Office for Product Safety & Standards

Heat Soaked Thermally Toughened Glass Annex A: Descriptive Analysis

Table 1 in the main body of the regulatory report presents summary statistics on the compliance of manufacturers with relevant regulatory requirements. This annex explains how the figures in the table were derived from data collected during inspections, and outlines the analytical approach, including how the data were treated – for example, through the harmonisation of terminology.

The question numbers used in this section refer to the questions used in Table 1 in the main body of the report.

Q1 – What percentage of inspected manufacturers provided a Declaration of Performance (DoP) at the initial inspection?

To answer this question, the DoP field of the Inspection Checklist (see Annex B) was used. The responses were coded as “Yes”, “No”, or “Partially”. A response of “Partially” indicates that the DoP was provided, but not all the requirements were met. **Table 2** summarises the distribution of responses across all inspected manufacturers.

Table 2. Distribution of DoP responses recorded at the initial inspection.

Response	**Frequency**
Yes	0
No	14
Partially	14

Equation (1) was used to answer the question.

$$\text{Percentage of inspected businesses providing a DoP} = (1-(\text{frequency of “No”} \div \text{number of manufacturers inspected})) \times 100 \quad (1)$$

In equation (1), “Partially” responses were grouped with “Yes” because the DoP was provided, but not all the requirements were met.

Q2 – What percentage of the DoPs provided were compliant at the initial inspection?

This question uses the data from **Table 2**. A response of ‘Partially’ means that a DoP was provided that was not compliant.

$$\text{Percentage of DoPs provided that were compliant} = (\text{frequency of “Yes”} \div (\text{frequency of “Yes”} + \text{frequency of “Partially”})) \times 100 \quad (2)$$

Q3 – What percentage of manufacturers failed to adequately declare pendulum body impact resistance on their DoPs for their products or otherwise failed to provide adequate evidence to support their declarations under this characteristic?

To answer this question, the "Pendulum body impact resistance: Shatter properties (safe breakability) and resistance to impact" field of the Inspection Checklist (see Annex B) was used. The responses were coded as "Yes", "No", or "Partially". A response of "Partially" indicates evidence was provided for some but not all thicknesses of glass, or the information has not been properly input into a DoP, or a business had test reports but not from an approved body. **Table 3** summarises the distribution of responses across all inspected manufacturers.

Table 3. Distribution of "Pendulum body impact resistance: Shatter properties (safe breakability) and resistance to impact" responses recorded at the initial inspection.

Response	Frequency
Yes	9
No	15
Partially	4

Equation (3) was used to answer the question.

$$\text{Percentage of inspected businesses not providing evidence of pendulum body impact resistance and/or incorrectly declared this on their DoP} = (1 - (\text{frequency of "Yes"} \div \text{number of manufacturers inspected})) \times 100 \quad (3)$$

In equation (3), "Partially" responses were grouped with "No" as not all the requirements were met.

Q4 – What percentage of manufacturers provided Initial Type Test reports (ITT) during the initial inspection?

To answer this question, the ITT field of the Inspection Checklist (see Annex B) was used. The response to these questions were coded as either "Yes", "No" and "Partially". The "Partially" response indicates that the type test report did not reflect the manufacturer's current production and/or contained errors. **Table 4** summarises the distribution of responses across all inspected manufacturers.

Table 4. Distribution of responses recorded for the ITT field.

Response	Frequency
Yes	11
No	11
Partially	6

Equation (4) was used to answer the question.

$$\text{Percentage provided initial type test reports at initial inspection} = (1 - (\text{frequency of "No"} \div \text{number of manufacturers inspected})) \times 100 \quad (4)$$

In equation (4), "Partially" has been grouped together with "Yes". This is because an ITT report was provided when the response was "Partially", though not all the requirements were met.

Q5 – What percentage of the ITT reports were relevant to current production?

This question used the distribution of responses as shown on **Table 4**. Equation (5) was used to answer the question.

$$\text{Percentage of initial type test reports relevant to current production provided at initial inspection} = (\text{frequency of “Yes”} \div (\text{frequency of “Yes”} + \text{frequency of “Partially”})) \times 100 \quad (5)$$

In equation (5), “Partially” has been grouped together with “Yes”. The reasoning is the same as of that identified in “Q4 – What percentage of manufacturers provided Initial Type Test (ITT) during the initial inspection?”.

