

Instruction of use

Medical Index X-Ray Protection Apron

Document Control #IFU-A

Information of Use

Medical Index X-Ray Aprons

22.02.2020

We thank you for using Medical Index equipment. Before using it, we recommend you to examine the following instructions with a strong attention.

If you desire any further information concerning the Medical Index radiation protective clothing, please do not hesitate to contact us.

CE Certificate

The equipment is personal protective equipment against X-rays exposure caused by x-rays generating tubes used in radiology and are intended to reduce the x-ray exposure of the wearer.

As personal protective equipment, their choice and use has to conform to the European council directive no. 89/656/EEC of 30.11.89, under the authority of a responsible officer in the field of radiology protection.

Medical Index personal protective equipment (aka. X-ray aprons) are certified by a notified body. A notified body is regulated under the European Parliament and undertakes relevant type approval procedures for the equipment identified. Medical Index meets the Regulation and applicable essential health and safety requirements. Medical Index x-ray aprons/personal protective equipment are certified according to EN 61331-1:2014 and EN 61331-3:2014.

Shielding Properties

The following results demonstrates the technical advantages of VECTOR X in terms of safety, weight and comfort. Vector X is the single most significant advance in flexible radiation protection materials for medical environments. Vector X is available as Light Lead (LL) and Non-Lead (NL) material, and Standard Lead (SL). All of the above passes the Kv range of 50-150kv.

Vector X enables protective aprons, skirts and accessories to provide up to 20 per cent reduction in absorbed dose than competitors' Lead composite materials, and 40% better performance than Lead-free alternatives at comparable LE.



Measurement Conditions

Distance from x-ray tube to target sample: 0.8m
Ionization chamber used: Radcal 10x5-60E s/n 9088

61331-1:2014 X-ray beam qualities

X-ray Tube Voltage kV	Total filtration mmAl*
50	2.5
70	2.5
90	2.5
110	2.5
120	2.5
150	2.5

*The inherent filtration of the x-ray tube was determined to be 0.3mmAl equivalent.

Measurement Results

The below table displays the results of the lead equivalence of 0.25mm, 0.35mm, and 0.50mm for Vector X Light Lead (LL) from 50-150kv.

Vector X Light Lead (LL)

Area density kV	0.25 mm	0.35mm	0.50 mm
50	98.8 %	99.7 %	>99.9*
70	95.1 %	97.6 %	99.1
90	90.7 %	94.5 %	97.4
110	87.5 %	92.3 %	96.1
120	86.2 %	91.3 %	95.5
150	82.7 %	88.6 %	93.0

*The response of the ionization chamber was too low to measure accurately. This value was extrapolated from a straight line fit of the 70-150kV qualities.

The below table displays the results of the lead equivalence of 0.25mm, 0.35mm, and 0.50mm for Vector X Non-Lead (NL) from 50-150kv.

Vector X Non-Lead (NL)

Area density kV	0.25 mm	0.35mm	0.50 mm
50	98.7 %	99.6 %	>99.9*
70	96.1 %	98.0 %	99.4
90	92.0 %	95.3 %	97.8
110	87.8 %	92.7 %	96.3
120	85.8 %	91.5 %	95.5
150	80.1 %	88.1 %	93.0

*The response of the ionization chamber was too low to measure accurately. This value was extrapolated from a straight line fit of the 70-150kV qualities.

The below table displays the results of the lead equivalence of 0.25mm, 0.35mm, and 0.50mm for Standard Lead (SL) from 50-150kv.

Standard Lead (SL)



Area density kV	0.25 mm	0.35mm	0.50 mm
50	98.8 %	99.7 %	>99.9*
70	95.1 %	97.6 %	99.1
90	90.7 %	94.5 %	97.4
110	87.5 %	92.3 %	96.1
120	86.2 %	91.3 %	95.5
150	82.7 %	88.6 %	93.0

*The response of the ionization chamber was too low to measure accurately. This value was extrapolated from a straight line fit of the 70-150kV qualities.


