SPECIFICATIONS

FOR CLOSED-LOOP RECYCLING OF GLAZING FROM BUILDING

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BUILDING GLASS

SAINT-GOBAIN

SPECIFICATIONS

FOR CLOSED-LOOP RECYCLING OF GLAZING FROM BUILDINGS

Closed-loop recycling is transforming a material at the end of its functional life into a new product. This can potentially be done endlessly, without losing any critical properties of the product.
Glass can be recycled infinitely, and thus a perfect candidate for closed-loop recycling. However, flat glass in glazings has a demanding nature and a special chemistry. To increase its recycled content, only cullet [1]originating from flat glass can be recycled into flat glass. Introducing more cullet in our glass has three main environmental virtues:

- **Reducing CO_2 emissions** (1 ton of cullet reduces CO_2 emissions by 300kg[2]);
- **Preserving natural resources** (1 ton of cullet saves 1.2 tons of primary raw materials);
- **Reducing energy consumption** (-30% less energy is needed for melting cullet, compared to melting primary raw material).

The aim of this document is to describe how building glass should be collected in order to be recycled in closed-loop process within a Saint-Gobain Glass furnace.

This document is made to be copy-paste, and eventually used to enrich the book of specification of the building or façade.

[1] Scraps of glass
[2] Scope 1 + 2

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1. CLOSED-LOOP RECYCLING OF GLAZING

The façade (glazing and joinery) shall be dismantled for closed loop recycling.

As such the glazing shall be collected and treated by a recycling company in partnership and/or certified by a flat glass producer. It is essential that the recommendations and guidelines concerning the proper removal and storage of windows and façade glazing are observed to maintain high quality cullet needed for float glass production.

2. TYPES OF GLASS ACCEPTED FOR FLOAT GLASS PRODUCTION

Accepted materials:

- Clear glass (coloured glass should be validated with the float glass manufacturer)
- Magnetron and pyrolytic coated glass
- Mirrors
- Lacquered glass
- Enameled glass (colour to be validated with the float glass manufacturer)
- Acid-etched glass
- Patterned glass[3]
- Any configuration: single glass, insulating glass, laminated glass, annealed, heat strengthened, toughened / tempered glass, heat soak tested glass, etc.

Excluded materials:

Building glazing

- Wired glass
- Glass cullet mixed with yard waste or other contaminated waste
- Glass with a fire-resistant intermediate layer
- Solar panels
- Electrochromic glass
- Glass with electric connections

Other glass types and materials:

- Glass-ceramic elements: cookers, oven doors, etc.
- Plastic and glass bottles
- Laboratory glass (test tubes, beaker glasses, etc.)
- Bulbs and light fittings
- Decorative glass objects
- Glazed joinery, containing less than 50% glass
- Television screens, computer screens...
- Construction waste (aggregates, concrete, rubble, sand…)
- Elements containing asbestos

[3] Also called *textured glass*

3. Conditions for closed-loop recycling of building glazing:

3.1. Glazing diagnosis

Before façade dismantling, a specific glazing diagnosis should be performed in order to properly identify and sort the different types of glazing.

3.2. Storage of windows and façade glazing

The company that conducts the windows and facades removal process or an approved third-party contractor, should guarantee that the glass collected is suitable for closed-loop recycling. This means the façade elements and windows must be properly handled and stored respecting the following conditions:

- Should be kept as non-fractured glass (integral glass elements). Broken glass (shards) could be accepted only after validation by the certified recycling company who will validate the breaking process and the quality;
- Should not be mixed with site waste;
- Should never be disposed of in containers;
- And efficient storage methods should be deployed

Examples of unbroken glazing stored in good conditions

3.3. Transport of windows and façade glazing

The company in charge of removing the windows and façade glazing from the building, or the certified recycling company can transport or receive the glass, with or without joinery, so that it can be further processed into cullet. Precaution must be taken during transportation to avoid any glazing breakage.

3.4. Transforming windows and façade glazing into cullet

The recycling company is responsible for the necessary checks required to produce good quality cullet in closed-loop. It may work together with the float glass producer to ensure this goal.

3.5. Monitoring the recycling of joinery and glass

The certified recycling company or partner shall provide a certificate stating:

- The amount of received and recycled joinery in kilos by the certified recycling company or partner;
- The amount of cullet finally received and recycled into the float glass producer.