Q6 – What percentage of manufacturers had ISO 9001 certification?

To answer this question, the ISO 9001 certificate field of the Inspection Checklist (see Annex B) was used. Responses were coded as either “Yes” or “No”: “Yes” indicates that the manufacturer held ISO 9001 certification audited by a third-party, while “No” means the manufacturer did not. **Table 5** summarises the distribution of responses across all inspected manufacturers.

Table 5. Distribution of responses recorded for the ISO 9001 certificate field.

Response	Frequency
Yes	13
No	15

Equation (6) was used to answer the question.

$$\text{Percentage having ISO 9001 certification} = (\text{frequency of “Yes”} \div \text{number of manufacturers inspected}) \times 100 \quad (6)$$

Q7 – What percentage of manufacturers were compliant with product marking requirements at initial inspection?

To address this question, the markings (on products) section of the Inspection Checklist (see Annex B) was used. The respons to this question was coded as either “Yes”, “No” or “Partially”. A response of “Partially” indicates that only some of the marking requirements were met. **Table 6** summarises the distribution of responses across all inspected manufacturers.

Table 6. Distribution of marking (on products) responses recorded at the initial inspection.

Response	Frequency
Yes	4
No	10
Partially	14

Equation (7) was used to answer the question.

$$\text{Percentage of manufacturers whose marking of products was compliant} = (\text{frequency of “Yes”} \div \text{number of manufacturers inspected}) \times 100 \quad (7)$$

Q8 – What percentage of manufacturers were compliant with product labelling requirements at initial inspection?

To address this question, the labelling section of the Inspection Checklist (see Annex B) was used. The response to this question was coded as either “Yes”, “No” or “Partially”. A response of “Partially” indicates that some of the labelling requirements were met. **Table 7** summarises the distribution of responses across all inspected manufacturers.

Table 7. Distribution of labelling responses recorded at the initial inspection.

Response	Frequency
Yes	2
No	16
Partially	10

Equation (8) was used to answer the question.

$$\text{Percentage of manufacturers whose labelling of products was compliant} = (\text{frequency of “Yes”} \div \text{number of manufacturers inspected}) \times 100 \quad (8)$$

Q9 – What percentage of manufacturers were not providing adequate statutory documentation to customers?

To address this question, the documentation accompanying the product section of the Inspection Checklist (see Annex B) was used. The response to this question was coded as either “Yes”, “No” and “Partially”, where “Partially” indicates that only some of the required documentation was provided. **Table 8** summarises the distribution of responses across all inspected manufacturers.

Table 8. Distribution of documentation accompanying the product responses recorded at the initial inspection.

Response	Frequency
Yes	2
No	18
Partially	8

Equation (9) was used to answer the question.

$$\text{Percentage of manufacturers not providing adequate documentation to customers} = (1 - (\text{frequency of “Yes”} \div \text{number of manufacturers inspected})) \times 100 \quad (9)$$

Q10 – What percentage of manufacturers produced adequate personnel training records at initial inspection?

To address this question, the personnel training record field of the Inspection Checklist (see Annex B) was used. The response to this question was coded as either “Yes”, “No” or “Partially”, with “Partially” indicating that some training had been provided but was deemed insufficient to meet factory production control requirements. **Table 9** summarises the distribution of responses across all inspected manufacturers.

Table 9. Distribution of personnel training record responses recorded at the initial inspection.

Response	Frequency
Yes	14
No	10
Partially	4

Equation (10) was used to answer the question.

$$\text{Percentage of manufacturers who can produce adequate personnel training records} = (\text{frequency of “Yes”} \div \text{number of manufacturers inspected}) \times 100 \quad (10)$$

Q11 – What percentage of manufacturers could not produce adequate heat soak oven calibration records at initial inspection?

To address this question, the field "Did manufacturers produce adequate heat soak oven calibration records?" from the Inspection Checklist (see Annex B) was used. The responses to this question was coded as either “Yes” or “No”. **Table 10** summarises the distribution of responses across all inspected manufacturers.

Table 10. Distribution of responses for heat soak oven calibration records at the initial inspection.