Labeling / Marking

In each Medical Index radiation protection apron, you will find a label that identifies the apron type, size, reference number, serial number, and lead equivalence protection level.



Number	Description
1	Model name
2	Size Length and Width
3	Reference No and KV Range
4	Serial Number
5	Lead Equivalence


1 **BR Skirt & Vest**
 Length: 110 cm
 Width at the hip: 117 cm
 Ref.-No.: BRSV110117/50LL
 50-150 KV IEC 61331-1:2014
 EN ISO 13688:2013
 Serial-No.: 022020
 Front Side: 0,50 mm Pb
 Back Side: 0,25 mm Pb
 Made in Germany Vector X

CE 0338 



Medical Index GmbH, Mayerhof 5
 D-74808 Bad Rappenau, Tel: +49 (0) 7264-807540
 Fax: +49 (0) 7264-807541, Email: info@medical-index.de
 www.medical-index.de


2 **MA Double Sided Apron**
 Length: 110 cm
 Width at the hip: 117 cm
 Ref.-No.: MADA110117/50NL
 50-150 KV IEC 61331-1:2014
 EN ISO 13688:2013
 Serial-No.: 022020
 Front Side: 0,50 mm Pb
 Back Side: 0,25 mm Pb
 Made in Germany Vector X

CE 0338 

Medical Index GmbH, Mayerhof 5
 D-74808 Bad Rappenau, Tel: +49 (0) 7264-807540
 Fax: +49 (0) 7264-807541, Email: info@medical-index.de
 www.medical-index.de

3 **Coat Apron**
 Length: 110 cm
 Width at the hip: 60 cm
 Reference No.: CA11060/35LL
 50-150 KV IEC 61331-1:2014
 EN ISO 13688:2013
 Serial-No.: 022020
 Front Side: 0,35 mm Pb
 Back Side: 0,25 mm Pb
 Made in Germany Vector X

CE 0338 

Medical Index GmbH, Mayerhof 5
 D-74808 Bad Rappenau, Tel: +49 (0) 7264-807540
 Fax: +49 (0) 7264-807541, Email: info@medical-index.de
 www.medical-index.de



Half Apron

Size: 30x30 cm
 Reference No.: GP03030/50LL
 50-150 KV IEC 61331-1:2014
 EN ISO 13688:2013
 Serial No.: 022020
 Lead Equivalent: 0,50 mm Pb

Made in Germany Vector X



0336



Medical Index GmbH, Mayerhof 5
 D-74806 Bad Rappenau, Tel: +49 (0) 7264-807540
 Fax: +49 (0) 7264-807541, Email: info@medical-index.de
 www.medical-index.de

4



Thyroid Collar

Width: 10 cm
 Height Collar: 4 cm
 Reference No.: MTS00410/50LL
 50-150 KV IEC 61331-1:2014
 EN ISO 13688:2013
 Serial No.: 022020
 Lead Equivalent: 0,50 mm Pb

Made in Germany Vector X



0338



Medical Index GmbH, Mayerhof 5
 D-74806 Bad Rappenau, Tel: +49 (0) 7264-807540
 Fax: +49 (0) 7264-807541, Email: info@medical-index.de
 www.medical-index.de

5

Recommendations and Limitations on Use

Wearer has to check if he is using an equipment adapted to the risks entailed. A particular attention has to be brought on the choice of the lead equivalent thickness of the equipment and on the choice of front and back protection. Wearer should check if the apron has been inspected in certain intervals and can provide necessary protection. If wearer has damaged the apron during a procedure (e.g. razor cut), the wearer should find a quick replacement. X-ray aprons are recommended to be cleaned and disinfected by hand after a procedure. If x-ray aprons are not in use, we recommend the x-ray apron to be carefully put on an apron wall hanger or rack/stand.