TAKIRON IVY-ONE（IVY 573）Specification

Ⅰ Products

This Specification defines the specifications and detail of TAKIRON IVY-ONE Wall Panels (IVY 573) and relative materials for installation (hereafter called Products).

1．IVY 573（Specification）

1.1 IVY 573 (1,220 mm × 2,440 mm × t=2 mm)
(4ft. × 8ft. × t=0.08inch)
C-PVC FM 4882 approved & ASTM E 84 Class 1 Wall Panel

1.2 Relative materials for installation：
Double –sided adhesive tape: TAKITAPE 47 for IYY 573
Modified silicone adhesive: TAKIBOND 47 for IVY 573
Corner parts: LCORNER 7L952 and RCORNER 7R952
Transition parts for corners: INCORNER INRL, INCORNER INRR, and OUTCORNER OUTRL
PVC base heat welding Rod: ROD 6171(Round welding rod, ϕ 4mm)

2. Certified standards

IVY573 is a product certified by the following standards. For the industrial standards described in this Specification, refer to the latest version as of the issuance date of this Specification unless otherwise noted.

2.1 American Society for Testing and Materials [ASTM]:
ASTM E-84 － Test for Surface Burning Characteristics of Building Materials

2.2 Factory Mutual [FM Approvals]
FM Class Number 4882 － Class 1 Interior Wall and Ceiling Materials or Systems for Smoke Sensitive Occupancies

Note: IVY 573 is certified only for installation onto walls less than 30 feet high with relative materials for installation of IVY573 described in 1.2 of paragraph 1

3. Mechanical properties

IVY 573 has been certified through mechanical testing as defined by the following ASTM standards:

ASTM D 638 － Standard Test Method for Tensile Properties of Plastics
ASTM D 790 － Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and the Electrical Insulating Materials
ASTM D 256 － Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
ASTM D 648 － Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position

* Please refer to the table 1 and 2 of physical properties.

Table 1 Physical Properties (U.S.A. unit)

Evaluation item	unit	IVY 573	Testing method
Tensile Stress at yield	psi	7,200	ASTM D-638
Nominal tensile Strain at break	psi	10,000	ASTM D-790
Tensile Modulus of elasticity	psi	435,000	ASTM D-790
Charpy impact strength	ft・lbs/in	2	ASTM D-256
Vicat softening Temperature	° F	210	JIS K 7206 B method (MOD ISO 306)
Dimensional change when heated	° F	200	ASTM D-648

The above data are a series of test results and given here without guarantee.

Table 2 Physical Properties (SI unit).

Evaluation item	unit	IVY 573	test method
Tensile Stress at yield	MPa	50	JIS K 7162-1B/50 (IDT ISO 527-2)
Flexural strength	MPa	75	
Flexural modulus of elasticity	MPa	3,000	JIS K 7162-1B/1 (IDT ISO 527-2)
Charpy impact strength	kJ/m^2	4	JIS K 7111-1epA (MOD ISO 179)
Vicat softening Temperature	℃	100	JIS K 7206 B method (MOD ISO 306)
Heat Deflection Temperature(HDT) 1.8MPa(264psi)	℃	95	JIS K 7191

The above data are a series of test results and given here without guarantee.

