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Target Audience

Factory Inspectors inspecting food premises
Specialist Group Inspectors (Engineering)

SAFEGUARDING TOFFEE ROPE SIZING MACHINES

This SIM informs inspectors of the standard of guarding which is reasonably practicable to achieve on toffee rope sizing machines. It is based on contract research.

DESCRIPTION

1 Toffee rope sizing machines (TRSMs) are used to produce continuous round sections of toffee and candy in confectionery manufacture. The diameter of the toffee rope is reduced to that required by being passed through a series, typically three or four, of paired sizing rollers. Throughput varies from 15 metres per minute to 100 metres per minute.

2 There are many manufacturers worldwide (eg Theegarten, Bosch, Klockner, Euromec and Latini) but the only known UK maker is AMP Rose, Gainsborough.

HAZARDS

3 The hazard is that of fingers or clothing being pulled in to the inrunning nip at the sizing rollers. The risks are greatest during the initial feeding of toffee into the rollers and when trying to remove excess product from between the rollers.

4 Traditionally these machines have been fitted with a triangular plate to guide in the candy and cover the inrunning nip point at each pair of rollers. The plates are held in place by thumb screws or bolts hand tightened on to pillars attached to the body of the machine and this method of securing the plates is not acceptable without interlocking. These plates are usually found not to comply with the separation distance requirements of BS EN 294: 1992, Table 4.

PREVENTION OF HAZARD

5 On older machines it may not be possible to extend the triangular cover plates to conform to BS EN 294, Table 4. It is possible, however, to interlock the cover plates with the control system.

6 Some machines may be fitted with vertically mounted pre-feed rollers. These present the same hazard as the sizing rollers.

7 One guarding solution identified is to enclose the pre-feed and sizing rollers in a hinged

mesh hood interlocked with the power supply. This solution should be possible on most machines but some models may require modification to allow the hood to open completely. The restricted access may cause problems in priming the rollers with product.

8 Separation distances from the pre-feed rollers to the mouth of the guard must comply with BS EN 294, Table 4.

9 To allow manual insertion of the rope through the rollers with the guard open a suitable hold to run or inching control should be used.

10 Because of the machine overrun, quick access to the emergency stop is important. A foot or knee operated emergency stop at the operator position is preferred to a hand button at the control panel.

ACTION

11 No special action is required but inspectors should be aware that the following standards are expected and considered reasonably practicable:

(1) an interlocked guard, or suitable photoelectric guard, to prevent access to the pre-feed and sizing rollers. Where vertical pre-feed rollers are fitted special attention should be given to the shear trap between the rollers and the side plates. The side plates should be high enough to prevent a finger trap and guards should be interlocked.

(2) a hold to run or inching control should be fitted to allow manual feeding of product or for cleaning and adjustment. On older machines this may not be practicable.

(3) location of the emergency stop to ensure easy accessibility.

(4) interlocking of the triangular cover plates.

12 The UK manufacturer, AMP Rose Forgrove, has been approached by the Sector and agreed that these standards are reasonably practicable on both new and existing machines.

13 New machinery would be expected to have the standards of guarding outlined in para 11. Where CE-marked machinery is considered not to comply with these standards the supplier should be contacted or, in the case of direct import, the Food Sector, Glasgow Office.

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