

Coating Characterization

Performance testing:

Coating performance testing evaluates a coating's quality, durability, and protective properties through standardized methods like adhesion, hardness, corrosion, and weather resistance tests. These tests assess physical and chemical resistance to ensure the coating meets required standards for longevity, proper application, and specific environmental conditions. Testing categories include **laboratory simulations**, **outdoor exposure**, and **empirical quality control** tests, often following ASTM or other industrial guidelines.

Liquid coating performance testing

Testing items	Description	ISO standard	ASTM standard	China GB standard	Internal methods
Flow time & Viscosity	Flow time	ISO 2431-ISO cups	ASTM D5125 ISO cups, ASTM D4212 Zahn cups, ASTM D1200 Ford cups,	GBT 6753.4-ISO cups, GBT 1723 Tu-1 & 4 cups	
	Rotary Viscosity	ISO 2884-1		GBT 9751.1	
	Stormer viscosity		ASTM D562	GBT 9269	
Fineness & Particle size	Fineness	ISO 1524	ASTM D 1210	GBT 1724	
	Particle size	ISO 8130-13		GBT 21782.13	
Non-volatile content	Non-volatile content	ISO 3251 ISO 3233-volume	ASTM D 2369	GBT 1725 GBT 9272-volume, GBT 6751 GBT6740	
VOC content	VOC content		EPA method 24	GBT 23985-weight GBT 23986-GC	
Density	Density	ISO 2811	ASTM D1475	GBT 6750 GBT 21862	
Stability	Stability		ASTM D 2243	GBT 6753.3 GBT 9268	

Dried coating film performance testing

Testing items	Description	ISO standard	ASTM standard	China GB standard	Internal methods
Thickness	Electromagnetism	ISO 2808	ASTM D7091	GBT 13452.2	
	Ultrasonic	ISO 2808	ASTM D6132	GBT 13452.2	
	Optic interference & polarization				Optical reflection & interference Ellipsometer
	Destructive testing	ISO 2808	ASTM D4138	GBT 13452.2	
Adhesion	Adhesion-Cross cut	ISO 2409	ASTM D3359	GBT 9286	
	Adhesion Pull-off	ISO 4624	ASTM D4541	GBT 5210	
Hardness	Pencil hardness	ISO 15184	ASTM D3363	GBT 6739	
Optical properties	Gloss	ISO 2813	ASTM D523 ASTM 2457	GBT 9754	
	Transmittance & Haze	ISO 14782 ISO 13468	ASTM D1003	GBT 2410	
	Color	ISO 7724	ASTM D2244	GBT 11186	
Flexibility	Cylindrical mandrel	ISO 1519	ASTM D 522	GBT 6742	
	Conical mandrel	ISO 6860	ASTM D 522	GBT 11185	
	T-bend	ISO 17132	ASTM D4145	GBT 30791	
	Cupping test	ISO 1520		GBT 9753	
	Impact resistance	ISO 6272	ASTM D2794	GBT 20624	
Abrasion and Scratch resistance	Abrasion resistance	ISO 7784	ASTM D 4060	GBT 1768-2006	
	Scratch resistance	ISO 1518		GBT 9279	
Aging test	Neutral SST	ISO 7253	ASTM B117	GBT 1771	

	SST test	ISO 9227		GBT 10125	
	Accelerated aging test	ISO 11341 Xenon arc radiation ISO 11507 UV lamp and water		GBT 1865 Xenon arc radiation GBT 23987 UV lamp and water	
Barrier properties	WVTR	ISO 15106-2	ASTM F1249	GBT 26253	
	OTR	ISO 15105-2	ASTM D3985	GBT 19789	
Non-stick coating				GBT 32095.1 ~ .4	
Surface properties	Contact angle			GBT 30693 GBT 30447	
Chemical resistance	Chemical resistance		ASTM D5402 ASTM D4752	GBT 30648.1~.2 GBT 23989 GBT 1763 GBT 9274	

ASTM D3359 (Adhesion By Cross-Cut)

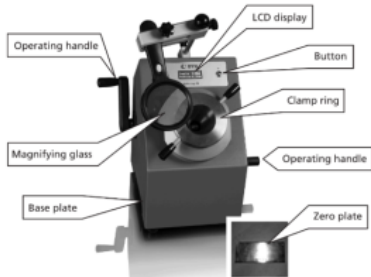
Example Appearance		Description	Classification	
Minimum Removal	Maximum Removal		ISO/US	ASTM
		The edges of the cuts are completely smooth; none of the squares of the lattice is detached.	0	5B
		Detachment of flakes of the coating at the intersections of the cuts. A cross cut area not greater than 5% is affected.	1	4B
		The coating has flaked along the edges and/or at the intersections of the cuts. A cross cut area greater than 5%, but not greater than 15% is affected.	2	3B
		The coating has flaked along the edges of the cuts partly or wholly in large ribbons, and/or it has flaked partly or wholly on different parts of the squares. A cross cut area greater than 15%, but not greater than 35%, is affected.	3	2B
		The coating has flaked along the edges of the cuts in large ribbons and/or some squares have detached partly or wholly. A cross cut area greater than 35%, but not greater than 65%, is affected.	4	1B
		Any degree of flaking that cannot be classified even by classification 4 or 1B	5	0B



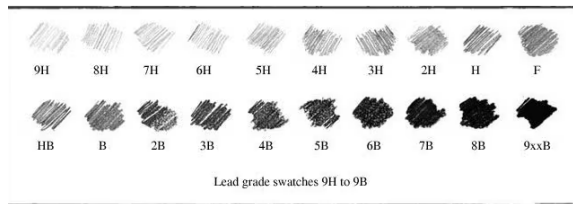
ADL Coating Competency - Adhesion



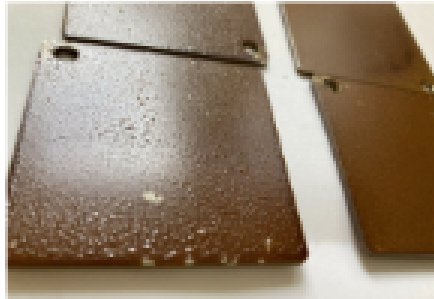
ISO 6860 (Conical Mandrel Test)



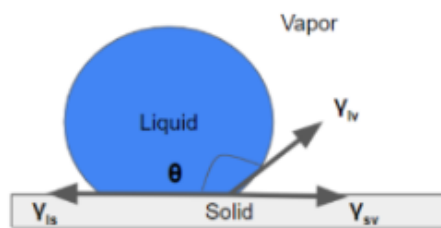
ISO 1520 (Erichsen Cupping Test)



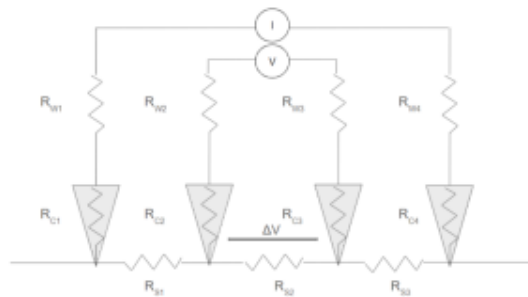
ASTM D3363 (Pencil Hardness)



ASTM D714-02 (Blistering Test)



Contact Angle



Electrical Conductivity



Non-Stick Coatings

ATLAS Test (Under Construction)

Coating Chemical Resistance (Under Construction)