ThreeBond

Three Bond International, Inc.
Technical Data Sheet

TB3373C – ANISOTROPIC CONDUCTIVE ADHESIVE

Information

TB3373C is a single component, solvent based, flexible, anisotropic conductive adhesive. TB3373C can be compression bonded over a wide temperature range (120-160ºC). Since main component of TB3373C is synthetic rubber, this product forms flexible film. It can be used on parts that cannot be soldered. (e.g. Transparent conductive glasses and plastic substrates)

Applications

The TB3373C is a screen printable anisotropic conductive adhesive that is designed for electrical interconnects. Because TB3373C is a z-axis conductive adhesive it can make a conductive bond between matched conductive pads without electrically bridging between adjacent pads easily down to pitches of 500 μm.

Screen-printing recommendation:

- Print:
    1. Mesh: 80 mesh stainless steel, 100μm diameter each wires
    2. Thickness: 15 – 25 μm after drying

- Dry: 100°C × 10-20 minutes, or 120°C × 5-10 minutes

Typical Properties

1. Uncured Material

Properties	Units	Value	Test Method	Remark
Main Component	-	Solvent based, Synthetic rubber	-	-
Solvent Contents	-	Toluene, Isophorone	-	-
Appearance	-	Light yellow-green liquid	3TS-201-02	-
Viscosity	Pa • s (P)	75 (750)	3TS-210-02	BH Type No.7×20rpm.
Specific gravity	-	1.01	3TS-213-02	-
Heating Residual	%	35	3TS-217-01	150°C × 1 hour

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2. Cured Material

Properties	Units	Value		Test Method	Remark
Connection Resistance	Ω	15		3TS-410-01	*1
Insulation Resistance	Ω	$>10^9$		3TS-403-01	0.4 mm Pitch 0.2 mm Pitch *2
Peel Strength	N/m	Control	1000h	3TS-304-42	60°C × 95%RH 1000 hours
PET Film / PET Film		670	610		
PET Film / ITO Glass		850	820		
PI Film / ITO Glass		650	715		
PI Film / Glass Epoxy		750	700		

Recommended Dry Condition : 100°C × 10-20 minutes, 120°C × 5-10 minutes
Recommended Bonding Condition : 3 MPa compression for 10 sec @ 140°C

*1: FPC / ITO Glass
FPC : 25μm polyimide film/35μm copper foil with gold plating; 400 μm pitch
ITO : Sodium lime glass / ITO sputtered (10Ω/□) (10Ω/□ : 10Ω/cm^2)
Bonding conditions : 3 MPa compression for 10 sec @ 140°C.

*2: Test Substrate
FPC : 25μm polyimide film with electrodes comprised of 35μm copper with gold plating.
Glass : Sodium lime glass
Bonding conditions : 3 MPa compression for 10 sec @ 140°C
Voltage applied : DC 10V × 1 min.
Measurement equipment : Hewlett Packard Hi-resistance meter HP4339B

2. Physical Testing

A. Connection Resistance

Connection resistance is measured on flexible circuitry (FPC) bonded to ITO glass with TB 3373C. Aged under the specified temperature and measured at room temperature after 60 minutes.

(1) Printed Circuit Board

Test Substrates : 38μm thickness PET film, carbon paste (Urethane : 80Ω/□), 600μm pitch, (L / S = 0.3mm/0.3mm), 20 conductors / sheet.
ITO glass : 60mm × 25mm × 1.1mm (10Ω/□)
Bonding conditions : 3 MPa compression for 5 sec @ 120°C
3 MPa compression for 10 sec @ 140°C
3 MPa compression for 20 sec @ 160°C
Aging temperature : 80°C, 60°C × 95%RH, -20°C
Number of test : n=2
Measurement equipment : Hewlett Packard Hi-resistance meter system

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(2) Polyimide Circuit Board

Test Substrates : 400μm pitch, (L / S = 0.2mm/0.2mm),
25μm thickness polyimide circuit board,
50 conductors / sheet.

