

INSTITUTE OF PETROLEUM  
TESTING OF VAPOUR CONTAINMENT  
ON PETROLEUM ROAD TANKERS



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# FOREWORD

The European Directive 94/63/EC for the control of the emissions of volatile organic compounds (VOCs) is implemented in the UK through regulations under the Environmental Protection Act. The requirements under the Directive for the design and testing of road tankers are included in the HSE *Approved Tank Requirements (ATR)* under the Carriage of Dangerous Goods by Road Regulations 1996.

The *Approved Tank Requirements* apply to all road tankers first constructed or converted to bottom loading after 31 August 1996 that carry petrol. There are three particular requirements for a subject tanker:

- a plate shall be affixed, marked with the maximum number of compartments that can be loaded simultaneously without causing vapour to be released through any of the pressure and vacuum breather vents (Clause 31).
- pressure and vacuum breather vents shall be tested at intervals not exceeding 24 months to ensure that they are leak tight in any orientation and that their actual opening pressures are within a specified tolerance of their nominal set pressure (Clause 34).
- the tank and its fittings shall be subject to a leakproofness (vapour tightness) test at intervals not exceeding three years (Clause 35).

The Institute of Petroleum and the road tanker and service equipment manufacturers have recognised the need to provide protocols defining acceptable practical means of satisfying the first and third requirements (determining the maximum number of loading arms, and establishing a leakproofness test). The proving of leak tightness of conventional designs of pressure and vacuum breather vents in any orientation, which is part of the second requirement, is not seen as a practical in-service test for which a protocol can be developed.

To verify and validate the method for determining maximum filling rates, a series of trials were carried out under controlled conditions that proved the test method to be a satisfactory, robust and repeatable process suitable as the basis of this protocol. The alternative to carrying out tests is to use a calculation method, although such a method has yet to be validated. The Road Tanker Panel of the Institute of Petroleum recommends that each tank type should be subject to an initial physical test, and that any calculation method is only used for assessing variants once its accuracy has been demonstrated and proven by physical test.

Successful trials were also carried out to verify a procedure for testing the vapour tightness of tanks using different test equipment; this is the procedure now recommended.

Although it is believed the adoption of these protocols will reduce the risk of vapour being released, the Institute of Petroleum cannot accept any responsibility for vapour release from a road tanker to which these protocols have been applied in whole or in part. Nor can it accept responsibility of whatsoever kind for personal injury, damage or alleged damage arising or otherwise occurring in or about premises and installations, or to vehicles, as a result of the application of this guidance.

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