fOCYI];APCTBEH.HA51 KOPTIOPA4M51 no ATOMHOÎÎI 9HEPfMM
<<PОСАТОМ »

СЕРТI1<РНКАТ-РАЗРЕIIIЕННЕ

PentcTpaL1,HOHHbll1 HOMep -, L,2..Q OT,, ,t,t « rp;g 20 ,:C, r.

НА РА,l(МОАКТIIВНЫIН МАТЕРМАJI ОСОliОго ВII,l(А

.:u:cToqnHKH raMM3-H3JiyqenHH 33Kph1Tble
na O<'HOBepaAHOHYKJIH,((a Ko6aJibT-60 THna rK60M3

RUS/6322/S-96(Rev.3)

BhIAaH L,t..ft.2022

CpoK AeÜcTiHH e!'.t.ii.2027

Заместитель генерального
директора по
государственной политике в
области безопасности при
использовании атомной энергии
в оборонных целях

10.B. 5.IKoBJieB

001508

JlHcT comacoBaHH.sI

corJIACOBAHO

3aMecnnem, pyKOBO,lU1TeJI5I
<t>e,n:epanbHOH Cny)K6bI
no 3KO,JIOrHqecKOMY, TeXHO,JIOnrqecKOMY
H_aroJ:IOMY Ha,n:3opy

_____A.B. ΦepaITOHTOB

•, .49//2010,,

CEP TII <I>H KAT-PA3PEIIIE HII E

HA PA,LUIOAKTi BHhIÜ MATEPIIAJI OCOliOrO BII,ll;A

IIcToqunKH raMMa-H3JiyqeuuSI 3aKpLITblC
ua ocuose pa,11.uouyK.Jiu,11.a Ko6aJibT-60 Tnna rK60M3
RUS/6322/S-96(Rev.3)

CpoK .neiicTBMsI no .fj. *iZ.202 -1*

HaqaJibHMK YITpaBJieHMsI ITOperym-IpoBaHmo 6e30ITaCHOCTH o6oeKTOB SJ,n:epHoro TOITJIHBHOro u;mrna, 51,n:epHbIX 3HepreTwqecKHX ycTaHOBOK cy,n:oB H pan:MaQMOHHOOITaCHbIX o6oeKTOB <t>e:n:epaJibHOH CJiy)K6bI ITO 3KO,JIOrw:leCKOMY, TeXHO,JIOrw:1eCKOMYH aTOMHOMYHa,n:3opy

Д.Ю.EenKMH
« . i _____ 202 r.

,[(HpeKTOp no cneQ:Ha,JibHI:,IM nepeBO3KaM H aBapHHHOH roTOBHOCTH-,n:MpeKTOp ,[(enapTaMeHTa sI,n:epHOH H pan:aaQHOHHOH 6e3onaCHOCTH, opraHH3a1.urn: JIHQeH3MOHHOHH pa3penmTellI>HOH ,n:esITeJIL;HOCTH rocKopnopau;nH «PocaToM»

PaliKOB
__:fZ_» 1',, 2022 r.

3rucmuem, - AKIJ,MOHepHoe o6IT(eCTBO «rocy.n.apCTBeHHbIH HayqHbIH u:ett-rp- HayqHo-MccJie,n;oBaTenbcKMH MHCTMTYTaToMHhIX peaKTopoB» (AO «rHI(**HIB1AP»).**

IlotITOBblH a.n.pec 3rucBMTellil: 433510, YJib51HOBCKéUI o6JI., r. ,IJ;MMHTpOBrpa)],, 3arra.n.ttoe rnocce, .n. 9.

Pa.1pa60T'l1MK MM3fOTOBMTeJlb MCTO'IlHMKOB-AÜ **«rHI(Hlli1AP».**

Cepn1cpHKaT-pa.1pemeH11e BhLIJaH AO «rHI(HIB1AP».

HaCTOSIIT(MH cepTI1q>MKaT-pa.3pemeHMe IIO.ZJ.TBep)Kn.aeT C0OTBeTCTBHe KOHCTJ)YKQHMHCTO'IlHMKOBraMMa-M3JiyqeHI151 3aKpb1TblX Ha OCHOBe paZJHOHYKJIM.Da K06aJibT-60 THIIa rK60M3 corJiaCHO pa.1.n.eJiy 2 Cpan.11oaKTHBHblM co.nep)KHMbIM corJiaCHO pa.1.n.eey 3 -rpe60BaHH51M «IIpaBHJI 6e3oIIaCHOCTM rrpH -rpaHCIIOpTHpOBaHHH pan.MoaKTMBHblX MaTepHaJIOB» (HII-053-16) 11 «IIpaBMJI 6e30IIaCHOH rrepeB03KM pan.HoaKTHBHblX MaTepHaJIOB» (I-fa.n.aHHe 2012 ro.n.a (SSR-6), MArAT3, 2013), rrpe.n.1>»:BllileMbIX Kpan.HoaKTHBHhIM MaTepHanaM oco6oro BH,na.

