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Project/archive no. 3B038304	Date 10.09.2010	Rev. date	No. of pages 19	Appendixes	Classification Restricted	Author(s) Geir Lippe Stavnes
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Assignment Report

Testing of mixers from Tapwell AB. Test method NS-EN 817.


Sanitary laboratory

The test results are valid exclusively for the tested objects.

NORSK
AKKREDITERING
TEST 113

Summary			
<p>SINTEF Building and Infrastructure has, on behalf of Tapwell AB, carried out testing of kitchen, basin and shower/bath mixers type EVO, FME, LEA, DOM.</p> <p>The tests have been carried out in accordance with NS-EN 817:2008 "Sanitary tapware – Mechanical mixing valves (PN 10) - General technical specification", Clause 10.6 and 14. See Table 4.1 for conducted tests.</p> <p>Result: Passed</p> <p>Remark: The flow rate measured at 0,3 MPa shall be at least 0,20 l/s. According to NS-EN 817:2008, a flow rate of 0,066 l/s is permissible for water saving valves if appropriate information is provided. In this case, LEA878 must have this information.</p>			
Address of the building			Built (year)
Method NS-EN 817	Keywords Tap ware	Filename 3B038304 Tapwell støy og kap EN 817	

1. INTRODUCTION

SINTEF Building and Infrastructure has, on behalf of Tapwell AB, carried out testing of kitchen, basin and shower/bath mixers type EVO, FME, LEA and DOM.

The tests according to NS-EN 817 were conducted by Geir Lippe Stavnes.

2. TEST METHOD

The tests have been carried out in accordance with NS-EN 817:2008 "Sanitary tapware – Mechanical mixing valves (PN 10) - General technical specification", Clause 10.6 and 14. See Table 4.1.

3. TEST OBJECT

The test objects from Tapwell AB are kitchen, basin and shower/bath mixers, see Figures 3.1 -3.10. All mixers, except the shower/bath mixers, were delivered with copper supply pipes.

The mixers were delivered to SINTEF Building and Infrastructure by Iver Bjerke on 20.8.2010. They were in good condition on arrival.

Table 3.1: Controlled mixers

Mixer	Number	Figure	Aerator
EVO186	3	3.1	Airforce P779IB
EVO176	3	3.2	Airforce P779IB
EVO200	3	3.3	Neoperl B
EVO078	3	3.4	Neoperl B
EVO980	3	3.5	Neoperl B
LES081	3	3.6	Airforce P278IB
FME181	3	3.7	unmarked
LEA878	3	3.8	Neoperl TT
DOM168	3	3.9	Neoperl CC
DOM022	3	3.10	-



Fig. 3.1: EVO186



Fig. 3.2: EVO176



Fig. 3.3: EVO200



Fig. 3.4: EVO078



Fig. 3.5: EVO980



Fig. 3.6: LES081



Fig. 3.7: FME181



Fig. 3.8: LEA878

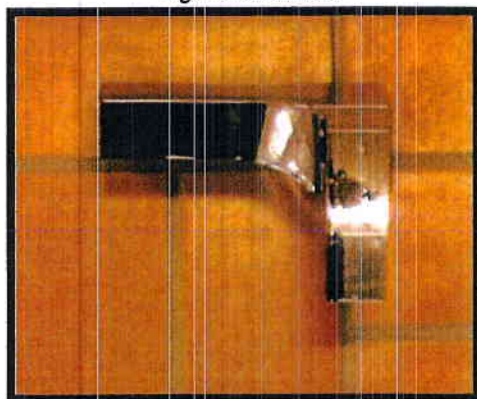


Fig. 3.9: DOM168

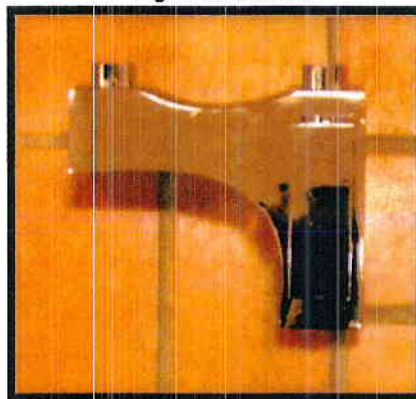


Fig. 3.10: DOM022

TESTS, METHOD, REQUIREMENTS AND RESULTS
Table 4.1: Summary of results

Chapter	Clause in NS-EN 817	Test	Passed		Accredited test	
			Yes	No	Yes	No
4.1	10.6	Determination of flow rate	x		x	
4.2	14	Acoustic characteristics	x		x	

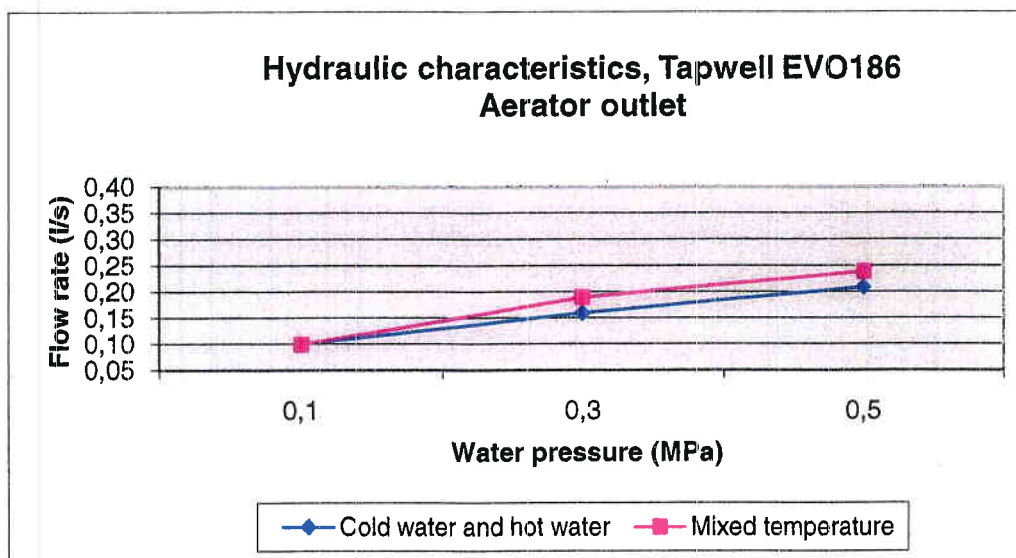
4.1 Determination of flow rate (NS-EN 817, Clause 10.6)

