

${}^{12}\text{C}(\mu^-, {}^9\text{C}), {}^{14}\text{N}(\mu^-, {}^9\text{C})$  2000Ha33

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, B. Grees		ENSDF	31-July-2020

**2000Ha33:** The yield of  ${}^9\text{C}$  and other radioisotopes, produced by energetic muons and their secondaries, was measured at the SPS muon beam at CERN. The measurements, carried out at  $E(\mu)=100$  and  $190$  MeV, are aimed at understanding backgrounds at BOREXINO and KAMLAND.

**2010Ab05:** The authors investigated the yield of radioisotopes, including  ${}^9\text{C}$  nuclei, produced in the KamLAND detector by cosmic  $\mu$  showers. They suggest  ${}^{12}\text{C}(\pi^-, {}^3\text{H})$  as the primary production mechanism; though in (2016Ab02) the  ${}^{14}\text{N}(\mu^-, \nu 5n)$  reaction is indicated. The subsequent  $\beta^+p$  and  $\beta^+\alpha$  decay of  ${}^9\text{C}$  gives rise to a high-energy backgrounds in the detector.

**2016Ab02:** The authors investigated the yield of radioisotopes produced by cosmic  $\mu$  in the Double Chooz detector. The  ${}^{14}\text{N}(\mu^-, \nu 5n)$ ,  ${}^{16}\text{O}(\mu^-, \nu d 5n)$  and  ${}^{16}\text{O}(\mu^-, \nu p 6n)$  reactions are suggested as the primary reactions producing  ${}^9\text{C}$ .

**2019Zh29:** The FLUKA Monte Carlo code was used to estimate  $\mu$  induced activity in the DUNE detector.

 ${}^9\text{C}$  LevelsE(level)

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