Radiology statement Medinox Pb1 – Pb3

Introduction

Metaflex Doors Europe offers a range of doors for radiation shielding. The Medinox is a medical door with airtight/hermetic feature.
The door system comprising of the door body, wall frames and windows provides the specified protection against radiation when these components are used in combination (without exclusions) and in closed position of the door.

Conditions

Since there are no international standardized regulations regarding the measurement of radiation protection, the sources type, distance of measurement etc. It is difficult to cater to and take into consideration the different regulatory norms.
Therefore, to determine the correct lead application and the thickness of lead used, Metaflex doors work in the following conditions:

1. The source of the radiation (primary source) is Static and located at least one (1) meter away from the front of the door and one (1) meter above the floor (centered to the door).
2. The radiation must reach the door below (± 45° from the horizontal) (see figure1).
3. The wall will not be supplied by Metaflex and is the buyer's full responsibility. The wall must be radiation proof and should have a lead overlap with the Metaflex wall-frames. Type of radiation used: X-rays.
4. The standard keV radiation shielding of the window offered at the Metaflex Doors Europe B.V. is 110 KeV.
5. All Metaflex doors use lead as radiation protection material, this is according to the lead alloy grade PB810M (EN 12588:2006).

All Metaflex doors will be delivered in accordance with the Metaflex General Terms and Conditions of Delivery and Payment, as applicable to the agreement between Metaflex and the buyer.

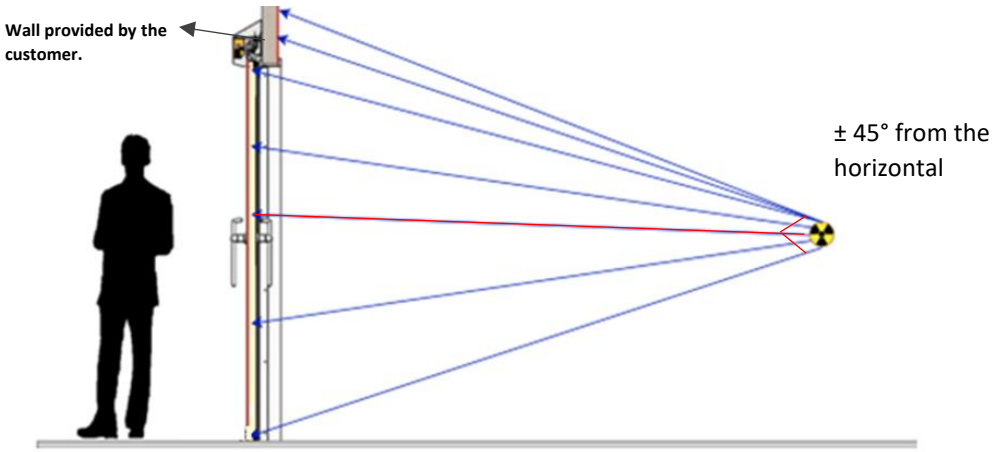


Figure 1 A Metaflex Medinox door providing radiation protection.

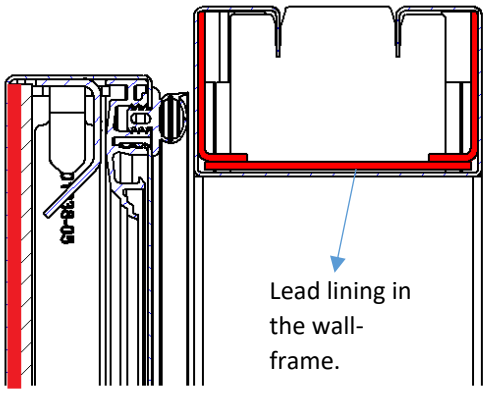
Figure 1 shows how the Medinox door system provides protection against radiation in an enclosure which has a source of radiation for radiological application.

For further information about the door, windows and wall frames refer to the technical drawings and for any other thickness of lead other than the standards, and other door related queries please contact the sales team.

Medinox Door system

The Medinox door is offered in three standard lead configurations.
The tables (1 & 2) illustrate the various thicknesses of lead available as standard lead options for the door body and the window and figure 2, 2a & 3 shows the location of the lead in the door and the window.

A standard Medinox door body and window.



Door type	Wall frame	Side overlap In mm	Min side overlap In mm	Top overlap In mm
Medinox	Malmo	40	40	40
Medinox	Helsinki	40	40	40
Medinox	Halmstad	40	40	40
Medinox	Vario	40	40	40
Medinox	Oslo	40	40	40
Medinox	Mounting frame	40	40	40
Medinox	1-sided alu	40	40	40
Medinox	1-sided stainless stell	40	40	40

Tabel 1 Overlap distances for Medinox.