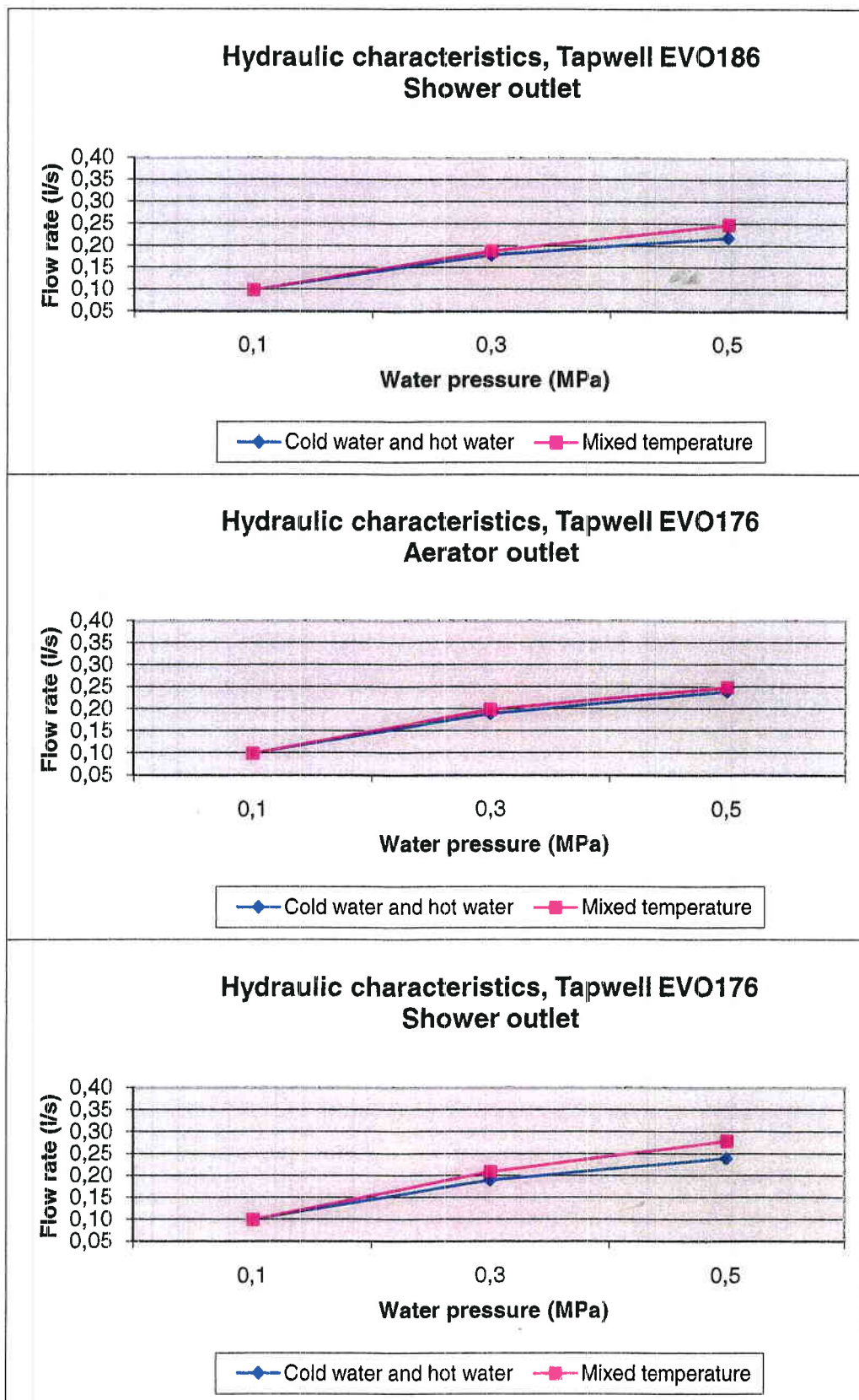
Method: Measuring the flow rate at 0,3 MPa

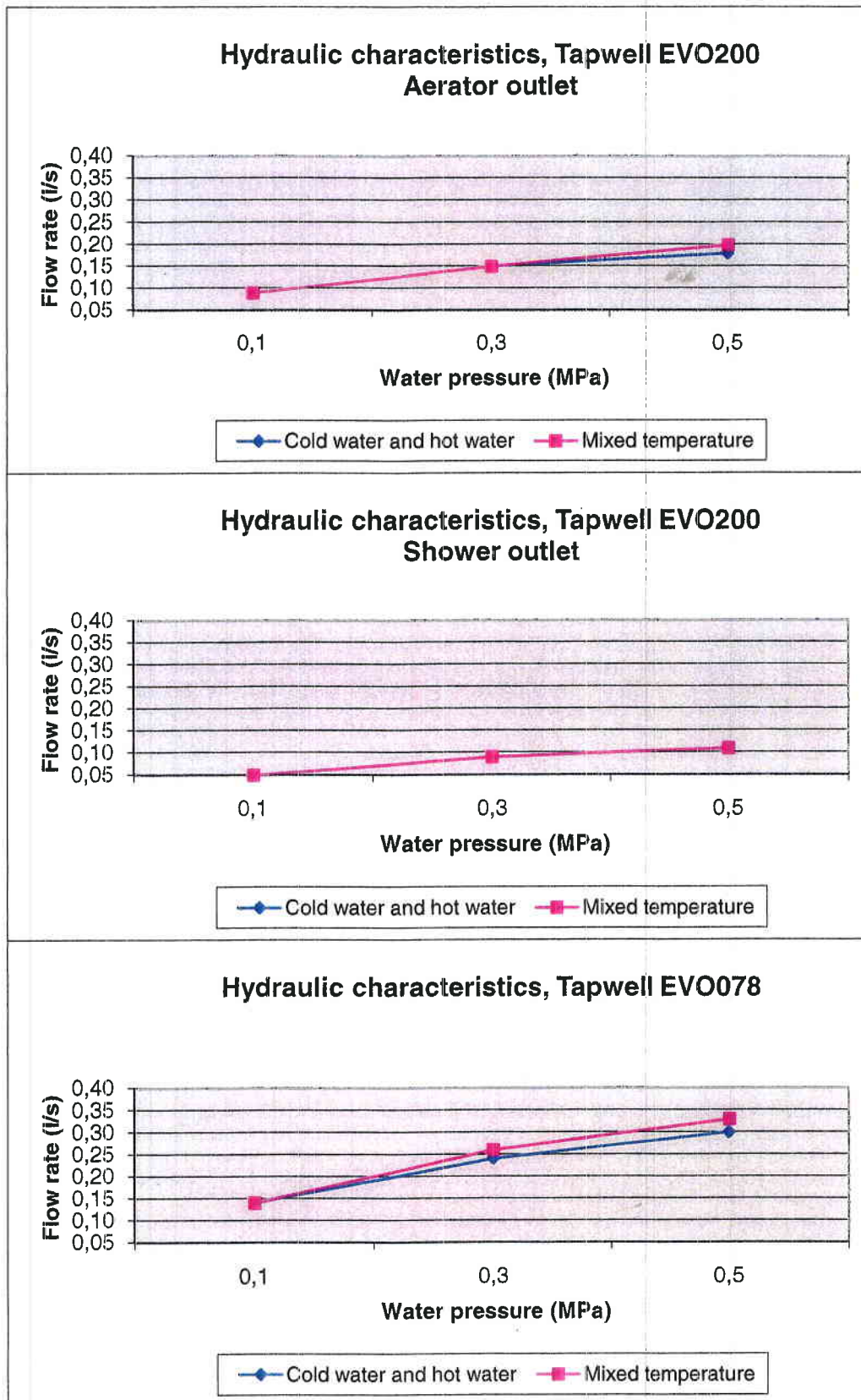
Mixer	Passed	Not passed
EVO186	x	
EVO176	x	
EVO200	x	
EVO078	x	
EVO980	x	
LES081	x	
FME181	x	
LEA878 ¹⁾	x	
DOM168	x	
DOM022	x	

Remark: The flow rate measured at 0,3 MPa shall be at least 0,15 l/s when the tap is supplied with flexible hoses or a pull out spray. The flow rate measured at 0,3 MPa shall be at least 0,20 l/s when the tap is supplied with copper supply pipes. For bath mixers, the flow rate measured at 0,3 MPa shall be at least 0,30 l/s.

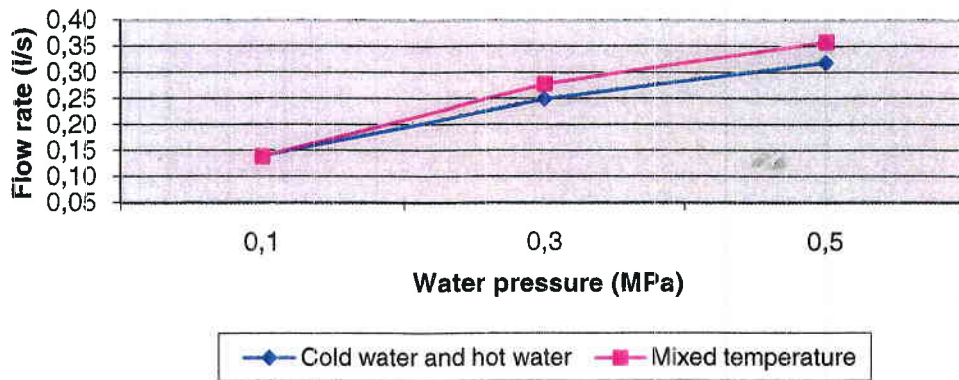
- 1) According to NS-EN 817:2008, a flow rate of 0,066 l/s is permissible for water saving valves if appropriate information is provided. In this case, LEA878 must have this information.