4. Data on chemical resistance

* Please refer to the table 3 of testing data

Table 3 Evaluation result

No.	Chemical		Concentration	IVY 573	Welding Rod 6171
1	Acid・Alkali	Hydrochloric acid （HCl）	1%	VG	VG
			0.5%	VG	VG
2		Sulfuric acid （H_2SO_4）	1%	VG	VG
3		Nitric acid （HNO_3）	1%	VG	VG
4		Phosphoric acid（H_3PO_4）	1%	VG	VG
5		Acetic acid （CH_3COOH）	1%	VG	VG
6		Hydrogen fluoride（HF）	1%	VG	VG
			0.5%	VG	VG
7		Hydrogen peroxide solution（H_2O_2）	1%	VG	VG
8		Sodium hydroxide （NaOH）	1%	VG	VG
9		Ammonia solution （NH_3）	1%	VG	VG
10		Sodium hypochlorite （NaClO）	1%	VG	VG
			0.5%	VG	VG
11	Solvent	METHANOL （Methyl alcohol）	100%	VG	VG
12		ETHANOL （Ethyl alcohol）	100%	VG	VG
13		ISOPROPANOL （Propan-2-ol）	100%	VG	VG
14		BUTANOL （Butyl alcohol）	100%	VG	VG
15		ETHYLENE GLYCOL （Ethylene glycol）	100%	VG	VG
16		ACETONE （Acetone）	100%	**BAD /MELTED**	**BAD /MELTED**
17		TOLUENE （ Toluene ）	100%	**BAD / MELTED**	**BAD / MELTED**
18	Others	Sodium chloride （NaCl）	1%	VG	VG
19		Ammonium fluoride （NH_4F）	1%	VG	VG
20		Potassium chloride （KCl）	1%	VG	VG
21		Detergent	1%	VG	VG
22	Sterile Liquid	Sodium Dioxochlorate Detergent Solution （$C_{18}H_{29}SO_3Na+NACIO_2$））	1%+0.5%	VG	VG
23		Lactic Acid （$CH_3CHOH)COOH$））	1%	VG	VG
24		Paracetic Acid Preparation ($CH_3COOOH+H_2O_2+CH_3COOH$)	0.5%	VG	VG

The above data are a series of test results and given here without guarantee.

Evaluation Method : JIS A5705 Staining Resistance for Resilient Floor Coverings

The ２ｍｌ of chemical is mounted on IVY573. The specimen is kept in contact with the chemical for 24hrs at 23degree C. After 24hrs, specimen was rinsed with water and its Surface Appearance were observe ｄ.

Evaluation result: VG: No change was observed SC: Slight change was observed BAD: Big change was observed.

Note1: Remember to use waste rug, sponge, or other soft materials to clean panels. Scabbing surfaces with a metal brush or other improper materials can result in scratched or damaged surfaces.

Note2: Prior to using a cleaning solvent, please check in advance that IVY 573 is resistant to the cleaning solvent.

Ⅱ Installation

IVY 573 shall be applied to substrates that meet the FM4880 and FM4882 standards.

1. Requirement

a) A test for ash content of the panel core without adhesive or facers per ASTM D 482

b) A combustion test of the panel core without adhesive or facers conducted in accordance with ASTM E2058 at an applied heat flux of 50 kW/m2 in air enriched to 40% oxygen.

c) A determination of the heat of combustion when tested without adhesive or facers in oxygen bomb per ISO 1716.

2. Verification

a) When tested for ash content, the samples shall have a minimum content of 90%. When a single test produces a result of less than 90%, two (2) additional tests shall be permitted to be conducted. The results of all three (3) tests shall be averaged. When averaged, the result shall not be less than 90%.

b) When tested for combustion, visible flaming of the panel core shall not occur during the entire test. The test shall be terminated at 15 minutes if the mass loss from the sample has ceased and/or if visible vapors (if present) have ceased to be generated. If at 15 minutes, the sample still exhibits mass loss and/or visible vapors, the test shall continue until the mass loss and/or visible vapors cease.

c) When tested for heat of combustion, the panel core shall have a maximum heat of combustion of 2.0 kJ/g (860 BTU/lb). When a single test produces a result of less than 2.0 kJ/g (860 BTU/lb), two additional tests shall be permitted to be conducted. The results of all three (3) tests shall be averaged. When averaged, the result shall be less than 2.0 kJ/g (860 BTU/lb).

3. Transportation and storage

1) IVY 573 Wall Panels shall be transported and stored according to Takiron's instructions and notices, and this Specification.
2) When transporting IVY 573 Wall Panels to the installation areas, they shall be packed in crates or put in containers with labels indicating the manufacturer's name, and the name and grade of the model.
3) IVY 573 Wall Panels shall be stored horizontally in-undamaged crates or containers. They shall not be stored vertically.
4) IVY 573 Wall Panels shall be acclimated at a temperature between 65°F (18.3°C) and 85°F (29.4°C) for 24 hours or more before the start of construction work.
5) The manufacturer's order placement procedure and lead-time shall be followed so that construction work will not be delayed.

