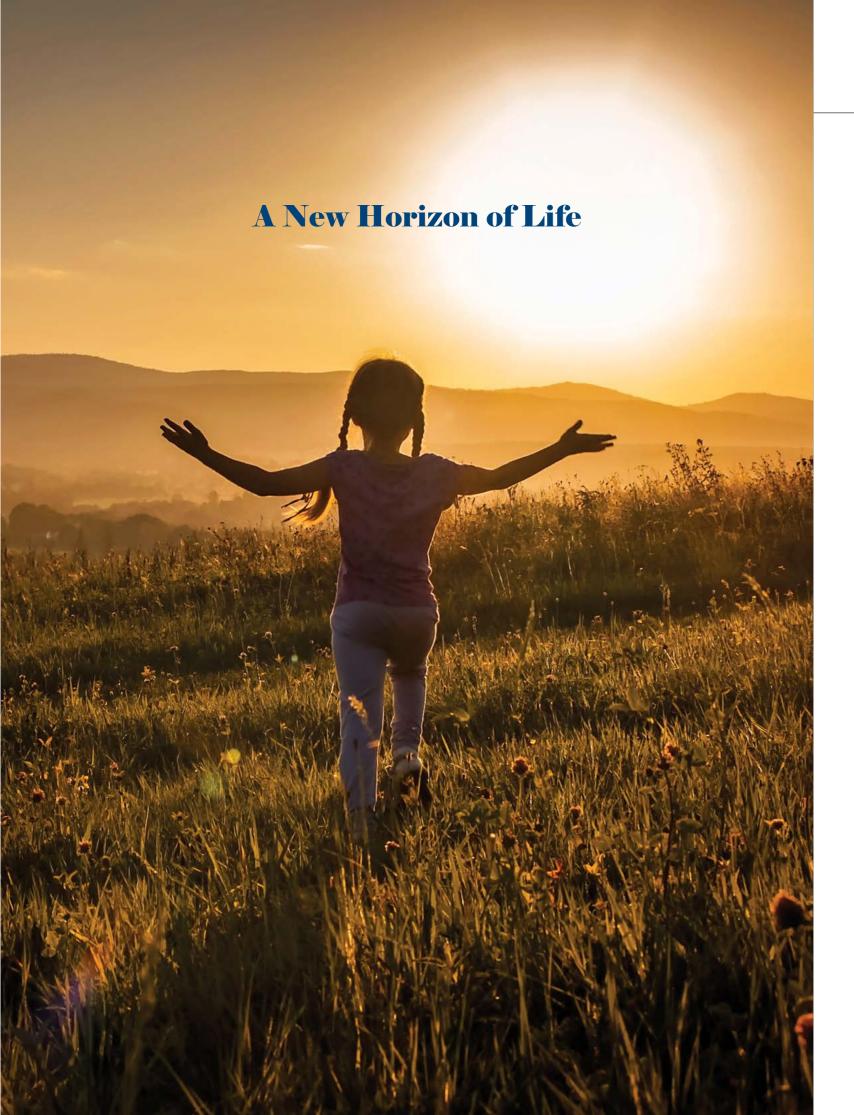


Radioisotope Development & Production For Medical Applications



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Contact us



# PARS ISOTOPE

Today, in the era of nuclear science and technology, humans are living in a world quite different from their ancestors. The livelihood and welfare of humans are now intermingled with nuclear technology and its achievements.

Iranian scholars have always been pioneers in the advance of science and well-being of the human societies, as it is found in Iranian poet Hatef Isfahani's poet:

If you split a particle, you find a hidden sun inside;

Relying on the foregoing briefs, PARS ISOTOPE Co. was founded and is mainly involved in:

"Production and development of various radioisotopes, radiopharmaceuticals, radiopharmaceutical kits associated equipment, and related services in the fields of medicine"

This company has always tried to produce and supply high-quality products /services by employing the state-of-the-art technology and professional human resources.

Adhering to human values and international standards, we have always tried our best to consider our target group as a precious asset, and we firmly believe in meeting all the requirements to reduce cost and enhance the social well-being.

We are manufacturing radiopharmaceuticals to alleviate patients' suffering; therefore, all the efforts have been focused on the public health as the main concern considering human values.

The main activities of Pars Isotope Co. is the production and supply of radioactive tracers used in nuclear medicine. By early diagnosis and treatment of cancer, as well as heart, brain and bone diseases, our world-class products empower our customers to treat patients effectively and achieve better outcomes.

It gives us utmost satisfaction and honor to announce that we are the exclusive producer of radiopharmaceuticals and radiopharmaceutical kits in Iran with a wide variety of top-notch diagnostic and therapeutic products.



- DIAGNOSTIC/SPECT
- THERANOSTIC





## **DIAGNOSTIC/SPECT**

#### **First Generation**

PARS-MIBI®

PARS-MDP®

**PARS-DTPA®** 

PARS-DMSA®

PARS-MAA®

PARS-EC®

PARS-ECD®

PARS-BrIDA®

PARS-RBC®

PARS-Phytate®

PARS-Antimony TS®

PARS-PYP®

PARS-Sulfur colloid®

PARS-WBC®

#### **New Generation / Peptide**

PARS-TECTO PSMA®

PARS-TRODAT®

**PARS-TOC®** 

PARS-TATE®

PARS-UBI®

**PARS-BOMBESIN®** 





#### PARS-MIBI®

(for labelling with Tc-99m)	
Chemical name	copper(I) tetra MIBI tetrafluoroborate
Pharmaceutical form	Lyophilized powder
Clinical application	A diagnostic agent for myocardial
	perfusion scintigraphy
Packaging	Each package contains 5 vials
Storage conditions	2 - 8 °C / keep away from light
Availability	From stock



## PARS-MDP® (for labelling with Tc-99m

(101 laboling with 10 com)	
Chemical name	Methylene diphosphonic acid
Pharmaceutical form	Lyophilized powder
Clinical application	A diagnostic agent for bone scintigraphy
Packaging	Each package contains 5 vials
Storage conditions	2 - 8 °C / keep away from light
Availability	From stock



## PARS-DTPA®

(for labelling with 1c-99m)	
Chemical name	Diethylene triamine pentaacetate
Pharmaceutical form	Lyophilized powder
Clinical application	A diagnostic agent for GFR of kidney scintigraphy
Packaging	Each package contains 5 vials
Storage conditions	2 - 8 °C / keep away from light
Availability	From stock



## PARS-DMSA® (for labelling with Tc-99m)

(101 laboling with 10 00m)	
Chemical name	Dimercaptosuccinic acid
Pharmaceutical form	Lyophilized powder
Clinical application	A diagnostic agent for morphology of kidney scintigraphy
Packaging	Each package contains 5 vials
Storage conditions	2 - 8 °C / keep away from light
Availability	From stock



#### PARS-MAA®

(for labelling with 1c-99m)	
Chemical name	Human serum albumin macroaggregates
Pharmaceutical form	Lyophilized powder
Clinical application	A diagnostic agent for lung scintigraphy
Packaging	Each package contains 5 vials
Storage conditions	2 - 8 °C / keep away from light
Availability	From stock



