Foreign body hazards represent one of the most significant risks associated with the production and distribution of food products. Among these, glass and hard plastic are the most significant given their widespread use in food production equipment, environments and utensils.

In order to mitigate against product contamination the food site must have in place effective procedures to eliminate or reduce so far as practically possible the likely occurrence of these hazards. In addition, the food plant should have in place a full risk assessment and clear policy for the control of glass and hard plastic.
1 THE NEED FOR AN EFFECTIVE GLASS AND HARD PLASTIC CONTROL SYSTEM

The production of a food product by its very nature presents the risk of contamination from a large variety of sources. These can be both intrinsic and extrinsic in nature and in the majority of cases it is not possible to completely eliminate all hazards. Instead, our objective is to reduce the risk to an acceptable level. This allows for both the safe and economic production of food. The procedures, activities and tasks we perform to achieve this come under the general heading of food safety management and within this are a number of established control procedures designed to address common hazards. Foreign body hazards are widely recognised as potential food safety issues including glass, hard plastic, wood, metal, paper, string, tape, maintenance debris and personal effects.

Glass and hard plastic present particular difficulties given their nature and prevalence in food operations. These materials can often be transparent and difficult to detect when present in food. Hard plastic is used widely in food production equipment and machinery and can be subject to damage, wear and tear. Glass and hard plastic is a major contributor to injury when consumed in the product. They can result in claims and on occasion litigation. These and other factors require glass and hard plastic to be eliminated from food production areas where possible. Where this is not practicable control must be exercised over these materials to ensure the risk of contamination is reduced to an acceptable level.

An effective glass and hard plastic control system will normally comprise the following elements:

- Glass and hard plastic policy
- Glass and hard plastic risk assessment
- Glass and hard plastic control procedure
- New equipment assessment and risk reduction
- Glass and hard plastic register
- Glass and hard plastic audit program
- Glass and hard plastic breakage procedure

The above elements are also required to meet the specific requirements of the multiple food retailers and other customers. The system is focused on identifying, eliminating, reducing or protecting all glass and hard plastic in the operation that may present a risk.

2 GFSI REQUIREMENTS FOR GLASS AND HARD PLASTIC CONTROL

The Global Food Safety Initiative’s (GFSI) group of approved schemes set out very prescriptive requirements for the control of possible foreign body hazards. The BRC Standard goes into specific requirements regarding glass and hard plastic and these can be found in section 4.9.
These requirements set out a system which excludes or protects against broken glass and other brittle materials which can pose a risk of contamination. The standard also mentions open product areas where the risk is greatest. The standard introduces the use of a register of items which should be checked and records maintained. Finally, the company should have in place a system for the management of breakages of glass and other brittle items.

### Glass, brittle plastic, ceramics and similar materials

<table>
<thead>
<tr>
<th>Clause</th>
<th>Requirements</th>
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<tr>
<td>4.9.3.1</td>
<td>Glass or other brittle materials shall be excluded or protected against breakage in areas where open products are handled or there is a risk of product contamination.</td>
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</table>
| 4.9.3.2  | Documented procedures for handling glass and other brittle materials shall be in place and implemented to ensure that necessary precautions are taken. Procedures shall include as a minimum:  
  - a list of items detailing location, number, type and condition  
  - recorded checks of condition of items, carried out at a specified frequency that is based on the level of risk to the product  
  - details on cleaning or replacing items to minimise potential for product contamination. |
| 4.9.3.3  | Documented procedures detailing the action to be taken in case of breakage of glass or other brittle items shall be implemented and include the following:  
  - quarantining the products and production area that were potentially affected  
  - cleaning the production area  
  - inspecting the production area and authorising to continue production  
  - changing of work wear and inspection of footwear  
  - specifying those staff authorised to carry out the above points  
  - recording the breakage incident |

## 3 GLASS & HARD PLASTIC POLICY & PROCEDURE

The first step in putting in place an effective glass and brittle plastic control system is to clearly define a policy and procedure. This should be documented and cover all the elements as previously described. The policy should be consistent with legal and commercial requirements and sufficient to ensure consumer protection. It should include the following:

- Policy and controls in place
- Register of items and their auditing
- Breakage procedure

The following page contains a general example of how this documented procedure might look.
Glass & Hard Plastic Control

1.0 Control

1.1 Control - No glass items shall be in the processing area. All products packed in jars SHALL ONLY be produced in the Glass Room. If this is not possible, production in the processing area must be scheduled for only the particular product that needs to be packed in glass jars. The clean-up procedure specified in Section 2.2 of this Policy shall be strictly followed.

1.2 Ingredients must be purchased in non-glass containers. If this is not possible, the glass containers must be opened away from the processing area under the supervision of the Production Supervisor. Ingredients shall then be transferred to a non-breakable container prior to entering the processing area.

1.3 All lights shall be protected to effectively contain broken glass. This is accomplished by using both:

- Shatterproof bulbs
- Plastic Shields or shields with end caps as applicable

1.4 Lights should only be replaced during non-production hours when there is no exposed product. If a light MUST be replaced during production hours all product and packaging materials must be covered or moved to a sufficient distance from the fixture to prevent accidental contamination.

1.5 Jars used solely for DIPS shall be stored in a separate rack in the warehouse. Jars shall be stored in boxes with separators to minimize breakage.

1.6 Thermometers shall have plastic covers.

2.0 Breakage

2.1 All glass/brittle plastic breakage shall be reported immediately to the QA Manager to ensure complete clean up and inspection.

