

Collage of Engineering
Materials Department

Third Class
Lecture (7-b)

GLASS

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5.2.1. Glass quality

During the process of melting and shaping of the glass (preparation of mixture, transportation, hot molding), different faults can occur in the glass. Quality of the glass is defined with maximum allowed number of faults and their size. Possible faults: stones, bubbles, vint. 24

Stones

Hard bright dots inside the product, caused by irregularities during the preparation of the mixture (white dots), crystallization during the melting process (glass like dots), disintegration of fireproof materials from the furnace structure (white, brown, red dots), fall of the agitator shaft into the workspace (dark dots). All these faults occur locally on some products. In case of an irregularly melted glass mixture, faults can be noticed on all workspaces and products, accompanied with small bubbles and vind.

Pebble or inclusion in the glass can be formed as result of incorrect treatment. They are of dark (black) color, and are caused by metal shards from:

- rust on blow pipe,
- blow pipe made from incorrect material,

- rust on bowl for pipes for vacuum gatherer (can be seen after polish),
- bright pebbles are results of glass particle that are attached to the product during processing.

Bubbles

Bubbles can be formed as a result of bad melting of the mixture- glass fault and as a result of incorrect processing- glass fault. If they are result of bad melting, bubbles occur on all products. They are of small in size and spread throughout whole product. Bubbles can be formed by agitators that are very old or due to their too high rotation speed. They can also be the result of the reboil process. Bubbles are considered as a fault, when their size is over 1mm and they can be found only on one part of the product.

Vind

Is a line or an area on the product with different angles of refraction.

Vind faults are caused by:

- a new furnace- reaction between glass and fireproof materials of the furnace (can happen with old furnaces also),
- fault during mixture preparation,
- inadequate temperature regime of melting,
- an increase in take out of the material, 25