1. ÜCHOBHOe Ha3Haqenue

HcTO'IlHHKM raMMa-H3JiyqeHH51 3aKpbITble Ha OCHOBe pa,nHOHYKJIHZJa Ko6anbT-60 TMrra rK60M3, H3r0T0BJieHHbie no K,IJ; 3H 2243.000.00, 2H 2986.000.00 H TeXHHqecKHM ycJI0BM51M TY 95 2320-2012, ITpeZJ.Ha.3HatieHbl ZJ.Jlil K0MITJieKTaU:HH raMMa-n.ecpeKTOCKOITOB, KOMIIbIOTepHbIX TOMOrpaq>OB, HCITOJib3yeMbiX ,D.Jlil pa,nHorpaq>MtieCKoro KOHTpOJIil KatieCTBa H3,l(eJIHH H MaTepHaJIOB.

2. KoHcTpyKD;HH HCTO'IIHHKa

HcTotIHHKH TMITa rK60M3 (pHc. 1) ITpe.n.cTaBJiilOT co6oü repMeTH'IlttyIO KaITcyny, H3r0TOBJieHttyro H3 Koppo3MOHHO-cToHKOH CTaJIH MapKH 12X18H10T ITOr OCT 5632-72, BHyTpH KOTOpOHITOMeIT(eH MeTaJIJIII1''tj;eCKHH K06aJibT-60 MapKH KO ITO f'OCT 123-98 (HJIH .n.pyroil: MapKH, 6onee tIHCTOH ITO XMMI1'IeCK0MY COCTaBy).

KaITCYJibl HCTO'IlHHK0B BbIIIOJIHeHbl B pa.3JII1''tj:HbIX MO,l(Hq>HKaU:H51X(Ta6JI. 1) B 3aBHCHMOCTH OT pa.3MepoB HCTO'IlHMKa M KOHCTJ)YKQHOHHoro HCITOJIHeHH51: 6e3 XB0CTOBJ1Ka li C XB0CT0BHKaMH ,l(lliI rro,n;coe,n;HHeHH51 K TpaHCIT0pTHpyrom:eMy yc-rpoHCTBY ,n;ecpeKTOCKOITa.

Karrcyna MCTO'tj:HMKOBrepMeTH3HpyeTC51 aproHo,n;yroBOH CBapKOH ITyTeM 0II'i aBJieHH51 Topu:a KaITcym,I c ITpo6KOH.

ÜCHOBHbie ITapaMeTJ)bI HCTO'IlHHKOBf'K60M3 ITpHBe,n;eHbI a Ta6n. 2

Ta6Jrn:na 1 - Mo.n;mpHKaUHHHCT01IHHK0Bf K60M3

Mo.n;mpHKan;IDI	BH.n; XB0CT0BHKa KancyJinl
f'K60M311	Ee3 XBOCTOBHKa
rK60M321	
rK60M312	Pe3n60BOM
rK60M322	
f'K60M313	JionaTKOM
f'K60M323	
f'K60M325	
f'K60M314	B BH,n;e ccpepH1IecKoro Bhlczyna
f'K60M324	
f'K60M315	

Ta6Jrnua 2 - ÜCHOBHble napaMeTpbI HCT01IHHK0Br K60M3

THn HCT01IHHKa	f'a6apHTHhie pa3Mepbl, MM				3HatJeHHe 3KBHBaneHTHOM aKTHBHOCTH, He 6orree, BK {KH)
	HCT01IHHKa		aKTHBHOro cep,n;etJHHKa		
	D	L	d	1	
f'K60M3 l 1.211 rK60M3 l2.2l 1 f'K60M313 .211 f'K60M314.211	6'0+0,s	11,0±0,5 18,5±0,5 18,5±0,5 16,0±0,5	1,5	1,5	$1{,}37 \cdot 10^{11}$ (3,7)
f'K60M31 l.511 f'K60M3 l2.511 f'K60M313.511 f'K60M314.511		11,0±0,5 18,5±0,5 18,5±0,5 16,0±0,5	2,0	2,0	$2{,}74 \cdot 10^{11}$ (7,4)
f'K60M3 l 1.112 f'K60M312.l 12 rK60M313.l 12 f'K60M314.l 12		11,0±0,5 18,5±0,5 18,5±0,5 16,0±0,5	2,5	2,5	$5{,}48 \cdot 10^{11}$ (14,8)
f'K60M3 l l.212 rK60M312.212 f'K60M313.212 f'K60M314.212		11,0±0,5 18,5±0,5 18,5±0,5 16,0±0,5	3,0	3,0	$2{,}32 \cdot 10^{12}$ (62,8)