Response	Frequency
Yes	21
No	7

Equation (11) was used to answer the question.

$$\text{Percentage of manufacturers who could not produce adequate heat soak oven calibration records} = (\text{frequency of “No”} \div \text{number of manufacturers inspected}) \times 100 \quad (11)$$

Q12 - What percentage of manufacturers could not produce adequate testing equipment calibration records at initial inspection?

To address this question, the field “Test equipment” from the Inspection Checklist (see Annex B) was used. The response to this question was coded as either “Yes”, “No” or “Partially”, with “Partially” indicating that calibration records were available for only some testing equipment. **Table 11** summarises the distribution of responses across all inspected manufacturers.

Table 11. Distribution of responses for test equipment calibration at the initial inspection.

Response	Frequency
Yes	12
No	8
Partially	8

Equation (12) was used to answer the question.

$$\text{Percentage of manufacturers who could not produce adequate testing equipment calibration records} = (1 - (\text{frequency of “Yes”} \div \text{number of manufacturers inspected})) \times 100 \quad (12)$$

Q13 – What percentage of manufacturers could not produce adequate records of bow testing at initial inspection?

To address this question, the field “Overall bow, local bow” from the Inspection Checklist (see Annex B) was used. The response to this question was coded as either “Yes”, “No” or “Partially”, with “Partially” indicating that the records did not specify a numerical value corresponding to the bow. **Table 12** summarises the distribution of responses across all inspected manufacturers.

Table 12. Distribution of responses for records of bow testing at the initial inspection.

Response	Frequency
Yes	19
No	6
Partially	3

Equation (13) was used to answer the question.

$$\text{Percentage of manufacturers not producing adequate records of bow testing at initial inspection} = (1 - (\text{frequency of “Yes”} \div \text{number of manufacturers inspected})) \times 100 \quad (13)$$

Q14 – What percentage of manufacturers could not produce adequate records of fragmentation testing at initial inspection post heat soak process?

To address this question, the field “Fragmentation” from the Inspection Checklist (see Annex B) was used. The response to this question was coded as either “Yes”, “No” or “Partially”, with “Partially” indicating that fragmentation tests had been conducted prior to the heat soak process, rather than after. **Table 13** summarises the distribution of responses across all inspected manufacturers.

Table 13. Distribution of responses for records of fragmentation testing at the initial inspection.

Response	Frequency
Yes	21
No	3
Partially	4

Equation (14) was used to answer the question.

$$\text{Percentage of manufacturers not producing adequate records of fragmentation testing} = (1 - (\text{frequency of “Yes”} \div \text{number of manufacturers inspected})) \times 100 \quad (14)$$

Q15 – What percentage of manufacturers could not produce adequate records of pre-stress, mechanical strength or proxy testing at initial inspection?

To address the question of what percentage of manufacturers could not produce records of pre-stress, mechanical strength, or proxy testing at initial inspection, the fields “Surface pre-stress”, “Mechanical strength”, and “Proxy test of mechanical strength” were used. The responses to these questions were coded as either “Yes”, “No”, “Partially”, or “N/A”.

A “Yes” in any one of the three fields indicates that the manufacturer could provide sufficient evidence. A response of “Partially” indicates that testing was conducted but lacked an initial reference value for comparison. If only one test was completed, “N/A” was recorded against the other two.

If a manufacturer has a "Yes" coded in any one of these three fields, they are considered able to produce sufficient records.

Table 14 summarizes the distribution of responses across all inspected manufacturers. In this context, a "Yes" in any field indicates that the manufacturer can provide evidence. A "No" is recorded when none of the three fields have a "Yes".

Table 14. Distribution of responses for records of pre-stress, mechanical strength or proxy testing at the initial inspection.

Response	Frequency
Yes	14
No	14

Equation (15) was used to answer the question.

$$\text{Percentage of manufacturers not producing adequate records of pre-stress, mechanical strength or proxy testing} = (\text{frequency of “No”} \div \text{number of manufacturers inspected}) \times 100 \quad (15)$$

Q16 – What percentage of manufacturers could not produce adequate records of measurements of thickness of glass at initial inspection?

To address this question, the field “Thickness - measurement” from the Inspection Checklist (see Annex B) was used. The response to this question was coded as either “Yes”, “No”, “Partially”, with “Partially” indicating that the records did not specify a numerical value corresponding to the thickness. **Table 15** summarises the distribution of responses across all inspected manufacturers.