## PARS-EC® (for labelling with Tc-99m)

Ethylene dicysteine
Lyophilized powder
A diagnostic agent for ERPF of kidney scintigraphy
2 Vials Kit + 2 Vials Buffer (Solution)
2 - 8 °C / keep away from light
From stock





#### PARS-ECD®

(for labelling with 1c-99m)	
Chemical name	Ethyl Cysteinate Dimer
Pharmaceutical form	Lyophilized powder
Clinical application	A diagnostic agent for regional cerebral blood flow scintigraphy
Packaging	2 Vials Kit + 2 Vials Buffer
Storage conditions	2 - 8 °C / keep away from light
Availability	From stock



## PARS-BrIDA® (for labelling with Tc-99m)

(ioi idboining mail to com)	
Chemical name	Trimethyl Bromo-IDA
Pharmaceutical form	Lyophilized powder
Clinical application	A diagnostic agent for hepatobiliary system scintigraphy
Packaging	Each package contains 5 vials
Storage conditions	2 - 8 °C / keep away from light
Availability	From stock



## PARS-RBC®

(	
Chemical name	Stannous Chloride
Pharmaceutical form	Lyophilized powder
Clinical application	A diagnostic agent for GI bleeding scintigraphy
Packaging	1 Vial kit + 1 Vial ACD (Solution) + 1 Vial Hypochlorite (Solution)
Storage conditions	2 - 8 °C / keep away from light
Availability	From stock



#### PARS-Phytate®

(for laboling with to com)	
Chemical name	Phytic Acid
Pharmaceutical form	Lyophilized powder
Clinical application	A diagnostic agent for liver/spleen scintigraphy
Packaging	Each package contains 5 vials
Storage conditions	2 - 8 °C / keep away from light
Availability	From stock

12 PARS T PE



## PARS-Antimony® (for labelling with Tc-99m)

(101 labelling with 10-3311)	
Chemical name	Antimony Trisulfide
Pharmaceutical form	Solution
Clinical application	A diagnostic agent for lymphoscintigraphy
Packaging	1 vial solution kit + 1 Vial hydrochloric acid (Solution) + 1 Vial Buffer
Storage conditions	2 - 8 °C / keep away from light
Availability	From stock



#### PARS-PYP® (for labelling with Tc-99m)

'	
Chemical name	Pyrophosphate
Pharmaceutical form	Lyophilized powder
Clinical application	A diagnostic agent for myocardial infarction scintigraphy
Packaging	Each package contains 5 vials
Storage conditions	2 - 8 °C / keep away from light
Availability	From stock



(for labelling with 1c-99m)	
Chemical name	Sodium thiosulfate anhydrous
Pharmaceutical form	Lyophilized powder
Clinical application	A diagnostic agent for GI system, liver/spleen scintigraphy
Packaging	Each package contains 5 vials
Storage conditions	2 - 8 °C / keep away from light
Availability	From stock



## PARS-WBC®

,	
Chemical name	HMPAO (hexamethylpropyleneamine oxime)
Pharmaceutical form	Lyophilized powder
Clinical application	To detect and localize any occult site of infection
Packaging	Each package contain 4 vials: - 2 colorless vials (Lyophilized powder) - 2 colorless vials (ACD solution)
Storage conditions	2 - 8 °C / keep away from light
Availability	From stock

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#### PARS-TECTO PSMA®

(for labelling with Tc-99m)

(	
Chemical name	Hynic-PSMA-11
Pharmaceutical form	Lyophilized powder
Clinical application	for a SPECT imaging of diagnosing and monitoring the treatment of prostate Carcinoma
Packaging	Each package contains 1 vial
Storage conditions	-8 to -20 °C / Keep away from light
Availability	From stock



#### PARS-TRODAT®

(for labelling with Tc-99m)

Chemical name
TRODAT-1

Pharmaceutical form
Lyophilized powder

Clinical application
For imaging of dopamine transporters (DAT) in the striatum

Packaging
Each package contains 1 vial

Storage conditions
-8 to -20 °C / Keep away from light

Availability
From stock



PARS-TOC®

(101 labelling with 10-9911)	
Chemical name	HYNIC-Tyrosine3-Octreotide
Pharmaceutical form	Lyophilized powder
Clinical application	For localization, staging and therapy follow-up of neuroendocrine tumors
Packaging	Each package contains 1 vial
Storage conditions	-8 to -20 °C / Keep away from light
Availability	From stock



#### PARS-TATE®

(for labelling with Tc-99m)	
Chemical name	HYNIC-Tyrosine3-Octreotate
Pharmaceutical form	Lyophilized powder
Clinical application	For localization, staging and therapy follow-up of neuroendocrine tumors.
Packaging	Each package contains 1 vial
Storage conditions	At -8 to -20 °C / Keep away from light
Availability	From stock



## **THERANOSTIC**

PARS-LUTO PSMA®
PARS-LUTO TATE®
PARS-LUTO EDTMP®
PARS-HEDP®



## PARS-UBI® (for labelling with Tc-99m)

( · · · · · · )	
Chemical name	HYNIC-Ubiquicidine 29-41
Pharmaceutical form	Lyophilized powder
Clinical application	For discrimination between infection and sterile inflammation
Packaging	Each package contains 1 vial
Storage conditions	-8 to -20 °C / Keep away from light
Availability	From stock



for labelling with Tc-99m)
----------------------------

YNIC-GABA-Bombesin
ophilized powder
or localization, staging and therapy llow-up of breast and prostate tumors
ach package contains 1 vial
to -20 °C / Keep away from light
rom stock









## PARS-LUTO PSMA® (for labelling with Lu-177)

(101 labelling with Lu-177)	
Chemical name	DOTA-PSMA
Pharmaceutical form	Lyophilized powder
Clinical application	Theranostics of metastatic prostate cancer
Packaging	Each package contains 1 vial
Storage conditions	-8 to -20 $^{\circ}\text{C}$ / Keep away from light
Availability	From stock



## PARS-LUTO TATE® (for labelling with Lu-177)

(101 labelling with Eu-177)	
Chemical name	DOTA-TATE
Pharmaceutical form	Lyophilized powder
Clinical application	Theranostics of neuroendocrine tumors with somatostatin receptors
Packaging	Each package contains 1 vial
Storage conditions	-8 to -20 °C / Keep away from light
Availability	From stock



#### PARS-LUTO EDTMP®

(for labelling with Eu-177)	
Chemical name	Ethylene Di-amine Tetra Methylene Phosphonic acid
Pharmaceutical form	Lyophilized powder
Clinical application	relieving bone metastatic pain
Packaging	Each package contains 5 vials
Storage conditions	2 - 8 °C / Keep away from light
Availability	From stock



#### PARS-HEDP® (for labelling with Re-188)

Chemical name	Hydroxy Ethylidene Di-Phosphonic acid
Pharmaceutical form	Lyophilized powder
Clinical application	relieve the severe pain of bone metastases
Packaging	Each package contains 5 vials (1 vial HEDP KIT + 1 vial acetate buffer + 1 vial potassium perrhenate + 1 evacuated vial + 1 vial saline 0.9%)
Storage conditions	2 - 8 °C / Keep away from light
Availability	From stock

