

ISO 10725:2000-12 (E)

Acceptance sampling plans and procedures for the inspection of bulk materials

Contents	Page
Foreword	vi
Introduction	vii
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Symbols and abbreviated terms	3
5 Sampling plans	6
5.1 General	6
5.2 Applicability	6
5.3 Standardized sampling procedures	7
5.4 Standard deviations	8
5.5 Costs	9
5.6 Acceptance quality limit and non-acceptance quality limit	10
5.7 Responsible authority	11
6 Inspection procedures	12
6.1 General	12
6.2 Assessment of the standard deviations	12
6.3 Determination of sample sizes	18
6.4 Selection and preparation of samples	21
6.5 Determination of the acceptance value	30
6.6 Determination of lot acceptability	31
7 Examples	32
7.1 Imprecise standard deviation with one-sided specification limit	32
7.2 Imprecise standard deviation with two-sided specification limits	33
7.3 Optional procedure for known standard deviation with one-sided specification limit	34
7.4 Known standard deviation with one-sided specification limit	35
7.5 Known standard deviations with two-sided specification limits	36
7.6 Revision of discrimination interval	38
7.7 Results from one lot	39
7.8 Results from consecutive lots	40
Annex A (normative) Special procedures for inspecting multiple characteristics of a material	42
Annex B (normative) Acceptance sampling plans and procedures for use where the measurement standard deviation is dominant	47
Annex C (informative) Theoretical background	52
Annex D (informative) Operating characteristic curves	62
Bibliography	72
Figure 1 -- Schematic model of bulk acceptance sampling procedures	8

Figure C.1 -- Relationship between mA, mR and acceptance value (Distribution ofx ; lower specification limit)	55
Figure C.2 -- Relationship between mA, mR and acceptance value (Distribution of x ; upper specification limit)	57
Figure C.3 -- Relationship between mAs, mRs and acceptance values (Distribution of x ; two-sided specification limits)	57
Figure C.4 -- Relationship between D and D (when D = d ' D) (Distribution of x ; two-sided specification limits)	57
Figure D.1 -- OC curve for Example 1	65
Figure D.2 -- OC curve for Example 2	66
Figure D.3 -- OC curve for Example 3	68
Figure D.4 -- OC curve for Example 4	71
Table 1 -- Values of d for two-sided specification limits (imprecise standard deviations)	11
Table 2 -- Values of fU for UCL	15
Table 3 -- Sample sizes (a »»» 5 %, b »»» 10 %), cost ratio level 1 for RC »»» 0,10 (0 to 0,17)	22
Table 4 -- Sample sizes (a »»» 5 %, b »»» 10 %), cost ratio level 2 for RC »»» 0,32 (0,18 to 0,56) ..	22
Table 5 -- Sample sizes (a »»» 5 %, b »»» 10 %), cost ratio level 3 for RC »»» 1,0 (0,57 to 1,7)	23
Table 6 -- Sample sizes (a »»» 5 %, b »»» 10 %), cost ratio level 4 for RC »»» 3,2 (1,8 to 5,6)	23
Table 7 -- Sample sizes (a »»» 5 %, b »»» 10 %), cost ratio level 5 for RC »»» 10 (5,7 or over)	24
Table 8 -- Sample sizes (a »»» 5 %, b »»» 5 %), cost ratio level 1 for RC »»» 0,10 (0 to 0,17)	24
Table 9 -- Sample sizes (a »»» 5 %, b »»» 5 %), cost ratio level 2 for RC »»» 0,32 (0,18 to 0,56)	25
Table 10 -- Sample sizes (a »»» 5 %, b »»» 5 %), cost ratio level 3 for RC »»» 1,0 (0,57 to 1,7)	25
Table 11 -- Sample sizes (a »»» 5 %, b »»» 5 %), cost ratio level 4 for RC »»» 3,2 (1,8 to 5,6)	26
Table 12 -- Sample sizes (a »»» 5 %, b »»» 5 %), cost ratio level 5 for RC »»» 10 (5,7 or over)	26
Table 13 -- Sample sizes (a »»» 5 %, b »»» 5 %) and degrees of freedom for nM = 1, cost ratio level 1 for RC »»» 0,10 (0 to 0,17)	27
Table 14 -- Sample sizes (a »»» 5 %, b »»» 5 %) and degrees of freedom for nM = 1, cost ratio level 2 for RC »»» 0,32 (0,18 to 0,56)	27
Table 15 -- Sample sizes (a »»» 5 %, b »»» 5 %) and degrees of freedom for nM = 1, cost ratio level 3 for RC »»» 1,0 (0,57 to 1,7)	28
Table 16 -- Sample sizes (a »»» 5 %, b »»» 5 %) and degrees of freedom for nM = 1, cost ratio level 4 for RC »»» 3,2 (1,8 to 5,6)	28
Table 17 -- Sample sizes (a »»» 5 %, b »»» 5 %) and degrees of freedom for nM = 1, cost ratio level 5 for RC »»» 10 (5,7 or over)	28

Table 18 -- Sample sizes (a »»» 5 %, b »»» 5 %) and degrees of freedom for nM = 2, cost ratio level 1 for RC »»» 0,10 (0 to 0,17)	29
Table 19 -- Sample sizes (a »»» 5 %, b »»» 5 %) and degrees of freedom for nM = 2, cost ratio level 2 for RC »»» 0,32 (0,18 to 0,56)	29
Table 20 -- Sample sizes (a »»» 5 %, b »»» 5 %) and degrees of freedom for nM = 2, cost ratio level 3 for RC »»» 1,0 (0,57 to 1,7)	29
Table 21 -- Sample sizes (a »»» 5 %, b »»» 5 %) and degrees of freedom for nM = 2, cost ratio level 4 for RC »»» 3,2 (1,8 to 5,6)	30
Table 22 -- Sample sizes (a »»» 5 %, b »»» 5 %) and degrees of freedom for nM = 2, cost ratio level 5 for RC »»» 10 (5,7 or over)	30
Table 23 -- Data obtained from one lot	39
Table 24 -- Data of consecutive lots	41
Table A.1 -- Correction factor, fD, for J characteristics for known standard deviations	43
Table A.2 -- Risks at mA (a*) and at mR (b*) (for each of J characteristics, in %)	44
Table A.3 -- Correction factor, fD, for J characteristics for imprecise standard deviations	46
Table B.1 -- Sample sizes for special procedures (known standard deviations; a »»» 5 %, b »»» 10 %)	48
Table B.2 -- Sample sizes for special procedures (known standard deviations; a »»» 5 %, b »»» 5 %)	49
Table B.3 -- Sample sizes for special procedures (imprecise standard deviations; a »»» 5 %, b »»» 5 %)	49
Table D.1 -- OC values for Example 1	65
Table D.2 -- OC values for Example 2	67
Table D.3 -- OC values for Example 3, lower side	68
Table D.4 -- OC values for Example 3, upper side	68
Table D.5 -- OC values for Example 4	70