



# MALAYSIAN STANDARD

MS 1870:2005

## GAS METERS - DIAPHRAGM GAS METERS

ICS: 75.180.30; 91.140.40

Descriptors: metrology, measuring instruments, volume measurements, gas supply meters, definitions, classifications, metrological inspection, design, safety, equipment specifications, performance evaluation, mechanical properties, tests, specifications, marking

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DEPARTMENT OF STANDARDS MALAYSIA

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## Committee representation

The Petroleum and Gas Industry Standards Committee (ISC H) under whose authority this Malaysian Standard was adopted, comprises representatives from the following organisations:

Association of Consulting Engineers Malaysia  
Association of Malaysian Oil and Gas Engineering Consultants  
Department of Occupational Safety and Health  
Department of Standards Malaysia  
Energy Commission  
ExxonMobil Malaysia Sdn Bhd  
Fire and Rescue Department  
Malaysian Gas Association  
Malaysian Petroleum Institute  
Malaysian Plastics Manufacturers Association  
Ministry of Domestic Trade and Consumer Affairs  
Ministry of International Trade and Industry  
Petroleum Nasional Berhad  
Road Transport Department Malaysia  
Shell Malaysia Trading Sdn Bhd  
The Institution of Engineers Malaysia  
Universiti Teknologi Malaysia  
Universiti Teknologi PETRONAS

The Technical Committee on Petroleum and Gas Measurement which recommends adoption of the EN Standard consists of representatives from the following organisations:

Association of Malaysian Oil and Gas Engineering Consultants  
Carigali-Triton Operating Company Sdn Bhd  
Exploration and Production Malaysia Inc  
Energy Commission  
Gas Malaysia Sdn Bhd  
Ministry of Domestic Trade and Consumer Affairs  
OGA Systems Sdn Bhd  
Petroleum Nasional Berhad  
Renaco Marine Sdn Bhd  
Sense Services Sdn Bhd  
SIRIM Berhad (Pusat Metrologi Kebangsaan)  
SIRIM Berhad (Secretariat)  
Universiti Teknologi Malaysia

### Co-opted members:

Persatuan Penjana Kuasa Bebas  
Petronas Research and Scientific Services  
Petrotechnical Inspection (M) Sdn Bhd  
Sarawak Shell Sdn Bhd

## **NATIONAL FOREWORD**

The adoption of the EN Standard as a Malaysian Standard was recommended by the Technical Committee on Petroleum and Gas Measurement under the authority of the Petroleum and Gas Industry Standards Committee.

This Malaysian Standard is identical with EN 1359:1998, *Gas meters – Diaphragm gas meters*, published by the European Committee for Standardization (CEN) with the exceptions as listed below.

This standard is published with the permission of the European Committee for Standardization. Such permission is hereby acknowledged.

## **MALAYSIAN STANDARD EXCEPTIONS**

- a) In Clause 1, the phrase 'of the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> families' has been replaced with '(natural gas and liquefied petroleum gas)';
- b) In Clause 1, the phrase 'minimum ambient and gas temperature range' has been replaced with 'minimum gas temperature range';
- c) In sub-clause 4.3, the phrase 'a minimum ambient temperature range and' has been deleted.
- d) In the whole text of the standard, the minimum gas/ambient temperature range has been replaced with '-5 °C to 50 °C';
- e) In sub-clause 8.3.3, reference to Annex A of EN 60730-1:1995 has been replaced in this standard as Annex E;
- f) in the source text, "this European Standard" should read "this Malaysian Standard";
- g) the comma which is used as a decimal sign (if any), to read as a point; and
- h) references to EN Standards should be replaced by equivalent Malaysian Standards as follows:

<u>Referenced International Standards</u>	<u>Corresponding Malaysian Standards</u>
EN 50020:1994, <i>Electrical apparatus for potentially explosive atmospheres – Part 11: Intrinsic safety "i"</i>	MS IEC 60079-11:2003, <i>Electrical apparatus for explosive gas atmospheres – Part 11: Intrinsic safety "i"</i>
EN 55022:1994, <i>Limits and methods of measurement of radio disturbance characteristics of information technology equipment</i>	MS CISPR 22:2000, <i>Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement</i>
EN 60529:2002, <i>Degrees of protection provided by enclosures (IP code)</i>	MS IEC 60529:2002, <i>Degrees of protection provided by enclosures (IP code)</i>

**FOREWORD** (continued)

ISO 9001:1994, <i>Quality systems – Model for quality assurance in design/development, production, installation and servicing</i>	MS ISO 9001:2000, <i>Quality management systems - requirements</i>
ISO 9002:1994, <i>Quality systems – Model for quality assurance in production, installation and servicing</i>	MS ISO 9002:1994, <i>Quality systems – Model for quality assurance in production, installation and servicing</i>
ISO 228-1:1994, <i>Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation</i>	MS ISO 228-1:2003, <i>Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation</i>
ISO 1518:1992, <i>Paints and varnishes – Scratch test</i>	MS 133: Part E2:2000, <i>Methods of test for paints and varnishes: Part E2: Scratch test (First revision)</i>
ISO 2409:1992, <i>Paints and varnishes – Cross-cut test</i>	MS 133: Part E6:2000, <i>Methods of test for paints and varnishes: Part E6: Cross-cut test (First revision)</i>
ISO 2812-1:1993, <i>Paints and varnishes – Determination of resistance to liquids: Part 1: General methods</i>	MS 133: Part G5:1975, <i>Methods of test for paints: Part G5: Resistance to liquids</i>
ISO 4628-2:1982, <i>Paints and varnishes – Evaluation of degradation of paint coatings – Designation of intensity, quantity and size of common types of defect: Part 2: Designation of degree of blistering</i>	MS 133: Part H2:1987, <i>Methods of test for paints: Part H2: Evaluation of degree of blistering</i>
ISO 4628-3:1982, <i>Paints and varnishes – Evaluation of degradation of paint coatings – Designation of intensity, quantity and size of common types of defect: Part 3: Designation of degree of rusting</i>	MS 133: Part H3:1989, <i>Methods of test for paints: Part H3: Evaluation of degree of rusting</i>
ISO 6270:1980, <i>Paints and varnishes – Determination of resistance to humidity (continuous condensation)</i>	MS 133: Part F2:2002, <i>Methods of test for paints and varnishes - Part F2: Resistance to humidity (continuous condensation) (First revision)</i>
ISO 6272:1993, <i>Paints and varnishes – Falling weight test</i>	MS 133: Part E3:2000, <i>Methods of test for paints and varnishes: Part E3: Resistance to impact (Falling-weight test) (First revision)</i>
ISO 7253:1984, <i>Paints and varnishes – Determination of resistance to neutral salt spray</i>	MS 133: Part F4:1973, <i>Methods of test for paints: Part F4: Resistance to continuous salt spray</i>

**FOREWORD** *(continued)*

ISO 61000-4-3:1996, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 3: Radiated, radio-frequency, electromagnetic field immunity test*

MS IEC 61000-4-3:2001, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 3: Radiated, radio-frequency, electromagnetic field immunity test (First revision)*

Compliance with a Malaysian Standard does not of itself confer immunity from legal obligations.