THn HCTOlJHHKa	fa6apHTHbie pa.3Mepbl, MM				3HatJeHIHe 3KBHBaJieHTHOH aKTHBHOCTH, He 6onee, EK (KH)
	HCTOIJHHKa		aKTHBHOro cep.l(etJHHKa		
	D	L	d	l	
fK6OM311.312 fK6OM312.312 rK6OM313 .312 fK6OM314.312		11,0±0,5 18,5±0,5 18,5±0,5 16,0±0,5	3,5	3,5	$3{,}7\cdot10^{12}$ (100,0)
fK6OM311.412 fK6OM312.412 fK6OM313.412 fK6OM314.412		11,0±0,5 18,5±0,5 18,5±0,5 16,0±0,5	4,0	4,0	$5{,}55\cdot10^{12}$ (150)
fK6OM315	7'O+0,1	18,O.o,s	5,1	5,4	$9{,}25\text{-}10^{12}$ (250)
fK6OM321.212 rK6OM322.212 fK6OM323.212 rK6OM324.212		15,0±0,5 22,5±0,5 22,5±0,5 20,0±0,5	3,0	3,0	$2{,}32\text{-}10^{12}$ (62,8)
rK6OM321.412 fK6OM322.412 fK6OM323.412 fK6OM324.412		15,0±0,5 22,5±0,5 22,5±0,5 20,0±0,5	4,0	4,0	$5{,}55\text{-}10^{12}$ (150)
fK6OM321.812 fK6OM322.812 fK6OM323.812 fK6OM324.812	10'o+o.[s]	15,0±0,5 22,5±0,5 22,5±0,5 20,0±0,5	5,0	5,0	$9{,}64\cdot10^{12}$ (260,6)
fK6OM321.113 rK6OM322.l 13 fK6OM323.l 13 fK6OM324.l 13		15,0±0,5 22,5±0,5 22,5±0,5 20,0±0,5	6,0	6,0	$1{,}66\cdot1O^{13}$ (450)
fK6OM325	1o'o+o,[1s]	18,0-0,2+0,3	7,1	8,3	$1{,}85\text{-}10^{13}$ (500,0)

IlpHMetJaHHsI: 1. 3KBHBaJieHTHasI aKTHBHOCTb BeJI:wm:Ha pacqeTHa.SI.

2. Pa.3Mepbl aKTHBHOroHCTOlJHHKa 3HatJeHH:srcrrpaBOlJHbie.

3. Ilo Tpe6oBamno 3aKa.3qm(a MOryT 6bITb H3rOTOBJieHbl HCTOIJHHKH C .l(pyrHMH 3HatJeHH.SIMH aKTHBHOCTH, HOB rrpe,l(errax, YKa.3aHHbIXB Ta6rr. 2.

11cTOtJHHKHcooTBeTCTB)IOT KJiaccaM npotJHocTH no rOCT P 52241-2004 (KrraccmpHKaJ.H.sr no 11CO 2919: 1999): C (E) 65445.

Ha.3HatJeHHbIH cpoK CJIY)K6bI HCTOlJHHKOB rrpH 3Kcnrya TaU:HH - He MeHee 15 rreT.

3.PaAHOaKTHBHOeCOAepm:HMOe

B KaqecTBe aKTHBHOHqacTH HCTOqffHKOB raMMa-H3ryqeHIDI 3aKpbITE,IX Ha OCHOBepa,[(HOH)'KJIH,n;a K06aJibT-60 THIIa rK60M3 HCIIOllb3yeTCSI MeTaJinHqecKHH K06aJibT MapKH KO II0 r o c T 123-98 (HnH .n.pyroii MapKH, 6onee qHCTOHno XHMffqeCKOMJ COCTaay).

ÜCHOBHbie rrapaMeT))bl HCTOqHHKOBK.60M3 npHBe,n;eHbl a Ta6n. 2.

4. Oco6L1e MepLI nepeA nepeB03KOii

YpoBeHb pa,[(HoaKTHBHoro 3arpSI3HeHIDI noaepxHOCTH HCTOqHHKa npH KOHTpone HMMepCH0HHbIMMeTO,[(OM];OJDI<eH6bITb He 6onee 200 EK (5,4 HKH).