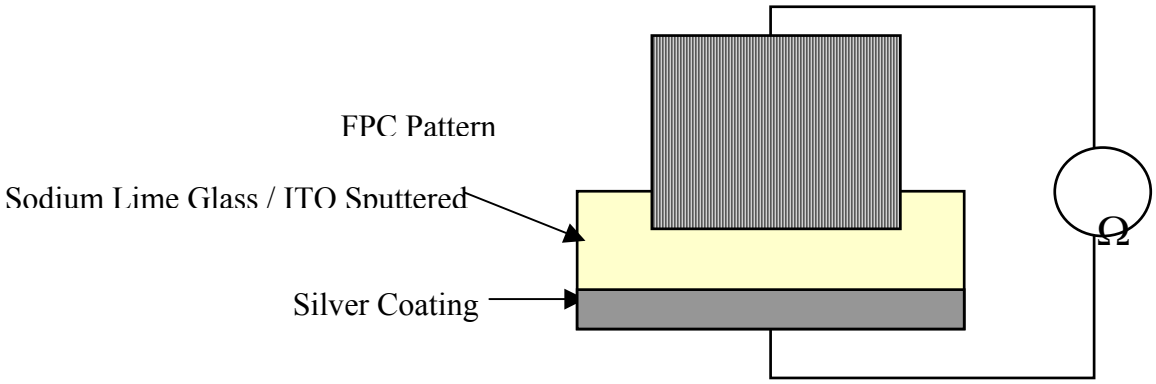
ITO glass : 60mm × 25mm × 1.1mm (10Ω/□)

Bonding conditions : 3 MPa compression for 5 sec @ 120°C
3 MPa compression for 10 sec @ 140°C
3 MPa compression for 20 sec @ 160°C

Aging temperature : 80°C, 60°C × 95%RH, -20°C

Number of test : n=2

Measurement equipment : Hewlett Packard Hi-resistance meter system



B. Insulation resistance

Insulation resistance is measured between two electrodes in a comb shaped pattern with a 200μm separation between electrodes under 10 VDC load. Aged under the specified temperature and measured at room temperature after 60 minutes.

Test Substrates : 400μm pitch, (L / S = 0.2mm/0.2mm)
25μm thickness Polyimide circuit board (35μm Cupper / Gold plating)
20 conductors / sheet.

Sodium lime glass : 60mm × 25mm × 1.1mm

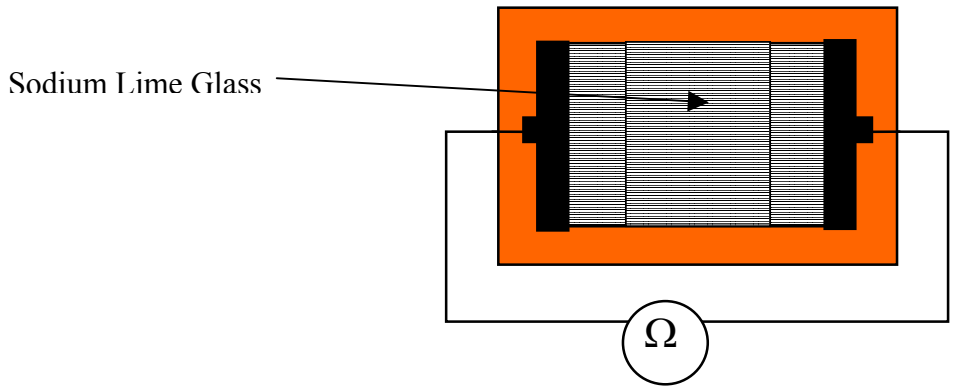
Bonding conditions : 3 MPa compression for 5 sec @ 120°C
3 MPa compression for 10 sec @ 140°C
3 MPa compression for 20 sec @ 160°C

Aging temperature : 80°C, 60°C × 95%RH, -20°C, 100°C, 85°C × 85%RH

Number of test : n=2

Voltage applied : DC 10V × 1 min.

Measurement equipment : Hewlett Packard Hi-resistance meter HP4339B

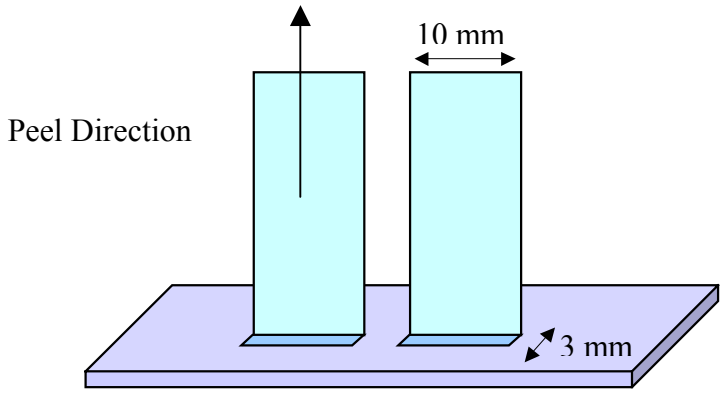


C. Peel strength

In this test the T-peel strength is measured. Width of the test piece is 10mm. Pull speed is 50mm/min.

