A) Summary statistics for a sample : Specific surface (Blaine)

		X1, X2, ... X(p-1), Xp	X2, X3, ... X(p-1), Xp	X3, X4... X(p-1), Xp	X1, X2, ... X(p-2), X(p-1)	X1, X2, ... X(p-3), X(p-2)	Sample without outliers
Count (Sample size)	n	13	12	11	12	11	12
Minimum value	$x_{min} = x_1$	466,8	476,60	478,20	466,80	466,80	476,60
Maximum value	$x_{max} = x_p$	524,1	524,10	524,10	515,00	512,40	524,10
Range of sample R =	$x_{max} - x_{min}$	57,3	47,50	45,90	48,20	45,60	47,50
difference $L_{m95\%} - L_{M95\%}$	$\Delta L_{95\%}$	73,22					61,44
Lower confidence limitsafterelimination of outliers (for P=98%)	$L_{m98\%}$	455,64					465,57
Lower confidence limitsafterelimination of outliers (for P=95%)	$L_{m95\%}$	464,07					472,79
Lower Irwin confidence limit (for P=95%)	$x_{minIw1-5\%}$	453,83					
Lower Grubbs confidence limit (for P=99%)	$x_{minG1-1\%}$	455,33	466,71				
Lower Grubbs confidence limit (for P=95%)	$x_{minG1-5\%}$	459,32	469,84				
Average (arithmetic mean) $\bar{x}$ =	$1/p\sum(x_i)$ =	500,68	503,51	505,95	498,73	497,25	503,51
Precision of a measure of the mean (for P=95%)	$\pm \varepsilon$	10,57	11,15	11,84	11,15	11,84	9,26
Upper Grubbs confidence limit (for P=99%)	$x_{maxGp-5\%}$	542,04			537,17		
Upper Grubbs confidence limit (for P=95%)	$x_{maxGp-1\%}$	546,03			540,73		
Upper Irwin confidence limit (for P=99%)	$x_{maxIw1-5\%}$	537,77					
Upper confidence limitsafterelimination of outliers (for P=95%)	$L_{M95\%}$	537,29					534,23
Upper confidence limitsafterelimination of outliers (for P=98%)	$L_{M98\%}$	545,72					541,45
Standard deviation of a sample	$s_{x,n-1}$	16,801	13,959	11,634	15,935	15,826	13,959
Standard deviation	$s_{x,0}$	16,142	13,364	11,092	15,257	15,089	13,364
Coefficient of variation	v	3,4%	2,8%	2,3%	3,2%	3,2%	2,8%
Standard skewness	Sk_{est}	-0,929	-0,973	-1,155	-1,109	-1,058	-0,973
Standard kurtosis (exces)	γ_2	0,036	0,710	2,992	-0,112	-0,370	0,710
t-value of the Student's distribution for P=95%	$t_{(n-1),\alpha=2,5\%}$	2,179	2,201	2,228	2,201	2,228	2,201
t-value of the Student's distribution for P=98%	$t_{(n-1),\alpha=1,0\%}$	2,681	2,718	2,764	2,718	2,764	2,718

B1) Tests by Irwin for an afterelimination of outliers

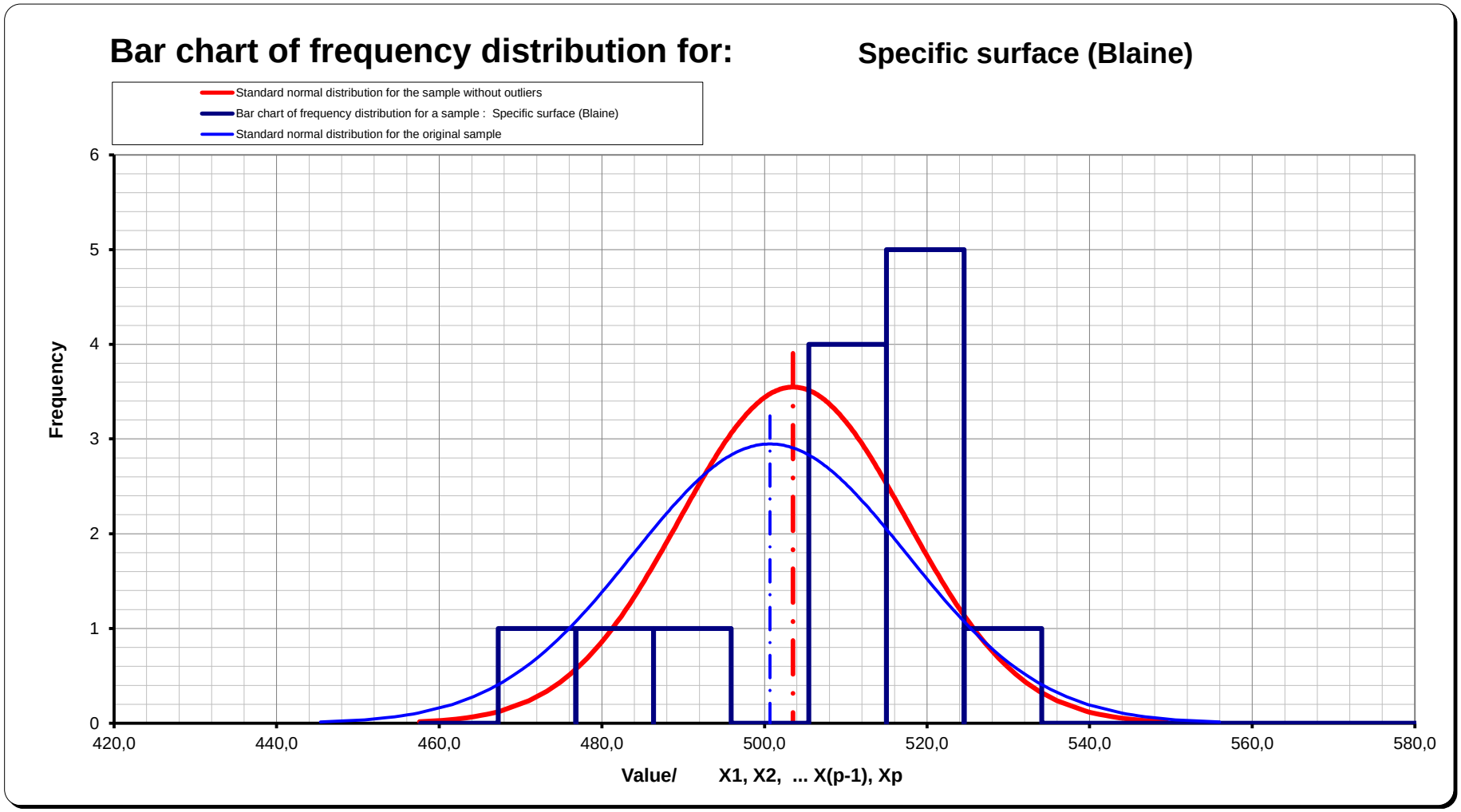
				Tests by Irwin for an afterelimination of outliers based on a level of signifiance of 5%			
Irwin critical value (for P=95%)	$\lambda_{\alpha(n)}$	1,411		1,441	1,477	1,441	1,477
	$\lambda_{calc,1,2}$	0,607		0,120	1,785	0,642	0,649
	$\lambda_{calc,n,n-1}$	0,564		0,681	0,820	0,170	0,139
Value x1 is not outlier		**1**	...	**1**	**0**	**1**	**1**
Value xp is not outlier		**1**	...	**1**	**1**	**1**	**1**

