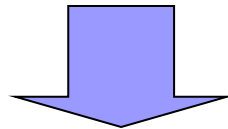
## Dramatic improvement of the weakness of water-based adhesives

Water resistance and heat resistance—two weaknesses of conventional products—are greatly improved.

# Background of Water-based Adhesion Technology “CYGNUS”

## Market trends leading to development

- 1990s      Recognition of “sick building syndrome” as a social problem.  
\* Relationship with organic substances suggested.



Architecture industry : Industry-wide countermeasures **are now in place.**  
Automobile industry : The industry **is searching for** guideline countermeasures.

- 2002      Development of our own water-based adhesives  
2003-      Start of mass-production at our Numazu Factory  
2010      Establishment of technology for mesh-containing, double-sided adhesive tape

# Introduction of Products Based on Water-based Adhesion Technology—Part 1





# Introduction of Products Based on Water-based Adhesion Technology—Part 2

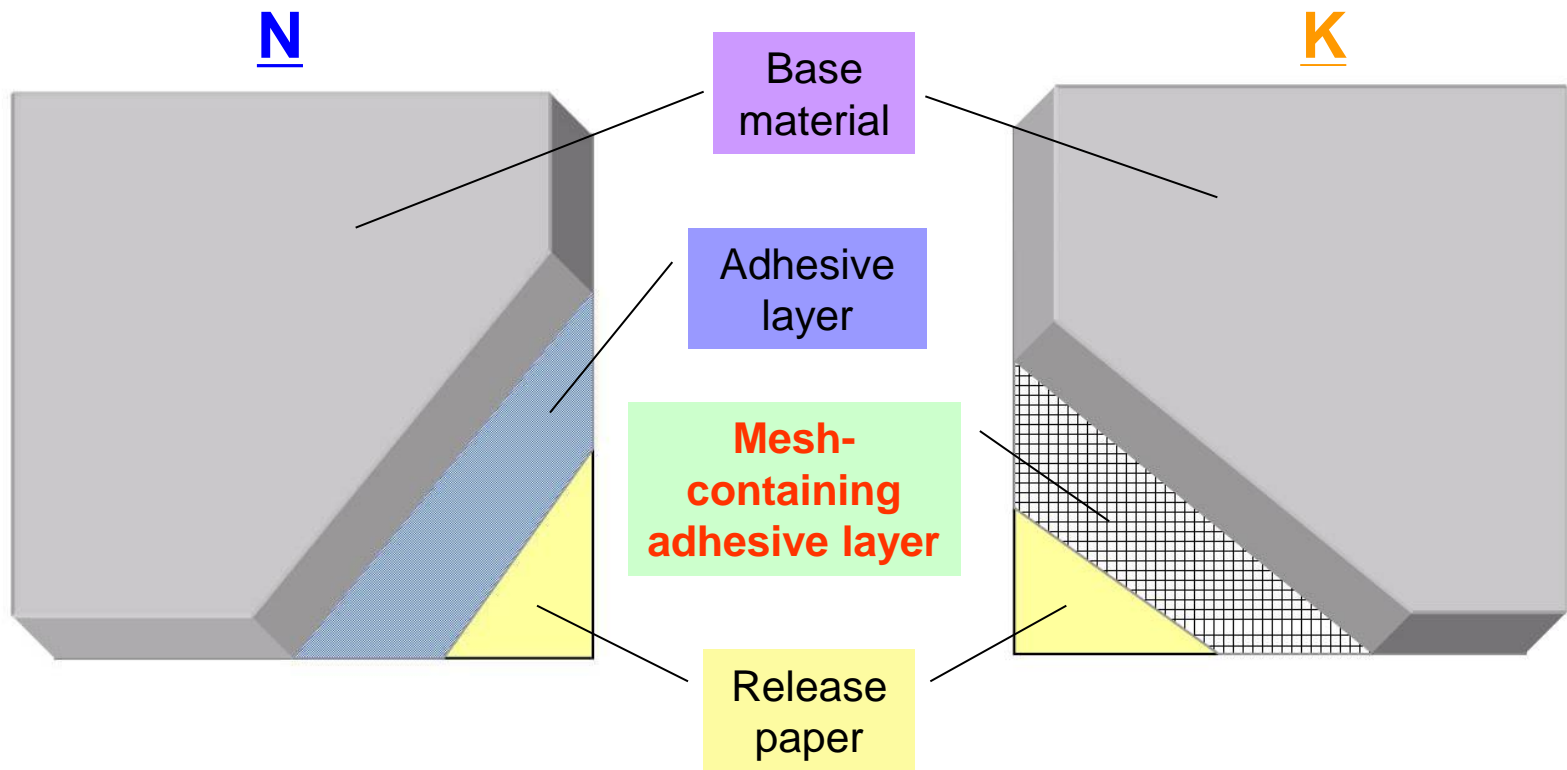
## Expansion into various products

	Direct coating	Double-sided tape
With core material	K	KW, PW
Without core material	N	NW

