STUK X-ray qualities for radiation protection level

Industrial X-ray system:
-W anode, angle 20°
-Inherent filtration: 3 mm Be (0,3 mm Al ISO N / ISO H ≥ 80 kV), 1.2 mmBe <80 kV.

Quality	Tube voltage	Additional filtration				1. HVL		Mean energy
	(kV)	Al (mm)	Cu (mm)	Sn (mm)	Pb (mm)	Al (mm)	Cu (mm)	(keV)
ISO N -series (ISO 4037:2019)								
ISO N-10*	10	0.1	-	-	-	0.06	-	8.5
ISO N-15*	15	0.5	-	-	-	0.2	-	12.7
ISO N-20	20	1.0	-	-	-	0.4	-	16.4
ISO N-25	25	2.0	-	-	-	0.7	-	20.4
ISO N-30	30	4.0	-	-	-	1.2	-	24.7
ISO N-40	40	4.0	0.2	-	-	2.8	-	33.3
ISO N-60	60	4.0	0.6	-	-	-	0.2	48.0
ISO N-80	80	3.9	2.0	-	-	-	0.6	65.2
ISO N-100	100	3.9	5.0	-	-	-	1.1	83.3
ISO N-120	120	3.9	5.0	1.0	-	-	1.7	100
ISO N-150	150	3.9	-	2.5	-	-	2.4	118
ISO N-200	200	3.9	2.0	3.0	1.0	-	4.1	165
ISO N-250	250	3.9	-	2.0	3.0	-	5.2	207
ISO N-300	300	3.9	-	3.0	5.0	-	6.1	248
ISO H -series (ISO 4037:2019)								
ISO H-10*	10	-	-	-	-	0.05	-	8
ISO H-20*	20	0.08	-	-	-	0.1	-	14
ISO H-30	30	0.42	-	-	-	0.4	-	20
ISO H-60	60	3.2	-	-	-	2.4	-	37
ISO H-100	100	4.0	0.2	-	-	-	0.3	57
ISO H-200	200	4.0	1.2	-	-	-	1.7	102
ISO H-250	250	4.0	1.6	-	-	-	2.5	122
ISO H-300	300	4.0	2.5	-	-	-	3.3	147

* available only upon special request

STUK X-ray qualities for X-ray imaging

Industrial X-ray system: IEC standard radiation qualities
-W anode, angle 20°
-Inherent filtration: 1.2 mm Be (X-ray tube window 1 mmBe + a monitor chamber)

Quality	Tube voltage	Additional filtration		1. HVL
	(kV)	Al (mm)	Cu (mm)	Al (mm)
RQR-series (IEC 61267:2026)				
RQR 2	40	2.5	-	1.4
RQR 3	50	2.5	-	1.8
RQR 4	60	2.8	-	2.2
RQR 5	70	2.9	-	2.6
RQR 6	80	3.0	-	3.0
RQR 7	90	3.3	-	3.5
RQR 8	100	3.4	-	4.0
RQR 9	120	3.8	-	5.0
RQR 10	150	4.5	-	6.5
RQT-series (IEC 61267:2026)				
RQT 8	100	3.4	0.2	7.1
RQT 9	120	3.8	0.3	8.5
RQT 10	150	4.4	0.3	10.3

STUK X-ray qualities for X-ray imaging

Industrial X-ray system: non-standard radiation qualities
-W anode, angle 20°
-Inherent filtration: 1.2 mm Be (X-ray tube window 1 mmBe + a monitor chamber)

