

The gas release phenomenon, resulting from a rapid decompression in a homogeneous gas–liquid flow is expressed by multiplying the mixture density by a degassing coefficient  $G_r$ . The effect of this coefficient is calculated by using the classical conservation equations of fluid mechanics and diffusion laws. These equations are solved by an improved new two time step finite difference scheme. The method of characteristics is used at the boundaries. The theoretical results obtained are in good agreement with experimental data and confirm the gas release effect on the flow parameters. © 2005 Elsevier Ltd. All rights reserved