

Lambourn abrasion test

Title

ISO23337:2007,Rubber, vulcanized or thermoplastic – Determination of abrasion resistance using the Improved Lambourn test machine

Outline

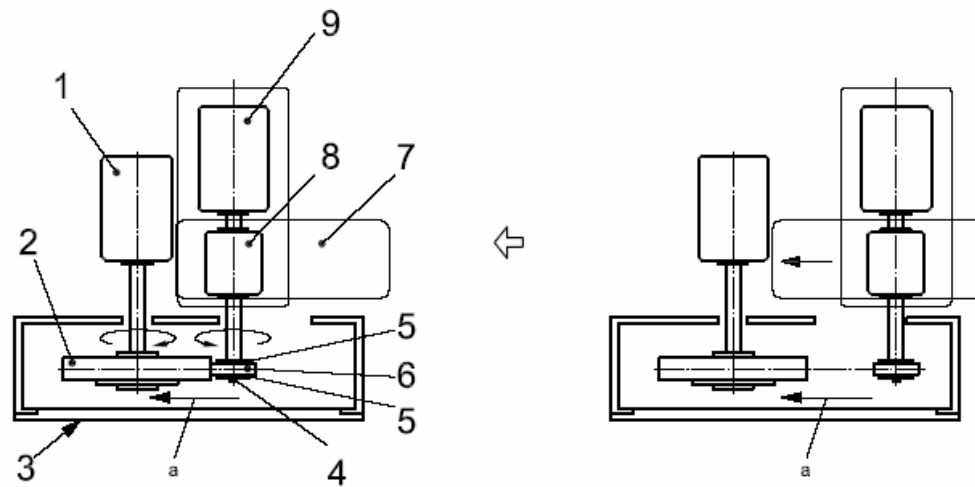
Wear occurs due to the slip caused by the difference of circumferential speed between a disc-shaped rubber test piece and an abrasive wheel rotating for a specified test time.

The test piece and the abrasive wheel, horizontal axes of which are aligned parallel, are driven independently and pressed against each other with a specified load . Grit is fed to prevent smearing of the test piece and the abrasive wheel surface.

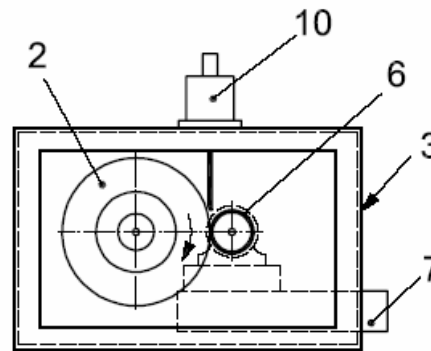
The loss in mass of the test piece is determined and the volume loss per abrasion time or abrasion running distance is calculated from the density of the test material. The abrasion resistance index, if required, is determined by comparing to the volume loss of a reference compound tested under the same conditions.

It is mainly used for wear evaluation of a tyre, a sole, a belt, etc.

-- See Fig.1 (Example of the test equipment)



a) Top view



b) Front view

Key

- | | |
|----------------------------------|---|
| 1 drive motor for abrasive wheel | 6 test piece |
| 2 abrasive wheel | 7 mechanism for exerting load on test piece |
| 3 test chamber | 8 torque meter |
| 4 test piece mounting | 9 drive motor for test piece |
| 5 test piece guide | 10 grit-dropping mechanism |

Refer from ISO23337

Fig.1 Example of the test equipment

Ueshima Lambourn type abrasion tester



Model : AB-1150
Lambourn abrasion tester



Model : AB-1152(Manual type) /
AB- 1165 (Automatic type)
New Lambourn abrasion tester



Model : AB-2010
FPS Abrasion tester

Systems	Lambourn abrasion tester	New Lambourn abrasion tester	FPS wear testing system
Model No.	AB-1150	AB-1152,1165	AB-2010
Outside dimensions	670(W) × 870(D) × 800(H)mm	1350(W) × 1250(D) × 1510(H)mm	1000(W) × 730(D) × 1060(H)mm
Figure of method			
Dimensions of testpiece	Diameter 49 or 63.5, Thickness 5 mm	Diameter 49, Thickness 5 or 10 mm	Diameter50,Thickness10mm
Diameter measurement of testpiece	Nothing	Nothing	Pulse method(Elasticity samples) Sensor method(Hard samples)
Number of testpiece	1 pc.	AB-1152(Automatic type)Max 54 pcs. AB-1165(Manual type) 1 pc.	Max 54 pcs.
Dimensions of abrasive material	Diameter 175,Thickness 25mm	Diameter 175,Thickness 25mm	Diameter 250,Thickness 40 mm
Circumferential speed of testpiece	10 ~ 200 m/min	10 ~ 200 m/min	0 ~ 999 rpm
Circumferential speed of abrasive mechanism	10 ~ 200 m/min	10 ~ 200 m/min	0 ~ 200 rpm
Slip angle	0 °	0 °	0 ~ ± 5 °
Loading load	5 ~ 80N,Continuous flexible driven by air cylinder,load cell detection, and feed back control method	5 ~ 80N,Continuous flexible driven by air cylinder,load cell detection, and feed back control method	10 ~ 85N,Continuous flexible driven by air cylinder,load cell detection, and feed back control method
Slip ratio	5 ~ 80%	5 ~ 80%	1 ~ ± 25%
Torquemeter of testpiece axis	Max 5N-m	Max 5N-m	Fx max 100N,Fy max 100N
High temp. chamber	Rt ~ 60	Rt ~ 60	Rt ~ 60
Abrasive material	Grindstone	Safety-Walk or Grindstone	Safety-Walk