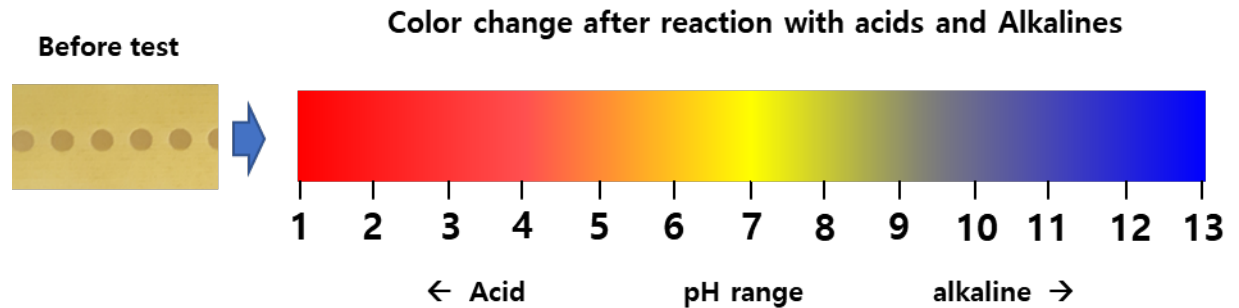


# Acid/Alkaline Dual Detection Tape

## ❖ pH Detection Range



## ❖ Product Specification

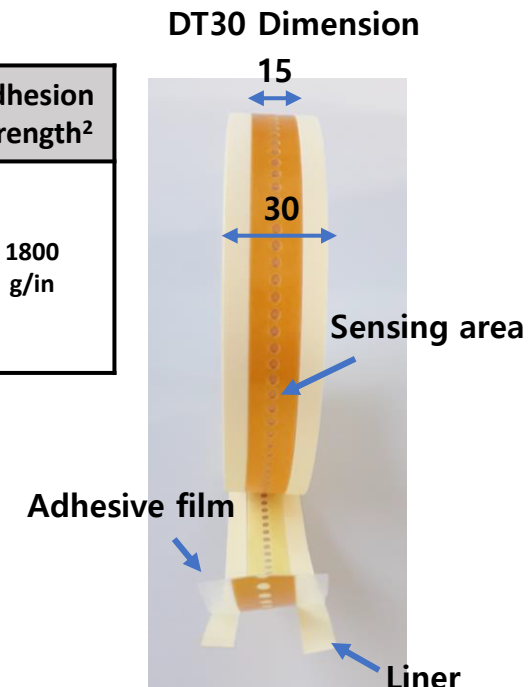
Use	Product name	Dimension <sup>1</sup> W(mm)xL(m)	Applicable chemicals	Detection range	Adhesion strength <sup>2</sup>
Acid/Alkaline leak detection	DT30	30x30	Hydrochloric acid, Nitric acid Sulfuric acid, Hydrofluoric acid Phosphoric acid, Acetic acid, etc	> 0.1%	1800 g/in
	DT50	50x30	Sodium hydroxide, Potassium hydroxide Ammonium hydroxide, etc		

REF 1: Sensing width 15 (30x30 tape), 30 (50x30 tape)

REF 2: Adhesion test method KS T 1028 (SUS 304)

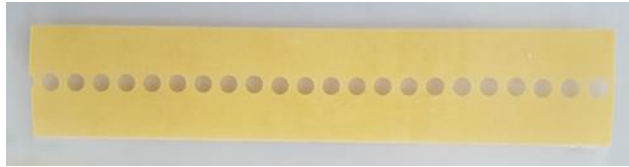
※ Operating Temp : 80°C (Max)

※ The tapes can be used in a clean room.

