

No. 18096310001-0201

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Date issued: September 18, 2018

REPORT

Client: FLAX Co., Ltd.
4-1 Hommokumotomachi, Naka-ku, Yokohama-shi, Kanagawa 231-0822, Japan

Sample(s): Hypochlorous acid water Generation bottle 「ZIA pocket」

Title: Deodorizing Effect Test

Received date of sample(s): August 22, 2018

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Signed for and on behalf of JFRL



T. Arai

Takeko Arai
Section of Analysis Documentation

Dec. 04, 2018

Date

Deodorizing Effect Test

1. Client

FLAX Co., Ltd.

2. Sample

Hypochlorous acid water Generation bottle 「ZIA pocket」

3. Outline of method

Sodium chloride provided by the client was dissolved in water. The solution was poured into the sample and it was operated for 3 minutes. The obtained solution was used as the test solution. The deodorizing effects of the test solution against ammonia, trimethylamine, methyl mercaptan and hydrogen sulfide were tested by gas detector tube method.

4. Results

Tables 1 to 4 and Figures 1 to 4 show the test results.

Table 1. Test results: Ammonia (Units: ppm)

Test specimen	Time period (min)				
	10	30	60	120	180
Test solution	35	27	23	21	20
Blank	100	96	93	86	82

Initial ammonia gas concentration: About 100 ppm

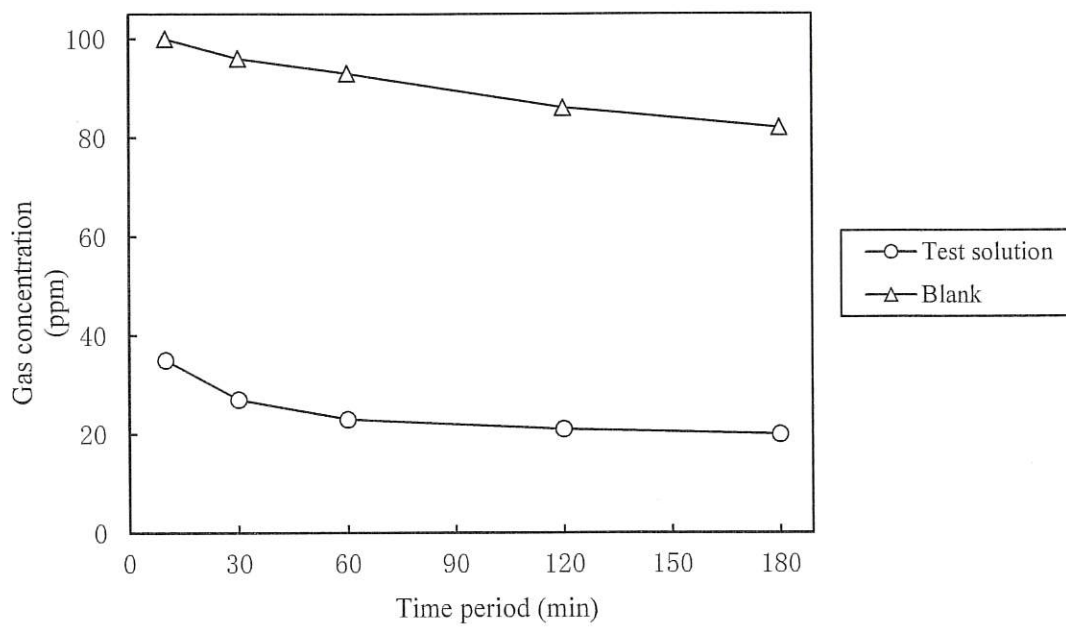


Figure 1. Test results: Ammonia

Table 2. Test results: Trimethylamine (Units: ppm)

Test specimen	Time period (min)				
	10	30	60	120	180
Test solution	13	8	5	3	2
Blank	20	20	20	20	20