B2) Tests by Grubb for an afterelimination of outliers or biased values

Grubb_i=1	G_1	2,017		2,630	
Grubb_i=p	G_p	1,394		1,592	
Upper critical values	$G_{h,1\%}$	2,699		2,636	**Test for an afterelimination of one outlier based on a level of signifiance of 1%**
for the Grubb-test		**1**	...	**1**	..... Value x1 is not outlier
according to ISO 5725-2,		**1**	...	**1**	..... Value xp is not outlier
clause 7.3.4.1	$G_{h,5\%}$	2,462		2,412	**Test for an afterelimination of one biased value based on a level of signifiance of 5%**
		1	...	**0**	..... x1 * is the biased value
		1	...	**1**	..... Value xp is not biased
Grubb_i=1,2	$G_{1,2}$	0,472		0,472	
Grubb_i=p,p-1	$G_{p,p-1}$	0,874		0,874	
Lower critical values	$G_{d,1\%}$	0,202		0,174	**Test for an afterelimination of two outliers based on a level of signifiance of 5%**
for the Grubb-test		**1**	...	**1**	..... Values x1, x2 are not outliers
according to ISO 5725-2,		**1**	...	**1**	..... Values xp, xp-1 are not biased values
clause 7.3.4.2	$G_{d,5\%}$	0,284		0,254	**Test for an afterelimination of two biased values based on a level of signifiance of 5%**
		1	...	**1**	..... Values x1, x2 are not outliers
		1	...	**1**	..... Values xp, xp-1 are not biased values

B3) Tests by Dixon for an afterelimination of outliers or biased values

				Test for an afterelimination of one biased value based on a level of signifiance of 5%			
Dixon_i=1, ... (x_2-x_1)	Q_1	0,171		0,034	0,431	0,203	0,215
Dixon_i=p, ...$(x_p-x_{(p-1)})$	Q_p	0,159		0,192	0,198	0,054	0,046
Upper critical values	$Q_{v,\alpha,5\%}$	0,361		0,376	0,392	0,376	0,392
Value x1 is not biased		**1**	...	**1**	**0**	**1**	**1**
Value xp is not biased		**1**	...	**1**	**1**	**1**	**1**


Bar chart of frequency distribution for:
Specific surface (Blaine)
Standard normal distribution for the sample without outliers
Bar chart of frequency distribution for a sample : Specific surface (Blaine)
Standard normal distribution for the original sample
Frequency
0
1
2
3
4
5
6
420,0
440,0
460,0
480,0
500,0
520,0
540,0
560,0
580,0
Value/ X1, X2, ... X(p-1), Xp

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A) Summary statistics for a sample :

Specific gravity

		X1, X2, ... X(p-1), Xp	X2, X3, ... X(p-1), Xp	X3, X4... X(p-1), Xp	X1, X2, ... X(p-2), X(p-1)	X1, X2, ... X(p-3), X(p-2)	Sample without outliers
Count (Sample size)	n	14	13	12	13	10	14
Minimum value	$x_{min} = x_1$	2,87	2,88	2,91	2,87	2,87	2,87
Maximum value	$x_{max} = x_p$	3,05	3,05	3,05	3,03	3,02	3,05
Range of sample R =	$x_{max} - x_{min}$	0,18	0,17	0,14	0,16	0,15	0,18
difference $L_{m95\%} - L_{M95\%}$	$\Delta L_{95\%}$	0,258					0,258
Lower confidence limitsafterelimination of outliers (for P=98%)	$L_{m98\%}$	2,823					2,823
Lower confidence limitsafterelimination of outliers (for P=95%)	$L_{m95\%}$	2,852					2,852
Lower Irwin confidence limit (for P=95%)	$x_{minIw1-5\%}$	2,801					
Lower Grubbs confidence limit (for P=99%)	$x_{minG1-1\%}$	2,817	2,849				
Lower Grubbs confidence limit (for P=95%)	$x_{minG1-5\%}$	2,832	2,861				
Average (arithmetic mean) $\overline{x}$ =	$1/p\sum(x_i)$ =	2,981	2,990	2,999	2,976	2,960	2,981
Precision of a measure of the mean (for P=95%)	$\pm \varepsilon$	0,036	0,037	0,040	0,037	0,045	0,036
Upper Grubbs confidence limit (for P=99%)	$x_{maxGp-5\%}$	3,13			3,12		
Upper Grubbs confidence limit (for P=95%)	$x_{maxGp-1\%}$	3,145			3,134		
Upper Irwin confidence limit (for P=99%)	$x_{maxIw1-5\%}$	3,109					
Upper confidence limitsafterelimination of outliers (for P=95%)	$L_{M95\%}$	3,110					3,11
Upper confidence limitsafterelimination of outliers (for P=98%)	$L_{M98\%}$	3,139					3,139
Standard deviation of a sample	$s_{x,n-1}$	0,0596	0,0523	0,0423	0,0585	0,0575	0,0596
Standard deviation	$s_{x,0}$	0,0574	0,0502	0,0405	0,0562	0,0546	0,0574
Coefficient of variation	v	2,0%	1,7%	1,4%	2,0%	1,9%	2,0%
Standard skewness	Sk_{est}	-0,910	-1,112	-1,201	-0,892	-0,582	-0,910
Standard kurtosis (exces)	γ_2	-0,585	0,175	0,708	-0,774	-1,468	-0,585
t-value of the Student's distribution for P=95%	$t_{(n-1),\alpha=2,5\%}$	2,160	2,179	2,201	2,179	2,262	2,160
t-value of the Student's distribution for P=98%	$t_{(n-1),\alpha=1,0\%}$	2,650	2,681	2,718	2,681	2,821	2,650