PARS T PE company

PARS PE

# Radionuclide Generators

PARSTEC® II
PARS-GalluGEN®
PARS-Rhen®
PARS-KRYPTO®



#### Radionuclide Generator

## **PARSTEC® II**

Product name	PARSTEC®II
Pharmaceutical form	Radionuclide generator
Specification	
Medical name	Mo-99/Tc-99m sterile generator
Radionuclide purity	≥99.9%
Radiochemical purity	>95%
Elution pH	4.5 - 7.5
Activity concentration	0.92-4.62 GBq/ml
Other information	
Clinical application	The eluate from the generator can be used for cold kit radiolabelling in diagnosis of various diseases or used directly in some cases.
Packaging	Type A
Storage	Room temperature
Availability	Weekly

#### Available activities:

PARSTEC® II is calibrated for 2-6 days after production date. The Tc-99m activities of PARSTEC® II are 200, 400, 600, 800, 1000, 1200, 1600 and 2000 mCi.



#### Elutable Pertechnetate (mCi activity of Tc-99m at 08:00 am IRST)

	Concreter	DA DOTEO II	DAROTEOU	DADOTEOU	DA DOTEO II
	Generator	PARSTEC II	PARSTECTI	PARSTEC II	-
	type	400	600	800	1000
	Activity Date	200	400	600	800
Production	-6	901	1814	2722	3630
	-5	705	1410	2115	2821
	-4	548	1096	1644	2192
	-3	426	852	1278	1704
	-2	331	662	993	1324
	-1	257	514	772	1029
Calibration	0	200	400	600	800
	+1	155	311	466	621
	+2	121	241	362	483
	+3	94	188	281	375
	+4	73	146	218	292
	+5	57	113	170	227
	+6	44	88	132	176

# PARSTE COMMING

#### **Expiry**

The expiration date of PARSTEC® II is 14 days after production date. The expiration time of the sodium pertechnetate is not later than 6 hours after elution.

## **PARS-GalluGEN®**

Product name	PARS - GalluGEN®
Pharmaceutical form	Radionuclide generator
Specification	
Medical name	Ge-68/Ga-68 sterile generator
Radionuclide purity	≥99.9%
Radiochemical purity	>95%
Eluent	3mL, 0.1 M HCI
Available activity	Up to 3.7 GBq
Other information	
Clinical application	Ga-68, one of the most widely used radionuclides in nuclear medicine, is used in PET imaging. Ga-68 is used to label various peptides such as DOTATATE, DOTANOC, PSMA, FAPI and specifically in the diagnosis of various types of cancers.
Packaging	Tape A
Storage	Room temperature
Availability	On demand



#### Physical decay chart: Ge-68 (half-life: 271 Day)

Day	Fraction Remaining
0.00 (Calibration Time)	1.000
30.00	0.930
60.00	0.865
90.00	0.804
120.00	0.748
150.00	0.696
180.00	0.647
210.00	0.602
240.00	0.560
270.00	0.521
300.00	0.484
330.00	0.450



A R S T P E company

#### Radionuclide Generator

## **PARS-Rhen**®

Product name	PARS -Rhen®
Pharmaceutical form	Radionuclide generator
Specification	
Medical name	W-188/Re-188 sterile generator
Radionuclide purity	≥99.9 %
Radiochemical purity	>98 %
Elution pH	4 - 7
Activity concentration	18.5 GBq
Available activity	3.7-37 GBq/ Generator
Other information	
Clinical application	The eluate from the generator can be
	used in cold kit radiolabelling for
	therapeutic purposes.
Packaging	Tape A
Storage	Room temperature
Availability	On demand



#### Physical decay chart: W-188 (half-life 70 Day)

Day	Fraction Remaining
0.00	1.000
(Calibration Time)	
10	0.905
20	0.820
30	0.743
40	0.673
50	0.609
60	0.552
70	0.500
80	0.452
90	0.410



## PARS-KRYPTO®

Product name	Rb-81/Kr-81m
Pharmaceutical form	Radionuclide generator
Specification	
Medical name	Kr-81m Gas generator
Radionuclide purity	≥99%
Available activity	0.148, 0.296, 0.444 GBq/ Generator
Other information	
Clinical application	Diagnosis of lung diseases
Packaging	Type A
Storage	Room temperature
Availability	Weekly



#### Physical decay chart:

Rb-81/Kr-81m Generator (half-life Rb-81: 4.6 h)

Hours	Fraction Remaining
0.00 (Calibration Time)	1.000
1.00	0.86
2.00	0.74
3.00	0.63
4.00	0.54
5.00	0.47
6.00	0.40
7.00	0.35
8.00	0.30
9.00	0.25



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# DIAGNOSTIC

## Ready-to-use Radiopharmaceuticals

#### **SPECT**

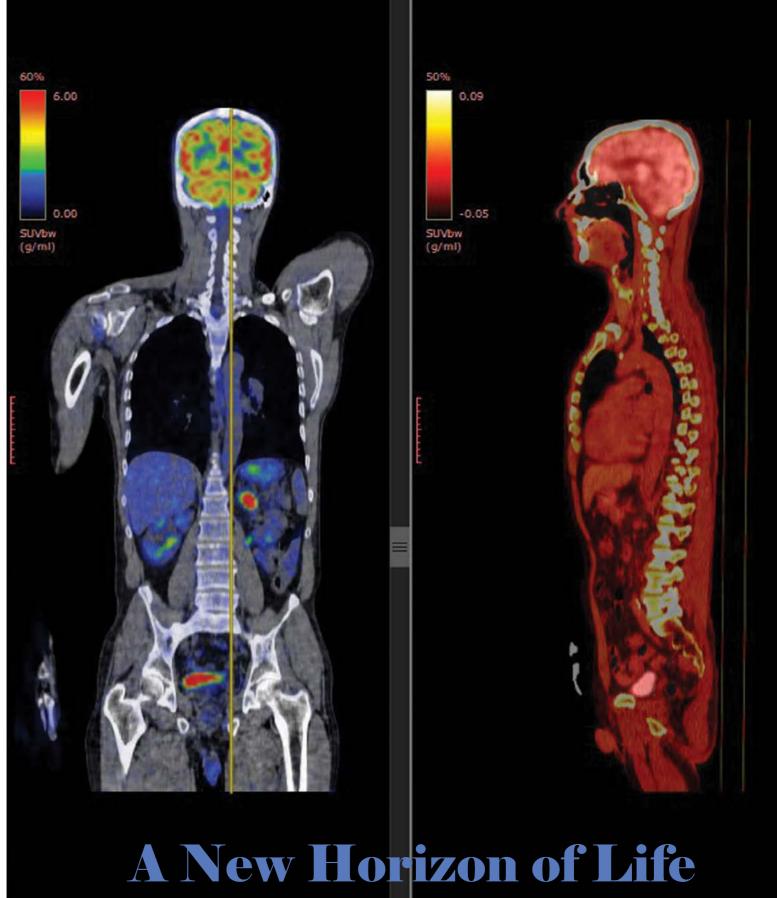
PARS-Iodine 131® Diagnostic Capsule
PARS-MIBG® Diagnostic
PARS-GALO®
PARS-THALO®