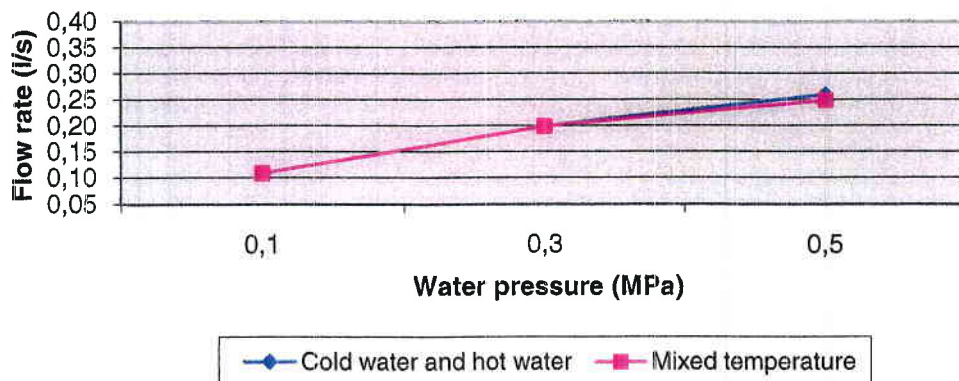




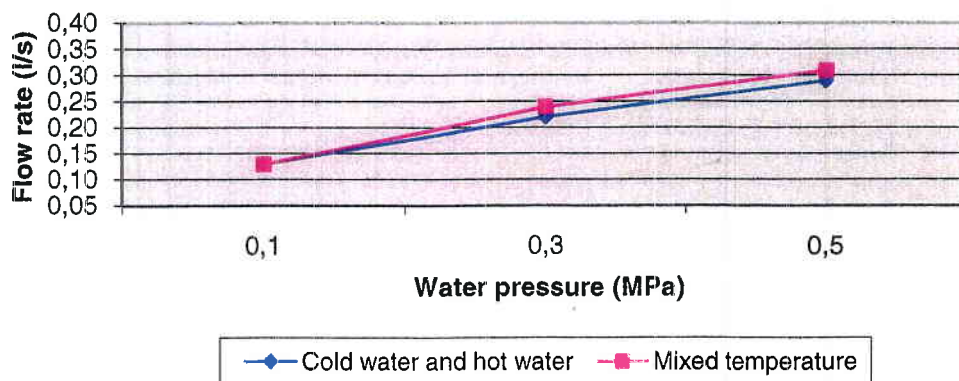
Hydraulic characteristics, Tapwell EVO980



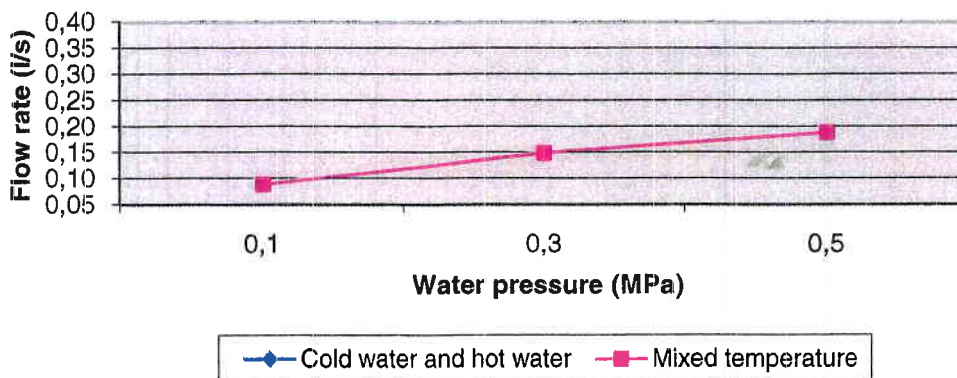
Hydraulic characteristics, Tapwell LES081



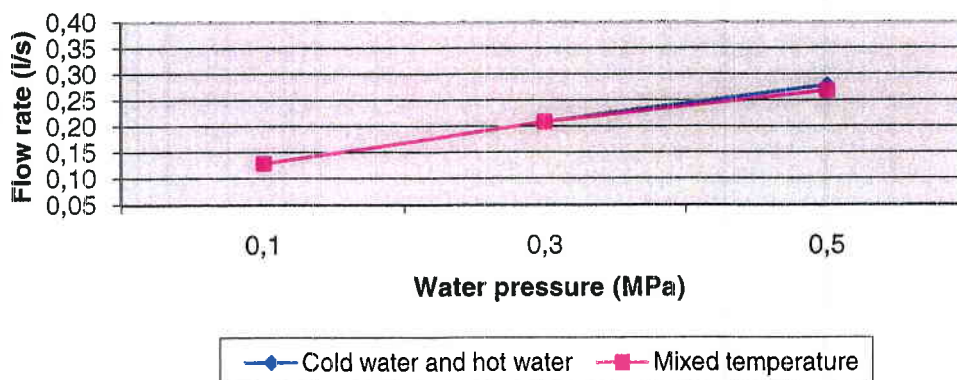
Hydraulic characteristics, Tapwell FME181



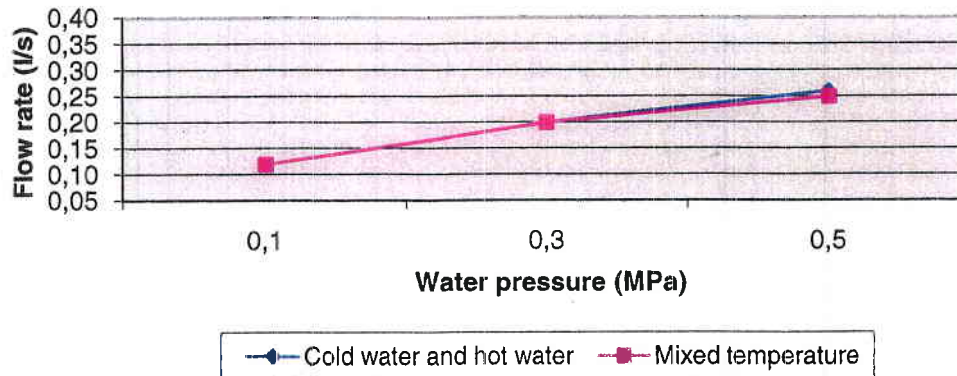
Hydraulic characteristics, Tapwell LEA878