B1) Tests by Irwin for an afterelimination of outliers

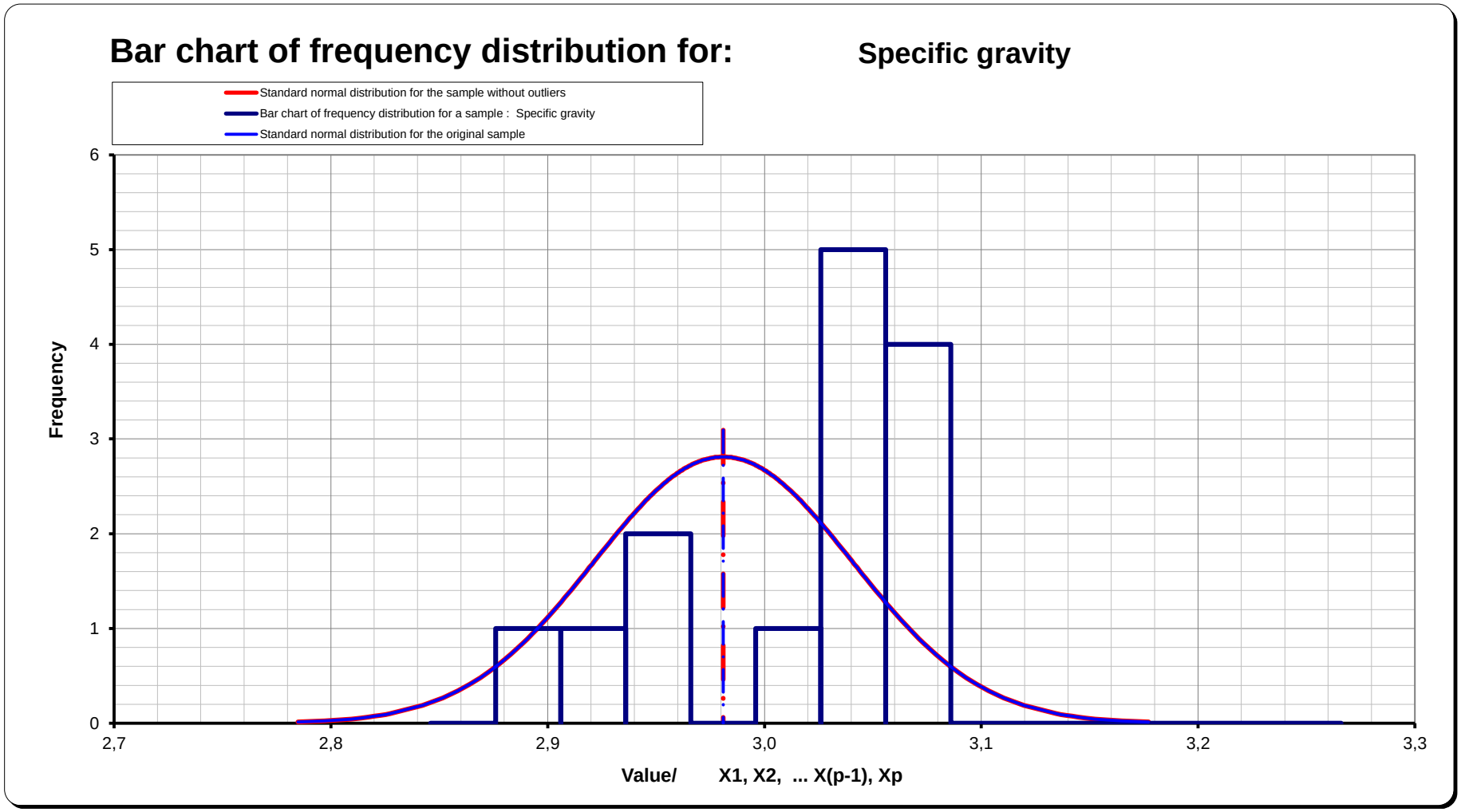
				Tests by Irwin for an afterelimination of outliers based on a level of significance of 5%			
Irwin critical value (for P=95%)	$\lambda_{\alpha(n)}$	1,383		1,411	1,441	1,411	1,518
	$\lambda_{calc,1,2}$	0,174		0,598	0,494	0,178	0,183
	$\lambda_{calc,n,n-1}$	0,348		0,398	0,494	0,000	0,183
Value x1 is not outlier		**1**	...	**1**	**1**	**1**	**1**
Value xp is not outlier		**1**	...	**1**	**1**	**1**	**1**

B2) Tests by Grubb for an afterelimination of outliers or biased values

Grubb_i=1	G_1	1,862		2,294	
Grubb_i=p	G_p	1,158		1,265	
Upper critical values	$G_{h,1\%}$	2,755		2,699	**Test for an afterelimination of one outlier based on a level of significance of 1%**
for the Grubb-test		**1**	...	**1**	..... Value x1 is not outlier
according to ISO 5725-2,		**1**	...	**1**	..... Value xp is not outlier
clause 7.3.4.1	$G_{h,5\%}$	2,507		2,462	**Test for an afterelimination of one biased value based on a level of significance of 5%**
		1	...	**1**	..... Value x1 is not biased
		1	...	**1**	..... Value xp is not biased
Grubb_i=1,2	$G_{1,2}$	0,498		0,498	
Grubb_i=p,p-1	$G_{p,p-1}$	0,905		0,905	
Lower critical values	$G_{d,1\%}$	0,228		0,202	**Test for an afterelimination of two outliers based on a level of significance of 5%**
for the Grubb-test		**1**	...	**1**	..... Values x1, x2 are not outliers
according to ISO 5725-2,		**1**	...	**1**	..... Values xp, xp-1 are not biased values
clause 7.3.4.2	$G_{d,5\%}$	0,311		0,284	**Test for an afterelimination of two biased values based on a level of significance of 5%**
		1	...	**1**	..... Values x1, x2 are not outliers
		1	...	**1**	..... Values xp, xp-1 are not biased values

B3) Tests by Dixon for an afterelimination of outliers or biased values

				Test for an afterelimination of one biased value based on a level of significance of 5%			
Dixon_i=1, ... (x_2-x_1)	Q_1	0,056		0,176	0,143	0,062	0,067
Dixon_i=p, ...$(x_p-x_{(p-1)})$	Q_p	0,111		0,118	0,143	0,000	0,067
Upper critical values	$Q_{v,\alpha,5\%}$	0,349		0,361	0,376	0,361	0,412
Value x1 is not biased		**1**	...	**1**	**1**	**1**	**1**
Value xp is not biased		**1**	...	**1**	**1**	**1**	**1**


Bar chart of frequency distribution for: Specific gravity
Standard normal distribution for the sample without outliers
Bar chart of frequency distribution for a sample : Specific gravity
Standard normal distribution for the original sample
Frequency
0
1
2
3
4
5
6
2,7
2,8
2,9
3,0
3,1
3,2
3,3
Value/ X1, X2, ... X(p-1), Xp

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A) Summary statistics for a sample :

Initial setting time

		X1, X2, ... X(p-1), Xp	X2, X3, ... X(p-1), Xp	X3, X4... X(p-1), Xp	X1, X2, ... X(p-2), X(p-1)	X1, X2, ... X(p-3), X(p-2)	Sample without outliers
Count (Sample size)	n	16	14	13	15	14	16
Minimum value	$x_{min} = x_1$	180	186,00	187,00	180,00	180,00	180,00
Maximum value	$x_{max} = x_p$	248	248,00	248,00	243,00	236,00	248,00
Range of sample R =	$x_{max} - x_{min}$	68	62,00	61,00	63,00	56,00	68,00
difference $L_{m95\%} - L_{M95\%}$	$\Delta L_{95\%}$	93,2					93,2
Lower confidence limitsafterelimination of outliers (for P=98%)	$L_{m98\%}$	157,5					157,5
Lower confidence limitsafterelimination of outliers (for P=95%)	$L_{m95\%}$	167,7					167,7
Lower Irwin confidence limit (for P=95%)	$x_{minIw1-5\%}$	157,7					
Lower Grubbs confidence limit (for P=99%)	$x_{minG1-1\%}$	152	168				
Lower Grubbs confidence limit (for P=95%)	$x_{minG1-5\%}$	157,8	172,6				
Average (arithmetic mean) $\bar{x}$ =	$1/p\sum(x_i)$ =	214,3	219,1	221,7	212,0	209,8	214,3
Precision of a measure of the mean (for P=95%)	± ε	12,0	13,1	13,7	12,5	13,1	12,0
Upper Grubbs confidence limit (for P=99%)	$x_{maxGp-5\%}$	270,8			263,6		
Upper Grubbs confidence limit (for P=95%)	$x_{maxGp-1\%}$	276,6			268,8		
Upper Irwin confidence limit (for P=99%)	$x_{maxIw1-5\%}$	271,3					
Upper confidence limitsafterelimination of outliers (for P=95%)	$L_{M95\%}$	260,9					260,9
Upper confidence limitsafterelimination of outliers (for P=98%)	$L_{M98\%}$	271,1					271,1
Standard deviation of a sample	$s_{x,n-1}$	21,84	18,55	16,56	20,6	19,44	21,84
Standard deviation	$s_{x,0}$	21,15	17,88	15,92	19,9	18,73	21,15
Coefficient of variation	v	10,2%	8,5%	7,5%	9,7%	9,3%	10,2%
Standard skewness	Sk_{est}	-0,350	-0,489	-0,516	-0,434	-0,525	-0,350
Standard kurtosis (exces)	γ_2	-0,945	-0,131	0,652	-1,071	-1,292	-0,945
t-value of the Student's distribution for P=95%	$t_{(n-1),\alpha=2,5\%}$	2,132	2,160	2,179	2,145	2,160	2,132
t-value of the Student's distribution for P=98%	$t_{(n-1),\alpha=1,0\%}$	2,603	2,650	2,681	2,625	2,650	2,603