4. Requirements for Installation

1) The temperature of the installation area shall remain constant between 65°F (18.3°C) and 85°F (29.4°C) for at least 72 hours before installation.
2) The temperature of the walls shall be at least 65°F (18.3°C), and shall not exceed 85°F (29.4°C) during installation work.
3) Relative humidity shall not exceed 80% during installation work.
4) IVY 573 Wall Panels shall not be exposed to direct sunlight during and after installation work. If the temperature of the panel surface exceeds 100°F (37.8°C), the IVY 573 Wall panels may warp or become discolored.

5. Inspection

The contractor shall inspect the conditions of all installation areas and the Products that will be installed. The contractor shall notify the design office and other relevant parties of any trouble that may cause a delay in the installation schedule. Installation work can start only when the conditions are judged normal by the contractor. The start of installation work will be defined as the time when the contractor approved the conditions for the installation work.

6. Preparation

1) IVY 573 Wall Panels shall be removed from packages before installation so that they can be acclimated for 24 hours to the environment where they will be installed.
2) Switch plates, fastening devices and other projections on walls where IVY 573 Wall Panels will be installed shall be removed, and the wall surface shall be given a flat, smooth finish.
3) Prepare for installation according to Takiron's instructions and notices, and this Specification.
4) The temperature of the installation areas shall remain constant between 65°F (18.3°C) and 85°F (29.4°C) for at least 72 hours before and during installation.

7. Installation

1) Installation of IVY 573 Wall Panels shall conducted according to Takiron's instructions and notices, and this Specification.
2) IVY 573 Wall Panels shall be installed without bends, air bubbles, wrinkles, deformed ends, stains, dirt, pinholes at joints, and other defects.

8. Contractor

IVY573 shall be installed by the contractor selected by the general contractor, the owner and the user at own risk and account. Takiron shall not be responsible for installation work of IVY573.

9. Completion and cleaning

1) After installation, the contractor shall clean all of the IVY 573 Wall Panels, removing dirt from the entire surface.
2) The contractor shall be responsible for disposing of the remnant of the Products, waste and refuse generated during installation.
3) After the completion of cleaning, the contractor shall obtain approval from the general contractor, the owner and the user after their inspection of the finished installation.

III Routine maintenance

1) Clean and wipe IVY 573 Wall Panels with a rag, sponge or other soft material.
Never use hard brushes that may damage the surface of IVY 573 Wall Panels.
2) The usage environment temperature shall be at least 50°F (10°C), and shall not exceed 100°F (37.8°C).
3) In the case of cracks in IVY 573 Wall Panels, cuts through joints, or any other defects, the IVY 573 Wall Panels shall be repaired promptly.

IV Certification

Takiron will issue the following certificates upon request from the general contractor, the owner and the user:

a. FM Approvals FM 4882 standard approvals certification
b. MSDS for IVY 573
c. MSDS for TAKIBOND 47 & TAKITAPE 47
d. MSDS for IVY 573 Welding ROD 6171
e. MSDS for IVY 573 Transition parts INCORNER INRL & INRR, OUTCORNER OUTRL
f. MSDS for IVY 573 Transition parts LCORNER 7L952 ＆ RCORNER 7R952

V Warrantee

Takiron shall only guarantee that IVY 537 will not suffer surface discoloration or deform for one year after the completion of construction under normal use conditions in conformity with this specification. Takiron assumes no responsibility for damage caused by construction, processes of construction work, or any other causes.

Information herein is considered accurate to the best of our knowledge. It is offered solely for your consideration, examination and verification, and is not to be construed as a representation or warranty expressed or implied, for which Takiron Co., Ltd. assumes any legal responsibility excluding above warranty. Takiron Co., Ltd. disclaims any liability incurred as a result of the use of IVY537 in accordance with the values of physical properties herein or in catalogue of IVY537.