Initial trimethylamine gas concentration: About 20 ppm

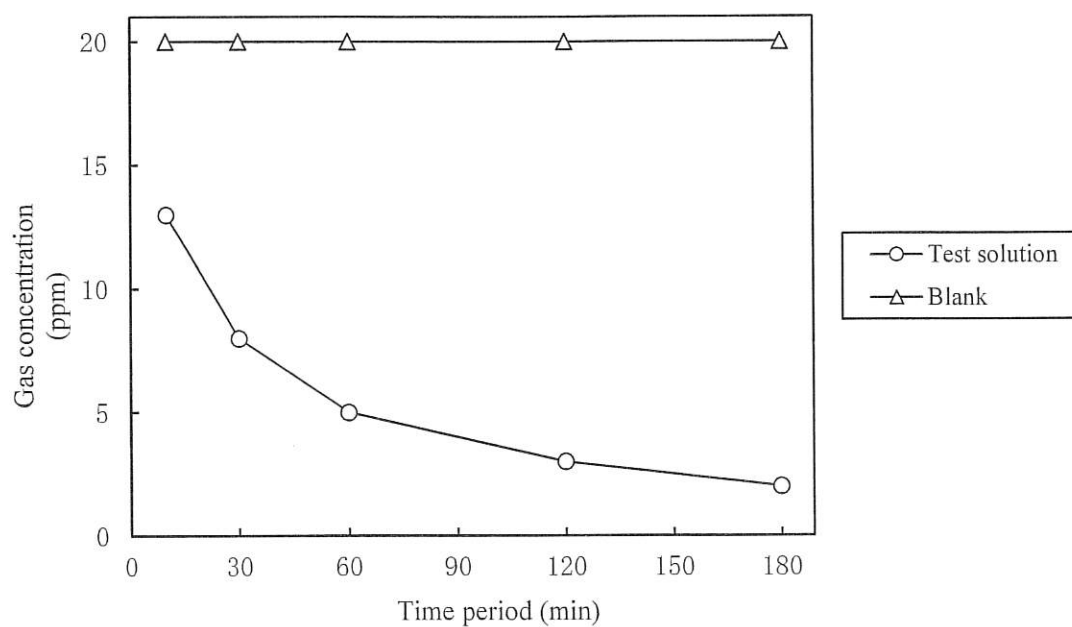


Figure 2. Test results: Trimethylamine

Table 3. Test results: Methyl mercaptan (Units: ppm)

Test specimen	Time period (min)				
	10	30	60	120	180
Test solution	5.0	3.9	3.1	3.0	3.0
Blank	8.0	8.0	8.0	8.0	8.0

Initial methyl mercaptan gas concentration: About 8.0 ppm

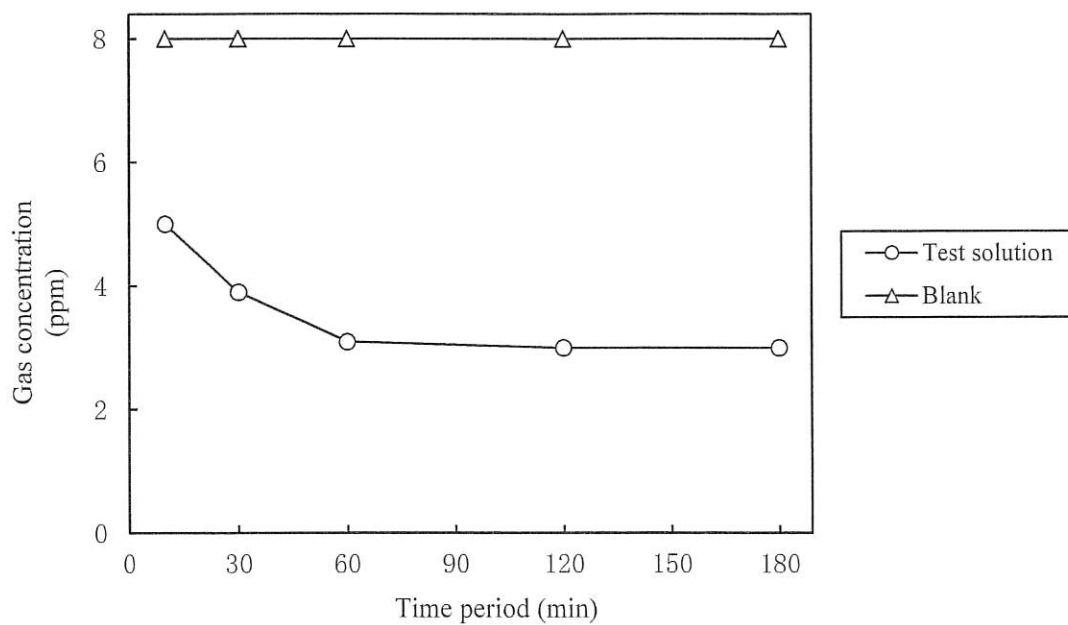


Figure 3. Test results: Methyl mercaptan

Table 4. Test results: Hydrogen sulfide (Units: ppm)