Table 15. Distribution of responses for records of thickness testing at the initial inspection.

Response	Frequency
Yes	12
No	12
Partially	4

Equation (16) was used to answer the question.

$$\text{Percentage of manufacturers not producing adequate records of measurement of thickness} = (1 - (\text{frequency of “Yes”} \div \text{number of manufacturers inspected})) \times 100 \quad (16)$$

Q17 – What percentage of manufacturers could not produce adequate records of traceability data for incoming glass at initial inspection?

To address this question, the field “Identification, including packaging and label” from the Inspection Checklist (see Annex B) was used. The response to this question was coded as either “Yes”, “No” or “Partially”, with “Partially” indicating instances of poor

record-keeping or documentation that did not meet the required standard. **Table 16** summarises the distribution of responses across all inspected manufacturers.

Table 16. Distribution of responses for traceability data of incoming glass.

Response	Frequency
Yes	19
No	3
Partially	6

Equation (17) was used to answer the question.

$$\text{Percentage of manufacturers not producing adequate records of traceability data for incoming glass at initial inspection} = (1 - (\text{frequency of “Yes”} \div \text{number of businesses inspected})) \times 100 \quad (17)$$

Q18 – What percentage of manufacturers could not produce records of heat soak curves which were traceable to specific orders at initial inspection?

To address this question, the field “Did manufacturers produce records of heat soak curves which are traceable to specific orders at initial inspection?” from the Inspection Report Checklist (see Annex B) was used. The response to this question was coded as either “Yes” or “No”. **Table 17** summarises the distribution of responses across all inspected manufacturers.

Table 17. Distribution of responses on heat soak curve record traceability.

Response	Frequency
Yes	18
No	10

Equation (18) was used to answer the question.

$$\text{Percentage of manufacturers not producing records of heat soak curves which are traceable at initial inspection} = (\text{frequency of “No”} \div \text{number of manufacturers inspected}) \times 100 \quad (18)$$

Q19 – How many corrective actions were required? (excluding observations)

To answer this question, the “non-compliances raised” section of the Inspection Checklist (see Annex B) was used. The number of non-compliances for each manufacturer were summed to give an overall total.

Q20 – How many serious non-compliances did OPSS identify?

To address this question, a similar method to that used for **“Q19 – How many corrective actions were required? (excluding observations)**” was used. Instead of counting the number of non-compliances, the severity associated with the potential impact of each non-compliance was identified and categorised as a non-compliance or a serious non-compliance. The number of serious non-compliances were counted to give an overall total.

Q21 – What percentage of corrective actions were completed as of 2 September 2025?

To address this question, the “Non-compliances raised” section towards the end of the Inspection Checklist (see Annex B) was used. Each corrective action was classified according to the severity associated to the nature of the non-compliance: "non-compliance" or "serious non-compliance". For both, “Yes”, “No” or “Partially” were used to indicate whether the corrective actions were completed. “Partially” indicates that the implementation of the corrective action was still in progress as of the data cut-off date (2 September 2025). **Table 18** and **Table 19** present the distribution of corrective actions linked to the total number of non-compliances and serious non-compliances, as well as those associated solely with serious non-compliances, along with their respective resolution statuses.

Table 18. Distribution of the resolution status of corrective actions associated with non-compliances and serious non-compliances

Actioned?	**Frequency**
Yes	224
No	9
Partially	23
Total	**256**

Table 19. Distribution of the resolution status of corrective actions associated with serious non-compliances

Actioned?	**Frequency**
Yes	103
No	2
Partially	9
Total	**114**

To address this question, **Table 18** and Equation (19) was used.

$$\text{Percentage of corrective actions completed} = (\text{frequency of “Yes”} \div \text{total count of non-compliances and serious non-compliances}) \times 100 \quad (19)$$

Q22 – What percentage of corrective actions associated with serious non-compliances were completed as of 2 September 2025?

To address this question, **Table 19** and equation (20) were used.

$$\text{Percentage of corrective actions associated with serious non-compliances completed} = (\text{frequency of “Yes”} \div \text{total corrective actions associated with serious non-compliance}) \times 100 \quad (20)$$

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