B1) Tests by Irwin for an afterelimination of outliers

Tests by Irwin for an afterelimination of outliers based on a level of signifiance of 5%

Irwin critical value (for P=95%)	$\lambda_{\alpha(n)}$	1,338	1,383	1,411	1,359	1,383
	$\lambda_{calc,1,2}$	0,000	0,056	0,691	0,000	0,000
	$\lambda_{calc,n,n-1}$	0,236	0,280	0,314	0,352	0,267
Value x1 is not outlier		**1** ...	**1**	**1**	**1**	**1**
Value xp is not outlier		**1** ...	**1**	**1**	**1**	**1**

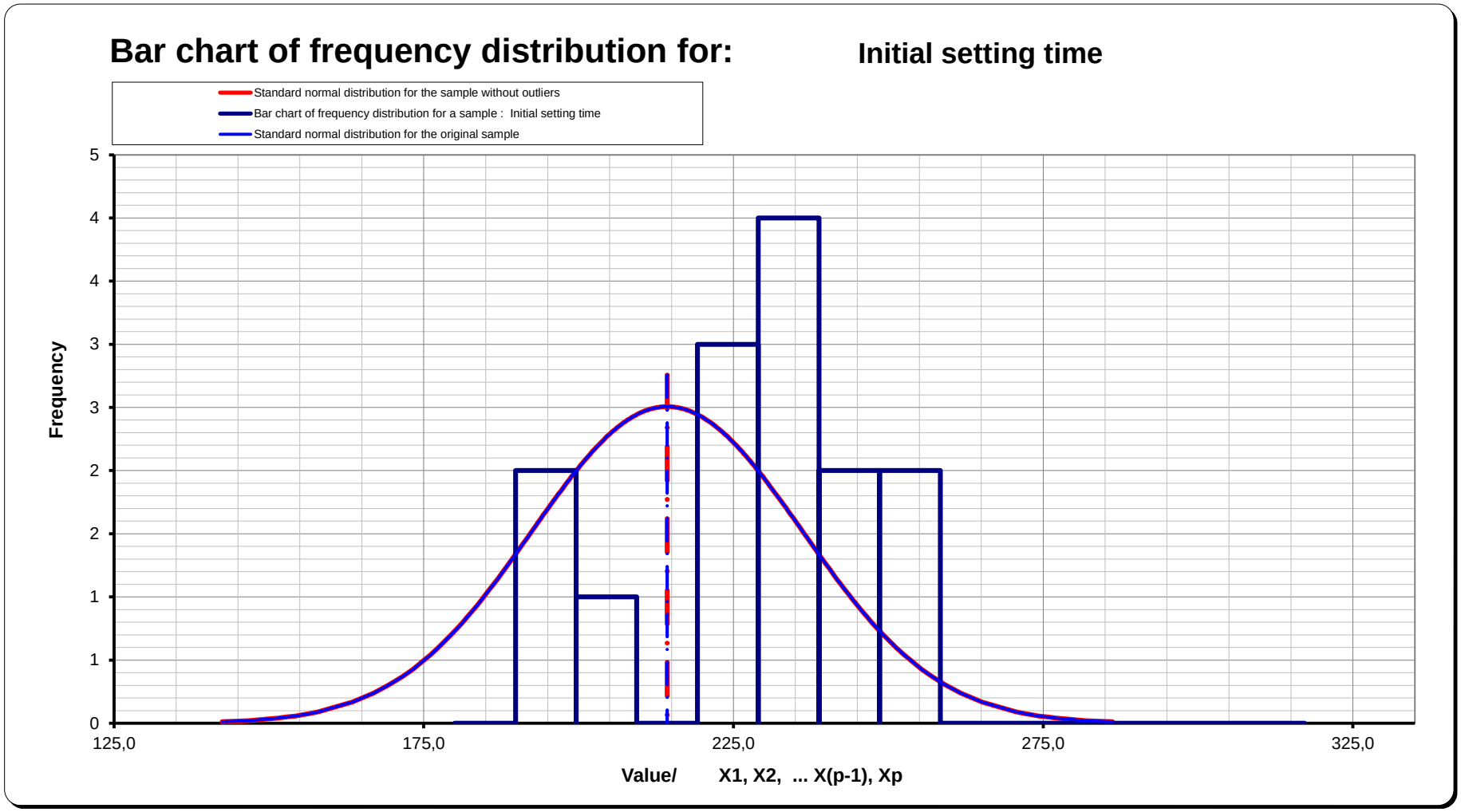
B2) Tests by Grubb for an afterelimination of outliers or biased values

Grubb_i=1	G_1	1,571	2,108	
Grubb_i=p	G_p	1,543	1,748	
Upper critical values	$G_{h,1\%}$	2,852	2,755	**Test for an afterelimination of one outlier based on a level of signifiance of 1%**
for the Grubb-test		**1** ...	**1**	Value x1 is not outlier
according to ISO 5725-2,		**1** ...	**1**	Value xp is not outlier
clause 7.3.4.1	$G_{h,5\%}$	2,585	2,507	**Test for an afterelimination of one biased value based on a level of signifiance of 5%**
		1 ...	**1**	Value x1 is not biased
		1 ...	**1**	Value xp is not biased
Grubb_i=1,2	$G_{1,2}$	0,570	0,570	
Grubb_i=p,p-1	$G_{p,p-1}$	0,780	0,780	
Lower critical values	$G_{d,1\%}$	0,277	0,228	**Test for an afterelimination of two outliers based on a level of signifiance of 5%**
for the Grubb-test		**1** ...	**1**	Values x1, x2 are not outliers
according to ISO 5725-2,		**1** ...	**1**	Values xp, xp-1 are not biased values
clause 7.3.4.2	$G_{d,5\%}$	0,360	0,311	**Test for an afterelimination of two biased values based on a level of signifiance of 5%**
		1 ...	**1**	Values x1, x2 are not outliers
		1 ...	**1**	Values xp, xp-1 are not biased values

B3) Tests by Dixon for an afterelimination of outliers or biased values

Test for an afterelimination of one biased value based on a level of signifiance of 5%

Dixon_i=1, ... (x_2-x_1)	Q_1	0,000	0,016	0,180	0,000	0,000
Dixon_i=p, ...$(x_p-x_{(p-1)})$	Q_p	0,074	0,081	0,082	0,111	0,089
Upper critical values	$Q_{v,\alpha,5\%}$	0,329	0,349	0,361	0,338	0,349
Value x1 is not biased		**1** ...	**1**	**1**	**1**	**1**
Value xp is not biased		**1** ...	**1**	**1**	**1**	**1**


Bar chart of frequency distribution for: Initial setting time
Standard normal distribution for the sample without outliers
Bar chart of frequency distribution for a sample : Initial setting time
Standard normal distribution for the original sample
Frequency
0
1
1
2
2
3
3
4
4
5
125,0
175,0
225,0
275,0
325,0
Value/ X1, X2, ... X(p-1), Xp

