

Safety guidelines on liquid hydrogen target systems for particle and nuclear physics experiments at J-PARC

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Liquid hydrogen and liquid deuterium are widely used as targets for various particle and nuclear physics experiments. The safety guidelines for liquid hydrogen / deuterium target systems were drawn up at the Japan Proton Accelerator Research Complex (J-PARC). Requirements for the target systems and surrounding instruments are (1) method for pressure proof and airtight test, and design-strength verifying test for the target systems, (2) criteria for the areas where the preventive measures for explosion are necessary, (3) required measures against explosion, such as interlock for electric devices, *etc.* They also describe the method to evaluate the safety distance from the hydrogen instruments for various target systems.

The guidelines were examined in detail and decided by the expert working-group organized in the J-PARC Center. Liquid hydrogen/deuterium targets and similar apparatus in J-PARC are presently designed and developed according to the guidelines.

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