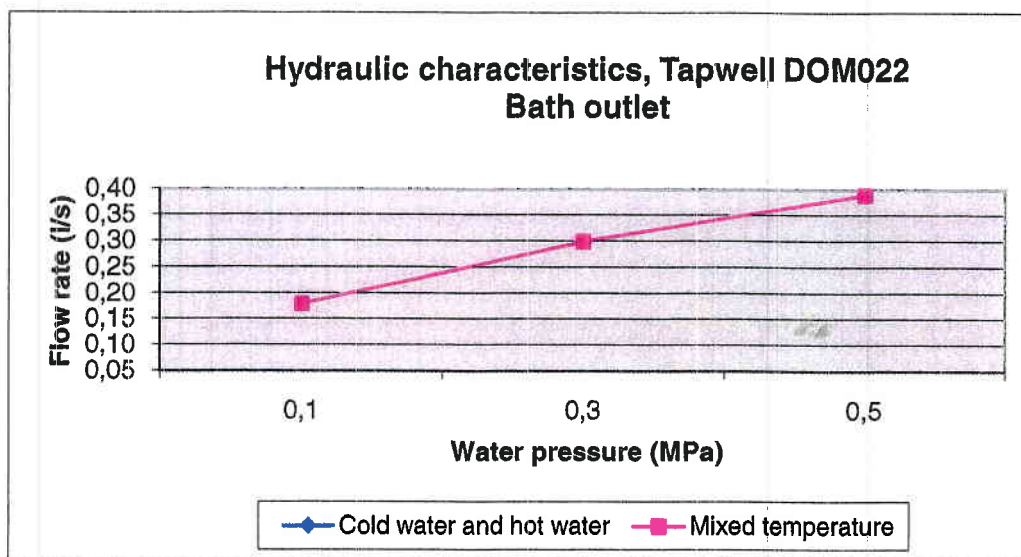


Hydraulic characteristics, Tapwell DOM168



Hydraulic characteristics, Tapwell DOM022 Shower outlet



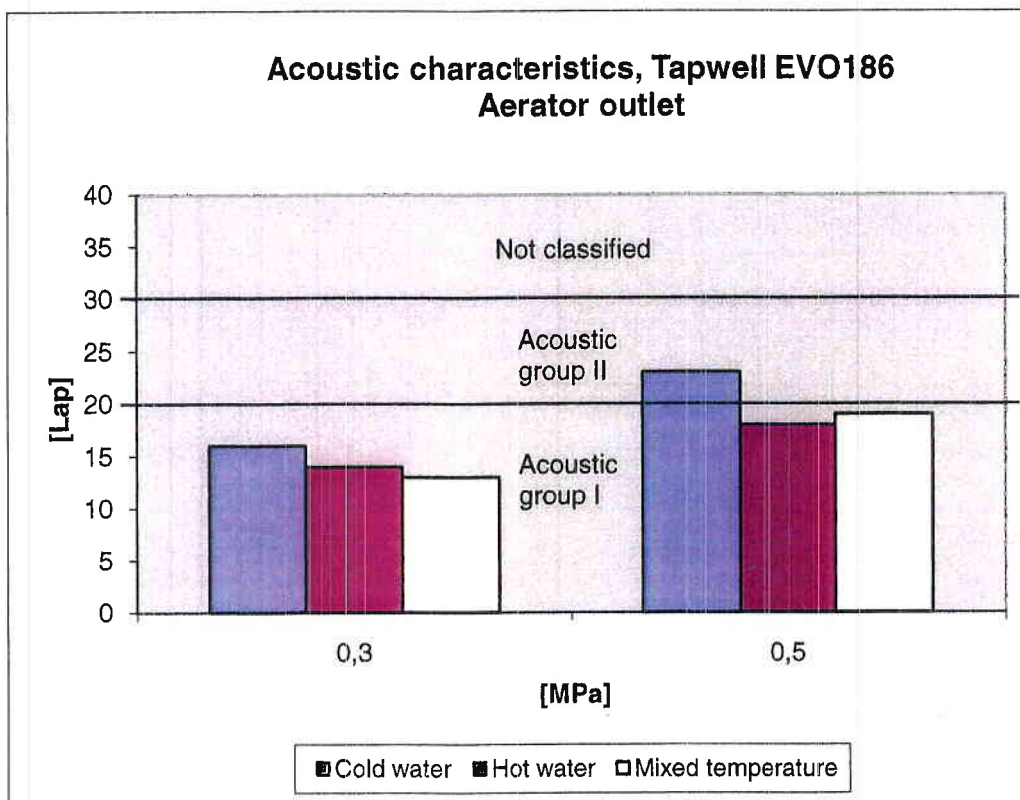


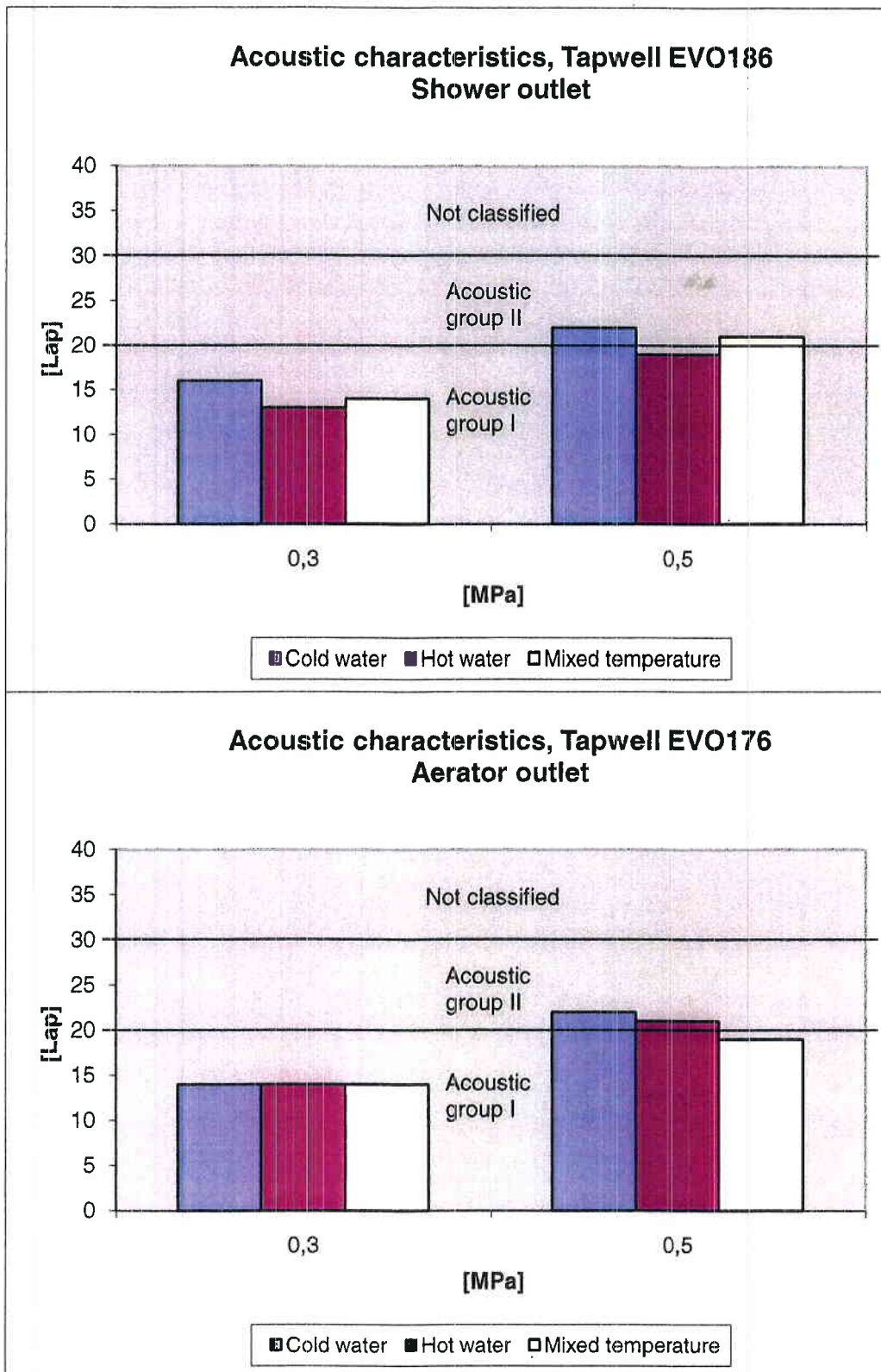
4.5 Acoustic characteristics (NS-EN 817, clause 14)
Method: EN ISO 3822

