Acceptance sampling, Tables

Menu:	QCExpert	Acceptance Sampling	Sampling Tables

This module is an extension of the previous sampling design. It can generate tables for multiple different sampling designs in a user-friendly format. Individual cells of the table are in format "*n/c*", where *n* is the required sample size and *c* is the acceptance number (the highest allowed number of non-conforming units in sample for the lot to be accepted). Every table cell is computed for different ranges of values *N*, AQL and RQL defined by user in the dialog window (Fig. 3). Ranges for *N*, AQL and RQL allow high flexibility to generate customized tables in addition to existing ISO standards. The tables generated in this module are compatible with the ISO 2859-2 international standard. On the Fig. 1 and Fig. 2 we illustrate in 3-dimensional plots the dependence of *n* and *c* on AQL and RQL at a constant *N*.
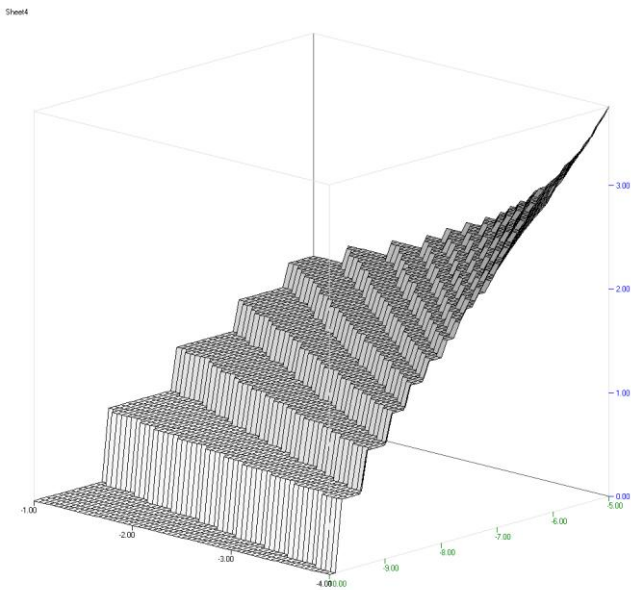

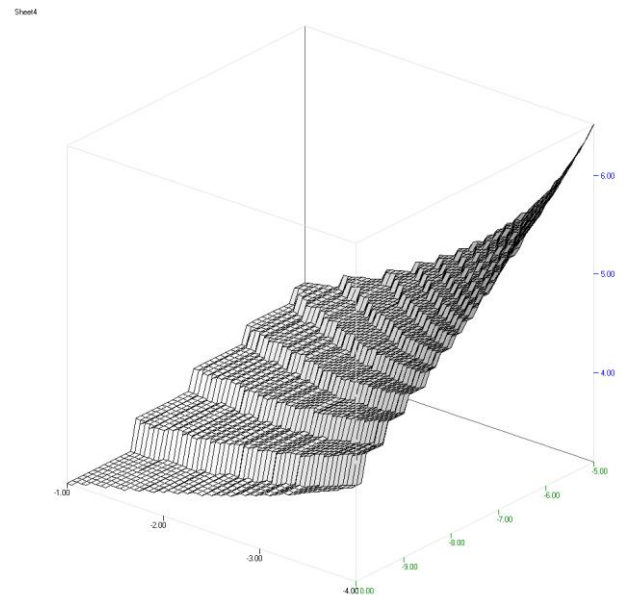**Fig. 1 Dependence of log *c* on AQL (from 0.01 to 0.04) and RQL (from 0.05 to 0.10).**

Fig. 2 Dependence of log *n* on AQL (from 0.01 to 0.04) and RQL (from 0.05 to 0.10).

It is advisable to keep in mind that too close values of AQL and RQL will result in too high sample sizes n, as seen on Fig. 1 and Fig. 2.

