

Xe-133 Fact Sheet

Xenon-133 Fission Radiochemical Xenon Gas

Xenon (Xe-133) Gas (fission)

Half-Life: 5.243 days

Xenon-133 Fission Radiochemical Xenon Gas

Xenon-133 is used for lung ventilation studies which demonstrate respiratory efficiency. Patients breathe the radioactive gas and scintillation cameras measure the amount of radioactivity found over areas of the lung.

This procedure provides a good indication of how well the lung is functioning, can detect the presence of pulmonary emboli, and can assess chronic ventilation diseases.

MDS Nordion has an unparalleled base of technical expertise and production capabilities. State-of-the-art facilities provide a reliable supply of isotopes to customers around the world. Our strong focus on customer service and quality has made us a world leader.

Process Data

Nuclear Reaction

^{235}U (n,f)

Chemical Processing

NaOH or HNO₃ dissolution of target; off-gas collection and purification

Assay

High resolution gamma spectrometry

Product Specification

Chemical Form

^{133}Xe gas

Specific Activity*

≥ 1000 Ci/g Xe

Activity Concentration*

≥ 5 Ci/cm³ of total gas at STP

Radiopurity*

≥ 99.9% ^{133}Xe , $^{133\text{m}}\text{Xe}$ and $^{131\text{m}}\text{Xe}$

≤ 0.6% $^{133\text{m}}\text{Xe}$

≤ 1% $^{131\text{m}}\text{Xe}$

≤ 0.03% ^{85}Kr

≤ 0.01% ^{131}I

*Activity and radiopurity specifications are at customer's calibration time.

Packaging

Gas cylinder with Swagelock fitting (10 mL, 13.5 mL, 30 mL, 150 mL)

Availability

Available daily

Product Origin

Ottawa, Canada

World Class Delivery Service

MDS Nordion has a world class distribution system that includes a unique, software-based order management system. Carefully managed transportation logistics ensure products reach their destination on time.

Xenon-133 Decay Table Half-Life: 5.243 days

HOURS:	0	2	4	6	8	10	12	14	16	18	20	22
0	1.0000	0.9890	0.9782	0.9675	0.9569	0.9464	0.9360	0.9258	0.9156	0.9056	0.8957	0.8859
1	0.8762	0.8666	0.8571	0.8477	0.8384	0.8292	0.8201	0.8111	0.8022	0.7935	0.7848	0.7762
2	0.7677	0.7592	0.7509	0.7427	0.7346	0.7265	0.7186	0.7107	0.7029	0.6952	0.6876	0.6800
3	0.6726	0.6652	0.6579	0.6507	0.6436	0.6365	0.6296	0.6227	0.6159	0.6091	0.6024	0.5958
4	0.5893	0.5828	0.5765	0.5701	0.5639	0.5577	0.5516	0.5456	0.5396	0.5337	0.5278	0.5220
5	0.5163	0.5107	0.5051	0.4995	0.4941	0.4886	0.4833	0.4780	0.4728	0.4676	0.4625	0.4574
6	0.4524	0.4474	0.4425	0.4377	0.4329	0.4281	0.4234	0.4188	0.4142	0.4097	0.4052	0.4008
7	0.3964	0.3920	0.3877	0.3835	0.3793	0.3751	0.3710	0.3669	0.3629	0.3589	0.3550	0.3511
8	0.3473	0.3435	0.3397	0.3360	0.3323	0.3287	0.3251	0.3215	0.3180	0.3145	0.3110	0.3076
9	0.3043	0.3009	0.2976	0.2944	0.2912	0.2880	0.2848	0.2817	0.2786	0.2755	0.2725	0.2695
10	0.2666	0.2637	0.2608	0.2579	0.2551	0.2523	0.2495	0.2468	0.2441	0.2414	0.2388	0.2362
11	0.2336	0.2310	0.2285	0.2260	0.2235	0.2211	0.2186	0.2162	0.2139	0.2115	0.2092	0.2069
12	0.2046	0.2024	0.2002	0.1980	0.1958	0.1937	0.1916	0.1895	0.1874	0.1853	0.1833	0.1813
13	0.1793	0.1773	0.1754	0.1735	0.1716	0.1697	0.1678	0.1660	0.1642	0.1624	0.1606	0.1588
14	0.1571	0.1554	0.1537	0.1520	0.1503	0.1487	0.1471	0.1454	0.1438	0.1423	0.1407	0.1392
15	0.1376	0.1361	0.1346	0.1332	0.1317	0.1303	0.1288	0.1274	0.1260	0.1247	0.1233	0.1219
16	0.1206	0.1193	0.1180	0.1167	0.1154	0.1141	0.1129	0.1116	0.1104	0.1092	0.1080	0.1068
17	0.1057	0.1045	0.1034	0.1022	0.1011	0.1000	0.0989	0.0978	0.0968	0.0957	0.0946	0.0936
18	0.0926	0.0916	0.0906	0.0896	0.0886	0.0876	0.0867	0.0857	0.0848	0.0838	0.0829	0.0820
19	0.0811	0.0802	0.0793	0.0785	0.0776	0.0768	0.0759	0.0751	0.0743	0.0735	0.0727	0.0719

The half-life values stated are as of time of publication. MDS Nordion values may vary.

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