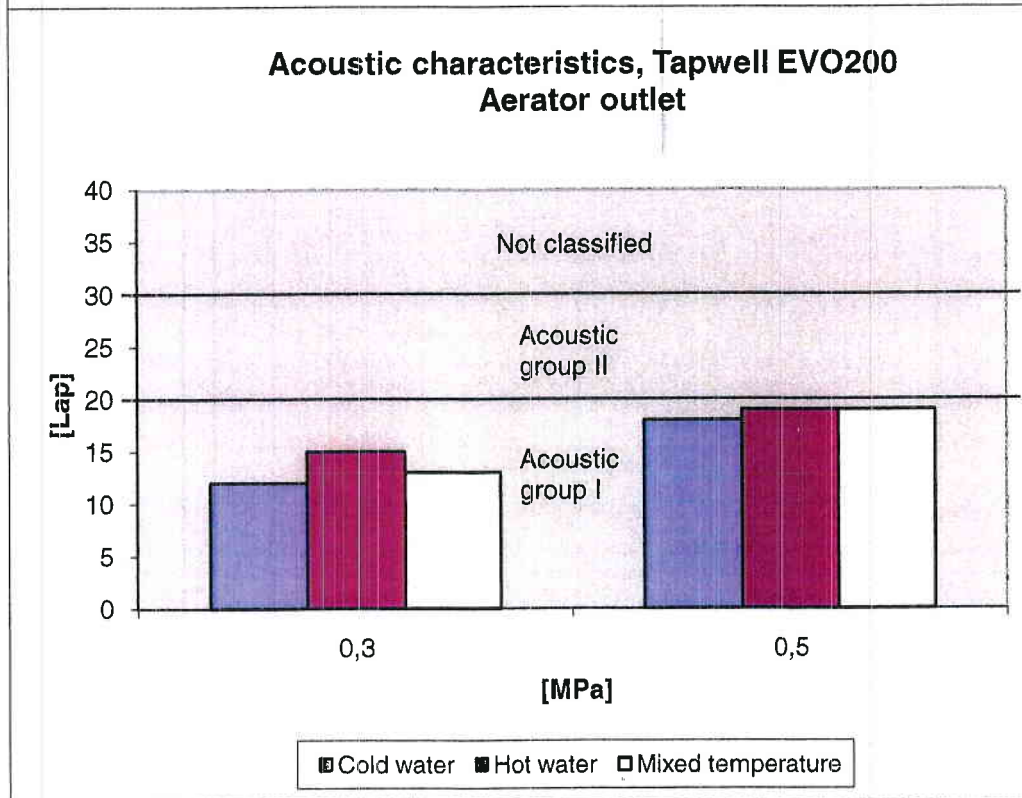
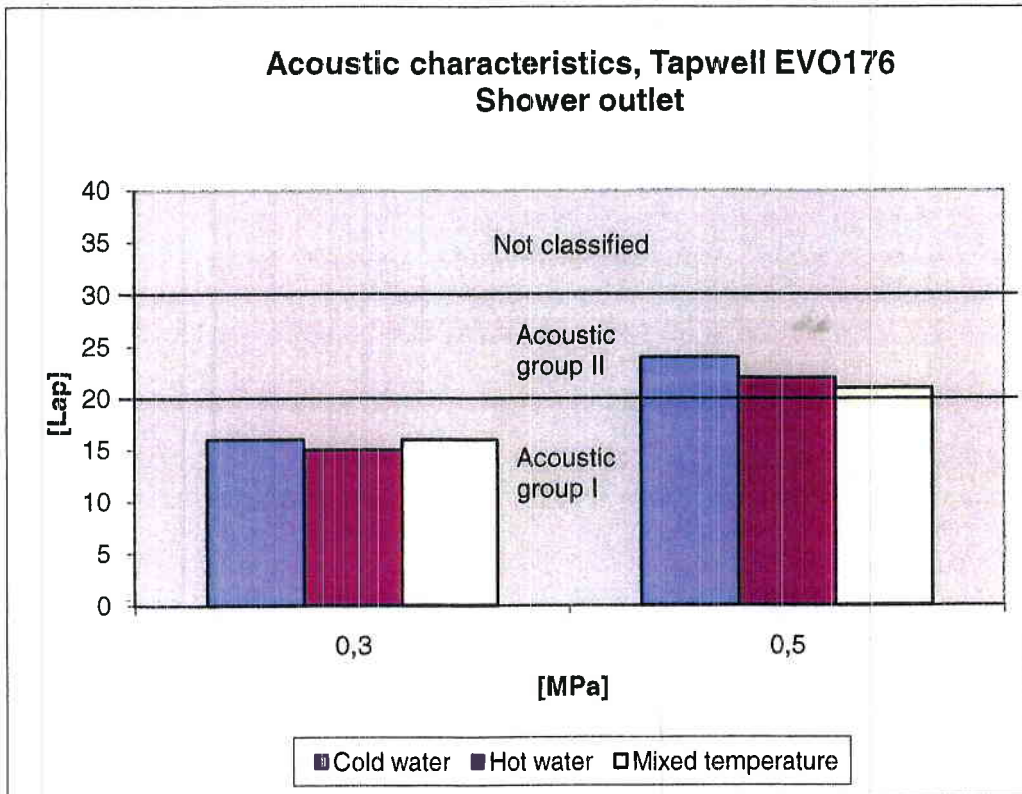
Mixer	Acoustic group			0,3 MPa			0,5 MPa		
				Cold	Hot	Mixed	Cold	Hot	Mixed
EVO186 Aerator outlet	✓ I	Fully open	L _{ap}	16	14	13	23	18	19
			I/s	0,16	0,16	0,19	0,21	0,21	0,24
		Max sound pressure	L _{ap}	16	14	13	23	18	19
			I/s	0,16	0,16	0,19	0,21	0,21	0,24
EVO186 Shower outlet	✓ I	Fully open	L _{ap}	16	13	14	22	19	21
			I/s	0,18	0,18	0,19	0,22	0,22	0,25
		Max sound pressure	L _{ap}	16	13	14	22	19	21
			I/s	0,18	0,18	0,19	0,22	0,22	0,25
EVO176 Aerator outlet	✓ I	Fully open	L _{ap}	14	14	14	22	21	19
			I/s	0,19	0,19	0,20	0,24	0,24	0,25
		Max sound pressure	L _{ap}	14	14	14	22	21	19
			I/s	0,19	0,19	0,20	0,24	0,24	0,25
EVO176 Shower outlet	✓ I	Fully open	L _{ap}	16	15	16	24	22	21
			I/s	0,19	0,19	0,21	0,24	0,24	0,28
		Max sound pressure	L _{ap}	16	15	16	24	22	21
			I/s	0,19	0,19	0,21	0,24	0,24	0,28
EVO200 Aerator outlet	✓ I	Fully open	L _{ap}	12	15	13	18	19	19
			I/s	0,15	0,15	0,15	0,18	0,18	0,20
		Max sound pressure	L _{ap}	12	15	13	18	19	19
			I/s	0,15	0,15	0,15	0,18	0,18	0,20
EVO200 Shower outlet	✓ I	Fully open	L _{ap}	9	9	9	13	12	14
			I/s	0,09	0,09	0,09	0,11	0,11	0,11
		Max sound pressure	L _{ap}	9	9	9	13	12	14
			I/s	0,09	0,09	0,09	0,11	0,11	0,11
EVO078	✓ II	Fully open	L _{ap}	23	23	23	28	28	28
			I/s	0,24	0,24	0,26	0,30	0,32	0,33
		Max sound pressure	L _{ap}	23	23	23	28	28	28
			I/s	0,24	0,24	0,26	0,30	0,32	0,33
EVO980	✓ II	Fully open	L _{ap}	21	20	19	29	27	27
			I/s	0,25	0,24	0,28	0,32	0,32	0,36
		Max sound pressure	L _{ap}	21	20	23	29	27	29
			I/s	0,25	0,24	0,14	0,32	0,32	0,17
LES081	✓ II	Fully open	L _{ap}	24	25	30	31	30	38
			I/s	0,20	0,20	0,20	0,26	0,25	0,25
		Max sound pressure	L _{ap}	24	25	30	31	30	38
			I/s	0,20	0,20	0,20	0,26	0,25	0,25

