

Technical Parameter Table

Model: EPU windshield protection films

I.Product Description:

The glass shield armor is made of polyurethane as raw material and coated with pressure-sensitive adhesive by precision machines.

A functional film material formed by surface coating repair, featuring excellent adhesion, light transmittance, UV resistance and aging resistance.

It is mainly applicable to surface/process protection of materials such as automobiles and electronic products.

II.Core functions and advantages

1. Excellent impact resistance

Core technology: Utilizing enhanced polyurethane (EPU) materials applied in military and aerospace fields, its tear resistance and elasticity far exceed those of ordinary PVC or TPU materials.

Effect: It can effectively absorb and disperse the energy generated by the impact of hard objects such as stones, greatly reducing the risk of glass being cracked. Even if the glass breaks due to a strong impact, the film can adhere to the glass fragments, preventing them from flying and injuring people, thereby enhancing safety.

2. Ultimate clarity, without any visual interference

High light transmittance: Optical-grade transparent material, with a light transmittance of over 99%. After application, it is almost imperceptible and does not affect the clarity of the original car glass or the driver's line of sight at all.

Anti-glare: The surface has undergone special treatment, which can effectively reduce the glare caused by strong sunlight during the day and high beams from oncoming vehicles at night, making the driving field of vision more comfortable and reducing fatigue.

3. Strong surface protection

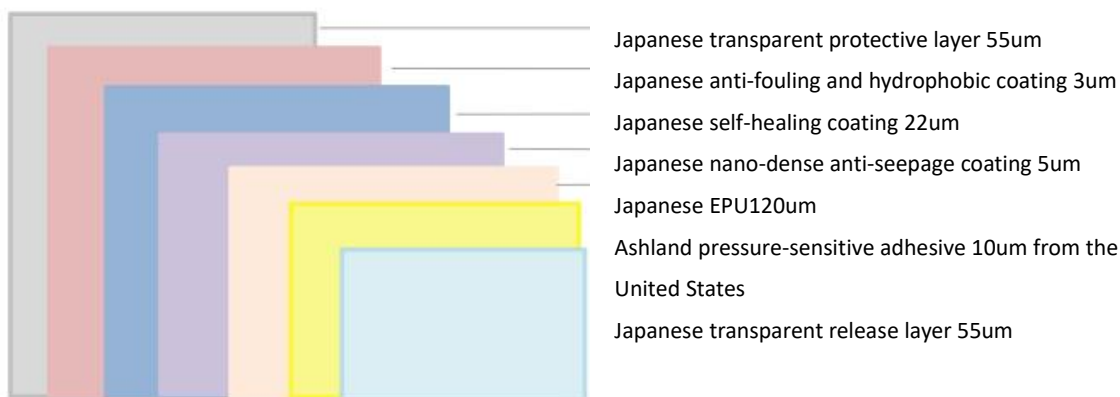
Hydrophobic and oleophobic coating: The surface has an excellent lotus leaf effect. Rainwater cannot adhere and will quickly condense into water droplets and slide off. At the same time, it effectively resists oil stains, shellac, tree SAP and other dirt, keeping the glass clean and reducing the frequency of wiper use.

Self-healing function: The surface of the film layer has the ability to self-repair minor scratches.

Fine scratches caused by daily car washing or slight friction can gradually fade and disappear after exposure to sunlight or heat, remaining as good as new for a long time.

4. Durable, stable and reliable

Strong weather resistance: It can withstand extreme temperature changes (-40℃ to 90℃), ultraviolet radiation and chemical corrosion. It does not turn yellow, bubble or fall off after long-term use, with stable performance and a long service life.



Main physical property parameters of the product

Inspection items	Reference value	Unit	Test method
Use layer thickness	170±10	um	GB/T7125-2014
Thickness of protective layer	55±2	um	GB/T7125-2014
Thickness of the repair layer	35±5	um	GB/T7125-2014
EPU film thickness	125±5	um	GB/T7125-2014
Thickness of pressure-sensitive adhesive	10±3	um	GB/T7125-2014
Thickness of the transparent release layer	75±2	um	GB/T7125-2014
Light transmittance	>92%	%	GB/T2410-2008
Haze	<1%	%	GB/T2410-2008
UV blocking rate	>99.9%	%	UV tester
Water droplet Angle	>100°	°	Water drop Angle tester
Adhesive force (20 minutes)	>300g	g/25mm	GB/T2792-2014
Adhesive force (24 hours)	>1000g	g/25mm	GB/T2792-2014
Scratch repair	OK (It has instant repair and can also be hot-repaired.)	Slide the copper brush back and forth 50 times. There are no obvious scratches	



Iv. Usage Suggestions

We suggest that you conduct your own tests to determine if the product is suitable for your specific application, make thorough prior confirmation, and take into account the material of the object to be attached as well as the application environment, method and other conditions, which are different

The objects to be pasted and different pasting conditions may cause abnormal phenomena such as delamination, residual glue, weak adhesion, and reaction.