#### PET

PARS-FDG®
PARS-GALO PSMA®
PARS-GALO TATE®
PARS-GALO FAP®
PARS-CIXAFOR®







## PARS-Iodine 131® Diagnostic Capsule

Product name	I-131 Capsule-D
Pharmaceutical form	Oral capsule
Specification	
Medical name	Sodium Iodide I-131 Capsule
Radionuclide purity	≥99.9%
Radiochemical purity	≥95%
Half life	8.02 days
Available activity	1.11, 1.85 MBq/Capsule
Other information	
Clinical application	Estimation of thyroid uptake
	Identification of thyroid remnants
	and metastases (after ablation)
Packaging	Type A
Storage	15-25 °C
Availability	Weekly





## PARS-MIBG® Diagnostic

Product name	I-131 MIBG-D
Pharmaceutical form	strerile, clear, colorless solution for injection
Specification	
Medical name	I-131 Metaiodobenzyl guanidine
Radionuclide purity	≥99.9%
Radiochemical purity	≥90%
рН	4.5 - 7.5
Half life	8.02 days
Activity concentration	18.5 MBq/mL
Available activity	37, 74, 111, 148 MBq
Specific activity	1110-2220 MBq/mg (MIBG)
Other information	
Clinical application	Diagnosis of neuroendocrine tumors, especially phaeochromocytoma, neuroblastoma and paraganglioma
Packaging	Type A
Storage	≤ - 15 °C
Availability	Weekly





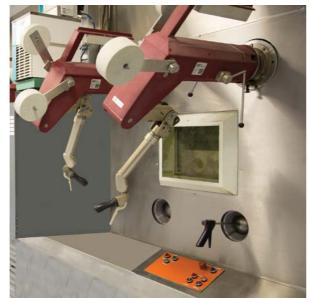
## **PARS-GALO®**

Product name	Ga-67 Citrate	
Pharmaceutical form	Sterile solution for injection	
Specification		
Medical name	Gallium-67 Citrate	
Radionuclide purity	≥99%	
Radiochemical purity	≥97%	
Specific activity	Carrier free	
рН	4.5-8	
Activity concentration	185-370 Mbq/mL	
Available activity	185 - 370 MBq on calibration time other activities available on request	
Half life	3.26 Day	
Other information		
Clinical application	In detection of infection, inflammation and various tumors	
Packaging	Type A	
Storage	Room temperature	
Availability	Weekly	



## **PARS-THALO®**

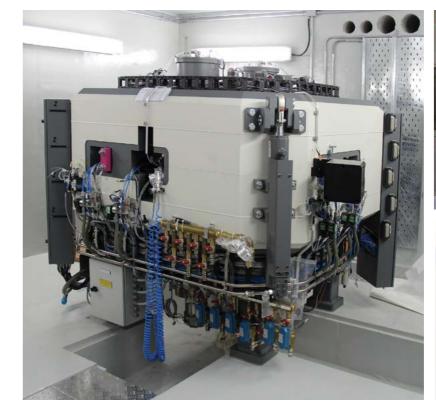
Product name	TI-201 Chloride
Pharmaceutical form	Sterile solution for injection
Specification	
Medical name	Thallous chloride
Radionuclide purity	≥99%
Radiochemical purity	≥95%
рН	4.5-7.5
Activity concentration	185-370 MBq/mL
Available activity	185 - 740 MBq/vial, on calibration date Other activities available on request
Half life	3.038 Day
Other information	
Clinical application	Diagnosis of myocardial viability
Packaging	Type A
Storage	Room temperature
Availability	Weekly



## PARS-FDG®

Product name	F-18 FDG
Pharmaceutical form	Sterile solution for injection
Specification	
Medical name	F-18 Fluorodeoxyglucose
Radionuclide purity	≥99.5%
Radiochemical purity	≥90%
pH	4.5 - 7.5
Activity concentration	11-17.5 MBq/mL
Half life	110 min
Volume	0.5-15 mL
Available activity	370MBq-74GBq/vial, at calibration time Other activities available on request
Specific activity	Carrier free
Other information	
Clinical application	PET imaging of the whole body using FDG improves the diagnosis and staging of cancer, the selection of appropriate treatment and the evaluation of the therapeutic response.
Packaging	Type A
Storage	Room temperature
Availability	Daily









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## **PARS-GALO PSMA®**

Product name	Ga-68 PSMA-11
Pharmaceutical form	Sterile clear, colorless solution in a multiple-dose vial for injection
Specification	
Medical name	Ga-68 Prostate-specific membrane antigen
Radionuclide purity	≥99.9%
Radiochemical purity	>95%
рН	4-7
Half life	68 min
Volume	10-15 mL
Available activity	185, 370 Mbq/vial, at calibration time
Specific activity	5–7.5 MBq/nmol, diluted in PBS
Other information	
Clinical application	tumors and cancer cells expressing fibroblast activation Prostate cancer imaging
Packaging	Type A
Storage	≤25 °C
Availability	Daily



#### **PARS-GALO TATE®**

Product name	Ga-68 DOTATATE
Pharmaceutical form	Sterile clear, colorless solution in a
	multiple-dose vial for injection
Specification	
Medical name	Ga-68 DOTA-Octrotate
Radionuclide purity	≥99.9%
Radiochemical purity	>95%
pH	4-7
Half life	68 min
Volume	10-15 mL
Available activity	185, 370 MBq/vial, at calibration time
Specific activity	5-7.5 MBq/nmol, diluted in PBS
Other information	
Clinical application	Neuroendocrine tumors imaging
Packaging	Type A
Storage	≤25 °C
Availability	Daily



#### **PARS-GALO FAP®**

Product name	Ga-68 FAPI
Pharmaceutical form	Sterile clear, colorless solution in a multiple-dose vial for injection
Specification	
Medical name	Ga-68 Fibroblast activation protein
Radionuclide purity	≥99.9%
Radiochemical purity	>98%
рН	4-7
Half life	68 min
Volume	10-15 mL
Available activity	185, 370 MBq/vial, at calibration time
Specific activity	5–7.5 MBq/nmol, diluted in PBS
Other information	
Clinical application	tumors and cancer cells expressing fibroblast activation protein imaging
Packaging	Type A
Storage	≤25 °C
Availability	Daily



#### **PARS-CIXAFOR®**

Product name	Ga-68 CIXAFOR
Pharmaceutical form	Sterile clear, colorless solution in a multiple-dose vial for injection
Specification	
Medical name	Ga-68 Cixafor
Radionuclide purity	≥99.9%
Radiochemical purity	>95%
pH	4-7
Half life	68 min
Volume	10-15 mL
Available activity	185, 370 MBq/vial, at calibration time
Specific activity	5-7.5 MBq/nmol, diluted in PBS
Other information	
Clinical application	tumors and cancer cells expressing CXCR4 receptors imaging
Packaging	Type A
Storage	≤25 °C
Availability	Daily



