



国家化学建筑材料测试中心

NATIONAL  
TEST CENTER  
OF POLYMER AND  
BUILDING MATERIALS



中国认可  
国际互认  
检测  
TESTING  
CNAS L1049

# National Test Center of Polymer & Building Materials

Address: No. 14, Beisanhuandonglu, Chaoyang District, Beijing, China Post Code: 100013  
Tel: +86(0)1064208747, +86(0)1064200694, +86(0)1064224642, +86(0)1059202479  
Fax: +86(0)1059202784, +86(0)1084290301 Web site: www.plasticstest.net

No. 2023(X) 06185

**CUSTOMER:** Haoyang Environmental Co., Ltd

## SAMPLES FOR TESTING

Name: 1.5mm double smooth HDPE geomembrane

Manufacturer: Haoyang Environmental Co., Ltd

Appearance: Black sheet

Thickness: 1.5mm

**DATE OF RECEIPT:** 2023-02-10

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**DIRECTOR:** 杨红浩

**CHECK:** 潘淑





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## TESTING RESULTS

No. 2023(X) 06185

No.	Test Items	Requirements	Results	Test Methods
1	Thickness, mm	$\geq 1.5$	1.55	CJ/T 234-2006 6.2
2	Thickness limit deviation, mm	$\pm 0.15$	0.10	CJ/T 234-2006 6.2
3	Thickness deviation, % mean	$\geq 0$	3.3	CJ/T 234-2006 6.2
4	Appearance quality			
	Cutting ends	Straight edge and no visible sawtooth	Pass	CJ/T 234-2006 6.4
	Repair of perforation point	Not allowed	Pass	CJ/T 234-2006 6.4
	Mechanical (machining) scratches	No or not distinct	Pass	CJ/T 234-2006 6.4
	Gelosises	Not more than 10 gelosises per square meter, of which the diameter is no more than 2.0mm; no gelosises throughout the film thickness	Pass	CJ/T 234-2006 6.4
	Bubbles and impurity	Not allowed	Pass	CJ/T 234-2006 6.4
	Cracks, delamination, joints and broken ends	Not allowed	Pass	CJ/T 234-2006 6.4
5	Density, g/cm <sup>3</sup>	$\geq 0.939$	0.9488	CJ/T 234-2006 6.5

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Test: 王庆庆 游欢 赵彦霞 刘张硕

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No.	Test Items	Requirements	Results	Test Methods
6	Tensile yield strength, N/mm	transversal	$\geq 22$	31.7 CJ/T 234-2006 6.6
		longitudinal	$\geq 22$	29.7 CJ/T 234-2006 6.6
7	Tensile break strength, N/mm	transversal	$\geq 40$	41.8 CJ/T 234-2006 6.6
		longitudinal	$\geq 40$	40.6 CJ/T 234-2006 6.6
8	Elongation at yield, %	transversal	$\geq 12$	12 CJ/T 234-2006 6.6
		longitudinal	$\geq 12$	12 CJ/T 234-2006 6.6
9	Elongation at break, %	transversal	$\geq 700$	796 CJ/T 234-2006 6.6
		longitudinal	$\geq 700$	819 CJ/T 234-2006 6.6
10	Tear strength, N	transversal	$\geq 187$	257 CJ/T 234-2006 6.7
		longitudinal	$\geq 187$	250 CJ/T 234-2006 6.7
11	Puncture resistance, N	$\geq 480$	720 CJ/T 234-2006 6.8	Appendixes B

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No.	Test Items	Requirements	Results	Test Methods
12	Stress crack resistance (NCTL), h	transversal	$\geq 300$	300h without failure CJ/T 234-2006 6.9/ Appendixes C
		longitudinal	$\geq 300$	300h without failure CJ/T 234-2006 6.9/ Appendixes C
13	Carbon black content, %	2.0~3.0	2.5	CJ/T 234-2006 6.10
14	Dispersion of carbon black, grade	9 in categories 1 or 2 and 1 in category 3	Category 1:8 Category 2:2	CJ/T 234-2006 6.11/ Appendixes D
15	Oxidative inductive time, min	$\geq 100$	125	CJ/T 234-2006 6.12
16	Air-oven aging at 85°C			CJ/T 234-2006 6.13
	Retention rate of oxidative inductive time after 90d, %	$\geq 55$	63.0	
17	UV resistance			CJ/T 234-2006 6.14
	Retention rate of oxidative inductive time after 1600h, %	$\geq 50$	52.6	
18	Water vapor transmission, g·cm/(cm <sup>2</sup> ·s·Pa)	$\leq 1.0 \times 10^{-13}$	$3.4 \times 10^{-15}$	CJ/T 234-2006 6.16

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No.	Test Items	Requirements	Results	Test Methods	
19	Brittleness temperature (-70°C)	Pass (More than 25 out of 30 specimens do not fail)	no specimen failed	CJ/T 234-2006 6.17	
20	Linear change, %	transversal	±2	-0.10	CJ/T 234-2006 6.18
		longitudinal	±2	-0.45	CJ/T 234-2006 6.18

Note: Test items 1~13, 15~20 were conducted at Tongzhou branch, test item 14 was conducted at Chaoyang branch.

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