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A) Summary statistics for a sample : Final setting time

		X1, X2, ... X(p-1), Xp	X2, X3, ... X(p-1), Xp	X3, X4... X(p-1), Xp	X1, X2, ... X(p-2), X(p-1)	X1, X2, ... X(p-3), X(p-2)	Sample without outliers
Count (Sample size)	n	16	15	14	15	14	15
Minimum value	$x_{min} = x_1$	250	265,00	275,00	250,00	250,00	250,00
Maximum value	$x_{max} = x_p$	423	423,00	423,00	312,00	300,00	312,00
Range of sample R =	$x_{max} - x_{min}$	173	158,00	148,00	62,00	50,00	62,00
difference $L_{m95\%} - L_{M95\%}$	$\Delta L_{95\%}$	160,4					67,2
Lower confidence limitsafterelimination of outliers (for P=98%)	$L_{m98\%}$	195,9					244
Lower confidence limitsafterelimination of outliers (for P=95%)	$L_{m95\%}$	213,6					251,6
Lower Irwin confidence limit (for P=95%)	$x_{minIw1-5\%}$	216,3					
Lower Grubbs confidence limit (for P=99%)	$x_{minG1-1\%}$	186,5	192,8				
Lower Grubbs confidence limit (for P=95%)	$x_{minG1-5\%}$	196,5	213,4				
Average (arithmetic mean) $\overline{x}$ =	$1/p\sum(x_i)$ =	293,8	296,7	299,0	285,2	283,3	285,2
Precision of a measure of the mean (for P=95%)	$\pm \varepsilon$	20,7	21,6	22,5	21,6	22,5	9,0
Upper Grubbs confidence limit (for P=99%)	$x_{maxGp-5\%}$	391,1			320,5		
Upper Grubbs confidence limit (for P=95%)	$x_{maxGp-1\%}$	401,1			329,2		
Upper Irwin confidence limit (for P=99%)	$x_{maxIw1-5\%}$	360,7					
Upper confidence limitsafterelimination of outliers (for P=95%)	$L_{M95\%}$	374,0					318,8
Upper confidence limitsafterelimination of outliers (for P=98%)	$L_{M98\%}$	391,7					326,4
Standard deviation of a sample	$s_{x,n-1}$	37,63	37,03	37,33	15,68	14,34	15,68
Standard deviation	$s_{x,0}$	36,44	35,77	35,97	15,15	13,82	15,15
Coefficient of variation	v	12,8%	12,5%	12,5%	5,5%	5,1%	5,5%
Standard skewness	Sk_{est}	2,904	3,160	3,201	-0,555	-0,906	-0,555
Standard kurtosis (exces)	γ_2	10,368	11,192	11,128	0,525	0,676	0,525
t-value of the Student's distribution for P=95%	$t_{(n-1),\alpha=2,5\%}$	2,132	2,145	2,160	2,145	2,160	2,145
t-value of the Student's distribution for P=98%	$t_{(n-1),\alpha=1,0\%}$	2,603	2,625	2,650	2,625	2,650	2,625

B1) Tests by Irwin for an afterelimination of outliers

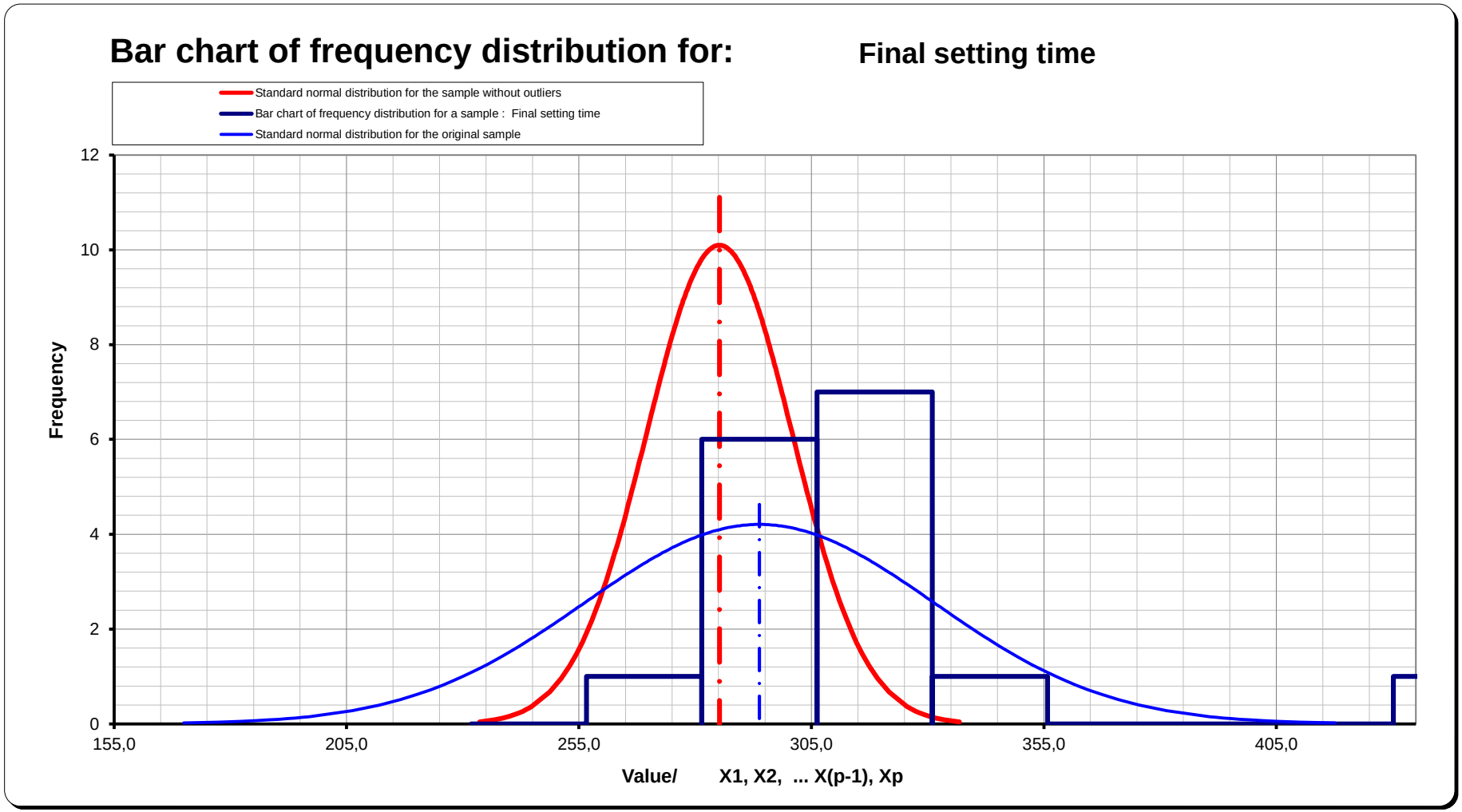
				Tests by Irwin for an afterelimination of outliers based on a level of signifiance of 5%			
Irwin critical value (for P=95%)	$\lambda_{\alpha(n)}$	1,338		1,359	1,383	1,359	1,383
	$\lambda_{calc,1,2}$	0,412		0,280	0,056	0,990	1,085
	$\lambda_{calc,n,n-1}$	3,046		3,103	3,086	0,792	0,000
Value x1 is not outlier		**1**	...	**1**	**1**	**1**	**1**
*xp ** is an outlier*		**0**	...	**0**	**0**	**1**	**1**

