

Application of nanofiltration for concentration of sodium sulfate waste solution

B. Cichy^{a,*}, H. Jaroszek^a, W. Mikołajczak^a, M. Nowak^a, B. Pisarska^a, P. Markowicz^b,
T. Malinowski^b

^aNew Chemical Syntheses Institute, Inorganic Chemistry Division "IChN" in Gliwice, Sowinskiego 11, PL 44-101 Gliwice, Poland, email: barbara.cichy@ichn.gliwice.pl (B. Cichy), hanna.jaroszek@ichn.gliwice.pl (H. Jaroszek), wojciech.mikolajczak@ichn.gliwice.pl (W. Mikołajczak), mariusz.nowak@ichn.gliwice.pl (M. Nowak), bozenna.pisarska@ichn.gliwice.pl (B. Pisarska)

^bGrupa Azoty S.A., Kwiatkowskiego 8, PL 33-101 Tarnów, Poland, email: Pawel.Markowicz@grupaazoty.com (P. Markowicz), Tomasz.Malinowski@grupaazoty.com (T. Malinowski)

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ABSTRACT

Nanofiltration was successfully applied to pre-concentrate waste sodium sulfate solution. Reducing salt discharge to the environment is important from both an economical and ecological point of view. Two commercial membranes: NF-270 (DOW FilmTec) and MPS-34 (KOCH) were characterized in flat-sheet and tested in spiral-wound configuration. In the pressure range of 10–40 bar, both permeation flux and salt retention were found to decrease significantly with increasing feed concentration and decreasing driving force. To maintain a high concentration of Na₂SO₄ (up to 110 g/l) and low salt content in permeate (below 0.3 g/l Na₂SO₄), a two-stage process was proposed and verified.

Keywords: Nanofiltration; Sodium sulfate; Wastewater treatment; Recovery

*Corresponding author.

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