PARS IS T PE

## **THERAPEUTIC**

## Ready-to-use Radiopharmaceuticals

#### • Bone pain palliation:

PARS-SAM 153®
PARS-LUTO EDTMP®
PARS-RHEN HEDP 186®
PARS-RHEN HEDP 188®

#### • Radiosynovectomy:

PARS-Yittropatite®
PARS-Phosphate Colloidal®
PARS-RHEN Sulfide 186®
PARS-RHEN Sulfide 188®

#### • Therapeutic:

PARS-lodine 131® Therapeutic Capsule PARS-lodine 131® Solution PARS-MIBG® Therapeutic PARS-LUTO PSMA® PARS-LUTO TATE® PARS-LUTO FAP®



PARS-SAM 153®	
Product name	Sm-153 EDTMP
Pharmaceutical form	Sterile clear, colorless solution for injection
Specification	
Medical name	Sm-153 Lexidronam
Radionuclide purity	≥99.9%
Radiochemical purity	≥95%
Volume	3mL, 6mL
рН	7-8.5
Half life	1.93 days
Activity concentration	984 MBq/mL
Available activity	2960 MBq, 5920 MBq
Other information	
Clinical application	Bone pain palliation in cancer metastases
Packaging	Type A
Storage	Below -10 °C
Availability	Monthly on request



PARS-LUTO EDTMP®	
Product name	Lu-177 EDTMP
Pharmaceutical form	Sterile clear, colorless solution for injection
Specification	
Medical name	Lu-177 Ethylene Di-amine Tetra Methylene Phosphonic acid
Radionuclide purity	≥99.9%
Radiochemical purity	>98%
Volume	1.5 mL
рН	7 - 8.5
Half life	6.73 days
Activity concentration	1973 MBq/mL
Available activity	2960 MBq
Other information	
Clinical application	Bone pain palliation in cancer metastases
Packaging	Type A packaging
Storage	Below -10 °C
Availability	weekly



PARS-R	HEN HEDP 186®
Product name	Re-186 HEDP
Pharmaceutical form	Sterile clear, colorless solution for injection
Specification	
Medical name	Re-186 Ethidronate
Radionuclide purity	≥99.9 %
Radiochemical purity	≥95%
Volume	5 mL
pH	5 - 8
Half life	3.77 days
Activity concentration	592 MBq/mL
Available activity	2960 MBq
Other information	Bone pain palliation in cancer metastases
Clinical application	Type A
Packaging	15 - 25 °C
Storage	Monthly on request



Product name	Re-188 HEDP	
Pharmaceutical form	Sterile clear, colorless solution for injection	
Specification		
Medical name	Re -188 Ethidronate	
Radionuclide purity	≥99.9%	
Radiochemical purity	≥95%	
Volume	5 mL	
рН	5 -8	
Half life	0.7 days	
Activity concentration	592 MBq/mL	
Available activity	2960 MBq	
Other information	Bone pain palliation in cancer metastases	
Clinical application	Type A	
Packaging	15 - 25 °C	
Storage	Monthly on request	



PARS-Yittropatite®		
Product name	Y-90 Hydroxy Apatite	
Pharmaceutical form	Sterile white suspension for intra-articular injection	
Specification		
Medical name	Yttrium-90 hydroxyapatite	
Radionuclide purity	≥99.9%	
Radiochemical purity	≥95%	
Volume	1 mL	
рН	5.5 - 7.5	
Half life	2.67 days	
Activity concentration	185 MBq/mL	
Available activity	1850 MBq	
Other information	Other information	
Clinical application	Therapeutic agent to cure chronic knee synovitis in rheumatoid arthritis, hemophilia or orthopedic troubles	
Packaging	Type A	
Storage	15 - 25 °C	
Availability	Weekly on request	



	PARS-Phosphate Colloidal®
Product name	P-32 Colloidal chromic phosphate
Pharmaceutical form	Sterile colloid
Specification	
Medical name	P-32 Chromic phosphate colloid
Radionuclide purity	>99.9%
Radiochemical purity	≥95%
Volume	5 mL
рН	3-5
Half life	14.3 days
Activity concentration	37 MBq/mL for radiosynovectomy 370 MBq/mL for liver metastases
Available activity	185 MBq for synovectomy 1850 MBq for liver
Other information	
Clinical application	<ul> <li>Treatment of patients with rheumatoid arthritis (Radiosynovectomy)</li> <li>Treatment of patients with recurrent hemorrhages in the joints due to hemphilia</li> <li>Larger size (20-60 μm) are also used for the treatment of liver metastases</li> </ul>
Packaging	Type A
Storage	15 - 25 °C
Availability	Weekly

## PARS-RHEN Sulfide 186®

Product name	Re-186 Sulfide colloid
Pharmaceutical form	Sterile colloid
Specification	
Medical name	Re-186 sulfide
Radionuclide purity	≥99%
Radiochemical purity	≥98%
Volume	3 mL, 6mL
рН	4.5 - 5.5
Half life	3.77 days
Activity concentration	185 MBq/mL
Available activity	555 MBq, 1110 MBq
Other information	
Clinical application	Radiosynovectomy of medium size joints
Packaging	Type A
Storage	15 - 25 °C
Availability	Monthly

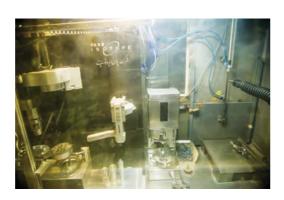


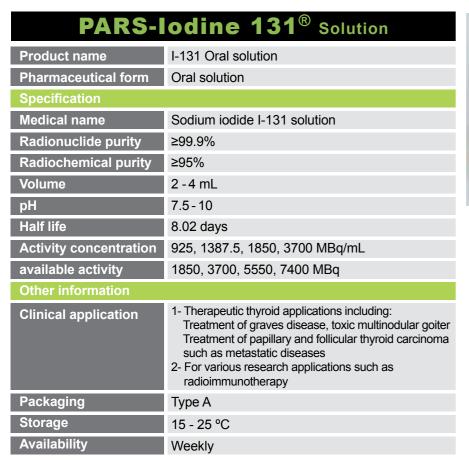
#### PARS-RHEN Sulfide 188®

Product name	Re-188 sulfide colloid
Pharmaceutical form	Sterile Colloid
Specification	
Medical name	Re -188 sulfide
Radionuclide purity	≥99.9%
Radiochemical purity	≥95%
Volume	3mL, 6mL
рН	4.5 - 5.5
Half life	0.7 days
Activity concentration	185 MBq/mL
Available activity	555 MBq, 1110 MBq
Other information	
Clinical a pplication	Radiosynovectomy of large size joints
Packaging	Type A
Storage	15 - 25 °C
Availability	Weekly



