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The invention relates to the semiconductors technology and may be applied for the InP thin pure layers production with the high reproducible electrophysical parameters.

The proposed process consists in the preliminary thermic treatment of the indium source and the epitaxial growth of the layers in the In-PCl<sub>3</sub>-H<sub>2</sub> system, the indium source preliminary thermic treatment being effected in void (vacuum).

The technical result of the invention consists in the purification of the indium source out of the uncontrolled impurities and the reducing of the term for establishing the conditions of the InP layers development.