B2) Tests by Grubb for an afterelimination of outliers or biased values

Grubb_i=1	G_1	1,164		1,261	
Grubb_i=p	G_p	3,433		8,788	
Upper critical values	$G_{h,1\%}$	**2,852**		**2,806**	**Test for an afterelimination of one outlier based on a level of signifiance of 1%**
for the Grubb-test		**1**	...	**1**	..... Value x1 is not outlier
according to ISO 5725-2,		**0**	...	**0**	..... xp ** is the outlier
clause 7.3.4.1	$G_{h,5\%}$	2,585		2,249	**Test for an afterelimination of one biased value based on a level of signifiance of 5%**
		1	...	**1**	..... Value x1 is not biased
		0	...	**0**	..... xp * is the biased value
Grubb_i=1,2	$G_{1,2}$	0,970		0,970	
Grubb_i=p,p-1	$G_{p,p-1}$	0,140		0,140	
Lower critical values	$G_{d,1\%}$	0,277		0,253	**Test for an afterelimination of two outliers based on a level of signifiance of 5%**
for the Grubb-test		**1**	...	**1**	..... Values x1, x2 are not outliers
according to ISO 5725-2,		**0**	...	**0**	..... xp *, xp-1 * are biased values
clause 7.3.4.2	$G_{d,5\%}$	0,360		0,337	**Test for an afterelimination of two biased values based on a level of signifiance of 5%**
		1	...	**1**	..... Values x1, x2 are not outliers
		0	...	**0**	..... xp *, xp-1 * are biased values

B3) Tests by Dixon for an afterelimination of outliers or biased values

				Test for an afterelimination of one biased value based on a level of signifiance of 5%			
Dixon_i=1, ... (x_2-x_1)	Q_1	0,087		0,063	0,014	0,242	0,300
Dixon_i=p, ...$(x_p-x_{(p-1)})$	Q_p	0,642		0,703	0,750	0,194	0,000
Upper critical values	$Q_{v,\alpha,5\%}$	**0,329**		**0,338**	**0,349**	**0,338**	**0,349**
Value x1 is not biased		**1**	...	**1**	**1**	**1**	**1**
*xp * is the biased value*		**0**	...	**0**	**0**	**1**	**1**


Bar chart of frequency distribution for: Final setting time
Standard normal distribution for the sample without outliers
Bar chart of frequency distribution for a sample : Final setting time
Standard normal distribution for the original sample
Frequency
0
2
4
6
8
10
12
155,0
205,0
255,0
305,0
355,0
405,0
Value/ X1, X2, ... X(p-1), Xp

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A) Summary statistics for a sample : Water content

		X1, X2, ... X(p-1), Xp	X2, X3, ... X(p-1), Xp	X3, X4... X(p-1), Xp	X1, X2, ... X(p-2), X(p-1)	X1, X2, ... X(p-3), X(p-2)	Sample without outliers
Count (Sample size)	n	16	14	13	15	14	16
Minimum value	$x_{min} = x_1$	26,9	27,20	27,40	26,90	26,90	26,90
Maximum value	$x_{max} = x_p$	29	29,00	29,00	28,80	28,75	29,00
Range of sample R =	$x_{max} - x_{min}$	2,1	1,80	1,60	1,90	1,85	2,10
difference $L_{m95\%} - L_{M95\%}$	$\Delta L_{95\%}$	2,938					2,938
Lower confidence limitsafterelimination of outliers (for P=98%)	$L_{m98\%}$	26,09					26,093
Lower confidence limitsafterelimination of outliers (for P=95%)	$L_{m95\%}$	26,42					26,417
Lower Irwin confidence limit (for P=95%)	$x_{minIw1-5\%}$	26,308					
Lower Grubbs confidence limit (for P=99%)	$x_{minG1-1\%}$	25,921	26,336				
Lower Grubbs confidence limit (for P=95%)	$x_{minG1-5\%}$	26,105	26,488				
Average (arithmetic mean) $\overline{x}$ =	$1/p\sum(x_i)$ =	27,886	28,027	28,091	27,812	27,741	27,886
Precision of a measure of the mean (for P=95%)	$\pm \varepsilon$	0,38	0,41	0,43	0,40	0,41	0,38
Upper Grubbs confidence limit (for P=99%)	$x_{maxGp-5\%}$	29,667			29,426		
Upper Grubbs confidence limit (for P=95%)	$x_{maxGp-1\%}$	29,851			29,585		
Upper Irwin confidence limit (for P=99%)	$x_{maxIw1-5\%}$	29,692					
Upper confidence limitsafterelimination of outliers (for P=95%)	$L_{M95\%}$	29,36					29,355
Upper confidence limitsafterelimination of outliers (for P=98%)	$L_{M98\%}$	29,68					29,679
Standard deviation of a sample	$s_{x,n-1}$	0,689	0,614	0,589	0,644	0,605	0,689
Standard deviation	$s_{x,0}$	0,6672	0,5916	0,5659	0,6218	0,5828	0,6672
Coefficient of variation	v	2,5%	2,2%	2,1%	2,3%	2,2%	2,5%
Standard skewness	Sk_{est}	0,190	0,242	0,189	0,226	0,316	0,190
Standard kurtosis (exces)	γ_2	-1,320	-1,624	-1,745	-1,276	-1,079	-1,320
t-value of the Student's distribution for P=95%	$t_{(n-1),\alpha=2,5\%}$	2,132	2,160	2,179	2,145	2,160	2,132
t-value of the Student's distribution for P=98%	$t_{(n-1),\alpha=1,0\%}$	2,603	2,650	2,681	2,625	2,650	2,603

