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Status of the liquid scintillator for JUNO

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The Jiangmen Underground Neutrino Observatory (JUNO) is a multipurpose experiment designed to elucidate fundamental neutrino properties, study neutrinos of astrophysical or terrestrial origin and search for rare processes beyond the standard model of particle physics. Its central detector is a 20 kt liquid scintillator (LS) located 650 m underground in Guangdong, China. JUNO LS needs to be highly transparent and have an exceptionally low radiation background with a very high radio purity in order to meet its physics objectives: For reactor neutrino physics, ^{238}U , ^{232}Th in LS $<1 \times 10^{-15}$ g/g, ^{40}K in LS $<1 \times 10^{-18}$ g/g. Five systems were designed to purify the LS: Alumina filtration, distillation, mixing, water extraction and steam stripping. In addition, two corollary equipment, an ultra-pure water plant and a high-purity nitrogen plant, were developed to supply ultra-pure water and high-purity nitrogen for the LS purification system. Low-background stainless steel was used in the construction of key sub-systems. In accordance with JUNO requirement, the stainless steel tanks and pipes were degreased, pickled, and passivated. The leakage rate of all sub-systems is better than 1×10^{-6} mbarL/s. The installation of all seven plants has been thoroughly completed, and both self-commissioning and joint commissioning of the plants have been carried out.

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