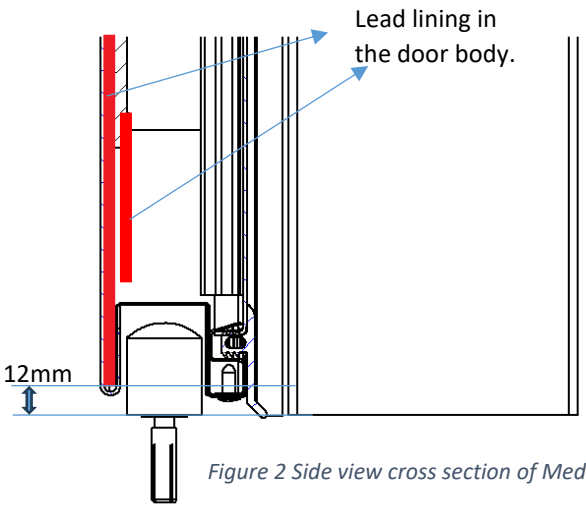


Figure 2 Side view cross section of Medinox.

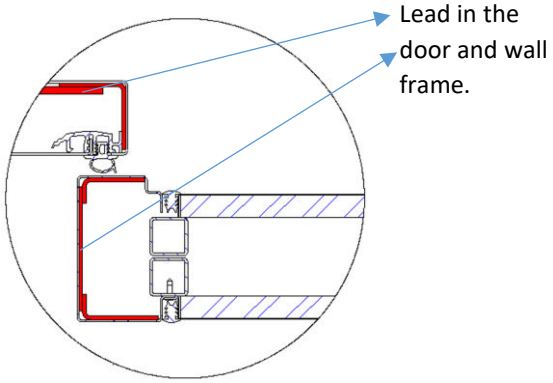


Figure 2a Top view cross section of a Medinox.

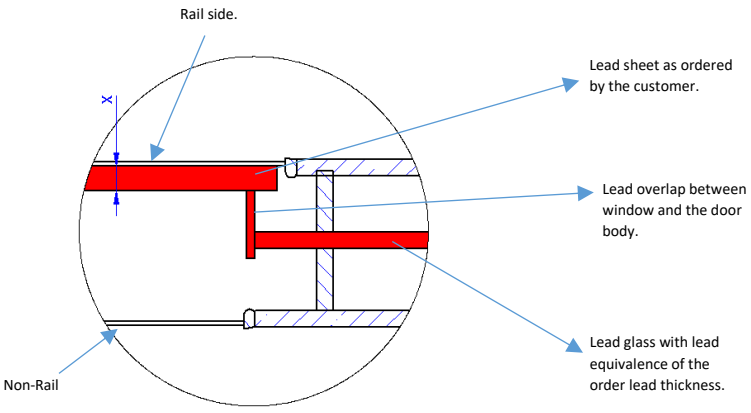


Figure 3 Window Lead thickness configuration.

Door type	x in mm	Lead glass in mm	Openers
L1	1	≥ 1mm	No leakage during tests with X-rays
L2	2	≥ 2mm	
L3	3	≥ 3mm	

Table 2 Lead thickness configuration

For further information about the door, windows and wall frames refer to the technical drawings and for any other thickness of lead other than the standards, and other door related queries please contact the sales team.

Hermetic opener

When hermetic opener configuration is used as openers, the door body must be drilled to fasten the hermetic opener on the door body with screws. This will cause to drilling on the lead sheets. However, during measurements, the hermetic opener, the screws, and the nuts on the door body will provide radiation shielding equivalent to lead in the door body (in case of X-rays and 3mm lead doors).

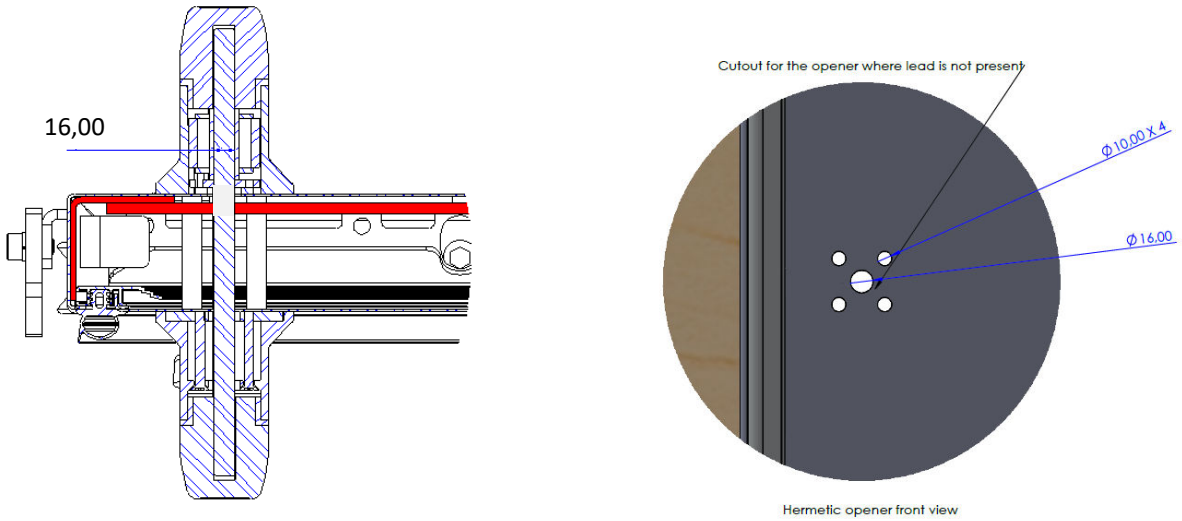


Figure 4 Hermetic opener with cutout for opener.

