

# HYOSUNG CHEMICAL CORPORATION TEST REPORT

**SCOPE OF WORK**

DBL5430 (2019) testing on Polyketone Plastic, PN M630V

**REPORT NUMBER**

105334067GRR-001

**ISSUE DATE**

15-February-2023

**PAGES**

11

**DOCUMENT CONTROL NUMBER**

RT-GRR-001 (24-October-2022)

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## TEST REPORT FOR HYOSUNG CHEMICAL CORPORATION

Report No.: 105334067GRR-001

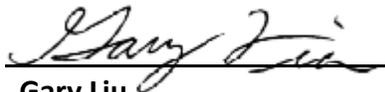
Date: 15-February-2023

P.O.: RC23R-S0012

### SECTION 1

#### CLIENT INFORMATION

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**SECTION 2**

**SUMMARY**

Date of Manufacture:	None Specified
Date of Shipment:	None Specified
Date Received:	24-January-2023
Dates Tested:	09-February-2023 to 09-February-2023

**DESCRIPTION OF SAMPLES**

Part Description:	Polyketone Plastic, PN M630V
Material Submitted:	10 of 80 mm Diameter Disc and Bag of Pellets
Material Specification:	DBL5430 (2019)
Condition of Samples:	Sample

**WORK REQUESTED/APPLICABLE DOCUMENTS**

DBL5430 (2019)  
Intertek quote Qu-01317148-

### SECTION 3 CONCLUSION

TEST	RESULTS
6.4.1 Odor	Report
6.8 Fog	Conforming

### SAMPLE DISPOSITION

After testing completed, samples were rendered unusable and then disposed of.

### SUBMITTED TEST SAMPLES



Figure 1: Typical samples as received

**SECTION 4**

**6.4.1 ODOR:**

Date of Manufacture: None Specified  
 Date of Shipment: None Specified  
 Date Received: 24-January-2023  
 Date Tested: 10-February-2022  
 Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: Polyketone Plastic, PN M630V  
 Material Submitted: 10 of 80 mm Diameter Disc and Bag of Pellets  
 Material Specification: DBL5430 (2019)  
 Condition of Samples: Sample

**TEST PROCEDURE:**

Test Method: Per DBL5430 (2019) section 6.4.1  
 VDA 270 (June 2018), variant(s) B3 per 02/01/23 client email  
 Sample Received: In sealed Ziploc bag  
 Conditioning: 168 hours minimum at 23 ± 2 °C and 50 ± 5 % R.H.  
 Exposures: Variant 3: 80 ± 2 °C for 2 h ± 10 min, then cooled down to a test chamber temperature of 60 ± 5 °C before evaluation per 02/01/23 client email.  
 Jar Size: 1L glass jar  
 Specimen Size: Variant B, 1-L vessel: 20 ± 2 g / 3-L vessel: 60 ± 6 g, 20 mm thick max. per 02/01/23 client email.  
 Number of Samples: One (1) per condition

**ACCEPTANCE CRITERIA:**

Report per 02/01/23 client email.

**RESULTS:**

**Table 1: 6.4.1 Odor Results Table**

VARIANT	PANELIST	EVALUATION SCALE	ODOR DESCRIPTION	DISPOSITION
Variant 3: 80 ± 2 °C for 2 h ± 10 min, cooled down to 60 ± 5 °C, No water	1	3	Plastic	Report
	2	2.5	Lightly musty	
	3	2.5	Plastic	
	Mean*	2.5		

\*Report the mean rounded to the nearest half-step

Evaluation Scale:

Grade 1	Not Perceptible	Grade 4	Disturbing
Grade 2	Perceptible, not disturbing	Grade 5	Strongly disturbing
Grade 3	Clearly perceptible, but not disturbing	Grade 6	Not acceptable

PHOTOGRAPHS:

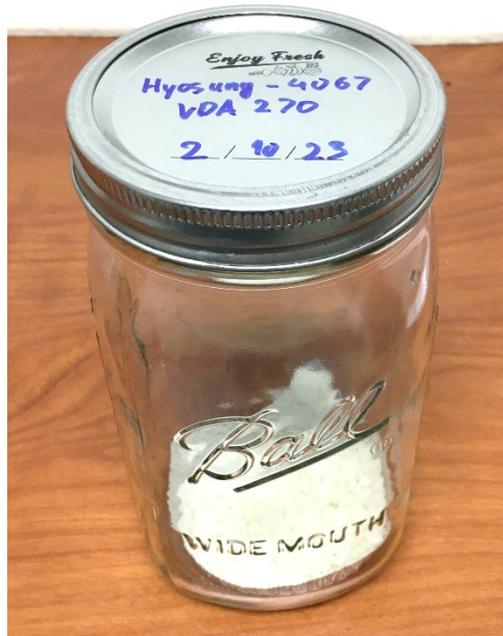


Figure 2: 6.4.1 Odor Set-Up

TEST EQUIPMENT:

ASSET NUMBER	EQUIPMENT	CALIBRATION DATE	CALIBRATION DUE
114229	Temperature and Humidity Recorder	7/13/2022	7/13/2023
117005	OVEN AMB. TO 204 C	REF ONLY	REF ONLY
117627	DIGITAL THERMOMETER	12/20/2022	12/20/2023
114248	Scout Pro Portable Balance 6200g capacity	4/26/2022	4/26/2023

**SECTION 5****6.8 FOG:**

Date of Manufacture:	None Specified
Date of Shipment:	None Specified
Date Received:	24-January-2023
Date Tested:	09-February-2023 to 14-February-2023
Location Tested:	Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description:	Polyketone Plastic, PN M630V
Material Submitted:	10 of 80 mm Diameter Disc and Bag of Pellets
Material Specification:	DBL5430 (2019)
Condition of Samples:	Sample

**TEST PROCEDURE:**

Test Method:	Per DBL5430 (2019) section 6.8 DIN 75 201 (November 2011), Method B- Gravimetric
Sample Received:	In sealed Ziploc bag
Sample Preparation:	168 hours minimum at $23 \pm 2$ °C and $50 \pm 5$ % R.H.
Test Side (Up in Beaker):	Either side
Pre-Drying Coding:	$\geq 1$ day in a desiccator
Bath Temperature:	$120 \pm 0.3$ °C (Per 01/31/23 client email)
Cooling Temperature:	$21 \pm 1$ °C
Exposure Duration:	16 h $\pm$ 10 minutes
Post-Drying Coding:	3.5 – 4.0 hours in a desiccator
Sample Size:	80 mm diameter
Number of Samples:	Four (4); Two (2) Specimens and one DIDP sample in each of two (2) separate analytical runs

**ACCEPTANCE CRITERIA:**

Per DBL5430 (2019)	
Condensable Constituents:	$\leq 5$ mg
DIDP Control:	$0.65 \pm 0.25$ mg

**RESULTS:**

**Table 2: 6.8 Fog Results Table**

Analytical Run	Specimen	Condensing Foil			Description of Fog Residue	Disposition
		Initial Mass (mg)	Final Mass (mg)	Condensable Constituents (mg)		
1	1	732.60	732.75	0.15	Dry uniform	Conforming
1	2	724.04	724.10	0.06	Dry uniform	Conforming
2	3	735.40	735.47	0.07	Dry uniform	Conforming
2	4	736.15	736.23	0.08	Dry uniform	Conforming
Mean				0.09	---	
1	DIDP	718.84	719.55	0.71		In range
2	DIDP	735.39	736.20	0.81		In range