B1) Tests by Irwin for an afterelimination of outliers

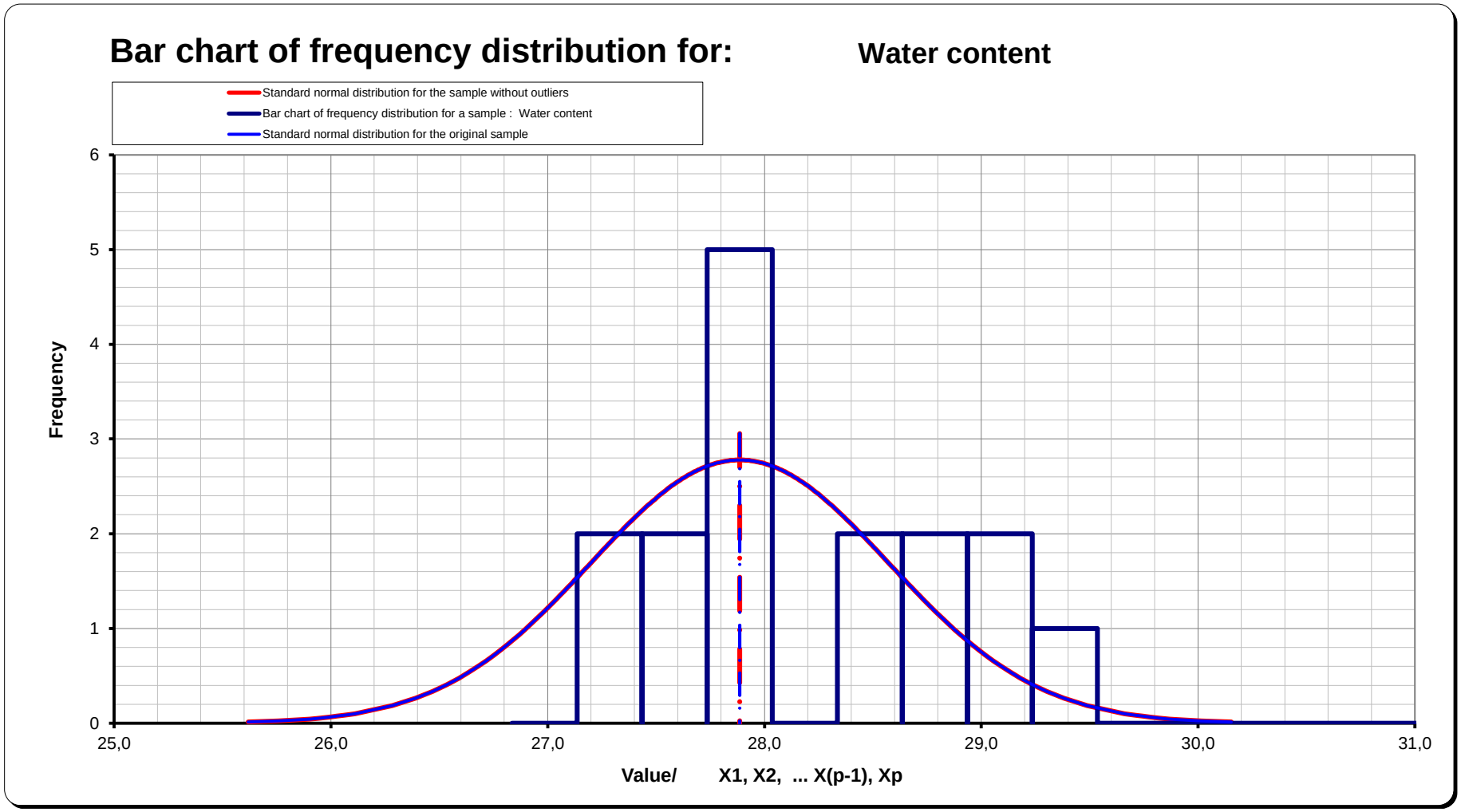
				Tests by Irwin for an afterelimination of outliers based on a level of significance of 5%			
Irwin critical value (for P=95%)	$\lambda_{\alpha(n)}$	1,338		1,383	1,411	1,359	1,383
	$\lambda_{calc,1,2}$	0,000		0,338	0,141	0,000	0,000
	$\lambda_{calc,n,n-1}$	0,300		0,338	0,353	0,080	0,343
Value x1 is not outlier		**1**	...	**1**	**1**	**1**	**1**
Value xp is not outlier		**1**	...	**1**	**1**	**1**	**1**

B2) Tests by Grubb for an afterelimination of outliers or biased values

Grubb_i=1	G_1	1,431		1,836	
Grubb_i=p	G_p	1,617		1,846	
Upper critical values	$G_{h,1\%}$	2,852		2,755	**Test for an afterelimination of one outlier based on a level of significance of 1%**
for the Grubb-test		**1**	...	**1**	..... Value x1 is not outlier
according to ISO 5725-2,		**1**	...	**1**	..... Value xp is not outlier
clause 7.3.4.1	$G_{h,5\%}$	2,585		2,507	**Test for an afterelimination of one biased value based on a level of significance of 5%**
		1	...	**1**	..... Value x1 is not biased
		1	...	**1**	..... Value xp is not biased
Grubb_i=1,2	$G_{1,2}$	0,719		0,719	
Grubb_i=p,p-1	$G_{p,p-1}$	0,763		0,763	
Lower critical values	$G_{d,1\%}$	0,277		0,228	**Test for an afterelimination of two outliers based on a level of significance of 5%**
for the Grubb-test		**1**	...	**1**	..... Values x1, x2 are not outliers
according to ISO 5725-2,		**1**	...	**1**	..... Values xp, xp-1 are not biased values
clause 7.3.4.2	$G_{d,5\%}$	0,360		0,311	**Test for an afterelimination of two biased values based on a level of significance of 5%**
		1	...	**1**	..... Values x1, x2 are not outliers
		1	...	**1**	..... Values xp, xp-1 are not biased values

B3) Tests by Dixon for an afterelimination of outliers or biased values

				Test for an afterelimination of one biased value based on a level of significance of 5%			
Dixon_i=1, ... (x_2-x_1)	Q_1	0,000		0,111	0,050	0,000	0,000
Dixon_i=p, ...$(x_p-x_{(p-1)})$	Q_p	0,095		0,111	0,125	0,026	0,108
Upper critical values	$Q_{v,\alpha,5\%}$	0,329		0,349	0,361	0,338	0,349
Value x1 is not biased		**1**	...	**1**	**1**	**1**	**1**
Value xp is not biased		**1**	...	**1**	**1**	**1**	**1**


Bar chart of frequency distribution for: Water content
Standard normal distribution for the sample without outliers
Bar chart of frequency distribution for a sample : Water content
Standard normal distribution for the original sample
Frequency
0
1
2
3
4
5
6
25,0
26,0
27,0
28,0
29,0
30,0
31,0
Value/ X1, X2, ... X(p-1), Xp

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A) Summary statistics for a sample :

Volume soundness (Le_Chatelier)

		X1, X2, ... X(p-1), Xp	X2, X3, ... X(p-1), Xp	X3, X4... X(p-1), Xp	X1, X2, ... X(p-2), X(p-1)	X1, X2, ... X(p-3), X(p-2)	Sample without outliers
Count (Sample size)	n	16	11	9	14	13	14
Minimum value	$x_{min} = x_1$	0	0,20	0,30	0,00	0,00	0,00
Maximum value	$x_{max} = x_p$	1	1,00	1,00	0,70	0,50	0,70
Range of sample R =	$x_{max} - x_{min}$	1	0,80	0,70	0,70	0,50	0,70
difference $L_{m95\%} - L_{M95\%}$	$\Delta L_{95\%}$	1,44					1,06
Lower confidence limitsafterelimination of outliers (for P=98%)	$L_{m98\%}$	-0,52					-0,39
Lower confidence limitsafterelimination of outliers (for P=95%)	$L_{m95\%}$	-0,36					-0,27
Lower Irwin confidence limit (for P=95%)	$x_{minIw1-5\%}$	-0,24					
Lower Grubbs confidence limit (for P=99%)	$x_{minG1-1\%}$	-0,61	-0,2				
Lower Grubbs confidence limit (for P=95%)	$x_{minG1-5\%}$	-0,52	-0,14				
Average (arithmetic mean) $\overline{x}$ =	$1/p\sum(x_i)$ =	0,36	0,52	0,59	0,26	0,23	0,26
Precision of a measure of the mean (for P=95%)	± ε	0,19	0,24	0,28	0,20	0,21	0,15
Upper Grubbs confidence limit (for P=99%)	$x_{maxGp-5\%}$	1,24			0,83		
Upper Grubbs confidence limit (for P=95%)	$x_{maxGp-1\%}$	1,33			0,89		
Upper Irwin confidence limit (for P=99%)	$x_{maxIw1-5\%}$	1,14					
Upper confidence limitsafterelimination of outliers (for P=95%)	$L_{M95\%}$	1,08					0,79
Upper confidence limitsafterelimination of outliers (for P=98%)	$L_{M98\%}$	1,24					0,91
Standard deviation of a sample	$s_{x,n-1}$	0,339	0,282	0,262	0,244	0,218	0,244
Standard deviation	$s_{x,0}$	0,328	0,269	0,247	0,235	0,209	0,235
Coefficient of variation	v	94,2%	54,2%	44,4%	93,8%	94,8%	93,8%
Standard skewness	Sk_{est}	0,691	0,786	0,799	0,263	0,165	0,263
Standard kurtosis (exces)	γ_2	-0,365	-0,296	-0,505	-1,315	-1,756	-1,315
t-value of the Student's distribution for P=95%	$t_{(n-1),\alpha=2,5\%}$	2,132	2,228	2,306	2,160	2,179	2,160
t-value of the Student's distribution for P=98%	$t_{(n-1),\alpha=1,0\%}$	2,603	2,764	2,897	2,650	2,681	2,650