\*W: Tape    N: No core    K: With mesh core    P: With core

# Introduction of Products Based on Water-based Adhesion Technology—Part 3

## Directly coated products



# Introduction of Products Based on Water-based Adhesion Technology—Part 2

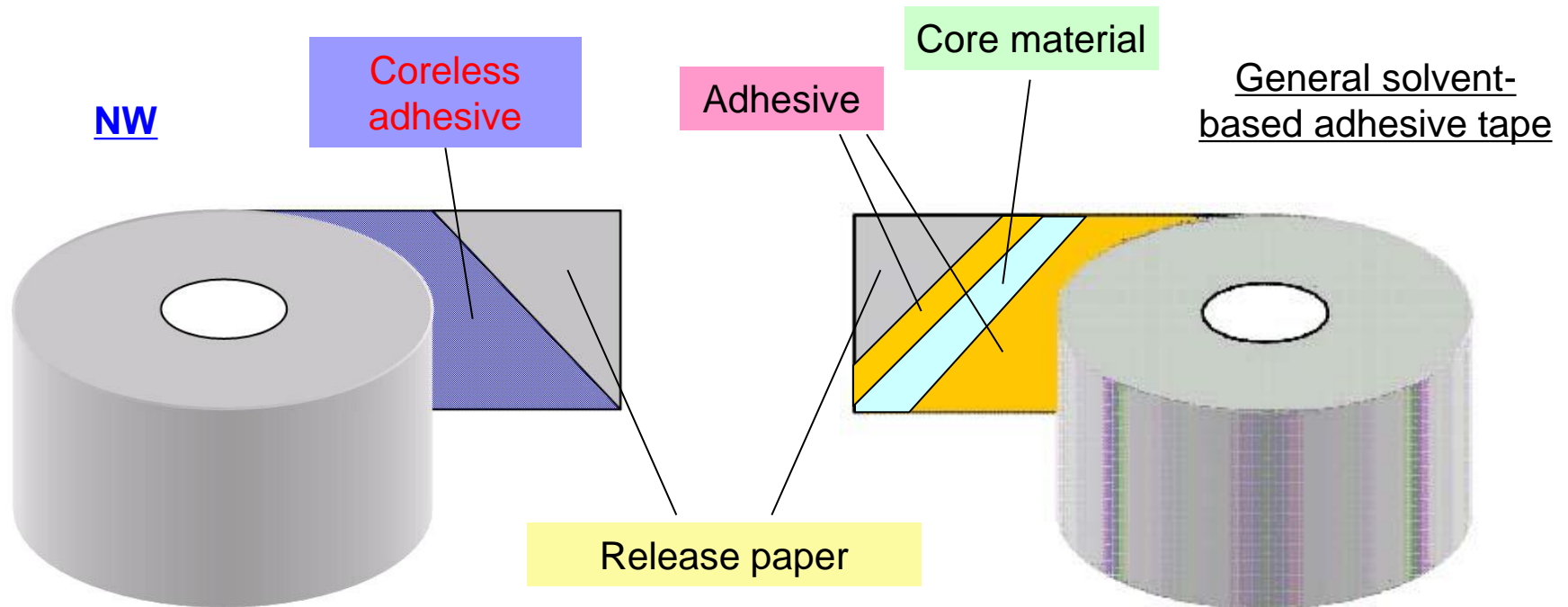
## Expansion into various products

	Direct coating	Double-sided tape
With core material	K	KW, PW
Without core material	N	NW