Data and parameters

In the dialog window (Fig. 3), input the supplier and consumer risks (these are kept constant throughout the table). Then specify ranges for lot size, AQL and RQL. *From* is the lowest value, *To* is the highest value, *Step* is the increment. Table will be generated for all valid combinations. *Total number of designs* is computed ones all values are specified. The total number of designs is equal to [number of different lot sizes] x [number of different AQLs] x [number of different RQLs] and can be very large and computation may take several seconds or more. This field is recalculated at every change of the respective values. Each design will occupy one cell in the output sheet. The only limitation for the table is the size of the output Protocol spreadsheet (256 columns and 65535 rows).
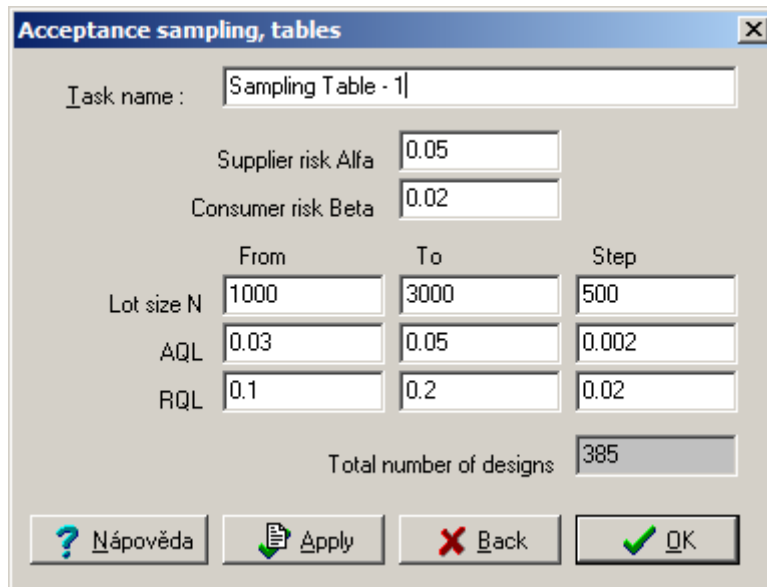
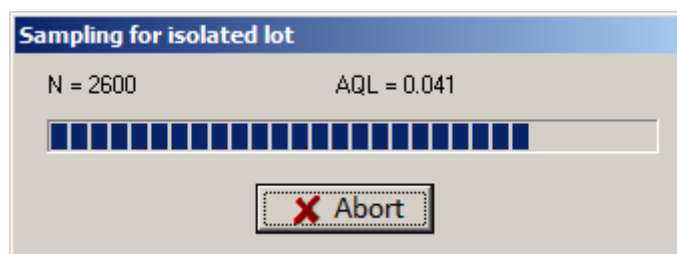**Fig. 3 Dialog window for Acceptance Sampling Tables**

Fig. 4 Sampling table - computation progress bar

Supplier risk alfa	0.05
Consumer risk beta	0.02
Number of designs	385

Lot size = 1000	RQL						
	0.1	0.12	0.14	0.16	0.18	0.2	0.2
AQL = 0.03	139/7	105/6	81/5	62/4	47/3	42/3	42/3
AQL = 0.032	152/8	105/6	81/5	62/4	55/4	42/3	42/3
AQL = 0.034	164/9	116/7	81/6	71/5	55/4	42/3	42/3
AQL = 0.036	177/10	116/7	90/6	71/5	55/4	49/4	49/4
AQL = 0.038	189/11	127/8	90/6	71/5	55/5	49/4	49/4
AQL = 0.04	201/12	137/9	100/7	79/6	63/5	49/4	49/4
AQL = 0.042	212/13	137/9	100/8	79/6	63/5	49/4	49/4
AQL = 0.044	224/14	148/10	109/8	79/7	63/6	56/5	56/5
AQL = 0.046	247/16	158/11	118/9	87/7	70/6	56/5	56/5
AQL = 0.048	258/17	168/12	118/9	87/7	70/6	56/5	56/5
AQL = 0.05	281/19	178/13	127/10	95/8	77/7	63/6	63/6

Fig. 5 An example of generated acceptance table for lot size N=1000, AQL from 0.02 to 0.05 with step 0.005 and RQL from 0.05 to 0.1 with step 0.01.

Protocol

Supplier risk alpha	Required probability of false rejecting of a lot at AQL.
Consumer risk beta	Required probability of false accepting of a lot at RQL.
Number of designs	Total number of designs that have been generated:

	(number of different *AQLs*)*(number of different *RQLs*)*(number of different *Ns*)
Acceptance tables	Separate sub-tables are generated for the specified values N. In each subtable, each row corresponds to a specified AQL value, each column corresponds to a specified RQL value. So to find a suitable sampling design, first find the subtable for the required N, within this subtable find a row with required AQL, within this row find a column with required RQL. In this cell there is the sampling design in the format *n*/*c*, where *n* is the random sample size, *c* is the acceptance number.
Lot size	Lot size, common for the whole table.
AQL	AQL values in a row.
RQL	RQL values in a column.