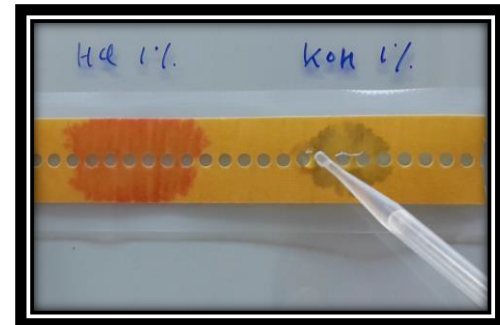
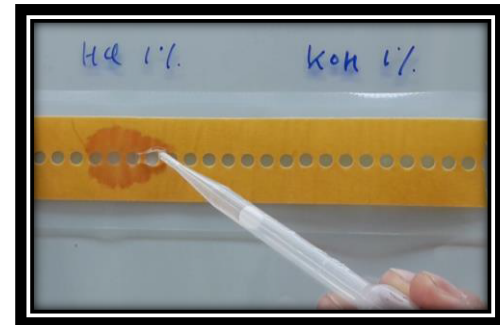
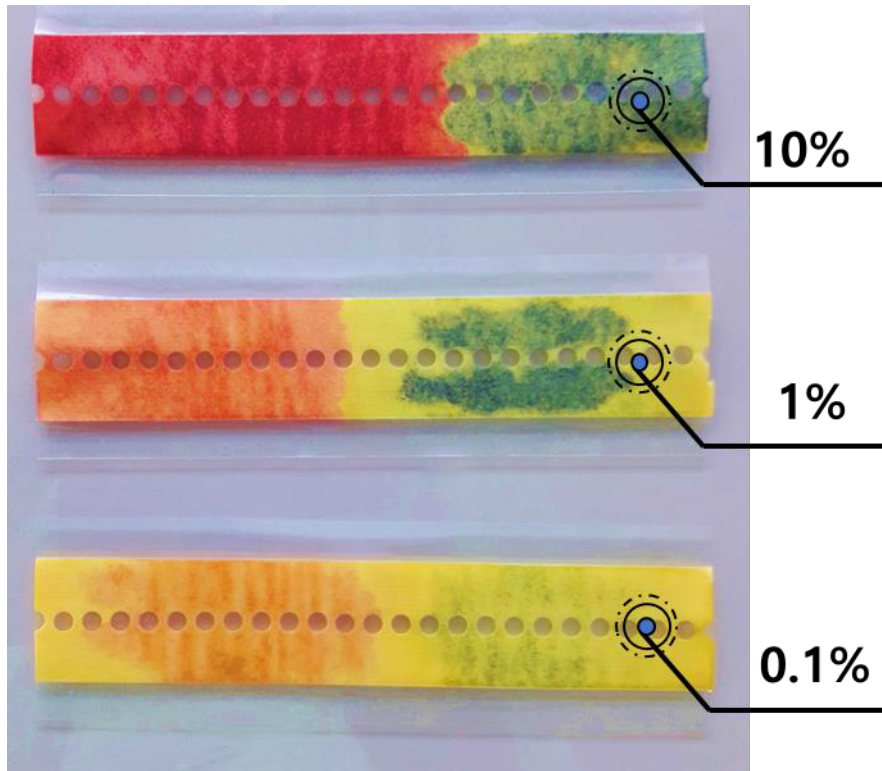