5. O6ecneqeuHe KaqecTBa

5.1. Pa3pa60TKa H rrpOH3B0,IJ;CTBO HCTOqHHKOBaMMa-H3ryqeHIDI 3aKpbITbIX Ha 0CHOBe pa,[(H0HJKnH,[(a K06aJibT-60 THIIa rK60M3 o6ecrreqHBaeTCSI B COOTBeTCTBHHC «IlporpaMMOH o6ecneqeHIDI KaqecTBa npH H3f0TOBneHHl1 pan.110HyKnHD.HbIX 11cToqffl1KoB H npenapaToB B AO «rHIJ: 1-Illli.AP» ITOK 086-45-2017 (c H3MeHeH11eMNQ 1, 2 OT 12.08.2020)», AO «rHIJ: Hl1MAP», 2017 r.

5.2. IlporpaMMa o6ecrre"LJeHIDI Ka"LJeCTBa ITOK 086-45-2017 (c 113MeHeHHeM NQ 1, 2 0T 12.08.2020) AO **«rHIJ:** 1-Illli.AP» COOTBeTCTByeT Tpe6oaaHIDIM HOpMaTHBHoro JJ;OKJMeHTa lllI-090-11.

6. HopMaTHBHLie HpyK0B0ABW.He A0KyMeHTLI

6.1. «IlpaBHna 6e3onaCHOCTH npH TpaHcnopTHpOBamrn pa,n;HOaKTHBHbIX MaTepHanoa», lllI-053-16, PocTexHa,n;3op, 2016 r.

6.2. «IlpaBHna 6e3onaCHOH nepeB03KH pa,rt;H0aKTHBHbIX MaTepHaJIOB» (I-fa,n;aHHe 2012 ro,n.a (SSR-6), MArAT3, 2013), 2013 r.

6.3. «Tpe6oBaHIDI K nporpaMMaM o6ecne"LJeHIDI Ka-creCTBa ,rt;IDI 061>eKTOB HCIIOllb30BaHIDI aTOMHOH3HeprHH» (lllI-090-11). PocTeXHa,[(30p, 2012 r.

6.4. r o c T P 52241-2004 (HCO 2919:1999) «HCTO"LJHHKHHOHH3Hp)'!OII(ero H3ryqeHIDI pa,rt;HOHJKnH,[t;Hbie 3aKpbITbie. Knaccbl npoqHOCTH H MeTO)];bl HCilbITaHRH», 0IIK J13,n;aTenbCTBO CTaH,rt;apTOB,2004 r.

7.)];oKyMeHTaD;HB, na 0CH0BaHHH KOTOpoii C0CTaBJieH cepTH«(>HKaT-pa3pemeuue

7.1. 3asiBneHHe AO «AT1(PocaTOMa» Ha BbI,n;aqy cepTH<p11KaTa-pa3perneHID1 RUS/6322/S-96(Rev.3) oT 22.11.2022 Hcx. NQ 218-01/21-1787 (no .noBepeHH0CTH AO «rI-IQ I-IBI1AP» (oT 18.10.2022 HCX.NQ 64-1000/13748).

7.2. 3KcnepTHoe 3aKnIOqeHHe A 3 2144, AO «AT[(PocaToMa», 2022 r.

8. O6w.ue ycJI0BHH

8.1. l1Hq>opMau;IDI o rrepecMoTpax cepTHq>HKaTa-pa3perneHIDI:

RUS/6322/S-96	IlepBH"LJHbIH cepTHq>HKaT-pa3perneHHe. B1,1,n;aH 21.03.2011, cpoK .neiicTBIDI .no 21.03.2016.

RUS/6322/S-96(Rev.1)	Пересмотр первичного сертификата-разрешения. Выдан 24.10.2012, срок действия до 24.10.2017.
RUS/6322/S-96(Rev.2)	Пересмотр сертификата-разрешения. Выдан 25.09.2017, срок действия до 25.09.2022.

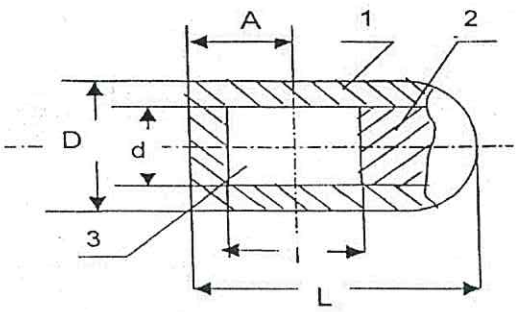
8.2. По всем вопросам, связанным с сертификатом-разрешением, следует обращаться:

- в Департамент ядерной и радиационной безопасности, организации лицензионной и разрешительной деятельности Государственной корпорации по атомной энергии «Росатом»: 119017, Москва, ул. Б. Ордынка, д. 24; тел. 8 (499) 949-29-27; факс 8 (499) 949-23-05;

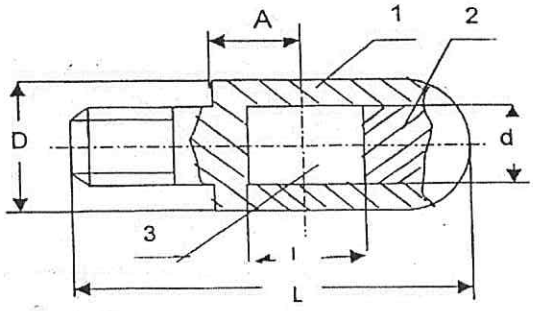
- в Федеральную службу по экологическому, технологическому и атомному надзору: 105066, Москва, ул. А. Лукьянова, д. 4, стр. 1, тел. 8 (495) 645-94-79 (доб. 60-04), 8 (495) 645-94-79 (доб. 64-66), факс 8 (495) 532-13-46;

- в АО «АТЦ Росатома» (194292, Санкт-Петербург, 3-ий Верхний пер., д. 2, литер А, тел./факс: 8 (812) 702-19-01 (основной), 8 (812) 591-52-30 (резервный).

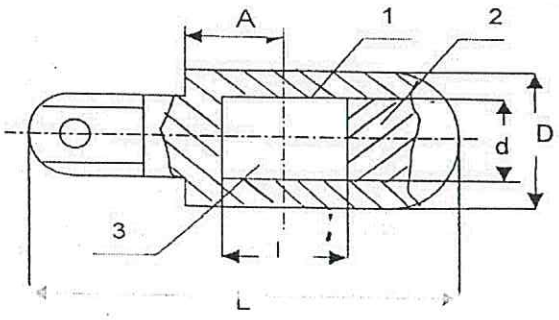
8.3. Официальными документами являются оригинал и копии сертификата-разрешения, заверенные в установленном порядке.



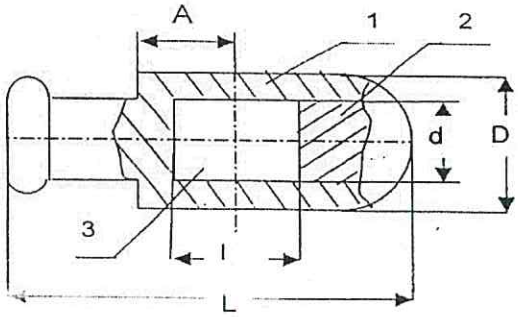
ГК60М311, ГК60М321



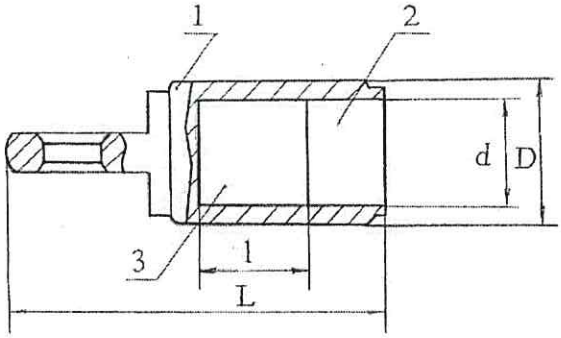
ГК60М312, ГК60М322



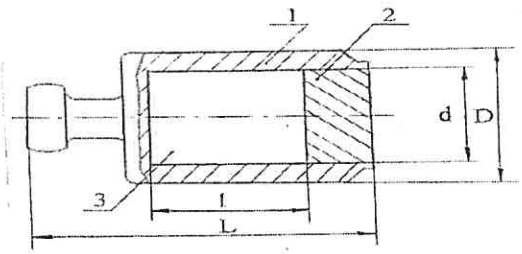
ГК60М313, ГК60М323



ГК60М314, ГК60М324



ГК60М325



ГК60М315

1 – капсула источника
2 – пробка
3 – активный сердечник

Рисунок 1 – Общий вид источников гамма-излучения закрытых на основе радионуклида кобальт-60 типа ГК60М3

ROSATOM STATE ATOMIC ENERGY CORPORATION

CERTIFICATE OF APPROVAL

Reference number 230 **" 22" December 2022**

FOR SPECIAL FORM RADIOACTIVE MATERIAL

Cobalt-60 based sealed gamma-ray sources GC60M3

RUS/6322/S-96(Rev.3)

Date of Issue	22.12.2022
Validity period	22.12.2027

Deputy Director General for the State Safety Policy in the Defense Uses of Atomic Energy — Yu.V. YAKOVLEV

