

Process of preparing high purity bromopicrin, and high purity bromopicrin produced therefrom. Providing a mixture of nitromethane and bromine, and preferably water, and absent of organic solvent. Adding an aqueous solution of an alkaline substance to the mixture, thereby providing a reaction mixture containing bromopicrin, the adding performed such that no excess of the alkaline substance occurs in the reaction mixture during the adding. Collecting the organic phase (containing the bromopicrin) from the reaction mixture. No need for subjecting the organic phase of the reaction mixture to distillation or extraction, for obtaining near quantitative yield of bromopicrin having purity of at least equal to or greater than 96 weight percent. Process parameters controlling selectivity of reaction forming bromopicrin are molar ratio of bromine and nitromethane in the mixture; reaction temperature while bromopicrin is formed; concentration of the alkaline substance in the aqueous solution; and reaction time.