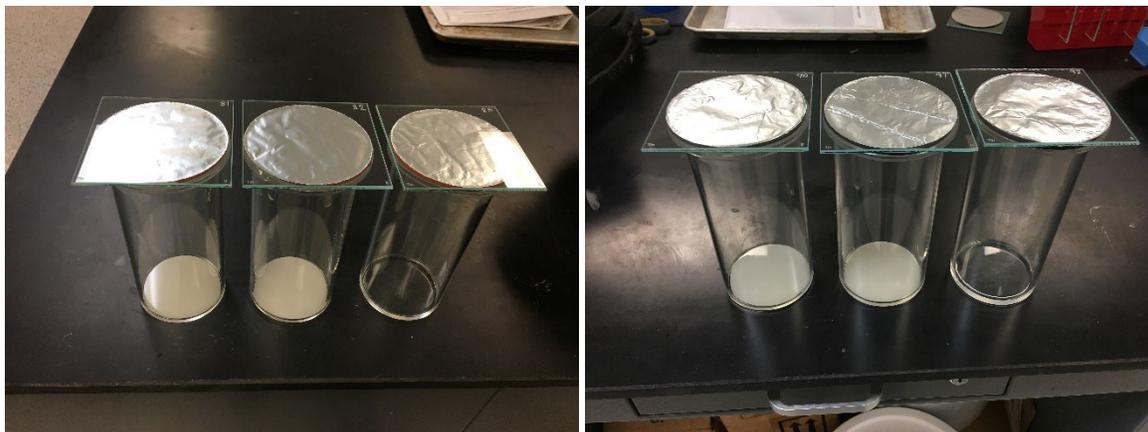
**PHOTOGRAPHS:**



Run 1

Run 2

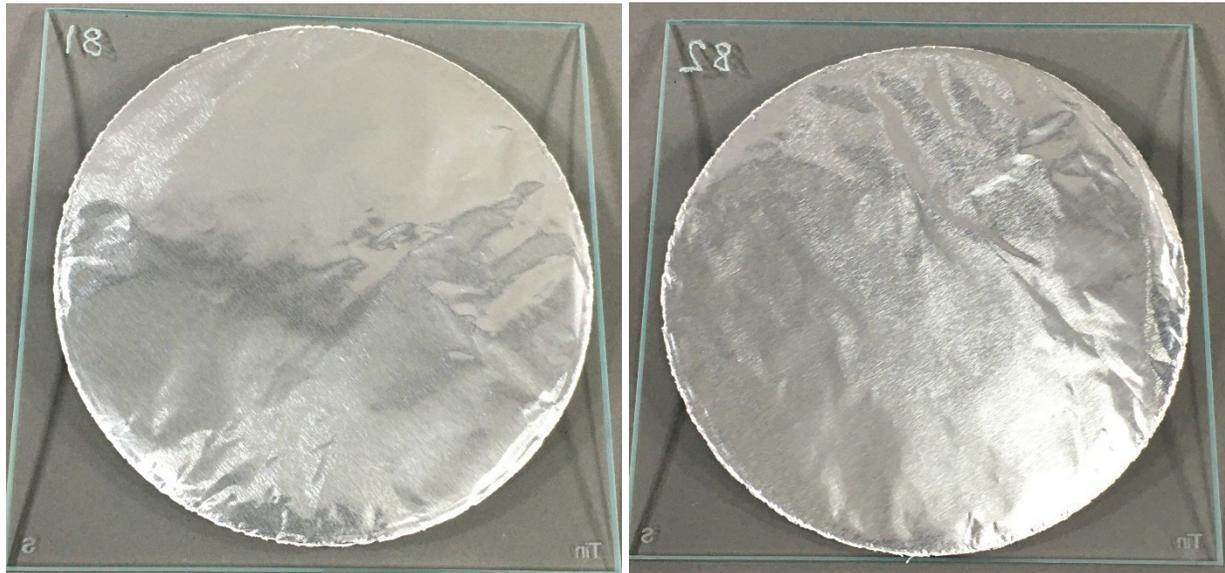
**Figure 3: 6.8 Fog Specimens before Exposure**



Run 1

Run 2

**Figure 4: 6.8 Fog Set-Up**



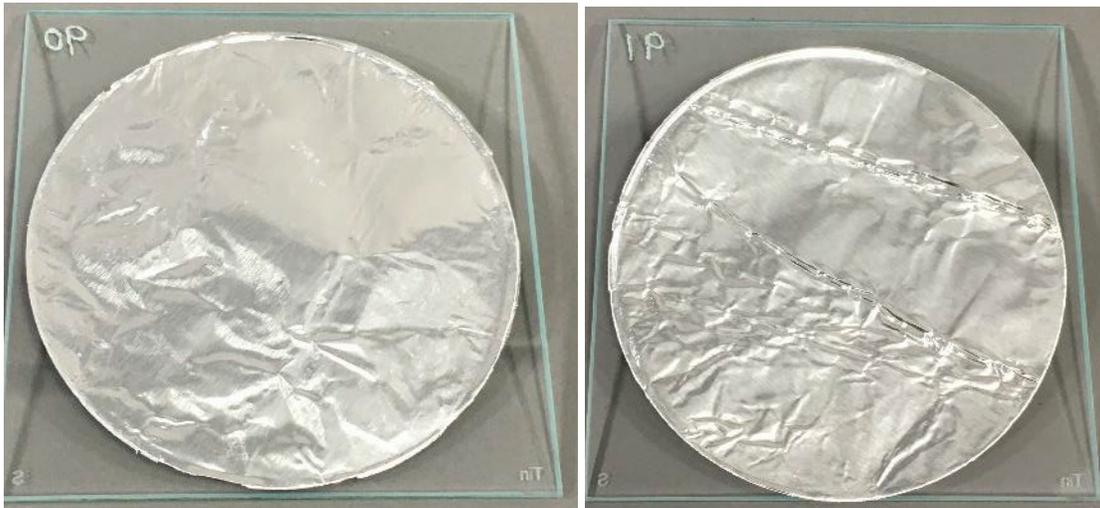
Sample 1

Sample 2



DIDP

Figure 5: 6.8 Fog Run 1 Foil after Exposure



Sample 1

Sample 2



DIDP

Figure 6: 6.8 Fog Run 2 Foil after Exposure

**TEST EQUIPMENT:**

ASSET NUMBER	EQUIPMENT	CALIBRATION DATE	CALIBRATION DUE
114229	Temperature and Humidity Recorder	7/13/2022	7/13/2023
114248	Scout Pro Portable Balance 6200g capacity	4/26/2022	4/26/2023
117132	FOG DIE 80mm	3/18/2022	3/18/2023
113694	Sartorius scale	11/16/2022	11/16/2023
117602.1	Fog Bath cooling unit	9/7/2022	9/7/2023
117602	Fog Bath heating unit	9/7/2022	9/7/2023
117390	Fogging Unit/Horizon AC-FTS	7/13/2022	7/13/2023
117390.1	Fogging unit/Bath Circulator A10	7/13/2022	7/13/2023