\*W: Tape    N: No core    K: With mesh core    P: With core

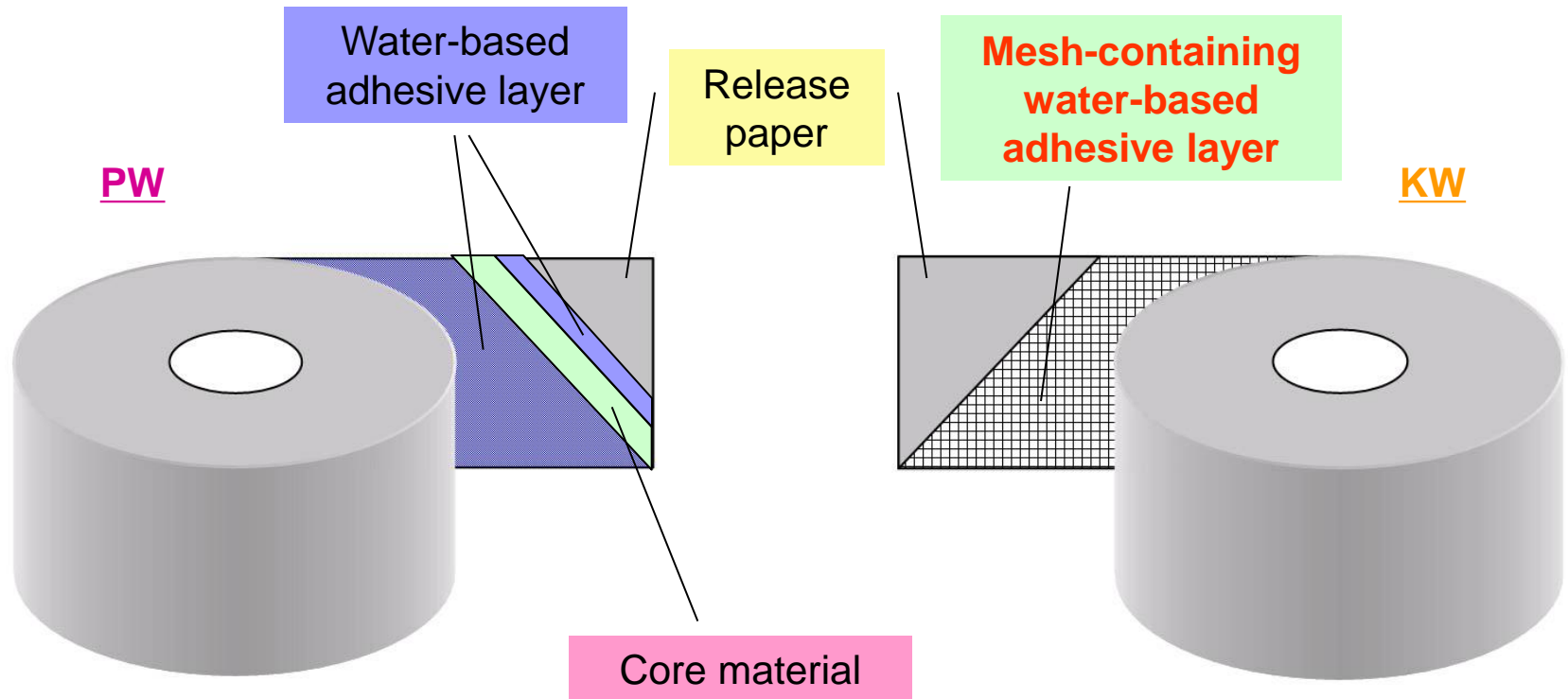
# Introduction of Products Based on Water-based Adhesion Technology—Part 4

## Difference between general tapes and our NW tape



# Introduction of Products Based on Water-based Adhesion Technology—Part 5

## Tapes with core materials



# Introduction of Products Based on Water-based Adhesion Technology—Part 6

## State of acquisition of intellectual property rights

### Patent

Under application: Japanese Unexamined Patent  
Application Publication No.  
2009-280796

Date of publication: December 3, 2009

### Registered trademark

No. 5397038

First category: Adhesive and paste

40th category: Application of adhesive to plastic, rubber, paper,  
wood, metal, and cloth

# Difference between Similar Products—Part 1

## **Superiority to conventional products**

### **Cost-effectiveness (compared to double-sided tapes)**

Less expensive than existing double-sided tapes.

### **No volatile organic solvents**

No harmful chemical substances are emitted from organic solvents.

Useful for controlling chemical emissions, for improving the workplace (foul odors, etc.), and for the business office-based management of chemical substance emissions.

### **Product quality improvement**

Core-containing products (K, KW, and PW) can contribute to the dimensional stability of products.