Test Substrates :	38μm PET film / 75μm PET film (T-peel test)
	38μm PET film / ITO glass (90° peel test)
	50μm PI film / ITO glass (90° peel test)
	50μm PI film / glass-epoxy (90° peel test)
Bonding conditions :	3 MPa compression for 10 sec @ 140°C
Tensile speed :	50 mm/min.
Aging temperature :	80°C, 60°C × 95%RH, -20°C, 100°C, 85°C × 85%RH
Number of test :	n=3

Measurement equipment : Tensile strength equipment



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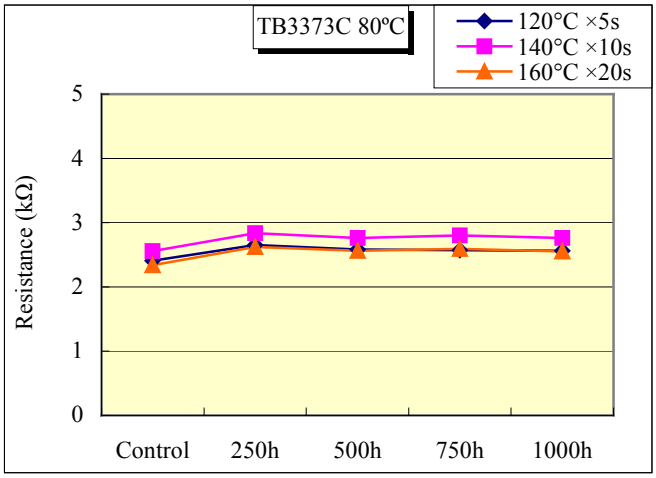
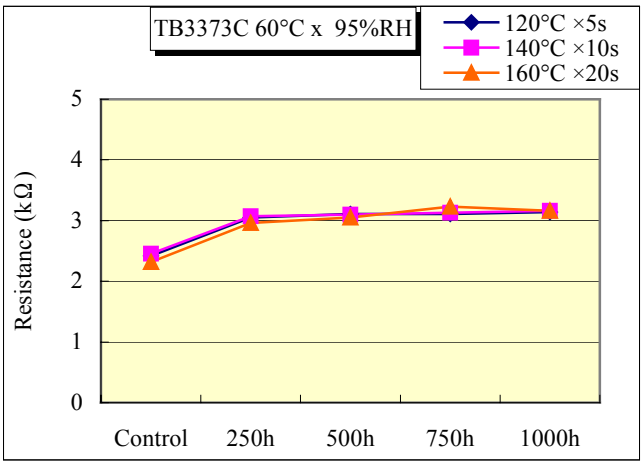
A-1 Connection Resistance (Printed Circuit Board)