Quality	Tube voltage	Additional filtration		1. HVL
	(kV)	Al (mm)	Cu (mm)	Al (mm)
RQC-series (non-standard qualities)				
RQC/1 3	50	2.5	0.1	2.8
RQC/1 5	70	2.9	0.1	4.0
RQC/1 8	100	3.4	0.1	5.8
RQC/1 9	120	3.8	0.1	7.1
RQC/1 10	150	4.5	0.1	8.3
RQC/3 3	50	2.5	0.3	3.8
RQC/3 5	70	2.9	0.3	5.6
RQC/3 8	100	3.4	0.3	7.8
RQC/3 9	120	3.8	0.3	8.8
RQC/9 4	60	2.8	0.9	6.5
RQC/9 5	70	2.9	0.9	7.6
RQC/9 8	100	3.4	0.9	10.1
RQC/9 9	120	3.8	0.9	11.2
RQC/9 10	150	4.5	0.9	12.5

Quality	Tube voltage	Additional filtration		1. HVL
Mammography	(kV)	Al (mm)	Cu (mm)	Al (mm)
MAM-series (non-standard qualities)				
MAM 25	25	0.5	-	0.33
MAM 28	28	0.5	-	0.38
MAM 30	30	0.5	-	0.40
MAM 35	35	0.5	-	0.47

STUK X-ray qualities for X-ray imaging

Clinical X-ray system: mainly used for calibration of X-ray multimeters (XMM)
-W anode, angle 16°

Quality	Tube voltage	Additional filtration		1. HVL
	(kV)	Al (mm)	Cu (mm)	Al (mm)
RQR-series (IEC 61267:2026)				
RQR 2	40	2.5	-	1.4
RQR 3	50	2.5	-	1.8
RQR 4	60	2.7	-	2.2
RQR 5	70	2.8	-	2.6
RQR 6	80	2.9	-	3.0
RQR 7	90	3.2	-	3.6
RQR 8	100	3.2	-	4.0
RQR 9	120	3.5	-	5.1

Quality	Tube voltage	Additional filtration		1. HVL
	(kV)	Al (mm)	Cu (mm)	Al (mm)
RQC-series (non-standard qualities)				
RQC/1 3	50	2.5	0.1	2.7
RQC/1 5	70	2.8	0.1	4.0
RQC/1 8	100	3.2	0.1	5.8
RQC/1 9	120	3.5	0.1	6.8
RQC/3 3	50	2.5	0.3	3.8
RQC/3 5	70	2.8	0.3	5.6
RQC/3 8	100	3.2	0.3	7.7
RQC/3 9	120	3.5	0.3	8.8
RQC/9 4	60	2.7	0.9	6.4
RQC/9 5	70	2.8	0.9	7.5
RQC/9 8	100	3.2	0.9	10.0
RQC/9 9	120	3.5	0.9	11.1

STUK X-ray qualities for mammography

Clinical X-ray system: mainly used for calibration of X-ray multimeters (XMM)
-Mo anode, angle 16°

Quality	Tube voltage	Filtration	1. HVL
	(kV)	Mo (µm)	Al (mm)
RQR-M-series (IEC 61267:2026)			
MoMo 25	25	30	0.27
MoMo 28	28	30	0.31
MoMo 30	30	30	0.33
MoMo 35	35	30	0.36
Mo/Rh series	(kV)	Rh (µm)	Al (mm)
MoRh 25	25	30	0.33
MoRh 28	28	30	0.38
MoRh 30	30	30	0.40
MoRh 35	35	30	0.43

STUK X-ray qualities for radiation therapy level

Industrial X-ray system:
-W anode, angle 20°
-Inherent filtration: 3 mm Be (0,3 mm Al ≥ 80 kV), 1.2 mmBe <80 kV.

CCRI X-ray qualities* (BIPM)

BIPM 25	25	0.4	-	0.3	-
BIPM 30	30	0.2	-	0.2	-
BIPM 50a	50	4.0	-	2.3	-
BIPM 50b	50	1.0	-	1.1	-
BIPM 100	100	3.6	-	4.1	-
BIPM 135	135	2.4	0.2	-	0.5
BIPM 180	180	2.2	0.5	-	1.0
BIPM 250	250	2.2	1.6	-	2.4

* available only upon special request

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