B1) Tests by Irwin for an afterelimination of outliers

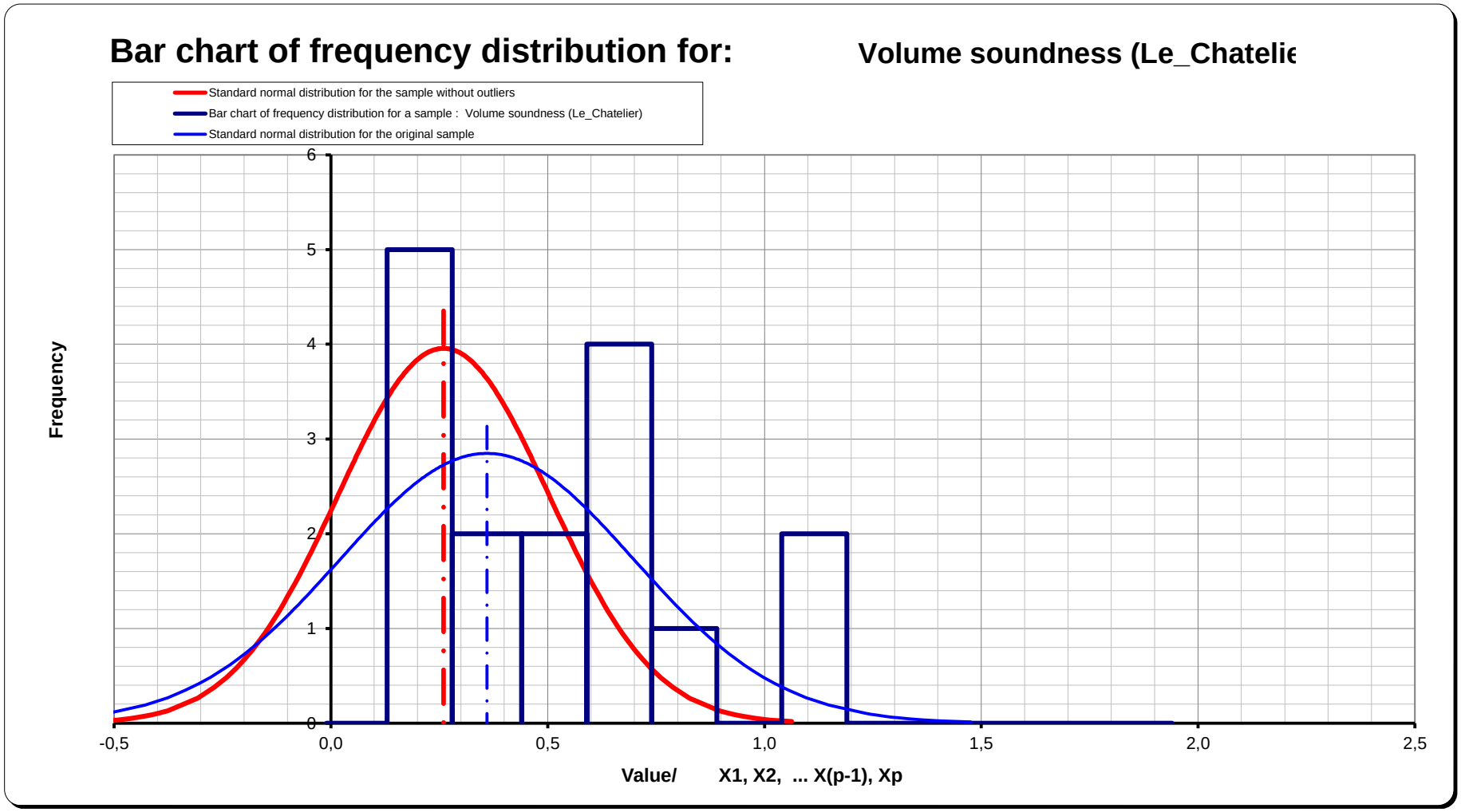
				Tests by Irwin for an afterelimination of outliers based on a level of signifiance of 5%			
Irwin critical value (for P=95%)	$\lambda_{\alpha(n)}$	1,338		1,477	1,566	1,383	1,411
	$\lambda_{calc,1,2}$	0,000		0,000	0,000	0,000	0,000
	$\lambda_{calc,n,n-1}$	0,000		0,000	0,000	0,851	0,000
Value x1 is not outlier		**1**	...	**1**	**1**	**1**	**1**
Value xp is not outlier		**1**	...	**1**	**1**	**1**	**1**

B2) Tests by Grubb for an afterelimination of outliers or biased values

Grubb_i=1	G_1	1,062		1,844	
Grubb_i=p	G_p	1,888		3,033	
Upper critical values	$G_{h,1\%}$	2,852		2,564	**Test for an afterelimination of one outlier based on a level of signifiance of 1%**
for the Grubb-test		**1**	...	**1**	..... Value x1 is not outlier
according to ISO 5725-2,		**1**	...	**0**	..... xp ** is the outlier
clause 7.3.4.1	$G_{h,5\%}$	2,585		2,355	**Test for an afterelimination of one biased value based on a level of signifiance of 5%**
		1	...	**1**	..... Value x1 is not biased
		1	...	**0**	..... xp * is the biased value
Grubb_i=1,2	$G_{1,2}$	0,567		0,567	
Grubb_i=p,p-1	$G_{p,p-1}$	0,406		0,406	
Lower critical values	$G_{d,1\%}$	0,277		0,145	**Test for an afterelimination of two outliers based on a level of signifiance of 5%**
for the Grubb-test		**1**	...	**1**	..... Values x1, x2 are not outliers
according to ISO 5725-2,		**1**	...	**1**	..... Values xp, xp-1 are not biased values
clause 7.3.4.2	$G_{d,5\%}$	0,360		0,221	**Test for an afterelimination of two biased values based on a level of signifiance of 5%**
		1	...	**1**	..... Values x1, x2 are not outliers
		1	...	**1**	..... Values xp, xp-1 are not biased values

B3) Tests by Dixon for an afterelimination of outliers or biased values

				Test for an afterelimination of one biased value based on a level of signifiance of 5%				
Dixon_i=1, ... (x_2-x_1)	Q_1	0,000		0,000	0,000	0,000	0,000	
Dixon_i=p, ...$(x_p-x_{(p-1)})$	Q_p	0,000		0,000	0,000	0,286	0,000	
Upper critical values	$Q_{v,\alpha,5\%}$	0,329		0,392	0,437	0,349	0,361	
Value x1 is not biased		**1**	...	**1**	**1**	**1**	**1**	
Value xp is not biased		**1**	...	**1**	**1**	**1**	**1**	


Bar chart of frequency distribution for: Volume soundness (Le_Chatelie
Standard normal distribution for the sample without outliers
Bar chart of frequency distribution for a sample : Volume soundness (Le_Chatelier)
Standard normal distribution for the original sample
Frequency
0
1
2
3
4
5
6
-0,5
0,0
0,5
1,0
1,5
2,0
2,5
Value/ X1, X2, ... X(p-1), Xp