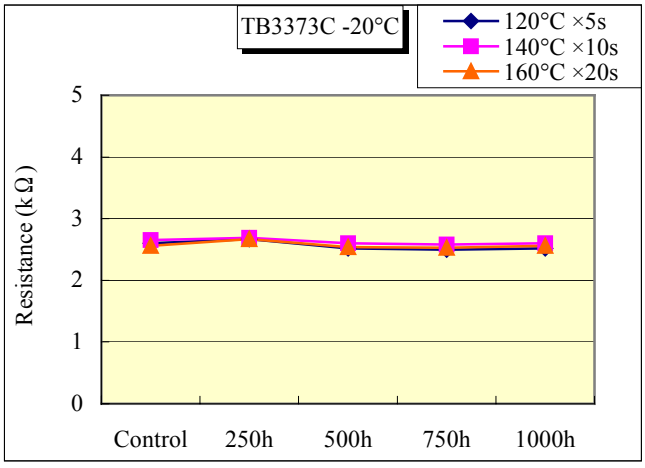
1) 80°C Aging



2) 60°C × 95%RH Aging



3) -20°C Aging



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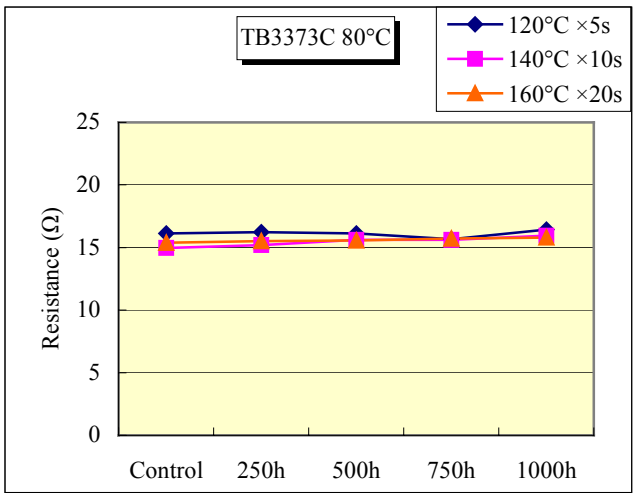
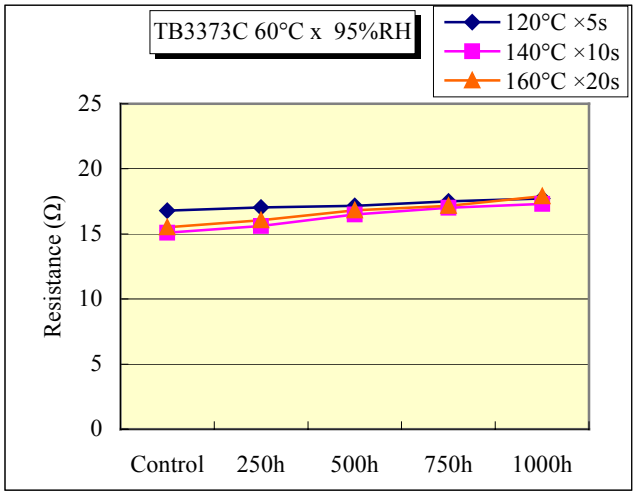
A-2 Connection Resistance (Polyimide Circuit Board)

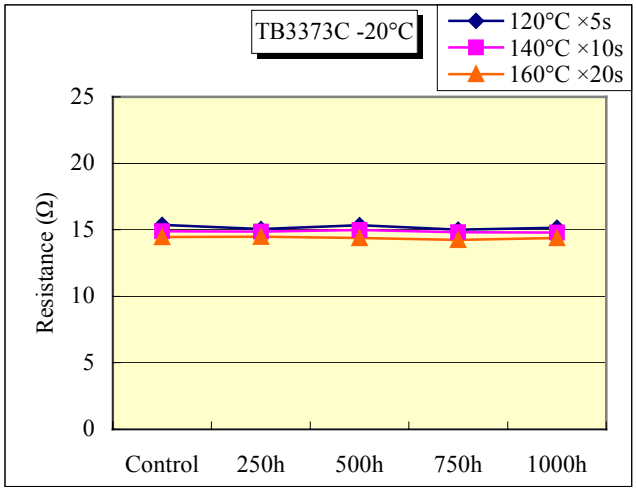
1) 80°C Aging



2) 60°C × 95%RH Aging



3) -20°C Aging



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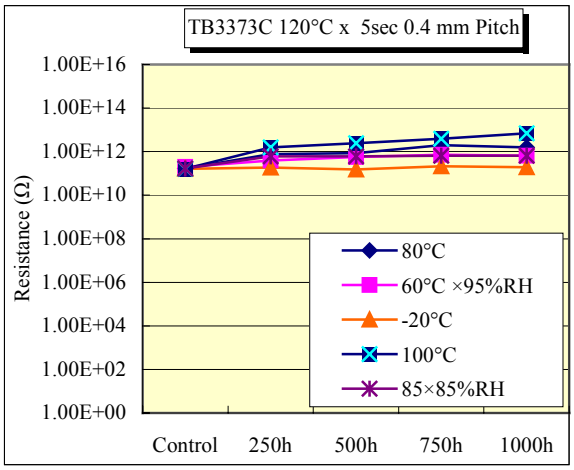
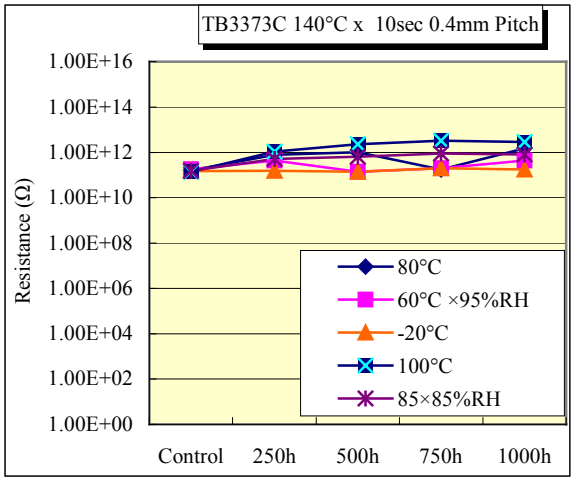
B. Insulating Resistance