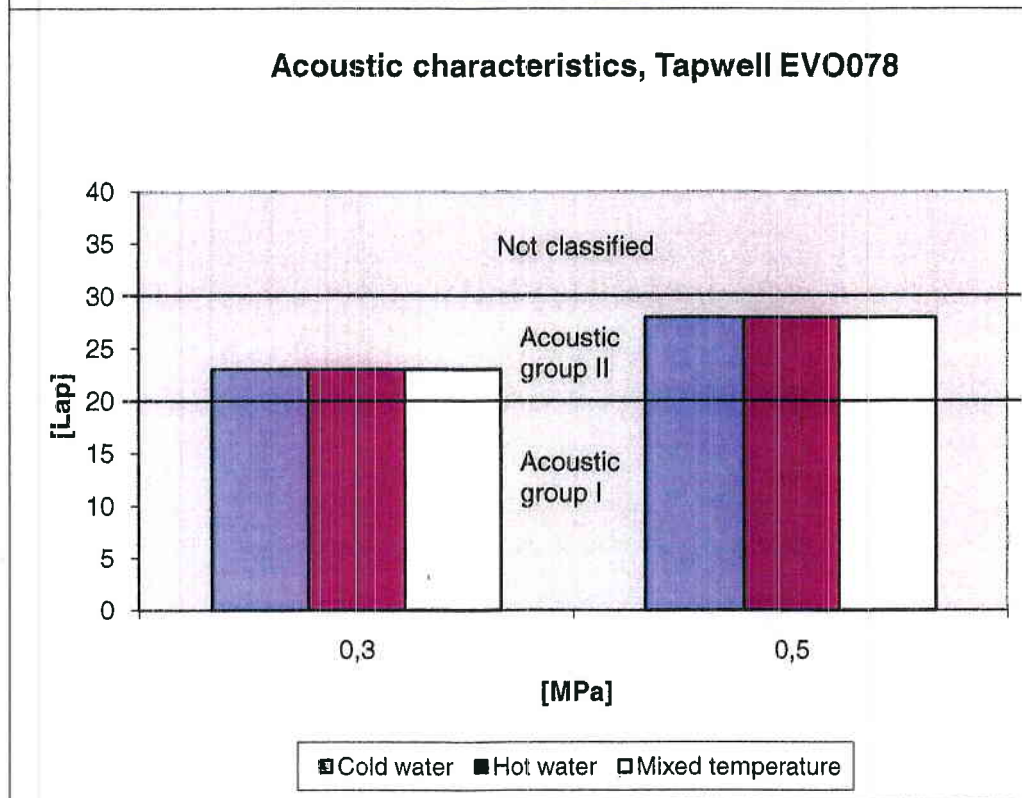
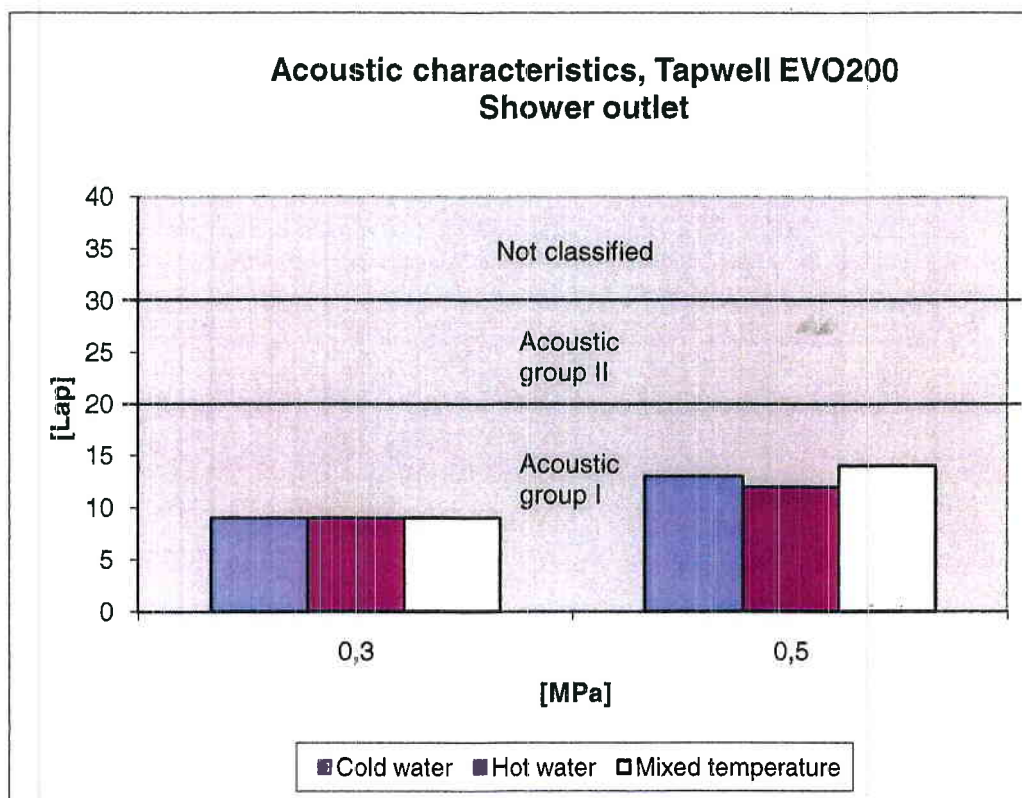
Mixer	Acoustic group			0,3 MPa			0,5 MPa		
				Cold	Hot	Mixed	Cold	Hot	Mixed
FME181	II	Fully open	L_{ap}	18	20	21	26	27	27
			I/s	0,22	0,22	0,24	0,29	0,29	0,31
		Max sound pressure	L_{ap}	18	20	21	26	27	27
			I/s	0,22	0,22	0,24	0,29	0,29	0,31
LEA878	II	Fully open	L_{ap}	23	19	26	30	27	33
			I/s	0,15	0,15	0,15	0,19	0,19	0,19
		Max sound pressure	L_{ap}	23	19	26	30	27	33
			I/s	0,15	0,15	0,15	0,19	0,19	0,19
DOM168 ¹⁾	II	Fully open	L_{ap}	24	15	26	29	17	34
			I/s	0,21	0,21	0,21	0,28	0,27	0,27
		Max sound pressure	L_{ap}	24	15	26	29	17	34
			I/s	0,21	0,21	0,21	0,28	0,27	0,27
DOM022 ¹⁾ Shower outlet	II	Fully open	L_{ap}	19	16	23	27	24	31
			I/s	0,20	0,20	0,20	0,26	0,25	0,25
		Max sound pressure	L_{ap}	19	16	23	27	24	31
			I/s	0,20	0,20	0,20	0,26	0,25	0,25
DOM022 Bath outlet	II	Fully open	L_{ap}	29	24	30	37	32	38
			I/s	0,30	0,30	0,30	0,39	0,39	0,39
		Max sound pressure	L_{ap}	29	24	30	37	32	38
			I/s	0,30	0,30	0,30	0,39	0,39	0,39

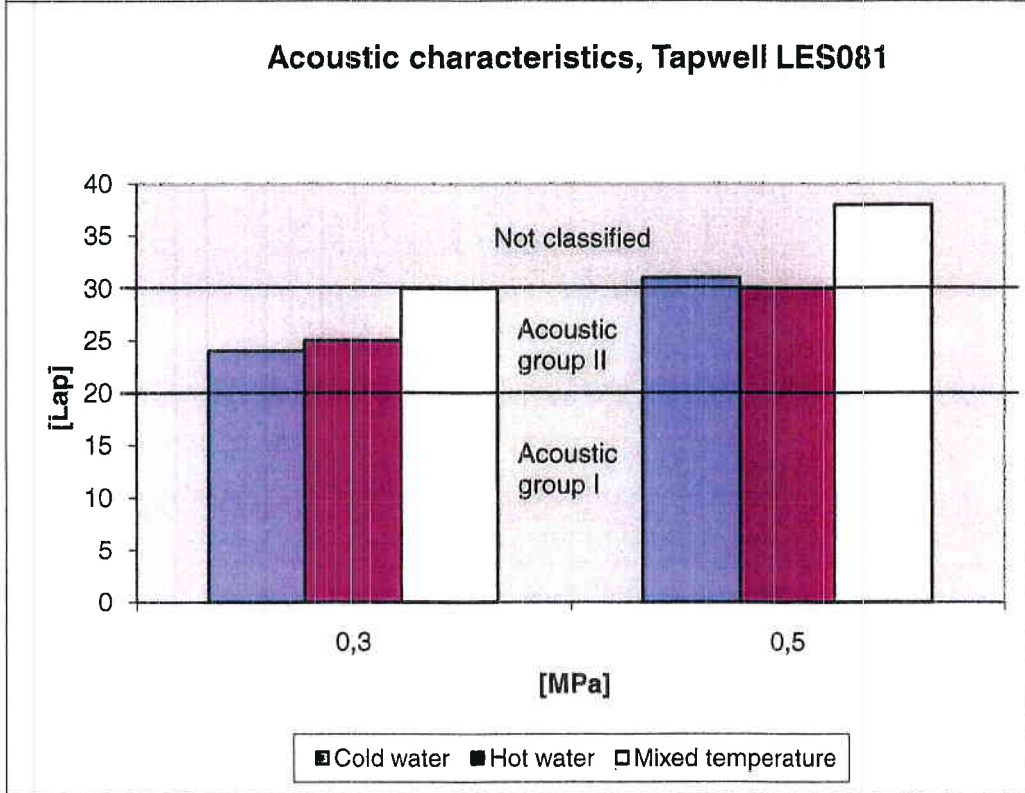
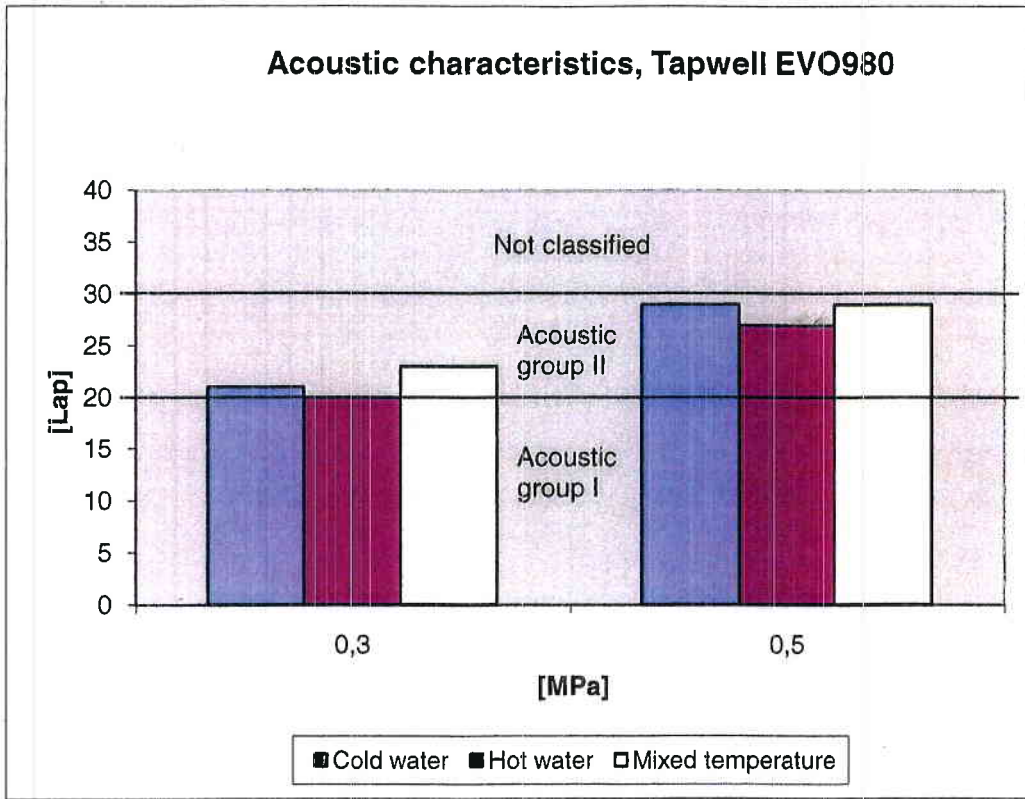
¹⁾ Hydraulic resistance Class A, in accordance with NS-EN 817, Clause 14.3.3.