PARS-Iodine 131® Therapeutic Capsule		
Product name	I-131 Capsule-T	
Pharmaceutical form	Oral capsule	
Specification		
Medical name	Sodium Iodide I-131 Capsule	
Radionuclide purity	≥99.9%	
Radiochemical purity	≥99.9%	
рН	7.5 - 10	
Half life	8.02 day	
Available activity	185, 370, 555, 740, 1110, 1850, 3700, 5550 MBq/Capsule	
Other information		
Clinical application	Treatment of thyroid cancer and hyperthyroidism	
Packaging	Type A	
Storage	15 - 25 °C	
Availability	Weekly	









Product name I-131 MIBG-T  Pharmaceutical form sterile, clear colorless solution for injection  Specification  Medical name I-131 Metaiodobenzylguanidine  Radionuclide purity ≥99%	
Specification  Medical name  I-131 Metaiodobenzylguanidine	
Medical name I-131 Metaiodobenzylguanidine	
, ,	
Radionuclide nurity >99%	
Tradional purity	
Radiochemical purity ≥90%	
Specific activity 2312.5-2775 MBq/ mg (MIBG)	
pH 4.5-7.5	
Half life 8.02 days	
Activity concentration 185-740 MBq/mL	
Available activity 1850, 3700, 5550, 7400 MBq	
Other information	
Clinical application  Treatment of neuroendocrine tumours, especially, phaeochromocytoma, neuroblastoma, paraganglioma, medulla thyroid carcinoma and carcinoid syndrome	
Packaging Type A	
Storage Below -15 °C	
Availability Weekly	



PARS T PE

PARS-LUTO PSMA®	
Product name	Lu-177 PSMA
Pharmaceutical form	Sterile clear, colorless solution for injection
Specification	
Medical name	Lu-177 PSMA-617
Radionuclide purity	≥99.9%
Radiochemical purity	>97%
volume	1-10 mL
рН	5-7
Available Activity	7400 MBq
Half life	6.734 days
Activity concentration	740-7400 MBq/mL
Other information	
Clinical application	treatment of prostate cancer, including Metastatic Castration-Resistant Prostate Cancer (mCRPC)
Packaging	Type A
Storage	Below -10°C
Availability	Weekly



PAR	RS-LUTO TATE®
Product name	Lu-177 DOTATATE
Pharmaceutical form	Sterile clear, colorless solution for injection
Specification	
Medical name	Lu-177 DOTATATE
Radionuclide purity	≥99.9%
Radiochemical purity	>97%
volume	1-10 mL
рН	5-7
Available Activity	7400 MBq
Half life	6.734 days
Activity concentration	740-7400 MBq/mL
Other information	
Clinical application	treatment of somatostatin receptor-positive gastroenteropancreatic neuroendocrine tumors (GEP-NETs), including foregut, midgut, and hindgut neuroendocrine tumors in adults
Packaging	Type A
Storage	Below -10°C
Availability	Weekly



PARS-LUTO FAP®	
Product name	Lu-177 FAPI
Pharmaceutical form	Sterile clear, colorless solution for injection
Specification	
Medical name	Lu-177 Fibroblast activation protein
Radionuclide purity	≥99.9%
Radiochemical purity	>97%
volume	1-10 mL
рН	5-7
Available Activity	7400 MBq
Half life	6.734 days
Activity concentration	740-7400 MBq/mL
Other information	
Clinical application	Treatments of advanced or metastatic solid tumors
Packaging	Type A
Storage	Below -10°C
Availability	Weekly





# RADIONUCLIDES

#### **Reactor productions**

I-131

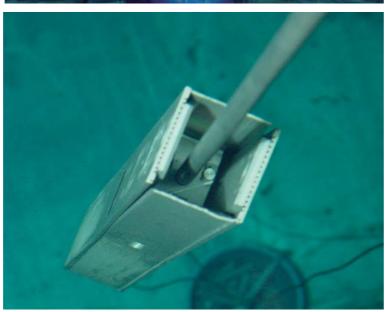
P-32

Sm-153

Re-186

Y-90









#### **Cyclotron productions**

TI-201

Ga-67

Ge-68

F-18

I-123

In-111

A New Horizon of Life

## RADIONUCLIDES

## **Reactor productions**

Name	I-131
Radioisotope	lodine 131 (I-131)
chemical formula	Sodium iodide (Na <sup>131</sup> I)
State or form	Soluble in NaOH 0.1 M
Half-life	8.02 day
рН	>12
Radionuclide purity	≥99.9%
Storage conditions	room temperature

Name	P-32
Radioisotope	Phosphorus 32 (P-32)
chemical formula	Phosphoric acid(H <sub>3</sub> <sup>32</sup> PO <sub>4</sub> )
State or form	Soluble in HCl 0.1 M
Half-life	14.28 day
рН	Acidic aqueous
Radionuclide purity	≥99.5%
Storage conditions	room temperature

Name	Sm-153
Radioisotope	Samarium 153 (Sm-153)
chemical formula	Samarium chloride (153SmCl <sub>3</sub> )
State or form	Soluble in HCI 0.1 M
Half-life	1.92 day (46.27 h)
рН	6-7
Radionuclide purity	≥99.8%
Storage conditions	room temperature

## **Reactor productions**

Name	Re-186
Radioisotope	Rhenium 186 (Re-186)
Chemical formula	Potassium Perrhenate (K <sup>186</sup> ReO <sub>4</sub> )
State or form	Solution
Half-life	3.77 day
рН	4.5 - 7.5
Radionuclide purity	≥99%
Storage conditions	room temperature

Name	Y-90
Radioisotope	Yttrium 90 (Y-90)
Chemical formula	Yttrium chloride (90YCl <sub>3</sub> )
State or form	Soluble in HCl 0.05 M
Half-life	2.67 day
pH	1 - 2
Radionuclide purity	≥99.9%
Storage conditions	room temperature



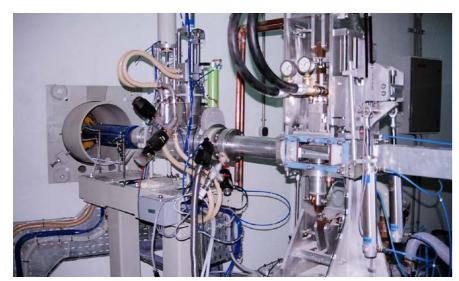
## RADIONUCLIDES

## **Cyclotron production**

Name	TI-201
Radioisotope	Thallium 201 (Tl-201)
Chemical formula	Thallium chloride (201TICI)
State or form	Soluble in normal saline
Half-life	3.04 day (73 h)
рН	≤ 1
Radionuclide purity	≥99%
Storage conditions	room temperature

Name	Ga-67
Radioisotope	Gallium 67 (Ga-67)
Chemical formula	Gallium citrate (C <sub>6</sub> H <sub>5</sub> <sup>67</sup> GaO <sub>7</sub> )
State or form	Soluble in normal saline
Half-life	3.26 day (78.3 h)
рН	≤ 1
Radionuclide purity	≥99%
Storage conditions	Room temperature

