

## Table of contents

<b>1</b>	<b>Introduction.....</b>	<b>1</b>
<b>2</b>	<b>Testing material .....</b>	<b>3</b>
<b>3</b>	<b>Laboratory experiments .....</b>	<b>5</b>
3.1	Material stability – triaxial compression test .....	5
3.1.1	Experimental layout .....	5
3.1.2	Testing procedure.....	7
3.1.3	Measurement results and interpretation.....	11
3.2	Multi-stage triaxial compression test .....	14
3.2.1	Experimental layout .....	14
3.2.2	Testing procedure.....	14
3.2.3	Measurement results and interpretation.....	15
3.3	Long-term deformation behaviour – uniaxial-testing method.....	20
3.3.1	Experimental layout .....	20
3.3.2	Testing procedure.....	21
3.3.3	Measurement results and interpretation.....	23
3.4	Long-term deformation behaviour – triaxial-testing method.....	27
3.4.1	Experimental layout .....	27
3.4.2	Testing procedure.....	28
3.4.3	Measurement results and interpretation.....	30
3.5	Long-term deformation behaviour – temperature effects.....	33
3.5.1	Experimental layout .....	33
3.5.2	Testing procedure.....	34
3.5.3	Measurement results and interpretation.....	36
3.6	Sealing capacity of rock salt / sealing system .....	38
3.6.1	Experimental layout .....	38
3.6.2	Testing procedure.....	40
3.6.3	Measurement results and interpretation.....	40
<b>4</b>	<b>Modelling work.....</b>	<b>45</b>

4.1	Physical Modelling .....	45
4.2	Numerical simulation of the triaxial compression test.....	48
4.2.1	Model geometry.....	48
4.2.2	Boundary conditions and material properties .....	49
4.2.3	Modelling results versus experimental data .....	52
4.2.4	Discussion .....	61
4.3	Simulation of the uniaxial creep test.....	63
4.3.1	Model geometry.....	63
4.3.2	Boundary conditions and material properties .....	64
4.3.3	Modelling results versus experimental data .....	66
4.3.4	Discussion .....	92
4.4	Simulation of the triaxial creep test .....	95
4.4.1	Model geometry.....	95
4.4.2	Boundary conditions and material properties .....	96
4.4.3	Modelling results versus experimental data .....	98
4.4.4	Discussion .....	111
<b>5</b>	<b>Summary and outlook .....</b>	<b>114</b>
<b>6</b>	<b>Zusammenfassung und Ausblick .....</b>	<b>116</b>
<b>7</b>	<b>Acknowledgements .....</b>	<b>118</b>
	<b>References .....</b>	<b>119</b>
	<b>Figures .....</b>	<b>122</b>
	<b>Tables .....</b>	<b>130</b>