# Acid/Alkaline Response Test (1)

Before Test



Hydrochloric Acid    Potassium hydroxide



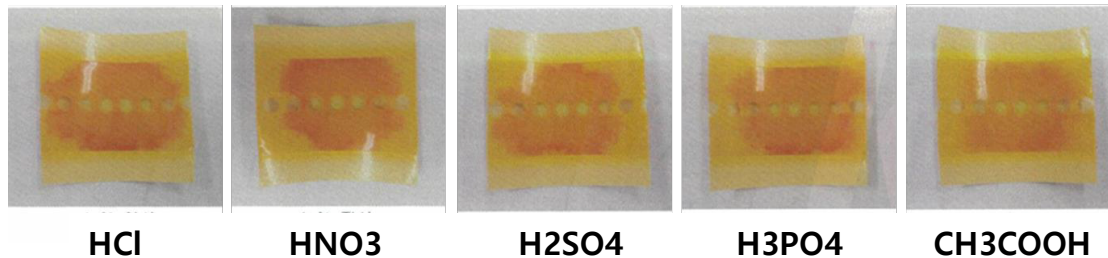
Immediate color change

# Acid/Alkaline Response Test (2)

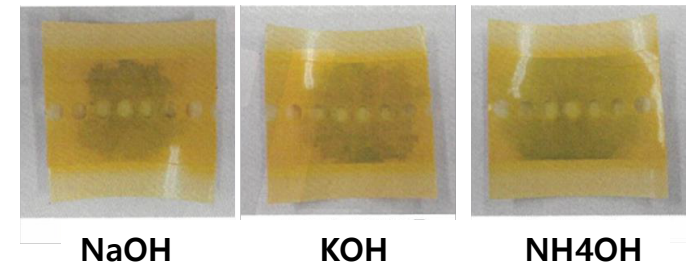
Test Items		Color difference ( $\Delta E^*ab$ )	Test Condition
Acid	1% Hydrochloric acid	23.6	- Color difference was measured in 5 sec after 1ml of the chemical drops on the tape.
	1% Nitric acid	21.6	
	1% Sulfuric acid	21.8	
	1% Acetic acid	20.6	
	1% Phosphoric acid	17.9	
Alkaline	1% Sodium hydroxide	22.2	
	1% Potassium hydroxide	21.6	
	1% Ammonium hydroxide	19.2	

※ Test Organization: KCL(Korea Conformity Laboratories)

## Acid chemicals (1 wt%)



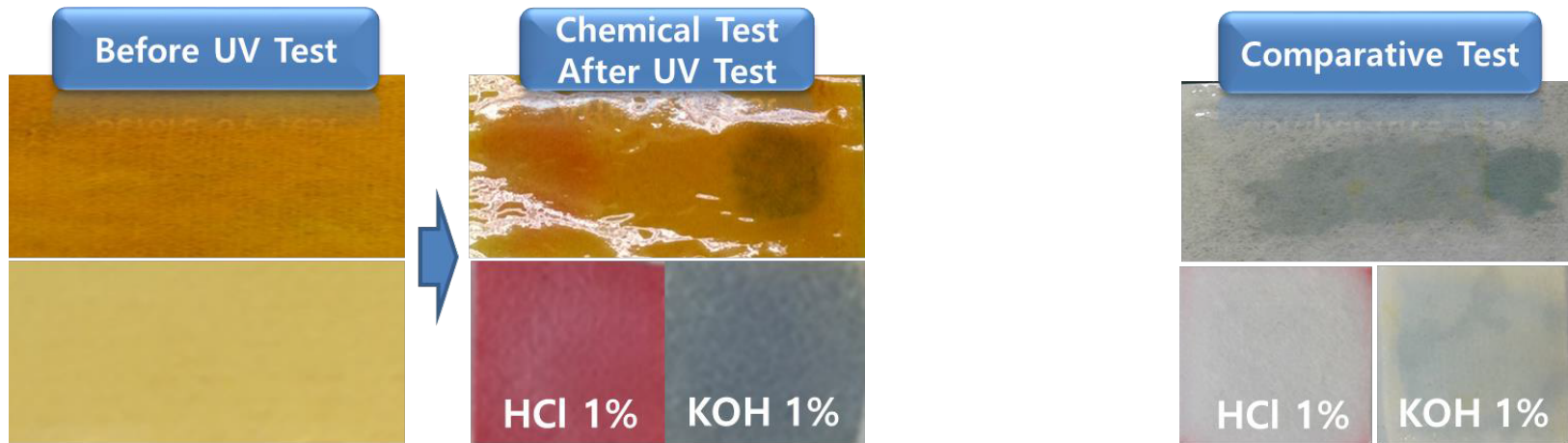
## Alkaline chemicals (1 wt%)