No information herein shall be construed as an offer of indemnity for infringement or as a recommendation to use IVY537 in such a manner as to infringe any patent, utility model and design, domestic or foreign.

THERE ARE NO WARRANTIES AS TO PRODUCTS DESCRIBED HEREIN, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE.

TAKIRON TAKIBOND47 Specification

1. PRODUCT DESCRIPTION

TAKIBOND47 is a one component, moisture curing, elastic adhesive, based on silyl modified polymer.

It is environmental-friendly and has good weather resistance, so it will fit for both interior and exterior applications.

2. Application

- Sanitary and kitchen areas – resist mould growth
- Bonding to walls panels, Insulation material, plinths, lathes

3. Substrates

Metals: Aluminum, Stainless Steel, Iron, PVC Steel, Galvanized Steel

Plastics: Rigid PVC, Polycarbonate

Woods: Cedar, Cypress, Plywood, and Particle Board

Inorganic Materials: Mortar, Concrete, Slate, ALC, Melamine decorative sheet, Glass (*)
Marble, Granite, Plasterboard, Ceramic, Brick

* Not suitable for glazing use.

* Please refer to the table 4 of testing data.

Table 4 Adhesion of TAKIBOD47 to Various Substrates

Substrates		Adhesion*1
Metals	Aluminum	○
	Stainless Steel, Iron	○
	PVC Steel	○
	Galvanized Steel	○
Plastics	Rigid PVC	○
	Acrylic, or Polyester Paint	×
	FRP	△
	Polystyrene	△
	Polycarbonate	○
	PE, PP, PTFE(e.g. Teflon)	×
Woods	Cedar, cypress	○
	Plywood	○
	Particle Board	○
Inorganic Materials	Mortar	○
	Concrete	○
	Slate	○
	ALC	○
	Marble	○
	Ceramics Tile	○
	Glass	△ *2
Rubbers	CR Rubber	×
	EPDM	×
	NBR	×
	EP Rubber	×

*1 Evaluation result: ○ : Good, △ : Possible, × : Can't be used

*2 Exposure to the sunlight may cause adhesive failure.

4. Features & Benefits

・Solvent, isocyanate, and water free

・Direct Adhesion

・Good initial fixation & rapid cure time

・One part system; Simple, trouble free application

・Elastic & tenacious

Excellent durability with high tensile, shear strength

・Easy to clean up

・Bond to a wide variety of substrates

・No gassing or foaming

・Easy to trowel at any temperatures

・Stable peak retention

・Paint able

・Good UV and weather resistance

・No staining rocks, concrete, etc

* Please refer to the below table.

Feature	TAKIBOND47
Curing system	One component Moisture cure
Main chain of polymer	Poly propylene glycol
Compatibility with paints	Good
No-staining	Good
VOC emission	Almost no emission
Mold resistance	Excellent
Heat resistance	Max. 90 degrees C
Solids content	ca.98%
Glass glazing	Can't be used

5. Technical Specifications

Basic Material :	Modified Silicone Polymer
Color:	White (colors can be added on request)
Odor:	Odorless
Solids Content:	ca. 98%
Specific Gravity:	ca. 1.5
Consistency:	Pasty, thixotropic Viscosity; ca. 400 Pa・s（10rpm, at 23℃）
Tack Free Time:	ca. 20 mins (at 23℃, 50%RH)
Cure Depth:	ca. 4 mm/24hr (at 23℃, 50%RH ）

(Curing time is dependent on temperature and humidity.)Application Temperature*1: 5℃ to 40℃

In Service Temperature Range:	-30℃ to 90℃
Stress at 100% Elongation:	ca. 0.6 MPa (According to JIS K-6301)
Tensile Strength*2:	ca. 1.5 MPa (According to JIS K-6301)
Elongation To Break:	ca. 500% (According to JIS K-6301)
Shelf Life:	12 months in unopened container

（Shown above are all typical values.）

*1 Please refer to the Figure 1.