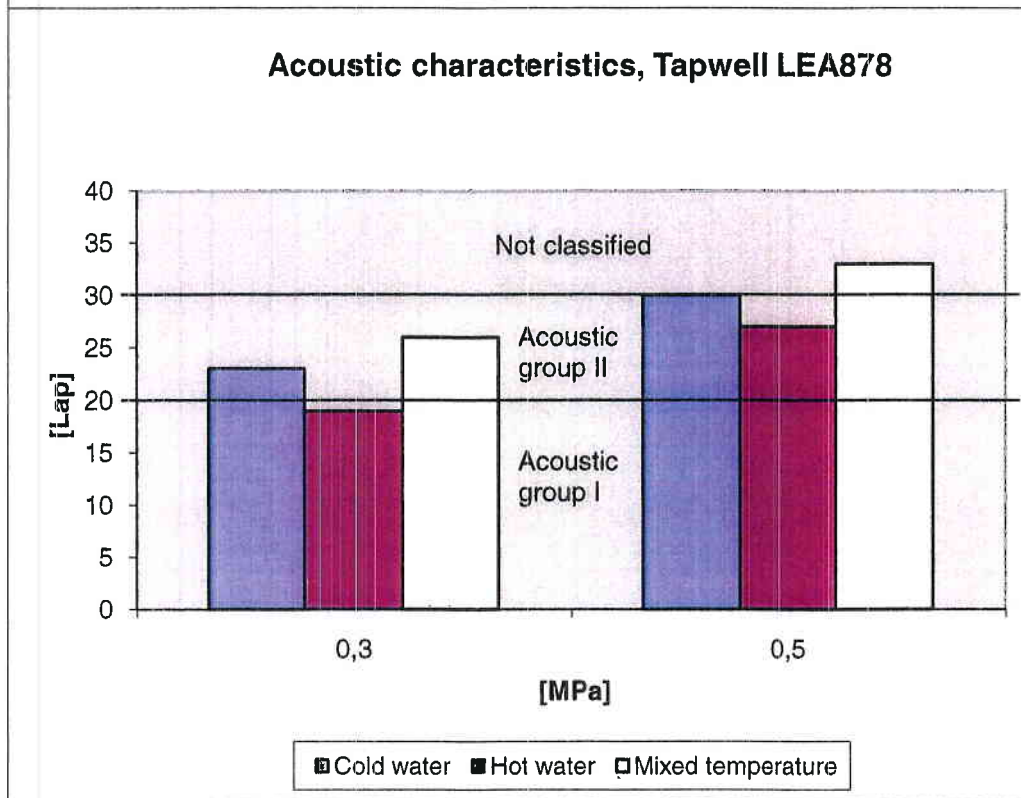
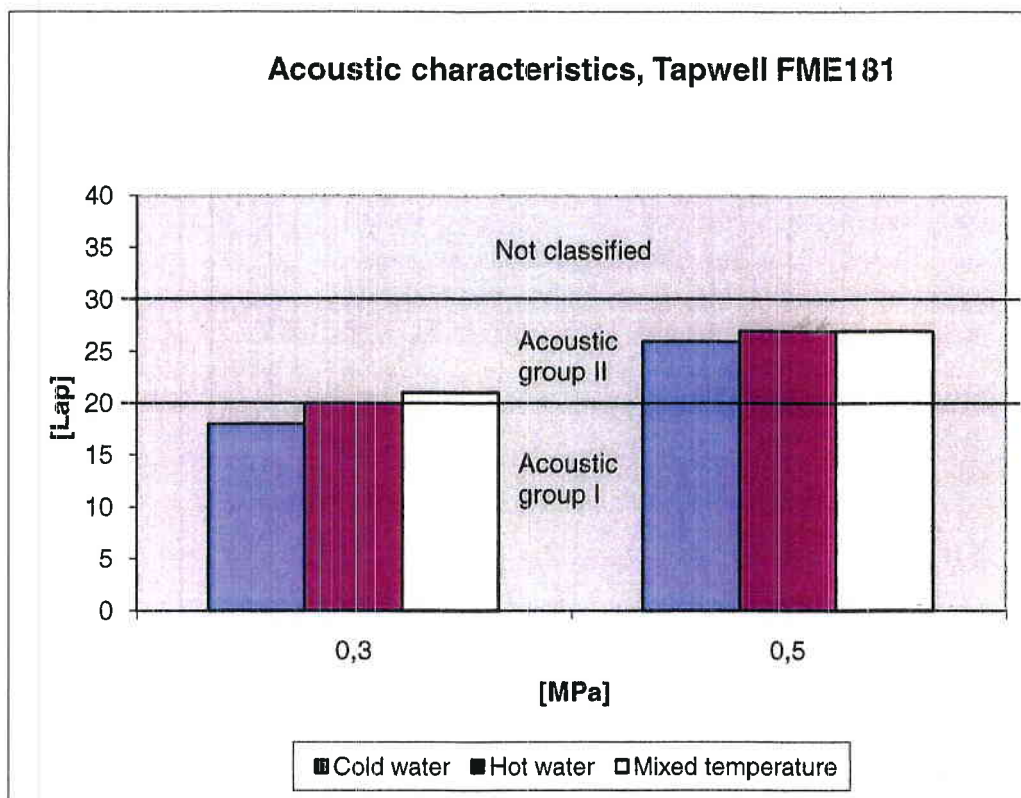