V. Product Size Specifications

Width: 1200mm; The packaging length is 15 meters per roll.

Vi. Product Shelf Life

1. Storage environment: Temperature 15 °C to 25 °C, humidity 50% to 70%. The storage space should avoid dampness, dust and direct sunlight.

2 Storage period: Store at a temperature of 23 °C $\pm$ 2 °C and a relative humidity of 65% $\pm$ 5%. The shelf life is one year, with the date of manufacture as the first day. Long-term storage or in harsh environments

Please test it thoroughly before use.

Vii. Remarks

1. The company shall not be held responsible for any abnormalities caused by force majeure or environmental changes.

2 The above data are the average values obtained from multiple tests conducted in accordance with national standards. They are only for reference of physical properties and not as a basis for inspection.

Annex 1: REACH Test Report

报告编号/ Report No.: WTF24F03069006C

任务号/Job No.:FSW202404026904CJ



汇总 / Summary

序号 Item No.	检测要求 Test Requested	检测结论 Test Conclusion
1	根据EC Regulation 1907/2006 (REACH法案)要求, 测试评估被列入高关注度物质候选清单的240种SVHC含量(截至2024年01月23日): According to European Commission Regulation 1907/2006 (REACH Act), to test and evaluate the 240 kinds of SVHC content which have been listed in ECHA's website (latest updated on Jan 23, 2024): https://echa.europa.eu/candidate-list-table	符合 [△] Pass [△]
2	依据申请方要求, 测试评估样品中3种公众评议物质的含量 According to the applicant's requirement, to determine and evaluate the 3 substances content which have been published in a public consultation launched by ECHA to identify an additional chemicals as Substances of Very High Concern (SVHCs) on 1 Jun. 2021 and 1 Mar. 2024.	符合 [△] Pass [△]
3	依据申请方要求, 测试评估样品中6项意向SVHC物质的含量, 物质清单为欧盟化学品管理局(ECHA)公布的清单 According to the applicant's requirement, to determine and evaluate 6 Intention SVHC, the substance list is published by the European Chemical Administration (ECHA).	符合 [△] Pass [△]

备注/Remark:

符合[△]的意思是/Pass[△] means

根据规定的测试范围及现有分析技术, 240项SVHC物质, 3种公众评议物质和6项意向SVHC物质的浓度<0.1%
According to the specified scope and analytical technique, the concentrations of the 240 Substances of SVHC, 3 kinds of public comment substances and 6 Intention SVHC comment substances are less than 0.1% in the submitted samples

样品图片 / Sample Photo:



Annex 2: Rohs Test Report



报告编号/ Report No.: WTF24F03069004C 任务号/Job No.:FSW202404026904CJ

测试结果/ Test Results:
 测试方法/ Test Method:
 - 参考 IEC62321-5:2013, 使用 ICP-OES 检测铅、镉含量;
 - 参考 IEC62321-4:2013+AMD1:2017 CSV, 使用 ICP-OES 检测汞含量;
 - 参考 IEC62321-7-2:2017, 使用 UV-Vis 检测六价铬含量;
 - 参考 IEC62321-6:2015, 使用 GC-MS 检测 PBBs 及 PBDEs 含量。
 - With reference to IEC62321-5:2013, determination of Lead and Cadmium by ICP-OES;
 - With reference to IEC62321-4:2013+AMD1:2017 CSV, determination of Mercury by ICP-OES;
 - With reference to IEC62321-7-2:2017, determination of Hexavalent Chromium by Colorimetric Method;
 - With reference to IEC62321-6:2015, determination of PBBs and PBDEs by GC-MS.

