Product Data Sheet

Updated: January 2021 This datasheet replaces all previous versions

DX-2106H

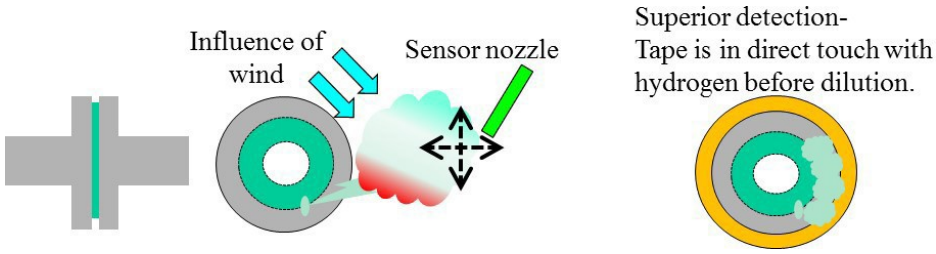
NITTO HYDROGEN DETECTION TAPE

PRODUCT DESCRIPTION

Nitto Hydrogen Detection Tape allows for the visual detection of hydrogen gas leaks by permanently changing color when in contact with hydrogen gas.

FEATURES

- Tape visually changes color, from amber to black, in as little as 10 seconds when exposed to H_2 (depending on the flow rate, temperature, time and percentage of hydrogen).
- Provides an additional safety net for detecting gas leaks and improves detection time by making it easier to find intermittent leaks.
- Is highly sensitive and can detect hydrogen leaks that contain as little as 1% H_2 concentration.
- DX-2106H will not return to its original color once exposed to hydrogen gas.
- Easy to use; applies the same as a typical silicone /polyimide PSA.
- Can be used in most indoor or outdoor environments.
- Superior capability in detecting the location of the H_2 leak when compared to conventional portable or stationary sensors.
- Less influenced by wind, position, duration, skills, etc.
- Easy to check vertical and bottom faces.



Portable/Stationary Sensor vs. DX-2106H Tape

PRODUCT CONSTRUCTION

POLYIMIDE FILM
SILICONE ADHESIVE WITH H_2 DETECTION

APPLICATION

- Hydrogen detection tape can be easily applied to or wrapped around pipes, flanges, fittings, valves, access panels, etc. to immediately identify an exact hydrogen leak location.
- The permanent color-change identifies the exact leak location even if the H_2 line is shutoff.
- Applications include and are not limited to power and chemical plants, transportation markets, hydrogen Co-Generators, fuel stations, storage tanks, compressors, new energy markets and more.

RoHS Compliant.

For additional information or support, please visit our website at www.nittodetectiontape or call toll free 800-755-8273

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PROPERTIES, CERTIFICATIONS AND SPECIFICATIONS

Backing Material	1-Mil Polyimide Film	
Pressure Sensitive Adhesive	Silicone with H_2 Detection Properties	
Color	Amber	
	Imperial	**Metric**
Total Tape Thickness	2.4 mils	0.06 mm
Adhesion to Steel	18 oz/in	5 N/ 25mm
Tensile Strength	36 lbs/in	158 N/ 25mm
Elongation	67%	67%
Dielectric Strength	7,080 V (Voltage elevation speed 0.5V/sec)	
Autoignition Temperature**	About 851°F	About 455°C

*CAUTION: The above are typical values and should not be used in writing specifications. Customer is responsible to ensure product meets intended application requirements before approved for use.

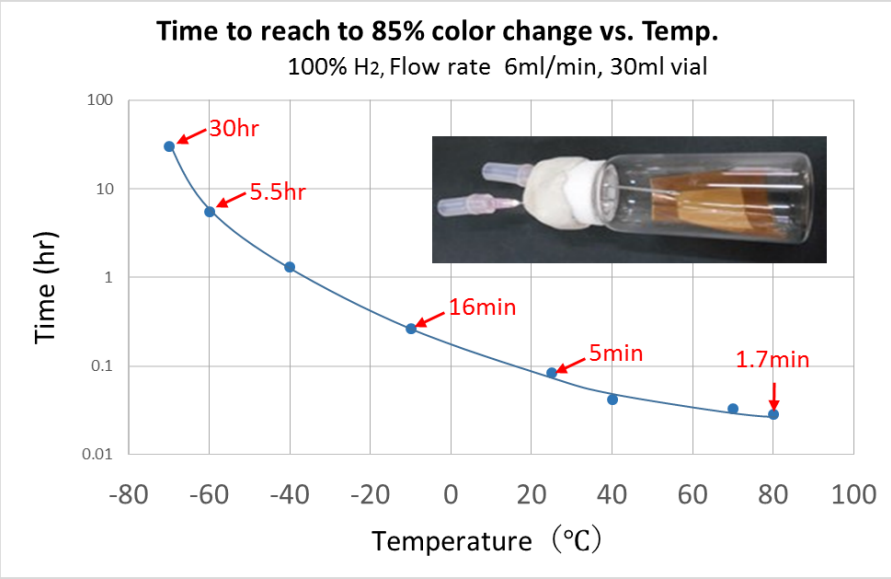
**AUTOIGNITION TEMPERATURE FOR H_2 (CAS# 1333-74-0) IS 500-571°C.