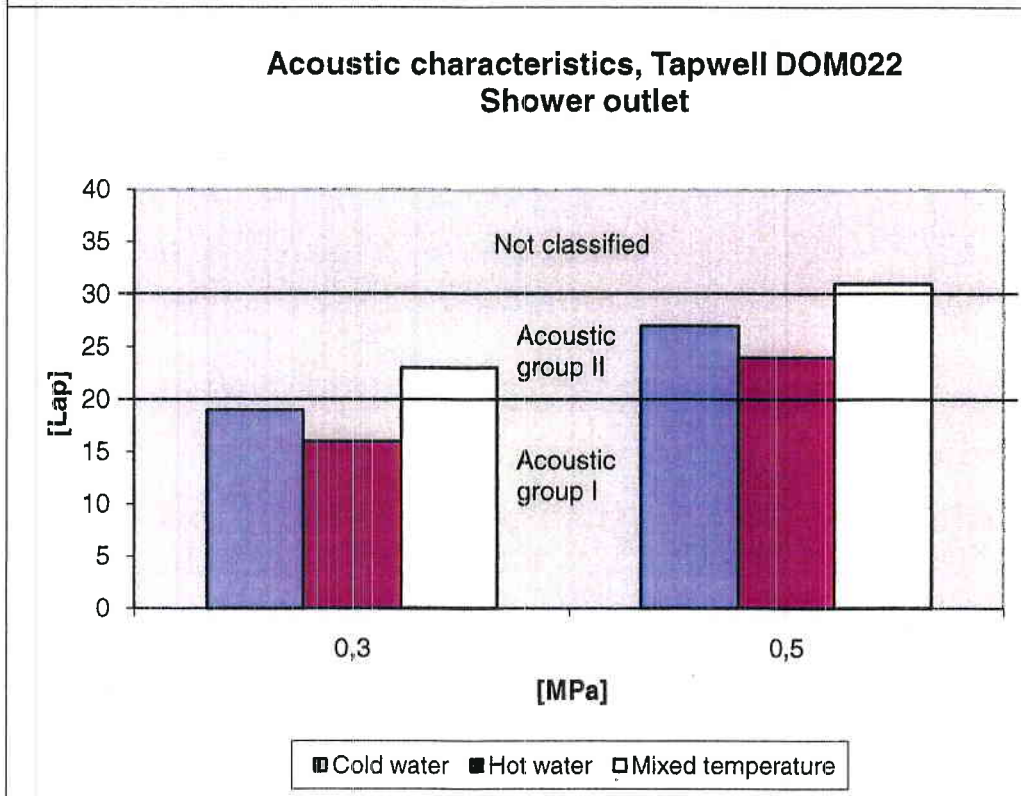
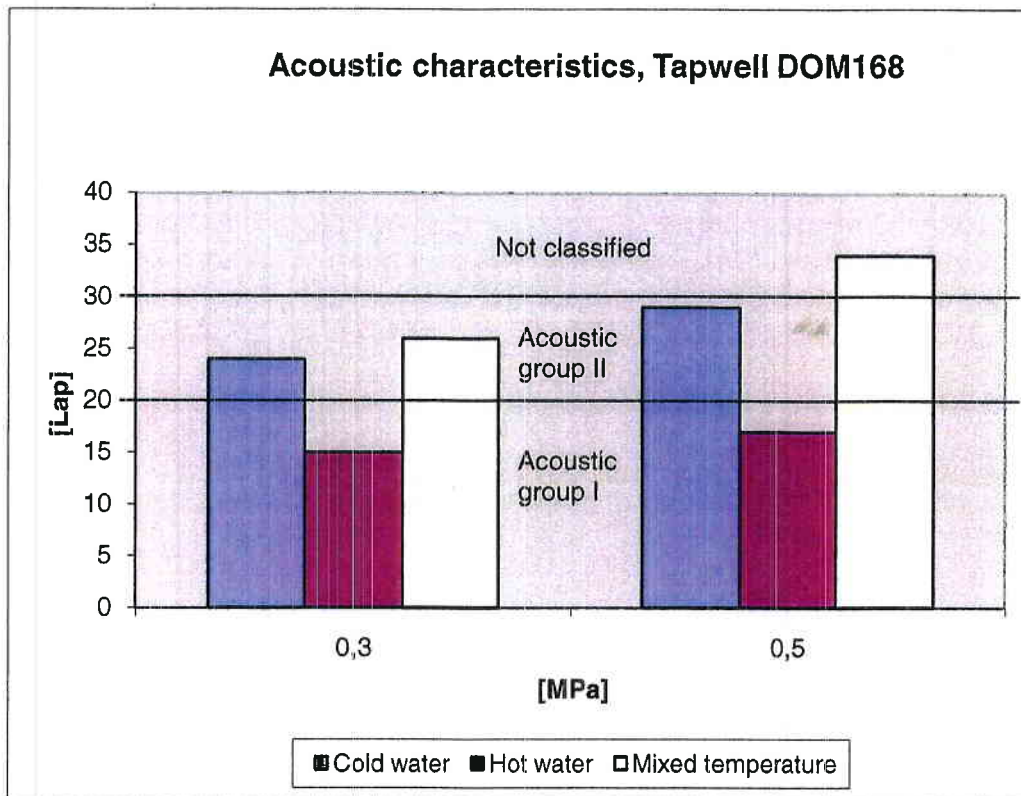


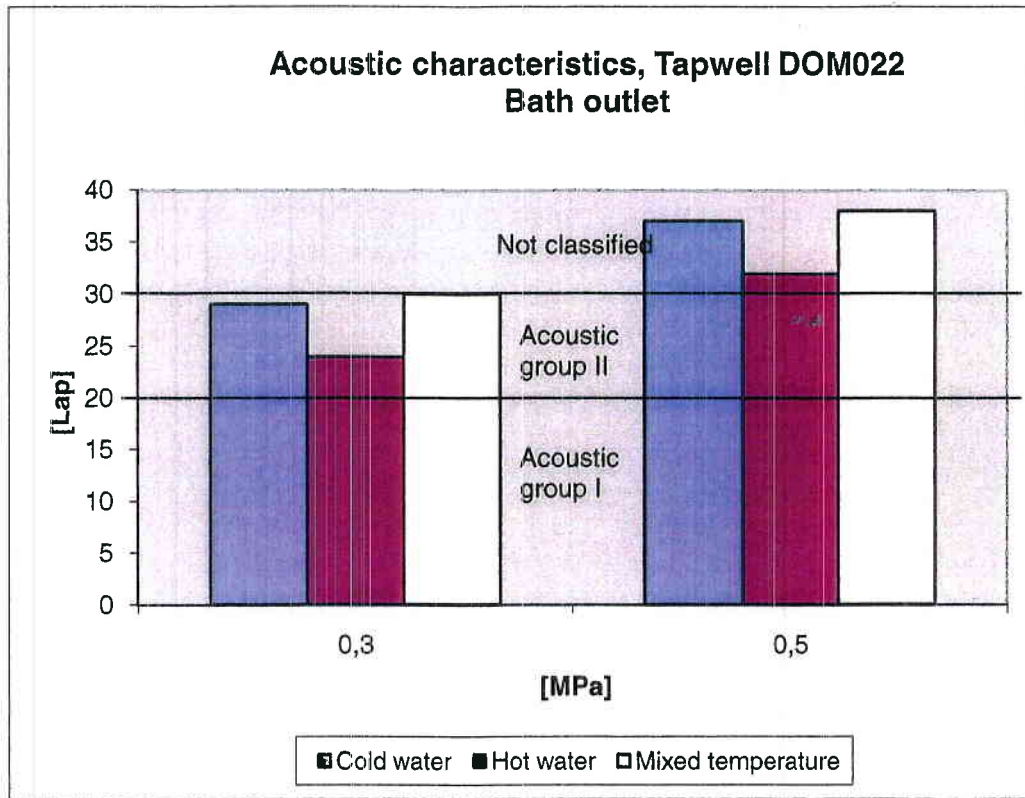












Oslo, 10.09.2010
SINTEF Building and Infrastructure

Geir Lippe Stavnes
Geir Lippe Stavnes

RAPPORT

UTLEKKING AV BLY OG KADMIMUM TIL SYNTETISK BRUKSVANN

Prosjektnr.:	O 6870 / 034	Dato utført:	12.02.04
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Prøvemethode:	Bestemmelse av bly og kadmium utlekking til syntetisk bruksvann i henhold til Norsk Standard NS 3834 / NKB 4
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Eksponeeringsforhold:	pH i løsning: 7,0	Temperatur(°C): 22,0
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Prøvenavn:	Tapwell blandebatteri
Antall prøver:	1
Utført av:	CJE
Evt.:	

Resultat:		Volum (mL)	Relativ mengde (µg/L)		Absolutt mengde (µg)	
			Cd	Pb	Cd	Pb
	Dag 9	99	8,3	85	0,82	8,4
	Dag 10	99	5,0	110	0,50	10,9

Dato:	12.02.04	Signatur:	 Christian J. Engelsen
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