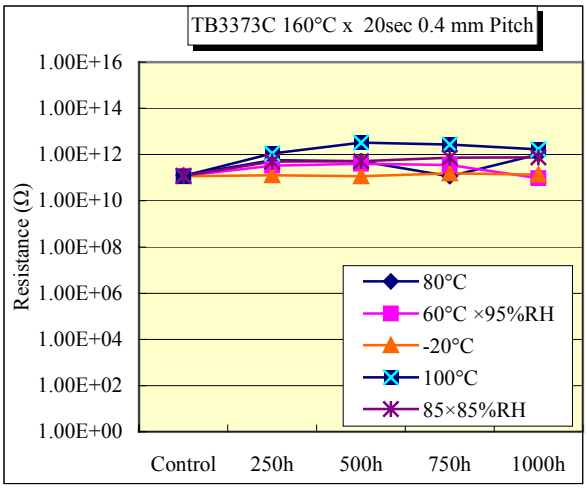
1) 0.4 mm Pitch 120°C × 5sec



2) 0.4 mm Pitch 140°C × 10 sec



3) 0.4 mm Pitch 160°C × 20 sec



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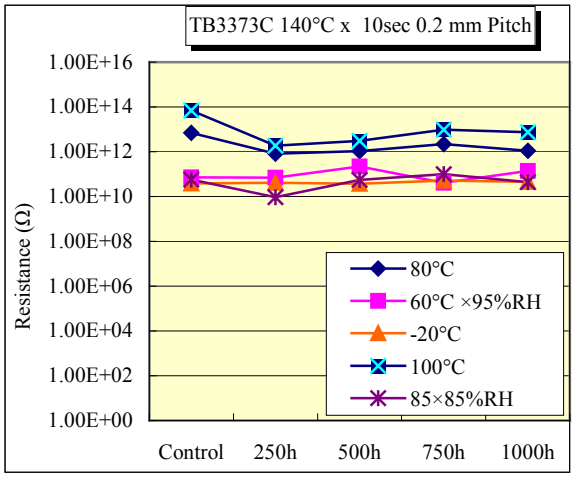
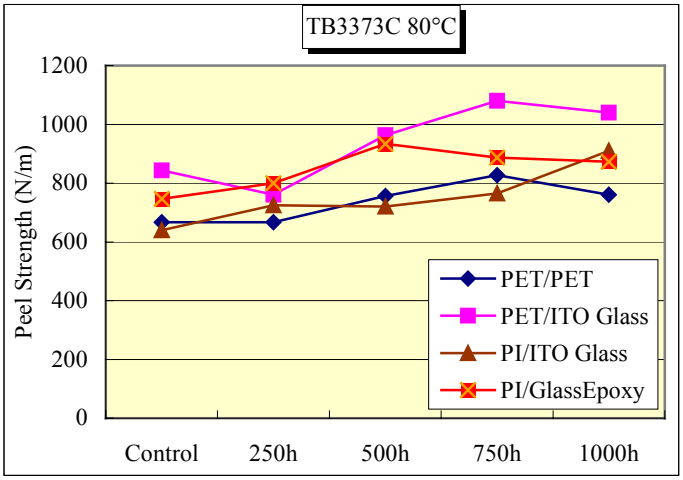
4) 0.2 mm Pitch 140°C × 10 sec

