

## Toughened Safety Glass Visual Quality (extracts from GGF Datasheet 4.4)

### 8.2. Optical distortion

#### 8.2.1 General

The toughening process will inevitably result in a product whose optical quality is lower than that of the glass from which it is produced. Surface distortion is produced by a reduction in the surface flatness, which can be seen particularly in reflection. This can be exacerbated when the glass used is body tinted, surface coated (including post-toughening coating) or enamelled and/or incorporated into insulating glass units.

#### 8.2.3 Thermally toughened soda lime silicate safety glass produced by horizontal toughening

While the hot glass is in contact with the rollers during the toughening process, a surface distortion is produced by a reduction in surface flatness, known as roller wave. Roller wave is generally noticed in reflection. Thermally toughened glass, may show signs of small imprints in the surface (roller pick-up/pluck). This is a result of the length of time the glass spends in the furnace. Therefore the thicker the glass the more pronounced this could be.

NOTE: Toughenable low-e glass requires longer in the furnace.

#### 8.2.4. Roller wave

On toughened sheet glass, or toughened patterned glass, it is not possible to measure roller wave, due to the inherent distortion of the basic glass.

Method of measuring roller wave distortion is given in clause 5.3.3 and limits for acceptance in Table 4. An alternative measurement method is given in Annex B

### 8.4 Visual quality

#### 8.4.1. Body faults, e.g. seeds, bubbles

The number, size and distribution of seeds, bubbles, etc. are defined for the glasses under consideration in the appropriate parts of EN 572. No change will occur as a result of the toughening process. Assessment of body faults should be undertaken using the method/criteria given, for the basic glasses in the appropriate parts of EN 572.

#### 8.4.2 Surface faults e.g. scars, scratches

Toughened safety glass shall be deemed acceptable if the following phenomena are neither obtrusive nor bunched: hairlines or blobs; fine scratches not more than 25mm long; minute imbedded particles.

Obtrusiveness of blemishes shall be judged by looking through the glass, not at it, when standing at right angles to it on the room side at a distance of not less than 3 metres in natural daylight and not in direct sunlight. The area to be viewed is the normal vision area with the exception of a 50mm wide band around the perimeter of the glass

#### Note:

These are the standards used by the office of fair trading and the courts should any claim be made against the manufacturer.