

Australian Standard®

Methods of testing bitumen and related roadmaking products

Method 11: Determination of ductility

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CH/25 on Bitumen and Related Products (for Roadmaking) to supersede AS 2341.11—1980. In preparing the Standard, reference was made to ASTM D 113, *Test Method for Ductility of Bituminous Materials*, and cognizance is taken of the assistance gained.

METHOD

1 SCOPE This Standard sets out a procedure for the determination of the ductility of bitumen.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

2341 Methods of testing bitumen and related roadmaking products

2341.1 Part 1: Precision data—Definitions

ASTM

E 1 Specification for ASTM Thermometers

IP

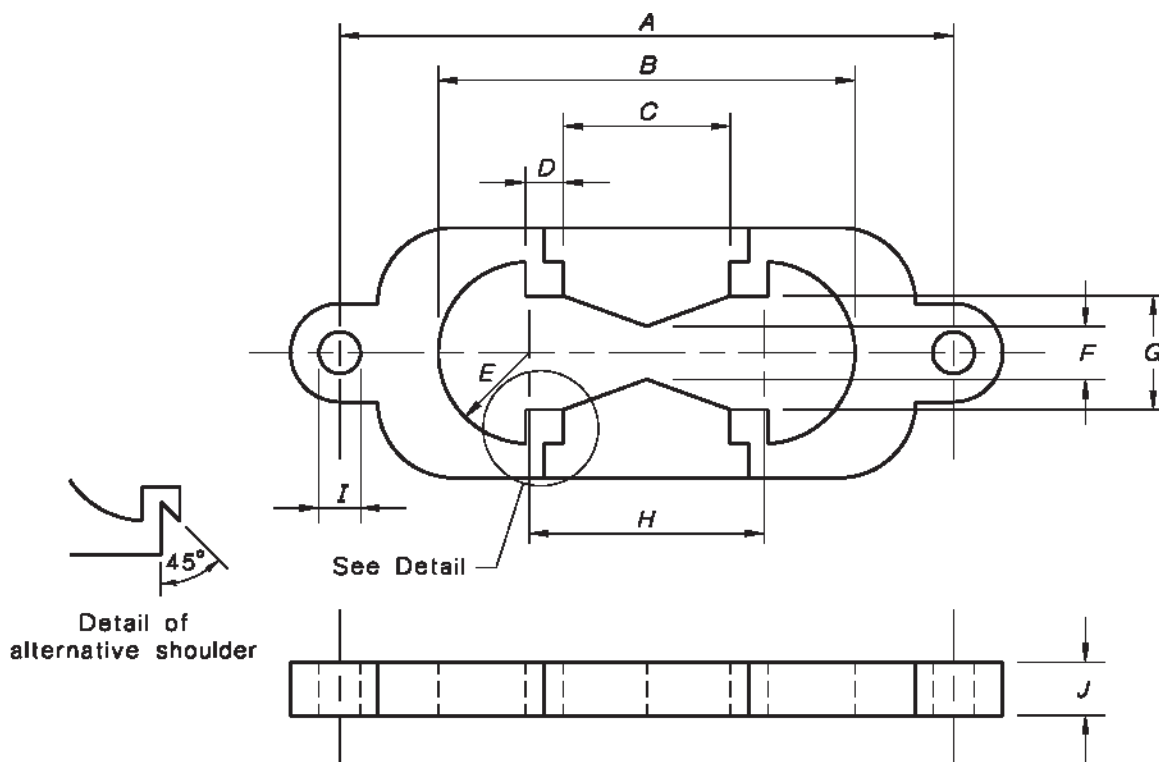
Methods for analysis and testing, Part 1, Vol. 2, Appendix A

3 PRINCIPLE The molten sample is poured into a specified mould, allowed to cool at room temperature, and then placed in a water bath at the test temperature. The ductility of the sample is determined as a measurement of the amount by which a standard briquette, formed from the sample and drawn into a thread, can be elongated before it breaks under specified conditions.

4 APPARATUS

4.1 General The following items of apparatus are required:

- (a) Three brass moulds having dimensions, as shown in Figure 1, that when assembled will form a briquette of the sample.
- (b) Three brass baseplates, suitable for the mould, are shown in Figure 1.



LEGEND:

A = distance between centres	112.5 ± 2.5
B = total length of briquette	75.0 ± 0.5
C = distance between clips	30.0 ± 0.3
D = shoulder	7.0 ± 0.8
E = radius	15.5 ± 0.8
F = width at minimum cross-section	10.0 ± 0.1
G = width at mouth of clip	20.0 ± 0.2
H = distance between centres of radii	45.0 ± 0.8
I = hole diameter	8.0 ± 3.0
J = thickness	10.0 ± 0.1

DIMENSIONS IN MILLIMETRES

FIGURE 1 MOULD FOR DUCTILITY TEST SPECIMEN

- (c) A ductilometer trough of such dimensions as to permit the following:
- Determinations being made on at least three briquettes at the same time.
 - Elongation of briquettes to a length of at least 1 m.
 - Immersion of the briquettes for test in water at a depth of not less than 50 mm from the top of the briquette to the surface of the water, and a clearance of 10 mm between the trough and the bottom of the briquette.
 - Observation, against a white background, of the breakage of the fine bitumen thread. The background should not allow the thread to readily adhere to it.
 - Pulling the briquettes apart, with minimum vibration, at 50 ± 2.5 mm/min.
 - Maintaining the water at the test temperature within 0.2°C .
- (d) Thermometer, IP 39C or ASTM 90C, as specified in ASTM E 1.
- (e) A 300 μm sieve.