

**IGEM/UP/16 Edition 2
COMMUNICATION 1882
2020**

The following Amendments (November 2023) apply to all copies of IGEM/UP/16, published in 2020.

**Clause 2.1 Second sentence reworded to
It is also applicable to**

Clause 2.4 Note added:

➤ *Note: Installation pipework may fall within the zone classification of the meter installation. Reference will need to be made to the primary meter risk assessment and IGEM/GM/7b as appropriate.* ◀

Clause 4.12 Note 2 Second sentence added:

➤ *Where further information on zoning of primary meter installations and adjacent pipework is required reference may be made to IGEM/GM/7B.* ◀

Clause 4.2.4

Deletion of maximum of 75 mbar operating pressure. Substitute:

➤ 100 mbar ◀
(throughout document)

Clause 4.4 Deletion of term 'cross-bonding'. Substitute:

➤ equipotential bonding◀

Clause 4.6.1 Deletion of 'emergency control valve'. Substitute:

➤ the primary meter installation◀

Clause 4.8.1 Deletion of second sentence.

Clause 4.8.1 Deletion of first sentence. Substitute:

➤ When determining ventilation and air movement, air change rates are typically used and will vary depending on room volume. ◀

Clause 4.8.3 Note 2 Deletion of second sentence. Substitute:

➤ *However, the conversion factor on vent sizes does not apply for one wall and other methods will be required for example refer to BS 5925.* ◀

Clause 5.2.1 Addition:

➤ and/or BS 6891 ◀

Clause 5.2.4 Addition

➤ and/or BS 6891 ◀

Clause 5.2.7 Substitution of 10 m³ to ➤ 4 m³◀

(Throughout document)

Clause 5.3.2 Deletion. Substitute:

➤ For large enclosures (>100 m³) the effectiveness of the ventilation, shall be assessed and if necessary air movements at the joints observed. Means of observation can include smoke generation and/or an anemometer. ◀

Clause 5.3.3 Word Deletions.

- Deletion of 75 mbar. Substitute 100 mbar.
- Deletion of 'verified'. Substitute 'observed'

Clause 5.6.1 Addition:

➤ 0.3 - 1 m from the floor. ◀

Table 1 (plus notes) deleted entirely. Substitute:

➤

Space Volume (m ³)	Pressure (mbar)	Air Changes per hour (ACH)	Air changes per hour (ACH) (moderate congestion) <small>See Note 5</small>	Air changes per hour (ACH) (congested or confined) <small>See Note 5</small>
Pressures up to 100 mbar (0.025 mm ² leak size) Non adverse condition				
4-10	Up to 28	N/A	N/A	2
4-10	28 -100	N/A	N/A	3
10 - 100	Up to 100	0.5	0.5	0.5
Pressures 100 – 2000 mbar (0.25 mm ² leak size)				
10	100	1	2	3
	500	2	4	6
	2000	4	8	12
50	100	0.5	0.5	0.5
	500	0.5	1	2
	2000	1	2	3
100	100	0.5	0.5	0.5
	500	0.5	0.5	1
	2000	0.5	1	2
Pressures 100 – 2000 mbar (2.5 mm ² leak size)				
10	100	11	24	36
	500	24	50	75
	2000	60	120	180
50	100	3	6	9

	500	5	10	15
	2000	12	24	36
100	100	2	4	6
	500	3	6	9
	2000	6	12	18

TABLE 1 - VENTILATION RATES REQUIRED TO MEET A ZONE 2 NE CLASSIFICATION

Note 1: Spaces between 4 m³ and 10 m³ have to be considered as confined or congested. In spaces below 4 m³ (not including voids and ducts), joints should be fully welded, soldered or braised otherwise refer to IGEM/SR/25. For voids or ducts refer to table 4.

Note 2: Releases in spaces between 4 and 10 m³ need to meet the following requirements

- *there is more than 4 m³ of unobstructed space*
- *release sources are not confined or congested or if they are, have additional ventilation in place*
- *suitable ventilation is at high and low levels.*

Note 3: Table 1 covers a single leak scenario. If between 20- 100 release sources are present and are in reasonable proximity then the moderate congestion column should be used. For more than 100 release sources the congested and confined column should be used. Further guidance can be obtained in IGEM/SR/25.

Note 4: These figures are for broad guidance. It is necessary to ensure the actual ventilation rate will achieve at least 0.5 ACH.

Note 5: A conversion factor of 1.4 cm² m⁻³ ACH⁻¹ may be applied to both inlet and outlet grilles to determine grille areas from room volume and air change rates. Account needs to be taken of specific grille pressure drops and grille location, sheltered locations may require larger areas. This is a free grille area based on 2 m s⁻¹ wind speed and actual grille size needs to be adjusted for the effective area. The calculated ventilation needs to be provided for inlet and outlet at high and low levels, on at least two walls. The figure is not total grille area for the room. If ventilation can only be provided on one wall, other methods of sizing grille areas will be required. For example, reference to be made to BS 5925 (1991) Table 12 or CIBSE AM10.

Note 6: The column that states congested or confined is based upon the release being within 0.5 m of three surfaces. Moderate congestion would have less congestion than this but would not be classed as freely ventilated. The ventilation rate for congested or confined is based upon a safety factor of 3 and for moderate congestion a safety factor of 2.

Note 7: When using the table for situations that don't line up to the numbers you should round up the pressure but round down the room volume. For example, a room of 20 m³ and 200 mbar pressure would use a room volume of 10 m³ and a pressure of 500 mbar. ◀

Clause 6.1.1 Deletion of second sentence.

Table 2 Deletions and Substitutions:

- Deletion of 75 mbar. Substitute ▶100 mbar. ◀
- Deletion of 10 m³. Substitute ▶4 m³◀
- Deletion of 9a text. Substitute ▶Is Natural ventilation provided for >0.5 ACH for enclosures greater than 10 m³. Minimum Grille area 0.7 cm² per m³ of enclosure? (see Note 3)(for enclosures between 4 and 10 m³ ventilation should be in compliance with Table 1., enclosure)◀

Table 2 Note Additions:

- Note 2 addition of > connector <
- Note 3 Addition of fourth sentence > *For example, reference to be made to BS 5925.* <
- Note 3 correction of spelling grill changed to > grille <

Table 3:

- 10b > 0.3 - 1 m from the floor. <
- 10c deletion of observed substitute: > proved <
- Table 3 title Deletion of 75 mbar. Substitute >100 mbar.<
- Note 2 addition of > connector <