Moscow

Approvals page

AGREED BY
Deputy Head of the Federal Environmental,
Industrial and Nuclear Supervision Agency

_____ A.V. FERAPONTOV
“_22_” _12____2022

CERTIFICATE OF APPROVAL

FOR SPECIAL FORM RADIOACTIVE MATERIAL

Cobalt-60 based sealed gamma-ray sources GC60M3

RUS/6322/S-96(Rev.3)

Validity period till 22.12.2027

Head of the Department for Safety Supervision of Nuclear Fuel Cycle Facilities, Shipboard Nuclear Power Plants and Radiation Hazardous Facilities of the Federal Environmental, Industrial and Nuclear Supervision Agency

_____D.Yu. BELKIN
“__19__” _12____2022

Director for Special Shipping and Emergency Response – Director of the Department for Nuclear and Radiation Safety, Licensing and Authorization Activities of ROSATOM State Atomic Energy Corporation

_____S.V. RAYKOV
“_09_” __12___2022

Applicant is Research Institute of Nuclear Reactors, State Scientific Center, Joint-Stock Company (RIAR JSC).

Applicant's correspondence address: Zapadnoye Shosse 9, Dimitrovgrad, Ulyanovsk region, Russia, 433510.

Designer and Manufacturer of the sources is RIAR JSC.

This Certificate of Approval was issued for RIAR JSC.

This Certificate of Approval confirms that the design of sealed Co-60 based gamma-ray sources GC60M3 pursuant to Section 2 with the radioactive content pursuant to Section 3 complies with the requirements of "Safety Rules for the Transportation of Radioactive Materials" (NP-053-16) and "Safety Regulations for Transportation of Radioactive Materials" (2012 Edition (SSR-6) IAEA, 2013) for special form Radioactive Material (SFRM).

1. Main Purpose

Co-60 based sealed gamma-ray sources GC60M3 produced in compliance with design documents 3N 2243.000.00, 2N 2986.000.00 and technical specifications Spec. TU 95 2320-2012 are intended to complete gamma-ray flaw detectors, computer tomographs used for radiographic quality control of products and materials.

2. Source design

Sources GC60M3 (Fig.1) represent a sealed capsule made of corrosion-resistant steel 12X18H10T according to GOST 5632-72, metal Cobalt-60 Grade K0 according to GOST 123-98 (or other grade purer in its chemical composition) is placed inside the capsule.

The source capsules are made in different modifications (Table 1) depending on the source size and design: with no tail and a configurable tail to fasten the source to the flow detector transporter.

The source capsule is sealed by argon-arc welding by melting the end of the capsule with a plug.

Basic specifications of GC60M3 sources are given in Table 2.

Table 1 – Modifications of GC60M3 sources

Modification	Capsule tail
GC60M311	no tail

Modification	Capsule tail
GC60M321	
GC60M312	screw tail
GC60M322	
GC60M313	blade shaped tail
GC60M323	
GC60M325	
GC60M314	spherical tail
GC60M324	
GC60M315	

Table 2 – Basic specifications of GC60M3sources

Source Type	Sizes, mm				Equivalent activity, no higher than Bq (Ci),
	Source		Active core		
	D	L	d	l	
GC60M311.211 GC60M312.211 GC60M313.211 GC60M314.211	$6.0^{+0.5}$	11.0±0.5 18.5±0.5 18.5±0.5 16.0±0.5	1.5	1.5	$1.37 \cdot 10^{11}$ (3.7)
GC60M311.511 GC60M312.511 GC60M313.511 GC60M314.511		11.0±0.5 18.5±0.5 18.5±0.5 16.0±0.5	2.0	2.0	$2.74 \cdot 10^{11}$ (7.4)
GC60M311.112 GC60M312.112 GC60M313.112 GC60M314.112		11.0±0.5 18.5±0.5 18.5±0.5 16.0±0.5	2.5	2.5	$5.48 \cdot 10^{11}$ (14.8)
GC60M311.212 GC60M312.212 GC60M313.212 GC60M314.212		11.0±0.5 18.5±0.5 18.5±0.5 16.0±0.5	3.0	3.0	$2.32 \cdot 10^{12}$ (62.8)
GC60M311.312 GC60M312.312 GC60M313.312 GC60M314.312		11.0±0.5 18.5±0.5 18.5±0.5 16.0±0.5	3.5	3.5	$3.7 \cdot 10^{12}$ (100.0)