Test specimen	Time period (min)				
	10	30	60	120	180
Test solution	17	16	16	16	15
Blank	20	20	20	20	20

Initial hydrogen sulfide gas concentration: About 20 ppm

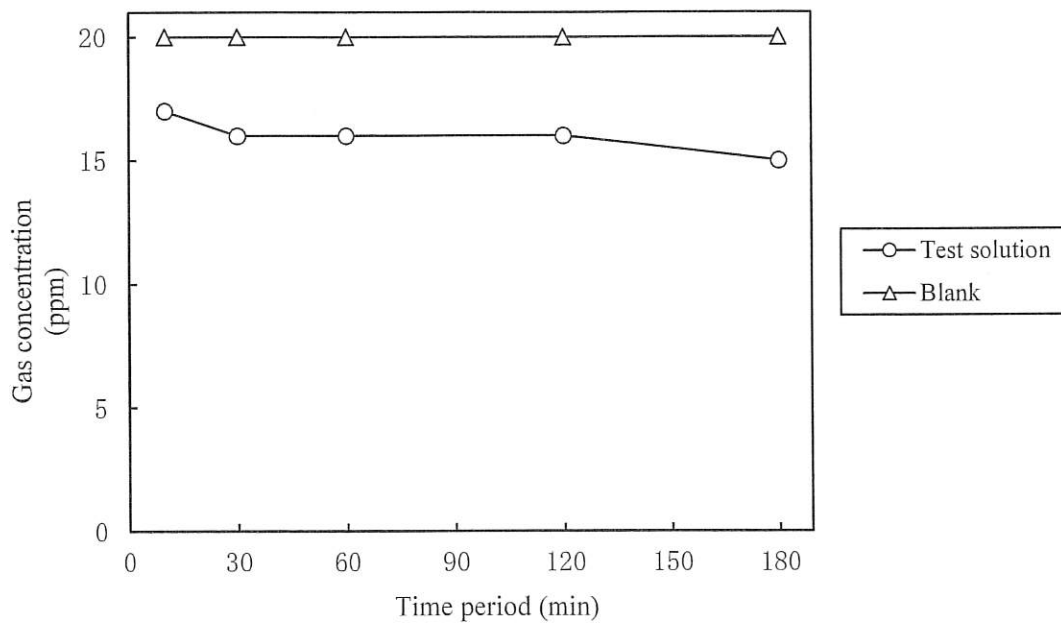


Figure 4. Test results: Hydrogen sulfide

5. Methods in detail

1) Reagents and equipment

Film bag (35 cm × 50 cm, ARAM Corporation)

Film bag (35 cm × 50 cm, GL Sciences Inc.)

Ammonia gas: Generated from ammonia solution (28 %, Special grade, Koso Chemical Co., Ltd.)

Trimethylamine gas: Generated from trimethylamine solution (28 %, Tokyo Chemical Industry Co., Ltd.)

Methyl mercaptan gas: Generated from a mixture of sodium methyl mercaptan solution (15 %, Koso Chemical Co., Ltd.) and diluted sulfuric acid.

Hydrogen sulfide gas: Generated from a mixture of iron sulfide II (For generation of hydrogen sulfide gas, Koso Chemical Co., Ltd.) and diluted sulfuric acid.

Gas detector tube (GASTEC CORPORATION)

Gas detector tube (Komyo Rikagaku Kogyo K.K.)

2) Preparation of test solution

A total of 1.0 g of sodium chloride provided by the client was dissolved in 180 mL of water. The solution was poured into the sample and it was operated for 3 minutes. The obtained solution was used as the test solution.

3) Procedures

The test solution was put in a film bag and it was heat-sealed. After 9 L of air was injected into the bag, the testing gas was added until the gas concentration reached the specified value. The bag was then stored at room temperature. The gas concentration in the bag was measured by gas detector tube method at each measurement time.

As a blank test, the testing gas alone (without the test solution) was tested in the same manner. Table 5 shows the test conditions.

Table 5. Test conditions

Volume of test solution	10 mL
Testing gas (initial gas concentration)	Ammonia (about 100 ppm)
	Trimethylamine (about 20 ppm)
	Methyl mercaptan (about 8.0 ppm)
	Hydrogen sulfide (about 20 ppm)
Temperature	Room temperature
Measurement times	After 10, 30, 60, 120 and 180 minutes

End of Report