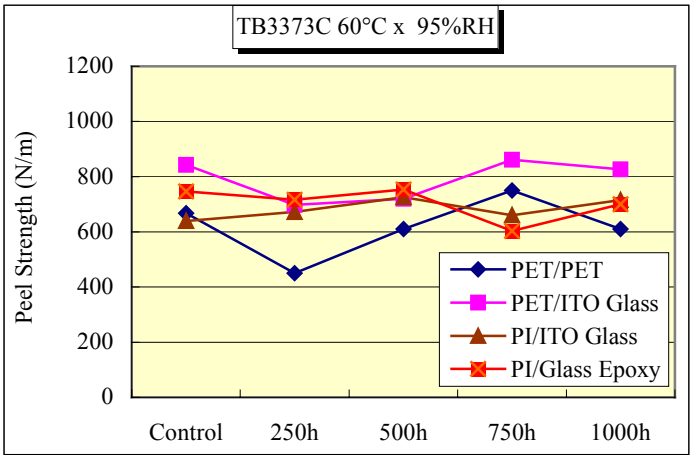


C. Peel Strength

1) 80°C Aging



2) 60°C × 95%RH Aging



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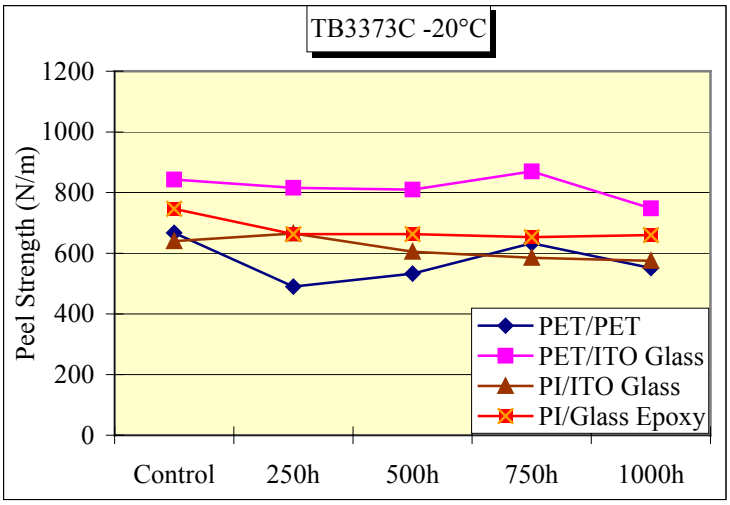
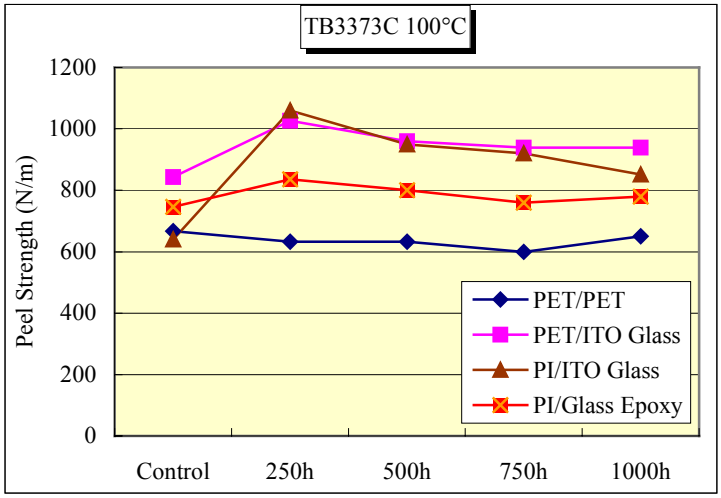
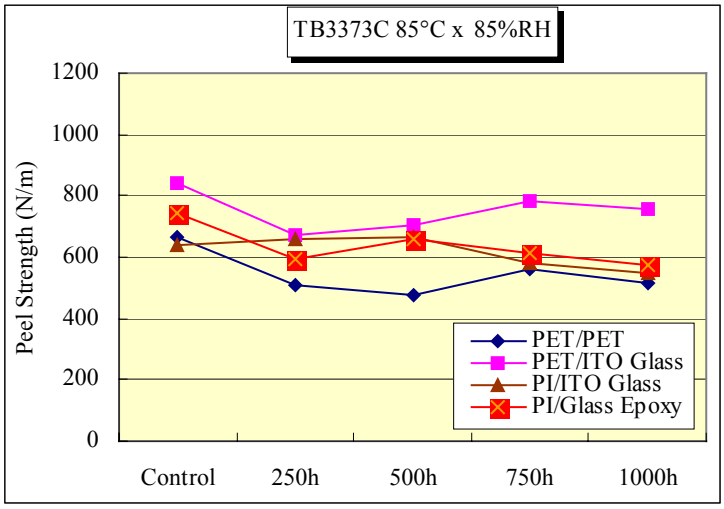
3) -20°C Aging