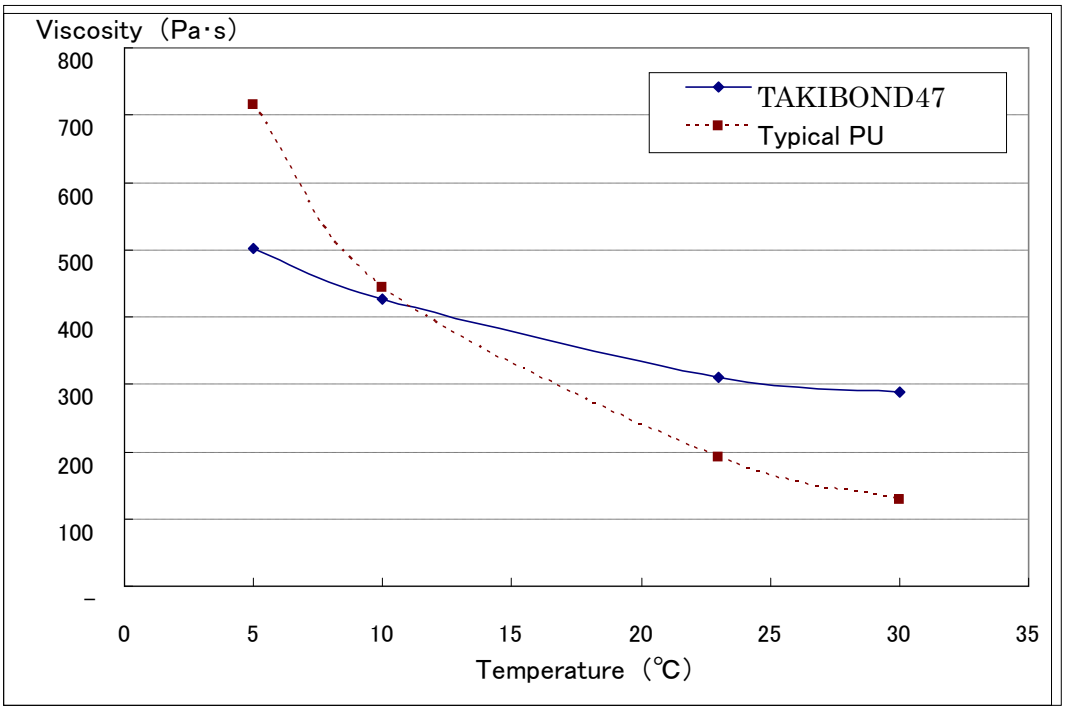


Figure 1 Temperature - Viscosity of TAKIBOND47(Refaference:Polyuretan type adheshive)
TAKIBOND47 keeps low viscosity even in lower temperature.

*2 Tensile Strength – Leaving Conditions

Substrates: Calcium silicate board / Gypsum board
Calcium silicate board / Calcium silicate board
Aging conditions: 5℃, 23℃ * 24hr, 48hr
Adhesive Thickness: 1.2 mm, 2.0 mm
Test speed: 5 mm/min

Thickness	Aging conditions		Calcium silicate board /gypsum board	Calcium silicate board /calcium silicate board
1.2mm	5℃	24hr	0.10 sf 100%	0.39 sf80% af20%
		48hr	0.10 sf 100%	0.55 sf 100%
	23℃	24hr	0.10 sf 100%	0.53 sf80% af20%
		48hr	0.10 sf 100%	0.70 sf 100%
2.0mm		48hr	0.10 sf 100%	0.44 sf90% af10%

6. Clean Up

Uncured TAKIBOND47 may be removed from tools and substrates with mild solvents.
E.g. methylated spirits, mineral turpentine, and acetone. Trim with a sharp knife when cured.

7. Packaging

Interior content: 330ml per cartridge.
Number per carton: 10 cartridges per carton.
Application Method: Manual or pneumatic caulking gun

8. Surface Preparation

All surfaces must be clean,sound and free of dust,standing water,oil or contamination.
and cracks. However, TAKIBOND47 has remarkable ability against wet surfaces.

9. Applying TAKIBOND47

TAKIBOND47 can be applied directly, usually without priming, onto the surface.
When used for adhesive, just apply directly from the cartridge, set and press the substrate manually to get enough adhesion strength; thus making application easy and saving time.
TAKIBOND47 should be tooled or smoothened within 5 minutes(at 23℃50%).
Wait at least 24 hours to give any external stress.