Name	Ge-68
Radioisotope	Germanium 68 (Ge-68)
Chemical formula	Germanium chloride (68GeCl <sub>4</sub> )
State or form	Soluble in HCI 0.1 M
Half-life	270.95 day
рН	≤ 2
Radionuclide purity	≥99%
Storage conditions	Room temperature



## **Cyclotron production**

Name	F-18
Radioisotope	Fluorine 18 (F-18)
Chemical formula	Fluorodeoxyglucose (C <sub>6</sub> H <sub>11</sub> <sup>18</sup> FO <sub>5</sub> )
State or form	Soluble in normal saline
Half-life	110 minutes
рН	4-7
Radionuclide purity	≥99.5%
Storage conditions	Room temperature

Name	I-123
Radioisotope	lodine 123 (I-123)
Chemical formula	Sodium iodide (Na <sup>123</sup> I)
State or form	Soluble in NaOH
Half-life	13.2 h
рН	9-10
Radionuclide purity	≥99%
Storage conditions	Room temperature

Name	In-111
Radioisotope	Indium 111 (In-111)
Chemical formula	Indium chloride (111 InCl <sub>3</sub> )
State or form	Soluble in HCl 1 M
Half-life	2.80 d (67.3 h)
рН	≤2
Radionuclide purity	≥99%
Storage conditions	Room temperature

50 PARS T PE Company

#### **Quality Control and Services**

#### Radiopharmaceuticals **Quality Control Department**

The PARS ISOTOPE quality control management is equipped with the modern analytical instruments complying with Good Laboratory Practice (GLP) which conducts the control experiments in accordance with the applicable pharmacopoeia monographs.

This management includes the following laboratories:

- Chemical and raw materials.
- Radiochemical and radionuclide laboratory for reactor-based products.
- Radiochemical and radionuclide laboratory for cyclotron-based products.
- Microbiological laboratories.
- Biological and imaging laboratory with animal house.
- In-Process Quality Control (IPQC) laboratory.
- Cell culture laboratory.

All tests in these laboratories are performed by well-trained and qualified experts in accordance with the requirements of ISO/IEC 17025 standard. The quality control process in PARS ISOTOPE Company starts from supplying raw materials and items needed to produce the final products and includes in-process controls, control of intermediate products, final product tests, checking the final packaging, product stability tests and conducting research. Quality control laboratories are directly involved in monitoring the quality of all PARS ISOTOPE products and give appropriate feedback by obtaining reliable data in order to maintain the quality characteristics and performance efficacy of radiopharmaceuticals and their continuous improvement processes. The ultimate mission of quality control management in PARS ISOTOPE Company as pointed out in PIC/S GMP guide, is to ensure that all the necessary and relevant tests are carried out and only when the quality of materials and the products are satisfactorily confirmed, they will be allowed to be released for use and sale.





#### The Secondary Standard Dosimetry Laboratory (SSDL)

The Secondary Standard Dosimetry Laboratory (SSDL) of Iran, as a member of the IAEA/WHO network of SSDLs, provides various calibration and quality control services in radiation therapy, radiation protection, and nuclear medicine. The main routine activities of the laboratories are as follows;

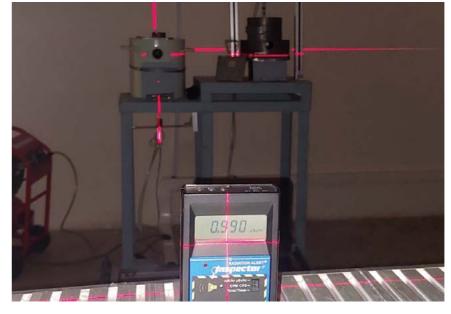
#### Calibration and Quality Control (QC) Services

- Calibration of ionization chambers applied in radiotherapy at the standard Co-60 gamma-ray field.
- Calibration of personal and environmental dosimeters at Co-60 and Cs-137 gamma-ray fields.
- Calibration of contamination monitors.
- Dosimetry and QC of brachytherapy machines.
- Dosimetry and calibration of radiation fields.
- HVL and TVL measurement of various materials.
- Reference dosimetry of electron and photon radiation beams of medical linear accelerators (LINACs) and gamma-rays of Co-60-based radiotherapy machines.
- QC of medical LINACs in terms of mechanical tests and radiation protection safety.
- Dosimetric audit of treatment planning systems in 3D conventional radiation therapy.
- Type test of newly manufactured radiation measurement devices.
- QC of image-guided radiation therapy systems.
- QC of nuclear medicine dose calibrators.

#### **Standard Irradiation**

Standard irradiation of samples at Co-60 and Cs-137 radiation field.











#### **Quality Control and Services**

#### **PARS-PET Phantom**

#### **Germanium-68 Cylindrical Phantom**

#### An instrument for calibrating PET imaging systems

A positron emission tomography (PET) scanner is one of the most modern, accurate and advanced nuclear medicine imaging systems with unparalleled capabilities in diagnosing different types of cancer, neurological and cardiovascular disease. In order to have a proper functioning imaging system, the machine needs to be calibrated and adjusted on a daily basis. This calibrations require a particular set of tools. The Germanium-68 Cylindrical Phantom is one of the tools that is used to perform the daily functional testing.

PET is a functional imaging technique in which images are taken from different parts of the body using radiation emitted by positron emitting radioactive materials with a short half-life, such as F-18 or Ga-68. These examinations attain different goals including early detection of any possible failures in the components of the device (like the detector module).

The examination also provides other services like 3D normalization, and receiving test images of the PET system.

Germanium-68 cylindrical phantom under the brand name of PARS-PET Phantom is manufactured by Iranian specialists in Parsisotope Company for purposes mentioned above. After passing control and guarantee approvals, this product is sent to nuclear medicine centers for calibrating PET imaging systems.

PARS-PET Phantom, Line source		
Product name	Ge-68 Phantoms	
	Ge-68 Line sources	
Shape	Cylindrical (Ge-68 phantom)	
	Annulus (Ge-68 phantom)	
	Line source (Ge-68)	
Active height	Cylindrical: 20, 27 cm	
	Annulus: 27 cm	
Nominal activity	Cylindrical (20 cm: 37 MBq, 27 cm: 74 MBq)	
	Annulus (55.5 MBq)	
	Line source (each one 74 MBq)	
Useful lifetime	year 1	
Application	PET imaging system calibration	
	- for SIEMENS PET & PET/CT	
	(Cylindrical phantom & line sources)	
	- for GE PET & PET/CT	
	(Annulus phantom & line sources)	
Packaging	Type A	
Storage	15 - 40 °C	
Availability	On request	









PARS T PE company

#### Radiation Monitoring

Finding possible contamination with radioactive materials is very important for those who work with such materials. For this reason, every nuclear center or laboratory that deals with radioactive materials must be equipped with a device to detect possible contamination of radioactive materials.

Two of our instruments (PIWS10 and PIHS10), listed below, have significant applications in radiation monitoring.

Whole Body Contamination

**Monitor (WBCM)** 

Pars Isotope Whole Body Contamination Monitors (PIWS10) remarkably detect radioactive contamination in every radioisotope production facility.

This instrument is optimized with a plastic scintillator for the best possible alpha /beta response.