2.2 The clean-up procedure applies to all areas:

- Put all open product(s) in immediate area on Hold, remove from the area and notify Production Supervisor and QA.
- Remove large pieces of glass/brittle plastic by hand (must wear gloves) and place in garbage.
- Sweep up the rest of the glass/brittle plastic shards in the area.
- Wash all affected areas thoroughly with water or with a damp wipe-all.
- Area must be checked by Production Manager or QA before resuming work in the area.
2.3 After, clean up all tools (brooms, brushes and gloves) and employees’ shoes must be cleaned outside of the processing area to prevent further contamination.

3.0 Register and Audit

3.1 The HACCP Team shall define a register of all essential glass and brittle plastics in the production and storage areas. This register will be audited weekly and the result recorded.

3.2 The register will indicate locations of all essential glass and brittle plastics in the production and storage areas including the number of items and any protection in place. This will be completed by the QA Manager. All supervisors are responsible for immediately informing the QA Manager when glass/brittle plastics are added and/or removed.

4.0 Training

4.1 Annual training (Internal Food Safety Program) shall include knowledge of glass/brittle plastic policy and associated cleaning procedures.

5.0 Record Retention

5.1 All records of the Glass/Brittle Plastic Control Program and activities including Glass Breakage Forms and Master List of Glass and Brittle Plastic shall be held for a period of two years.

4 NEW EQUIPMENT

Equipment used in the production of food frequently utilises plastic in its fabrication. When new equipment is purchased the opportunity should be taken to assess it for any items of plastic that can be removed or protected against breakage. Modifications to existing equipment should eliminate glass and clear plastic, where possible. A record of this assessment should be maintained.

Picture: New Equipment Assessment Record
5 THE REGISTER

The glass and brittle plastic register is the core document of your control system. It will contain a list of all glass and plastic items deemed to be a potential contamination risk to the final product and therefore the consumer. Glass and brittle plastic can come from a variety of sources. These should all be considered when conducting the risk assessment and generating the register.

Sources may include the following:

- Glass packaging used for ingredients
- Glass containers and jars used to package final product
- Lights and light covers
- Door panels on machines
- Machine parts

All glass and hard clear plastic in production and storage areas must be listed on a register. Brittle coloured plastics should also be considered for inclusion in the register, if they pose a risk of product contamination. For example, white plastics in dough production areas, red plastics in raw meat processing areas etc. may be included on the register. When developing the register you should consider including the following details:

- Item name and description if required
- Location
- The number of items, e.g. 4 x plastic panel doors
- Whether the item is protected against breakage
- Other details that may be required to conduct an effective inspection of each item

Keeping the register up to date is important since it will lead to non-conformances in the certification audit and increase the risk of product contamination due to critical items not being inspected during the internal audit of the list. Key members of staff, e.g. maintenance, should be trained to notify the relevant person responsible for the upkeep of the register.

Picture: Sample Glass and Plastic Register
6 THE AUDIT

Once the register is complete it should be audited based on the risk posed by the item or area, i.e. exposed product areas. More than one register may be developed to account for different risk areas and audited on a different frequency. Audits must be completed on all registered items at a frequency determined by risk assessment.

The audit must record the condition of the item, e.g. intact, broken, damaged but intact, undamaged but not working. Any issues raised must be investigated to establish if the glass breakage procedure has been followed and if not, whether product has been put at risk. A risk assessment must be completed to determine how quickly repairs must be made. A full record of the audit should be maintained including corrective actions. All audits should be conducted by trained personnel. The audit should be methodical ensuring that all items on the register are properly assessed.

Picture: Sample Glass and Hard Plastic Audit Record

In the sample above you will note the scope of the record usually required. The item, its location and the specific descriptive name of the glass or plastic is shown in addition to the specific number of items. Following this the current condition is recorded and where required a specific breakage report may be generated.
7 GLASS AND HARD PLASTIC BREAKAGE

A detailed procedure must be in place for the management of glass and hard plastic breakages. In the event of a breakage the procedure should clearly describe the actions to be taken to ensure consumers are not exposed to the risks associated with glass and plastic contamination. The first and most important step is stopping production. This will immediately limit the exposure of potentially contaminated product. Following this, restriction of movement through the affected area should be put in place. All affected product should be quarantined. The identification of the affected product should be conducted by a trained person who understands the risks and the nature of their control. In this regard, employees should be trained to report to management all breakages.

A clean up of breakage and disposal / cleaning of cleaning equipment should be undertaken and fully supervised by a responsible person identified in the procedure. This should include the safe removal of glass from the area and repair or replacement of the damaged item. The checking of PPE, including footwear and changing if necessary should be conducted.

Picture: Sample Breakage Report

A breakage report should be completed and signed off by a responsible / senior person, allowing production to restart. A sample of broken glass should be retained in a safe manner for reference in the event of a complaint relating to glass or plastic. Finally, corrective action to prevent reoccurrence should be undertaken and include a root cause analysis. The procedure should follow a logical sequence and have sufficient detail to manage the incident, for example, what equipment is used for the clean-up of breakage. It may include a specific colour, type or dedicated set of equipment for glass breakage only. It should also address how it is to be used and what happens with equipment after use, e.g. cleaned and returned to an office or disposed. It may be practical to take a photograph of a reassembled item rather than retain a sample in some instances (e.g. item snapped in two).
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