4) 100°C Aging



5) 85°C × 85%RH Aging



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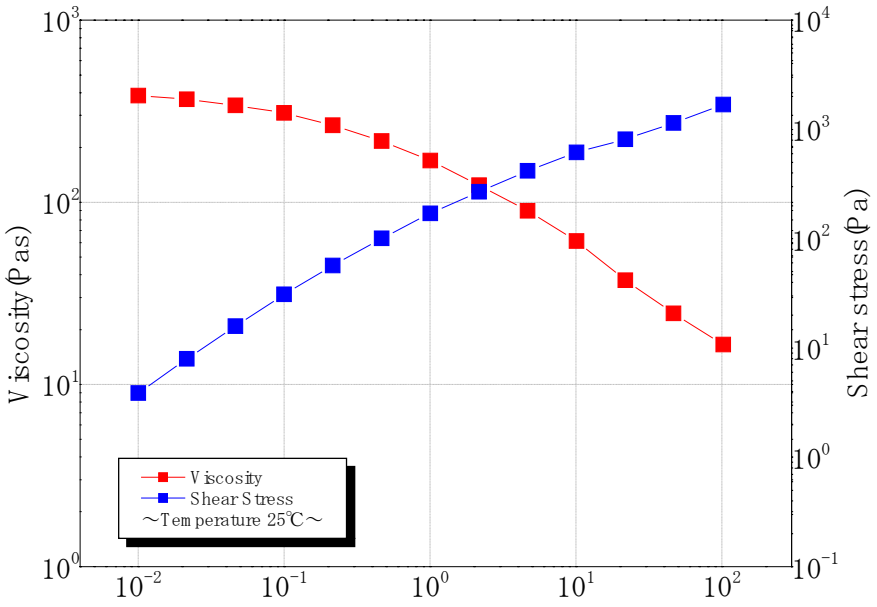
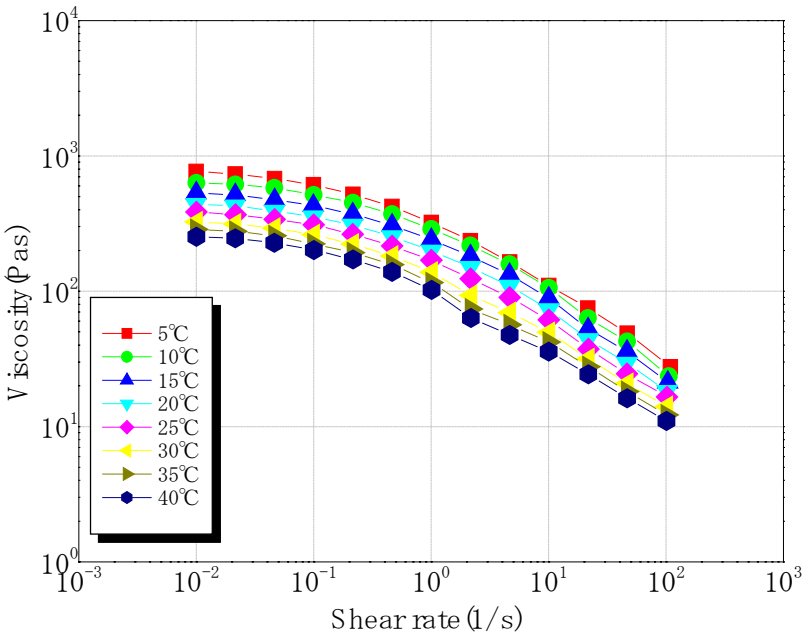
D. Rheology

Measureing Equipment:	REOLOGICA VAR-50
Measurement Method:	Cone plate ϕ25mm 4°
Measurement Mode:	Constant Rate
Shear Rate:	0.01-100 (1 / s)





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