Non-gaseous contamination monitoring of PIWS10 via plastic scintillator detectors has been the advantage of Pars Isotope instruments over traditional gas flow detectors.

#### Application:

- Radiopharmaceutical Production Facilities
- Nuclear Medicine centers
- Radioisotope Processing and Production Plants
- Radioisotope Research Centers
- Environmental Monitoring within laboratories, mines and nuclear reactors



#### Features:

- Easy installation and operation
- High sensitivity to identify surface contamination with low activity
- · Separate low and high contamination from each other
- Detect defective detectors
- Draw the plateau related to each detector separately and test each detectors on the device
- 10" LCD touch screen
- Visual alarms
- Conforming to the requirements of the IEC61098 standard
- Apply specific device settings for each user using its definition in the ID card (RFID)
- Print contaminated parts of the body and joined turn style
- Very convenient maintenance due to the movable frame holding the detectors
- Use of suitable and strong material to eliminate possible contamination
- Easy access for service and maintenance

scintillation counters to detect beta contamination and ZnS coating to
separate alpha and beta contaminations
- four detectors for foot insteps:
One detector for each foot, one detector for the soles of the feet and one for on the feet
- one detector for tools
- one detector for head
- Two detectors for hands: one detector for two hands, one detector for back of the hands and one for palms
- twenty detector for whole body
Measurement steps in two steps:
- Electronics: industrial grade
- Alarm: individually configurable for each detector
Measurement time: adjustable in seconds
- Display: CPS, Bq, Bq/cm <sup>2</sup>
- Screen: Color LCD screen, 10-inche, touch screen
- Power supply: 220 V and 50 Hz
- Dimensions: Approx. 240×120×112 cm (h×w×d)
- Weight: Approx. 500 Kg
- Housing: aluminum/stainless steel
<sup>90</sup> Sr: 50%
<sup>241</sup> Am: 45%
0 – 60 °C
Max 80%



#### Radiation Monitoring

# Hand and Foot Contamination Monitor (HFCM)

PIHS10 has a very important role in finding surface contamination of radioactive materials. The type of detectors used in the Pars Isotope HFCMs are plastic scintillation to detect beta contamination and ZnS coating to separate alpha and beta contaminations.

Due to its high sensitivity to beta and alpha radioactive materials, this device has wide applications:

- Radiopharmaceutical Production Facilities
- Nuclear Medicine centers
- Radioisotope Processing and Production Plants
- Radioisotope Research Centers
- Environmental Monitoring within laboratories, mines, and nuclear reactors

#### Features:

- High sensitivity to identify surface contamination with low activity
- Warm-up less than 30 seconds
- Without depreciation
- The ability to quickly adjust traffic for up to 100 people due to a fast response time
- Separate low and high contamination from each other
- Detect defective detectors
- Draw the plateau related to each detector separately and test each detectors on the device
- 10" LCD touch screen
- Visual alarms
- Conforming to the requirements of the IEC61098 standard
- Apply specific device settings for each user using its definition in the ID card (RFID)
- Print contaminated parts of the body
- Easy installation and operation
- Convenient maintenance due to the movable frame holding the detectors
- Use of suitable and strong material to eliminate possible contamination

Types of detectors	scintillation counters to detect beta contamination and ZnS
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	coating to separate alpha and beta contaminations
Measurement channels	- Two detectors for hands (Frisker):
	One detector for each hand and one detector and both of
	them are movable for checking body and clothes
	- Two detectors for each foot:
Measurement	two steps:
	- Electronics: industrial grade
	- Alarm: individually configurable for each detector
	Measurement time: adjustable in seconds, smart discriminate,
	rapid in Sub background, reliable in variable record, and fast
	response time and identity interface
Device features	- Display: CPS, Bq, Bq/cm <sup>2</sup>
	- Screen: Color LCD screen, 10-inche, touch screen
	- Power supply: 220 V and 50 Hz
	- Dimensions: Approx. 123.8×75.5×75 cm (h×w×d)
	- Weight: Approx. 50 Kg
	- Housing: aluminum/stainless steel
Detection efficiency	<sup>90</sup> Sr: 50%
	<sup>241</sup> Am: 40%
Limited working temperature	0 – 60 °C
relative humidity	Max 90%







In Pars Isotope Company, all radioactive products are produced and transported with Type A packaging and in accordan the Regulations for the safe transportation of radioa materials SSR-6 of the International Atomic Energy Agen as well as the rules and regulations of the Nuclear Safety Center of the country.

According to the regulations, radioactive packages are classified as Class 7 dangerous goods and the identification number is listed as a UN number.

According to the category, each package must have labels matching with the models provided below:

e produced	
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RADIOACT	TIVE II
ACTIVITY	
TRANSPORT	MEX
Ă \V	
IDIO A OTTUE	
DIOACTIVE	RADIOACTIVE III
N ACTIVITY	AETWITE.
7/	7
\'/	

Conditions			
TI Maximum radiation level at any point on external surface		Category	
0	Not more than 0.005 mSv/h	I-WHITE	
More than 0 but not more than 1	More than 0.005 mSv/h but not more than 0.5 mSv/h	II-YELLOW	
More than 1 but not more than 10	More than 0.5 mSv/h but not more than 2 mSv/h	III-YELLOW	



#### **CONTACT US** info@parsisotope.com





Ref: 665/102834 6/3/2024 Attach:

#### Certificate of Good Manufacturing Practices

On the basis of the inspection carried out, we certify that the site indicated on this certificate complies with Good Manufacturing Practices for the dosage forms, categories and activities listed in Table 1.

Name and address of site: Pars Isotope Company
 North Karegar Street, Tehran, Iran

2. Manufacturer's license number: D/665/40066

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3.	Table	1:	

Dosage Form(s)	Category(ies)	Activity(ies)
Powder, Lyophilized	Radiopharmaceutical Kits	Production, Quality Control, Packaging
Injectables	Radiopharmaceutical	Production, Quality Control, Packaging
Oral Solution	Radiopharmaceutical	Production, Quality Control, Packaging
Capsule	Radiopharmaceutical	Production, Quality Control, Packaging

The responsibility for the quality of the individual batches of the pharmaceutical products manufactured through this process lies with the manufacturer

This certificate remains valid for one year after the date of issue. It becomes invalid if the activities and/or categories certified herewith are changed or if the site is no longer considered to be in compliance with GMP.

Address of certifying authority: Central Building of Iran Food and Drug Administration, No. 30, Fakhr Razi St., Enghelab Ave., Tehran, Iran, P.O. Box: 1314715131

Name and function of responsible person: Dr. Mohammad Peikanpour IFDA Director General for Drugs and Controlled Materia

Email: co@fda.ir Telephone No.: +98(21)66467268 Fax No.: +98(21)6640557

Central Building of Iran Food and Drug Administration No.:30,Fakhr Razi St.,Enghelab Ave., Tehran, Iran Zip Code: 1314715311 Tel:+98 (21) 61927000 Fax:+98 (21) 66405571 info@fda.gov.ir https://fda.gov.ir