D-grip Opener

When D-grip opener configuration is used as openers, the door body must be drilled to fasten the D-grip opener on the door body with screws. This will cause to drilling on the lead sheets. However, during measurements, the hermetic opener, the screws, and the nuts on the door body will provide radiation shielding equivalent to lead in the door body (in case of X-rays and 3mm lead doors).

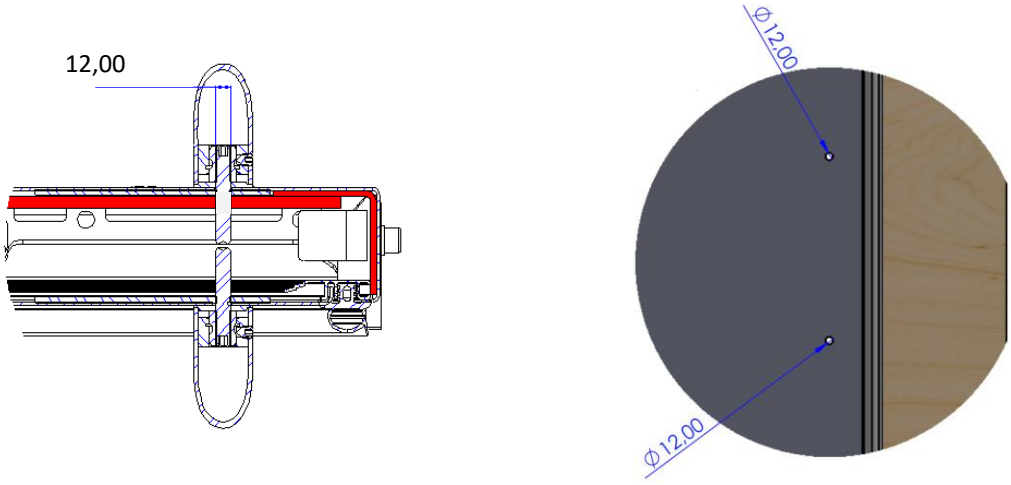


Figure 5 D-grip opener with cutout for opener.

For further information about the door, windows and wall frames refer to the technical drawings and for any other thickness of lead other than the standards, and other door related queries please contact the sales team.

Flush Opener

When Flush opener configuration is used as openers, the small cutout must be cut into the door body to assembly the flush opener. To cover this slot, a lead sheet of ordered lead thickness(200mm*250mm) is placed behind the opener as represented in the image below. This will provide complete protection against radiation at the opener.

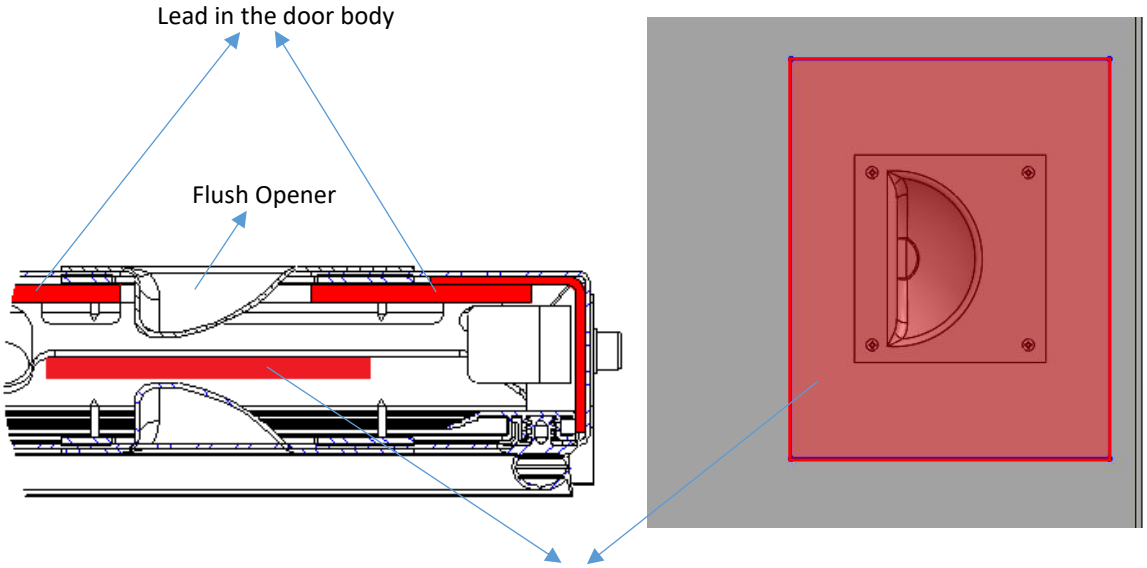


Figure 6 Flush opener lead shielding.

For further information about the door, windows and wall frames refer to the technical drawings and for any other thickness of lead other than the standards, and other door related queries please contact the sales team.