Simple process for hardening desalinated water with Mg\textsuperscript{2+} ions

David Hasson\textsuperscript{a, *}, Raphael Semiat\textsuperscript{a}, Hilla Shemer\textsuperscript{a}, Menachem Priel\textsuperscript{b}, Nissim Nadav\textsuperscript{b}

\textsuperscript{a}Rabin Desalination Laboratory, Technion-Israel Institute of Technology, Haifa, Israel
Tel. +972 4 8292936; Fax: +972 4 8292850; email: hasson@tx.technion.ac.il
\textsuperscript{b}Mekorot Water Co, Israel

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ABSTRACT

A simple easily controlled technique for adding Mg\textsuperscript{2+} ions to desalinated water is described. The Israeli Health Authority recommendation of adding of 20–30 mg/L of Mg\textsuperscript{2+} can be readily met by dissolution of magnesia pellets in a packed bed column. Experimental data are presented showing the effects of the specific flow velocity and CO\textsubscript{2} acidification of the inlet desalinated water on the Mg\textsuperscript{2+} concentration in the product stream leaving the column. Acidification of the inlet feed water is shown to enhance considerably the dissolution process. A kinetic expression is presented enabling full design of a dissolution packed column with nonacidified water.

Keywords: Desalinated water; Hardening; Magnesium; Magnesia dissolution; Kinetic model

*Corresponding author.

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