# Difference between Similar Products—Part 2

## Comparison with competitors' products

	Water resistance	Heat resistance	Volatile chemical substances	Dimensional stability	Light permeability
<b>CYGNUS N</b>	○	○	○	×	×
<b>CYGNUS K</b>	○	○	○	○	×
Solvent-based adhesive	○	○ or △	×	×	○
Water-based general adhesive	×	×	○	×	×
<b>CYGNUS NW</b>	○	○	○	×	×
<b>CYGNUS KW and PW</b>	○	○	○	○	×
Double-sided tape	○	○ or △	×	○	△



# Difference between Similar Products—Part 3

## Superiority to conventional products

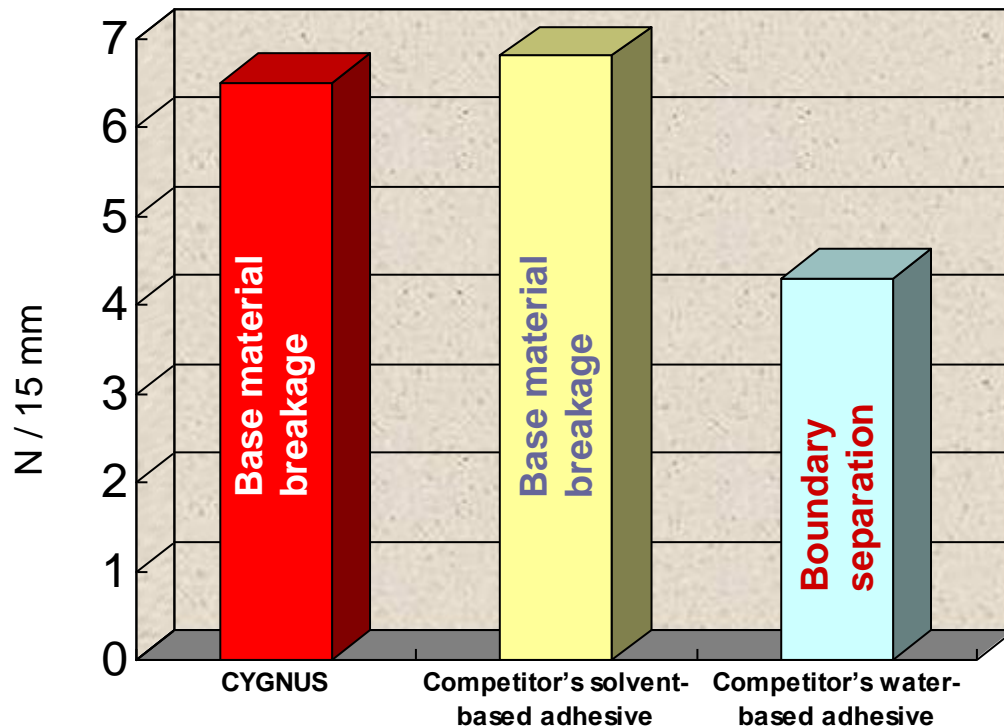


Fig: Test results of resistance to warm water (90°peeling, 300 mm/min)

○ Testing conditions:  
90°C warm water and 72 hr →  
Immersion in water at room temperature → Tension test of wet specimen

Substrate: SUS

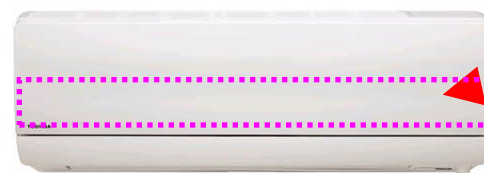
Base material: Urethane foam (asphalt dip)

→ **Comparable to solvent-based adhesives and superior to competitors' water-based adhesives!**

# Applications of CYGNUS Products—Part 1

## · Electrical home appliances

Room air conditioner: Used as heat-insulating material in the interior unit of an air-conditioner (Toshiba Carrier, Hitachi, SANYO Electric, Mitsubishi Electric, and Daikin Industries).



Interior from  
backside

Housing equipment: Used as air-tight and water-tight packing and heat-insulating material.

Ventilation unit, bath dryer (MAX), ceiling light (Odelic), etc.



# Applications of CYGNUS Products—Part 2

## · Machinery

Farm equipment: Used as noise-absorbing and vibration-damping materials (Kubota).

Instrument panel (backside)

Under floor



Elevator: Used as heat-insulating materials for gondolas (Toshiba Elevator and Building Systems).