# Accelerated Weathering Test

	Acid/Base Test	Color difference ( $\Delta E^*ab$ )	Test Condition Accelerated Weathering Test (ASTM G155)
Before accelerated weathering test	1% HCl	40.8	1. Weather-O-Meter, Xenon Arc Type, Cycle 1 2. Irradiance: 0.35 W/m <sup>2</sup> (340 nm) 3. Test duration: 150 h 4. Cycle: 102 min Light only & 18 min Light and Spray 5. (63 ± 3) °C Black Panel Temperature 6. (50 ± 5) % R.H.
	1% KOH	54.4	
After accelerated weathering test	Color difference before and after the test	9.9	
	1% HCl	15.2	
	1% KOH	34.4	

※ Test Organization: KCL(Korea Conformity Laboratories)

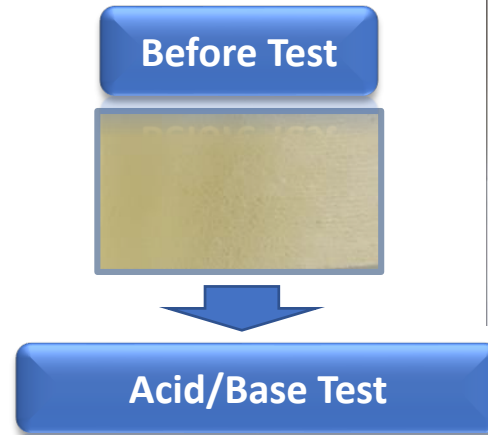


The SMTEK sensor tape still show a high reactivity with acids and bases even after the 150 h accelerated weathering test

The sensor tape lost leak detection capability after 150 h the accelerated weathering test

## ❖ Test Conditions:

Placed the specimen in water during a certain period of time and performed chemical tests

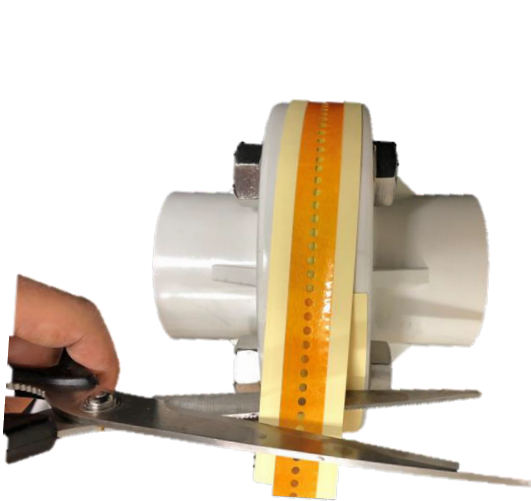


Elapsed time	HCl		KOH	
1 month	0.1%	1%	0.1%	1%
2 month	0.1%	1%	0.1%	1%
6 month	0.1%	1%	0.1%	1%

The effect of water on the acid/base reactivity of the sensor tape was not significant.

→ Applicable to indoor/outdoor applications such as flanges, joints, and chemical storage tanks, etc.

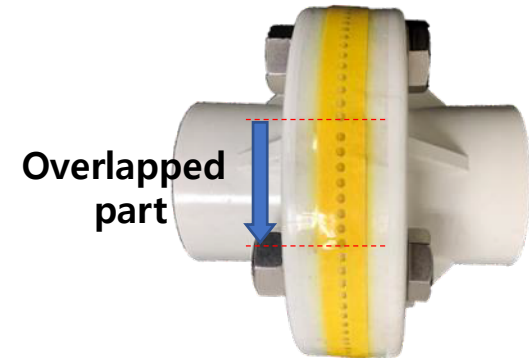
# How to Use the Chemical Tapes



**Step 1. Cut the tape slightly longer than a flange perimeter**



**Step 2. Remove the release liner**



**Overlapped part**

**Step 3. Attach the longer end of the tape over the already placed tape, directing downwards**



**Acid**



**Alkaline**

**Color change upon chemical leak**