Good afternoon!

Since the beginning of the green glass production the African chrome have been used till 2013.

There were no problems connected to the furnace operation during that usage apart from the black specks and metal surface cord (bead-shaped) defects appearance.

In order to eliminate these problems, the Russian chromite produced by "GDK CHROME" CJSC was used from 2013.

The chemical composition of this material was more or less stable, in particular Cr2O3 - 40-42%.

Thus, black specks and metal surface cord defects in green glass were liquidated.

We cooperated with this supplier till December 2016 until the shortage in feedstock took its place.

Regarding to this factor other suppliers appeared on the market.

From January 2017 we used “Center” LLC production chromite. The chemical composition of their materials extremely differs from those given in their quality passports(Cr2O3 from 13.59 to 43%).

At 8 Jan 2017 we received another feedstock supply from LLC “Center” and during its application the furnace mode was changed and olive color emerged.

As the inquiry progressed the presence of carbon in form of coke in delivery lot from 8 Jan 2017 and 11 Jan 2017 was stated.

If used by recipe, 2.6 kg. of anthracite to the plummet were added and moreover 4-6 kg. of carbon in form of coke were inadvertently loaded in. Thus it caused the furnace mode change and olive oil appearance.

According to the different raw material processing technologies (one for all from Kazakhstan) the chemical composition of chromite also differs due to the supplier.

Basically, the highest concentration, about 2-14% Fe2O3 and Cr2O3 42-44%, 20-23% MgO is typical for the Permian supplier with the smaller amount of СаО - 0,5%.

While LLC “Center” has following concentration characteristics: Fe2O3 - 6-12%, Cr2O3 - 13-40%, 12-19% of MgO and CaO from 7% to 32%.

HDV “Chrom”: Fe2O3 - 3-7% and Cr2O3 - 40-44%, 13-23% of MgO and CaO from 0% to 1%.

Due to the instability of Fe2O3 and Cr2O3 oxidation-reduction balance of the furnace changes too, thus causing the appearance of seeds, blisters and color reduction.

With such oxides instability it’s not possible to provide the correct recipe in time.

Conclusions:

1. To continue working with the Russian chromite (which is a synthetic concentrate of ferrochrome alloy wastes) its composition should be invariable and stable! Thus the supplier should be unique! to establish the mode of the furnace.

(These suppliers have more globular structure and fluidity of feedstock – on 0.125 mm sieve the residue is 0.4 to 0.9%.)

At the moment, due to the shortage of chromite in the market supplies are planned to be from different sources.

We received 20 tons of chromite (waste concentrate) from LLC “Center” at 2 Feb 2017 with the chromium content of 38-41%.

In a week we expect 20-40 tons from “Permskii Element” (waste concentrate). Due to the higher level of chrome 41 - 46% there will be other oxides oscillation.

Latter on there will be another 20 tons supply from “Novii Dom” (ore) with its own chromium concentration in 38-40%.

Due to the differences in composition and concentration of chromium it is impossible to adjust the recipe correctly.

2. If using the African chromite (acc. to the Moscow office – ore) where chemical composition is tend to be stable there is a higher possibility of such cord defects appearance as black specks and metal surface cord beads.

Causes of this phenomenon:

The material is very fine (as powder), on the sieve of 0,125mm the residue equals 0.

As a result, the material absorbs moisture and cakes (besides, our location - the Ural mountains with its high humidity influence upon) All these factors are causing the appearance of such surface cord defects as black specks and metal beads.

With all the respect and appreciation

K.Mirzoev