测试项目 Test Item(s)	单位Unit	测试结果 Test Results No.3	定量限 LOQ	限值 Limit
铅 Lead (Pb)	mg/kg	ND	2	1000
镉 Cadmium (Cd)	mg/kg	ND	2	100
汞 Mercury (Hg)	mg/kg	ND	2	1000
六价铬 Hexavalent Chromium (Cr ⁶⁺)	mg/kg	ND	8	1000
多溴联苯总和 Sum of PBBs	mg/kg	ND	--	1000
一溴联苯 Monobromobiphenyl	mg/kg	ND	5	--
二溴联苯 Dibromobiphenyl	mg/kg	ND	5	--
三溴联苯 Tribromobiphenyl	mg/kg	ND	5	--
四溴联苯 Tetrabromobiphenyl	mg/kg	ND	5	--
五溴联苯 Pentabromobiphenyl	mg/kg	ND	5	--
六溴联苯 Hexabromobiphenyl	mg/kg	ND	5	--
七溴联苯 Heptabromobiphenyl	mg/kg	ND	5	--
八溴联苯 Octabromobiphenyl	mg/kg	ND	5	--
九溴联苯 Nonabromobiphenyl	mg/kg	ND	5	--
十溴联苯 Decabromobiphenyl	mg/kg	ND	5	--
多溴二苯醚总和 Sum of PBDEs	mg/kg	ND	--	1000
一溴二苯醚 Monobromodiphenyl ether	mg/kg	ND	5	--
二溴二苯醚 Dibromodiphenyl ether	mg/kg	ND	5	--
三溴二苯醚 Tribromodiphenyl ether	mg/kg	ND	5	--
四溴二苯醚 Tetrabromodiphenyl ether	mg/kg	ND	5	--
五溴二苯醚 Pentabromodiphenyl ether	mg/kg	ND	5	--
六溴二苯醚 Hexabromodiphenyl ether	mg/kg	ND	5	--
七溴二苯醚 Heptabromodiphenyl ether	mg/kg	ND	5	--
八溴二苯醚 Octabromodiphenyl ether	mg/kg	ND	5	--
九溴二苯醚 Nonabromodiphenyl ether	mg/kg	ND	5	--
十溴二苯醚 Decabromodiphenyl ether	mg/kg	ND	5	--
结论 Conclusion	--	符合/Pass	--	--



报告编号/ Report No.: WTF24F03069004C 任务号/Job No.:FSW202404026904CJ

测试项目 Test Item(s)	单位 Unit	测试方法/测试仪器 Test Method & Test Equipment	结果 Results No.3	定量限 LOQ	限值 Limit
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	mg/kg	IEC 62321-8:2017, GC-MS	ND	50	1000
Bis (2-ethylhexyl)- phthalate (DEHP)	mg/kg		ND	50	1000
邻苯二甲酸二丁酯 (DBP)	mg/kg		ND	50	1000
Dibutyl phthalate (DBP)	mg/kg		ND	50	1000
邻苯二甲酸丁苯酯 (BBP)	mg/kg		ND	50	1000
Benzybutyl phthalate (BBP)	mg/kg	IEC 62321-8:2017, GC-MS	ND	50	1000
邻苯二甲酸二异丁酯 (DIBP)	mg/kg		ND	50	1000
Diisobutyl phthalate (DIBP)	mg/kg				
结论 / Conclusion	--	--	符合/ Pass	--	--

备注/ Note:
 (1) ND = 未检出, 检测值小于定量限/ Not Detected or lower than limit of quantitation
 (2) mg/kg = 毫克每千克 (milligram per kilogram)= 百万分之一 (ppm)
 (3) LOQ = 定量限/ Limit of quantitation
 (4) "--" = 未规定/ Not regulated

样品描述 / Specimen Description:

样品编号 Specimen No.	样品描述 Specimen Description
3	透明塑料膜 Transparent plastic film



报告编号 / Report No.: WTF24F03069009C
任务号 / Job No.: FSW202404026904CJ

测试结果 / Test Results:

测试项目 Test Item	单位 Unit	测试方法&测试仪器 Test Method& Test Equipment	结果/Results	定量限 LOQ
			No.3	
氟 Fluorine (F)	mg/kg	BS EN14582:2016, IC	ND	50
氯 Chlorine (Cl)	mg/kg		ND	50
溴 Bromine (Br)	mg/kg		ND	50
碘 Iodine (I)	mg/kg		ND	50

备注/Note:

(1) ND = 未检出, 检测值小于定量限 / Not Detected or lower than limit of quantitation
 (2) mg/kg (毫克每千克) = ppm (百万分之一)
 (3) LOQ = 定量限 / Limit of quantitation

测试流程图 / Testing Flow chart:

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graph TD
    A[样品前处理 / 分样  
Sample pretreatment/  
separation] --> B[称重及将样品放入样品槽中  
Weighting and putting  
Sample in cell]
    B --> C[燃烧弹 / 吸收  
Oxygen Bomb Combustion /  
Absorption]
    C --> D[稀释至固定体积  
Dilute to fixed volume]
    D --> E[用离子色谱仪分析  
Analysis was performed  
by IC]
    E --> F[数据  
Data]
  
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样品描述 / Specimen Description:

样品编号 Specimen No.	样品描述 Specimen Description
3	透明塑料膜 Transparent plastic film

技术服务

专用章

mg Services

(Foshan)