Inside wall and backside

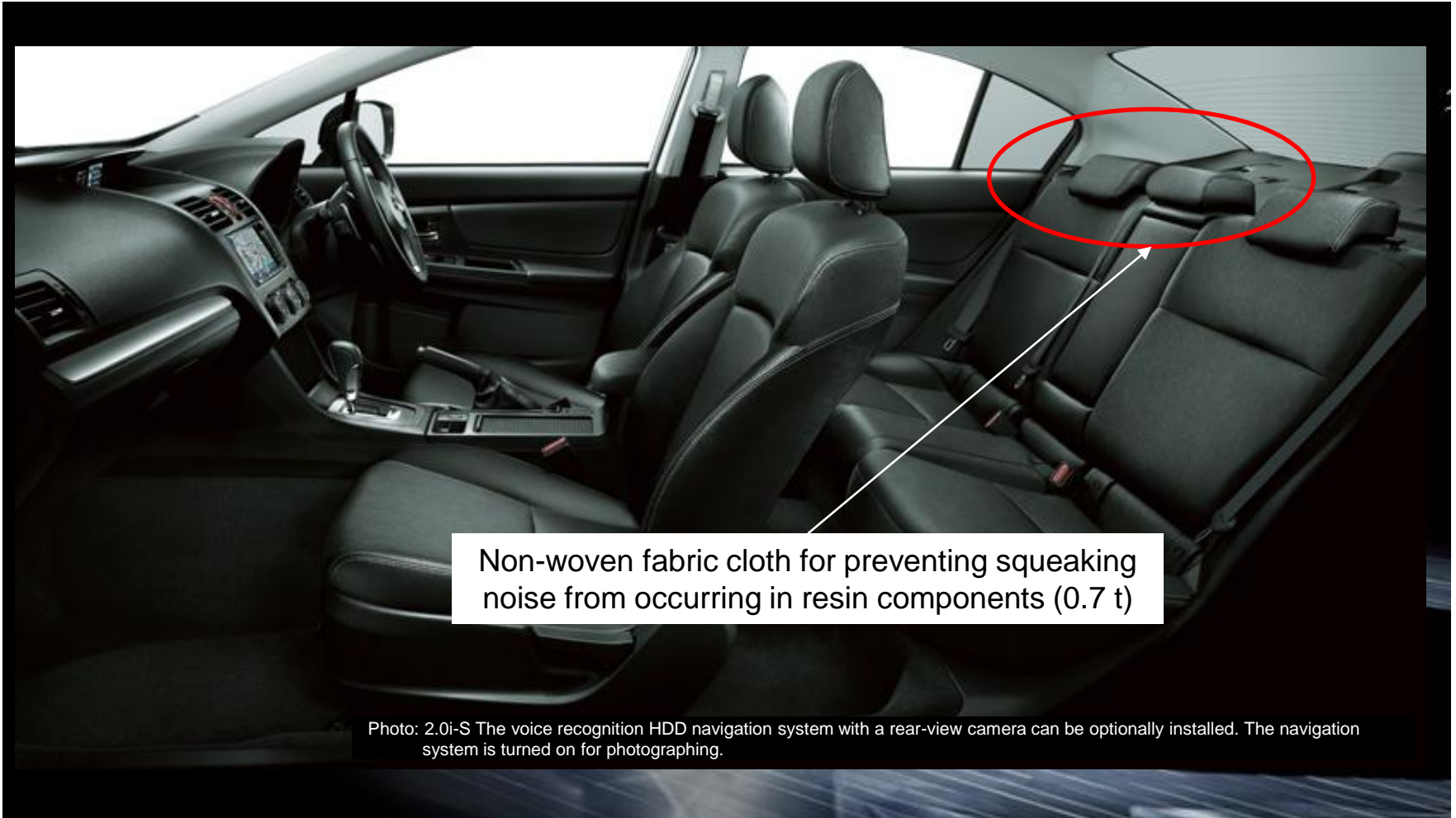


# Applications of CYGNUS Products—Part 3

*TOYOTA 86 (DBA-ZC6)*



# Applications of CYGNUS Products—Part 4



Non-woven fabric cloth for preventing squeaking noise from occurring in resin components (0.7 t)

Photo: 2.0i-S The voice recognition HDD navigation system with a rear-view camera can be optionally installed. The navigation system is turned on for photographing.

Thank you for your attention.



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