10. HAZARD INFORMATION

- This product doesn't contain any hazardous ingredients; according to the criteria of Japanese Ministry.
- Avoid long time contact with skin. Wear personal protective equipment (chemical resistant goggles/gloves/clothing)to prevent direct contact with skin and eyes.
- Store in a dry place at temperatures between +5℃ and +30℃.
- Keep tightly closed to prevent contact to moisture.

11. Protect children from being touched

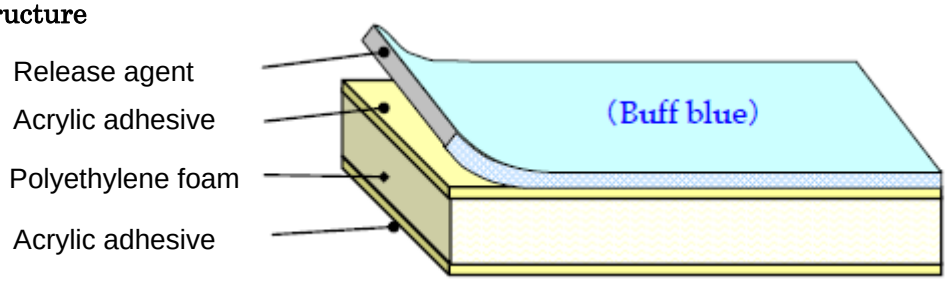
For further information, a Material Safety Data Sheet (MSDS) is available on request.

We recommend preliminary adhesion tests

The data and information contained herein is based on our experimental works and are believed to be correct; however they should not be construed as guaranteeing any specific property and performance of the products. Therefore, please check and evaluate carefully whether our products fulfill your requirements or not before use.

TAKIRON TAKITAPE47 Specification

1. Structure



2. Use

Suitable for temporarily fix to gypsum board and base sheet.

3. Features

(1) VOC 14(*) chemical substances are not contained in this tape.

(2) The initial adhesion is excellent. Also suitable to adhere in the low temperature atmosphere.

(3) Easy to cut the tape and fits to rough surfaces because special foam is structured in base material.

(4) The release liner is hard to tear.

*VOC 14 chemical Substances ; Formaldehyde, Toluene, Xylene, P-Dichlorobenzene, Ethyl benzene, Styrene, Chlorpyrifos, Di-n-butyl phthalate Tetradecane, Diethylhexyl phthalate, Diazinon, Acetaldehyde, Fenobucarb

4. Standard Size

Table-1 Standard Size

Item	Unit	Standard size
Tape thickness	mm	1.1
Width	mm	20
Length	mm	10

5. General adhesion property

Table-2 General adhesion characteristics

Item	Unit	–	Value	Mwasurement method
Adhesion Power (90° Peeling, to SUS Plate)	N/25mm	2nd	14.4	Based on JIS Z 0237
		1st	20.9	
Adhesion Power (90° Peeling, to Gypsum Board)	N/25mm	2nd	11.3	
		1st	12.6	
Tack(J.DOW Method)	1/32″	2nd	32<X	
		1st	32<X	
Holding Power (To SUS Plate, 40℃)	mm	2nd	0.2	
		1st	0.1	

***The figures above are not guaranteed values.

6. Caution

1) Remove dirt, water, oil and other contaminants from the substrates' surface before use.

2) Avoid re-application, and leave it for several hours after application.

3) Avoid direct application on uneven or coarse surfaces and human bodies.

4) Avoid storing in places with high temperatures, high humidity and direct sunlight.

5) Do tests before first application to new substrates'. If in doubt about is use, please contact us.

6) The warranty period of products is 6 months after delivery date.

*The figures on this Technical Data Sheet are measured values and not guaranteed values.

*If you wish to use tape in special ways, please contact us before use.

There is a possibility of changing appearance and specification without notice. All the users must use our product after judging and testing to
see if it suits the usage that the product demands.

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