Temperature vs. Reactivity

- Tape was exposed to 100% H_2 (6mL/min) at various temperatures between -70°C to 80°C and the time to reach 85% of total color-change was recorded.
- Color-change to black was observed in 1hr at -40°C, 6hrs at -60°C and 30hrs at -70°C.
- Color-change was observed to be faster as the temperature increases.

* Reactivity with H_2, at higher temperature, higher flow rate, and/or higher concentration will result in more immediate color-change

* Suggested application method: Apply the tape around the monitored fitting part by allowing extension similar to “luggage tag”. This technique will allow the hydrogen to travel into the area which is not covered by ice and can provide a visual color-change. Below pictures are provided only as an example.



“Luggage Tag” Application

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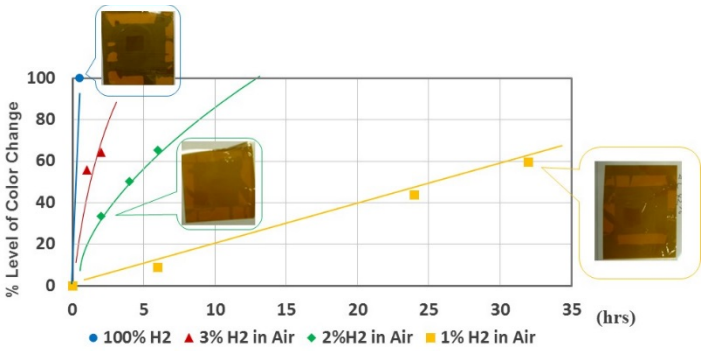
Color-Change Speed vs. H_2 Concentration

- Color-change was observed with 1%, 2%, 3% H_2 in air and 100% H_2 at room temperature and 100mL/min flow rate.
- With 100% H_2, full color-change at less than 5 minutes.
- With 1% H_2 in air, color-change can be observed in about 30hrs.



Environmental Durability

Condition	Duration	Color-Change after Aging	After Aging, H_2 Exposure
High Temp.	60°C x 6 months	No Color-Change	Reacted, Black
Low Temp.	- 5°C x 6 months	No Color-Change	Reacted, Black
High Humidity	40°C x 95% RH x 6 months	No Color-Change	Reacted, Black
Weather Resistance	Outdoor exposure 6 months under Florida sunshine	No Color-Change	Reacted, Black
Water Immersion	Tape only (Room Temp.) x 6 months	No Color-Change	Reacted, Black
	Tape on stainless steel (Room Temp.) x 6 months	No Color-Change	Reacted, Black
	Tape on Aluminum or Galvanized Metal	Color-Change to Black	N/A

※ Tapes applied on SUS316 pipe were aged at various conditions and confirmed for color-change with H_2 at room temperature.

- Once applied, DX-2106H can be exposed and function within temperatures ranging from -40°C to 100°C (- 40°F to 212°F) with short-term exposure to temperatures of up to 200°C (392°F).

GENERAL STORAGE CONDITIONS

Store in 50-80°F (10-27°C), 25-50% relative humidity; out of direct sunlight.

PRECAUTION REMINDER

Surface should be clean, free of oil, moisture and dirt before applying. Pressure-sensitive adhesive tapes may require pressure by roller, hand or press when applying. Not doing so may affect the general properties and appearance. Please inspect your surface prior to application; this tape may not adhere well to extremely uneven or distorted surfaces. Please remember to allow adequate time for full adhesive strength.

WARNINGS

This product is intended for use as a localized hydrogen gas indicator and should be used as part of a comprehensive gas detection system. DX-2106H will not prevent H_2 leaks. Customers should not rely solely on this product to monitor the safety of a facility where flammable or hazardous gases are present.

Please do not use this tape for detecting other reducing gases, like silane. Such gases have not been tested and may react with the tape aggressively.

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WARRANTY INFORMATION

Unless Nitto agrees otherwise in a written agreement signed by Nitto, the warranty information and other terms of sale can be found in the Nitto Terms and Conditions of Sale in the legal section of www.NittoDetectionTape.com and are hereby incorporated by reference.

Please visit www.NittoDetectionTape.com for notices in other languages.

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