Source Type	Sizes, mm				Equivalent activity, no higher than Bq (Ci),
	Source		Active core		
	D	L	d	l	
GC60M311.412 GC60M312.412 GC60M313.412 GC60M314.412		11.0±0.5 18.5±0.5 18.5±0.5 16.0±0.5	4.0	4.0	$5.55 \cdot 10^{12}$ (150)
GC60M315	$7.0^{+0.15}$	$18.0_{-0.5}$	5.1	5.4	$9.25 \cdot 10^{12}$ (250)
GC60M321.212 GC60M322.212 GC60M323.212 GC60M324.212	$10.0^{+0.5}$	15.0±0.5 22.5±0.5 22.5±0.5 20.0±0.5	3.0	3.0	$2.32 \cdot 10^{12}$ (62.8)
GC60M321.412 GC60M322.412 GC60M323.412 GC60M324.412		15.0±0.5 22.5±0.5 22.5±0.5 20.0±0.5	4.0	4.0	$5.55 \cdot 10^{12}$ (150)
GC60M321.812 GC60M322.812 GC60M323.812 GC60M324.812		15.0±0.5 22.5±0.5 22.5±0.5 20.0±0.5	5.0	5.0	$9.64 \cdot 10^{12}$ (260.6)
GC60M321.113 GC60M322.113 GC60M323.113 GC60M324.113		15.0±0.5 22.5±0.5 22.5±0.5 20.0±0.5	6.0	6.0	$1.66 \cdot 10^{13}$ (450)
GC60M325	$10.0^{+0.15}$	$18.0_{-0.2}{}^{+0.3}$	7.1	8.3	$1.85 \cdot 10^{13}$ (500.0)

Note: 1. Equivalent activity is a calculated value.

2. The size of the active source is a reference value.

3. Sources with other values of activity can be manufactured upon customer's request, but within the limits specified in Table 2.

Sources comply with strength grades according to GOST R 52241-2004 (classification according to ISO 2919:1999): C (E) 65445.

Assigned service life of sources during operation is not less than 15 years.

3. Radioactive content

Metal Cobalt-60 Grade K0 according to GOST 123-98 (or other grade purer in its chemical composition) is used as the active core material of Co-60 based sealed gamma-ray sources GC60M3.

Basic specifications of GC60M3sources are given in Table 2 2.

4. Special measures to be taken prior to shipment

The surface radioactive contamination of the source shall not exceed 200 Bq (5.4 nCi) with the use of immersion method.

5. Quality assurance

5.1. Co-60 based sealed gamma-ray sources GC60M3 are developed and produced in accordance with the "Quality Assurance Program (POK) for production of radionuclide sources and radiochemicals at RIAR JSC POK-086-45-2017 (with Modifications No.1, 2 dated 12 August 2020)", RIAR JSC, 2017.

5.2. Quality Assurance Programe POK-086-45-2017 (with Modifications No. 1, 2 dated 12 August 2020) of RIAR JSC complies with the requirements of regulatory document NP-090-11.

6. Statuary and regulatory documents

6.1. "Safety Regulations in Transportation of Radioactive Material", NP-053-16, Federal Agency for Ecological, Technological and Nuclear Supervision (Rostekhnadzor), 2016.

6.2. "Safety Regulations for Transportation of Radioactive Materials" (2012 Edition (SSR-6), IAEA, 2013).

6.3. "Requirements to quality assurance programs of nuclear facilities" (NP-090-11), Federal Agency for Ecological, Technological and Nuclear Supervision (Rostekhnadzor), 2012.

6.4. GOSTR 52241-2004 (ISO 2919:2012) "Sealed radioactive sources. Strength categories and test methods", IPK Publishing House of Standards, 2004.

7. Documents for issuing the Certificate of Approval

7.1. Application of JSC "EMERGENCY TECHNICAL CENTER OF ROSATOM" for issuing the Certificate of Approval RUS/6322/S-96(Rev.3) No. 218-01/21-1787 dated 22.11.2022 (by power of RIAR JSC attorney No. 64-1000/13748 dated 18.10.2022).

7.2. Expert Review Report AE 2144, JSC "EMERGENCY TECHNICAL CENTER OF ROSATOM", 2022.

8. General

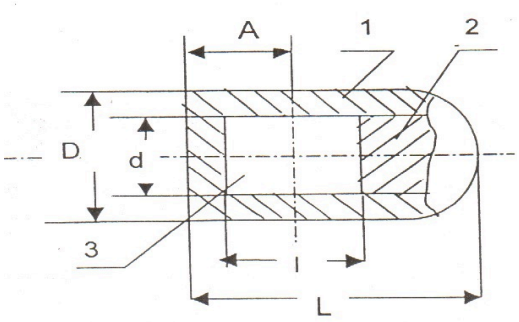
8.1. Information concerning the revision of this Certificate of Approval:

RUS/6322/S-96	Primary Certificate of Approval. It was issued on 21.03.2011, valid until 21.03.2016.
RUS/6322/S-96(Rev.1)	Revision of the primary Certificate of Approval. It was issued on 24.10.2012 valid until 24.10.2017.

