

### **<sup>33</sup>P**

Sheline et al. reported the observation of <sup>33</sup>P in the 1951 paper “The nuclide P<sup>33</sup> and the P<sup>32</sup> spectrum” ([1951Sh92](#)). The Chicago betatron was used to produce 48 MeV  $\gamma$ -rays which bombarded sulfur, sodium sulfide and lithium chloride targets. <sup>33</sup>P was produced in the photo-nuclear reactions <sup>34</sup>S( $\gamma$ ,p), <sup>35</sup>Cl( $\gamma$ ,2p), and <sup>37</sup>Cl( $\gamma$ , $\alpha$ ). Beta-rays were recorded with an end window Geiger tube and absorption curves were measured. “The P<sup>33</sup> activity has a  $25\pm 2$  day half-life with a  $0.27\pm 0.02$ -Mev negative beta-ray. There is less than one (0.5-Mev) gamma for every fifteen betas.” A previously measured 22(5) s half-life was reported as a meeting abstract ([1951Ya05](#)) and was incorrect.

Adapted from reference ([2012Th10](#))

- [1951Sh92](#) R. K. Sheline, R. B. Holtzman, and C. Y. Fan, Phys. Rev. **83**, 919 (1951).  
[1951Ya05](#) L. Yaffe and F. Brown, Phys. Rev. **82**, 332 (1951).  
[2012Th10](#) M. Thoennessen, At. Data Nucl. Data Tables **98**, 933 (2012).

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