

The Republic of the Union of Myanmar

Ministry of Construction



MOC Standard Specifications and Testing Methods

of

Bitumen for Pavement Construction

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Standard Specification and Testing Methods of Bitumen for Pavement Construction (Standard for Ministry of Construction)

1. Scope

This report presents physical properties of bitumen specified by Ministry of Construction (MOC) for use in pavement construction and testing methods and apparatus used in finding the properties. Reference documents are also mentioned.

Testing method does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Objective

This report is presented with the following objectives in view

- To specify the quality of imported products which is suitable for pavement construction in Myanmar
- To support the use of international recognized standards, and
- To develop and implement an effective National Quality Infrastructure System to fit the needs of the country.

3. Standard Specification of Physical Properties for Bitumen

Sr No.	Name of Test	Penetration Grade	
		60/70	80/100
1	Penetration at 25 ° C (0.1mm)	70 ± 10	100 ± 20
2	Softening Point (Ring & Ball) (° C)	44-54	41-51
3	Solubility in Trichloroethylene (%)	99.0 (Min)	99.5 (Min)
4	Specific Gravity at 25 ° C	1.00-1.06	1.00-1.06
5	Ductility at 25 ° C (cm)	100 (Min)	100 (Min)
6	Loss on Heating by Weight (%)	0.5 (Max)	0.5 (Max)
7	Flash Point (° C)	232 (Min)	225 (Min)
8	Penetration After Loss on Heating at 25 ° C (0.1 mm) (% of Original)	80 (Min.)	80 (Min.)

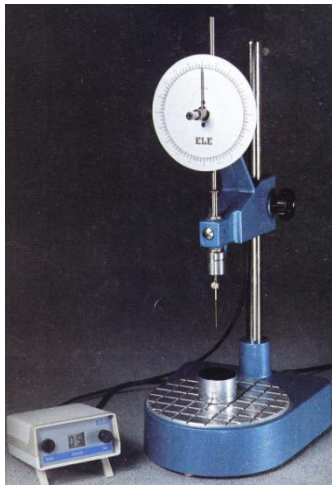
4. Testing Method of Bitumen

Sr No.	Name of Test	Designation ASTM
1	Penetration at 25 ° C (0.1mm)	D 5 – 05
2	Softening Point (Ring & Ball) (° C)	D 36-76
3	Solubility in Trichloroethylene (%)	D 2042 – 01
4	Specific Gravity at 25 ° C	D 70 – 03
5	Ductility at 25 ° C (cm)	D 113 – 99
6	Loss on Heating by Weight (%)	D 6-80
7	Flash Point (° C)	D 92- 78
8	Penetration After Loss on Heating at 25 ° C (0.1 mm) (% of Original)	D 5 - 05

5. Apparatus

Sr. No.	Name of Testing	Apparatus
1.	Penetration test (0.1mm)	<ul style="list-style-type: none"> - Penetration Apparatus - Penetration Needle - Sample Container - Water Bath - Transfer Dish - Timing Device - Thermometers(ASTM 17C)
2.	Softening point test	<ul style="list-style-type: none"> - Ring - Ball - Ball –centering guide - Ring holder - Brass Pouring plate - Bath - Thermometers(ASTM 15C)
3.	Solubility in Trichloroethylene test	<ul style="list-style-type: none"> - Gooch Crucible - Glass Fiber Pad - Filter Flask - Filter Tube - Rubber Tubing or Adapter - Erlenmeyer Flask - Oven
4.	Specific Gravity test	<ul style="list-style-type: none"> - Pycnometer - Water Bath - Thermometers (ASTM 63C)
5.	Ductility test	<ul style="list-style-type: none"> - Mold - Water Bath - Testing Machine - Thermometer(ASTM 63C)
6.	Loss on heating by weight test	<ul style="list-style-type: none"> - Oven(conform to E 145) - Thermometer(ASTM 13C) - Container
7.	Flash point test	<ul style="list-style-type: none"> - Cleveland open cup apparatus - Shield - Thermometer((ASTM 11C)

8.	Penetration after loss on heating test(0.1mm)	<ul style="list-style-type: none"> - Penetration Apparatus - Penetration Needle - Sample Container - Water Bath - Transfer Dish - Timing Device - Thermometers(ASTM 17C)
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Penetration apparatus



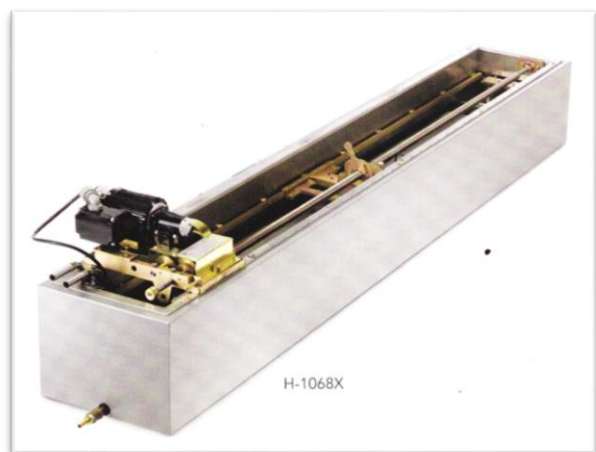
Ring & Ball apparatus (Softening Point Test)



Cleveland Open-Cup apparatus



Oven (Loss on heating)



Ductilometer (Ductility Test)

6. References

6.1 *ASTM Standards*

- D 5 – 05 Standard Test Method for Penetration of Bituminous Materials
- D 36 – 76 Standard Test Method for Softening Point of Bituminous Materials
- D 2042 -01 Standard Test Method for Solubility of Asphalt Materials in Trichloroethylene
- D 70 – 03 Standard Test Method for Specific Gravity of Semi-Solid Bituminous Materials
- D 113 – 99 Standard Test Method for Ductility of Bituminous Materials
- D 6 -80 Standard Test Method for Loss on Heating of oil and Asphaltic Compounds
- D 92 – 78 Standard Test Method for Flash and Fire Points by Cleveland Open Cup
- D 946 – 82 Standard Specification for Penetration Graded Asphalt Cement for use in Pavement Construction

6.2 *AASHTO Standard*

M 20 -70 (2000) Standard Specification for Penetration Graded Asphalt Cement

6.3 *BS Standard*

B.S – 3690 Specification for Penetration Grade Bitumen for Road Purposes