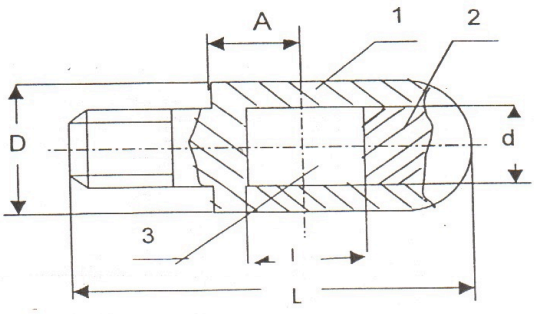
RUS/6322/S-96(Rev.2)	Revision of the Certificate of Approval. It was issued on 25.09.2017, valid until 25.09.2022.

8.2. All the inquiries regarding the Certificate of Approval shall be addressed to:

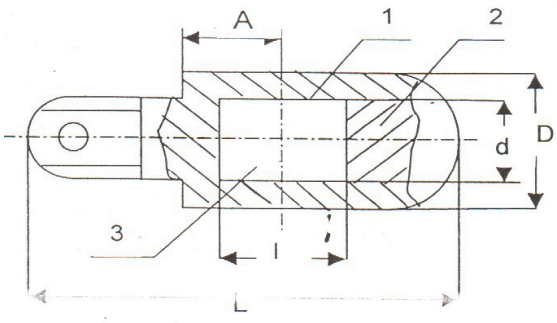
- Department of Nuclear and Radiation Safety, Licensing and Approval Activities under Rosatom State Atomic Energy Corporation: 24 Bolshaya Ordynka St, Moscow 119017; Tel: (499) 949-29-27; fax: (499) 949-23-05;;
- Federal Environmental, Industrial and Nuclear Supervision Agency: 4 A.Lukyanow St., Bdg. 1, Moscow 105066; Tel. (495) 645-94-79 (extens. 60-04), (495) 645-94-79 (extens.64-66), fax (495) 532-13-46;
- JSC “EMERGENCY TECHNICAL CENTER OF ROSATOM”: 2, 3rd Verkhnyj pereulok, liter A, St.Petersburg 194292; Tel./fax (812) 702-19-01(main number); (812) 591-52-30 (backup). 8.3 Official documents are the original and copies of the Certificate of Approval certified in the prescribed manner.



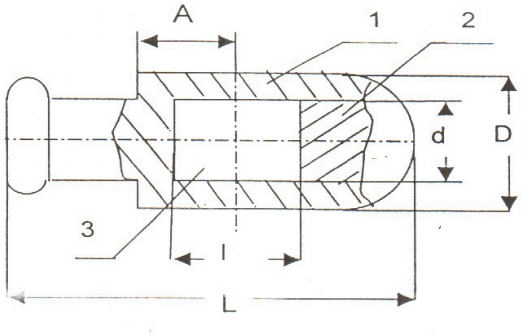
GC60M311, GC60M321



GC60M312, GC60M322



GC60M313, GC60M323



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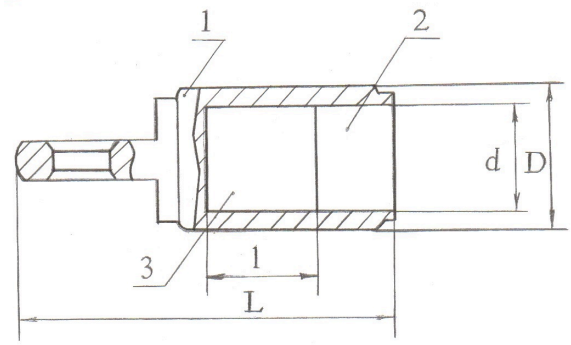
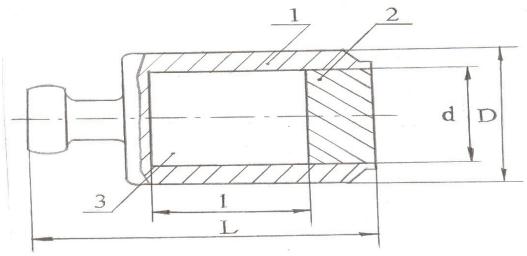


GC60M325



GC60M315

1 – capsule
2 – plug
3 – active core

Figure 1 – General view of Co-60 based sealed gamma-ray sources GC60M3