

THE INVENTION CLAIMED IS

1. A method of making the clear glass using a conventional float non-vacuum glass system, the method comprising:

providing a glass batch having ingredients to make the glass having the basic soda-lime-silica glass composition and colorants;

melting the glass to provide a pool of molten glass;

flowing the molten glass onto a molten tin bath;

moving the molten glass on the surface of the molten tin bath, while controllably cooling the glass and applying forces to the glass to provide a glass of a desired thickness; and

removing the glass from the molten tin bath, wherein

the method of making the glass is change from one of the glass batch portions to the other one of the glass batch portions by altering the weight percent of the colorants to alter the weight percent of iron within the range specified for the glass batch portion being changed.

2. The method of claim 1, wherein the conventional float non-vacuum glass system contains a furnace, the combustion of the furnace produced by a firing of air and/or gas, or by a firing of oxygen/gas, to control the redox in the glass ($\text{FeO}/\text{Fe}_2\text{O}_3$) from about 0.30 to 0.55.

3. The method of claim 2 wherein the combustion of the furnace can be produced by a firing of air/gas or be by a firing of oxygen/gas, and the desired redox in the glass ($\text{FeO}/\text{Fe}_2\text{O}_3$) from about 0.30 to 0.55 wt. %; can be achieved by adjusting the oxygen and air in the combustion.

4. The method of claim 2, wherein the source of iron is a low iron raw material.

5. The method of claim 4, wherein the low iron raw material is low iron sand, low iron limestone, low iron dolomite, low iron clear cullet, or a combination thereof.

6. The method of claim 4, wherein the low iron dolomite comprises a maximum of 0.020 wt. % Fe_2O_3 .

7. A method of forming clear glass comprising

mixing raw materials, wherein the raw materials comprise cullet, sand, soda ash, salt cake, limestone and dolomite, wherein the dolomite comprises:

SiO_2	0 to 5
Na_2O	0 to 1
CaO	25 to 40
MgO	15 to 30

Al ₂ O ₃	0 to 1
SO ₃	0 to 1
Fe ₂ O ₃	0 to 0.1

melting the raw materials to form molten glass;

flowing the molten glass onto a molten tin bath; moving the molten glass on the surface of the molten tin bath while controllably cooling the molten glass and applying forces to the molten glass to form a glass of a desired thickness and a desired width; and

removing the glass from the molten bath.

8. The method of claim 7, wherein the raw materials are present in the following amounts:

Cullet	0 to 15 wt. %
Sand	max 65 wt. %
Dolomite	5 to 20 wt. %
Salt Cake	0.2 to 1.0 wt. %
Soda Ash	13 to 23 wt. %

9. The method of any of claim 7, wherein the sand comprises:

SiO ₂	95 to 100
Na ₂ O	0 to 1
CaO	0 to 0.5
MgO	0 to 1
Al ₂ O ₃	0 to 1
SO ₃	0 to 1
Fe ₂ O ₃	0 to 1

10. The method of claim 7, wherein the salt cake comprises:

SiO ₂	0 to 1 wt. %
Na ₂ O	50 to 75 wt. %
CaO	0 to 1 wt. %
MgO	0 to 1 wt. %

Al ₂ O ₃	0 to 1 wt.%
SO ₃	0 to 1 wt.%
Fe ₂ O ₃	0 to 1 wt.%

11. The method of claim 7, wherein the cullet comprises:

SiO ₂	65 to 75 wt.%
Na ₂ O	10 to 20 wt.%
CaO	5 to 15 wt.%
MgO	0 to 5 wt.%
Al ₂ O ₃	0 to 5 wt.%
SO ₃	0 to 1 wt.%
Fe ₂ O ₃	0 to 1 wt.%

12. The method of claim 7, wherein the limestone comprises:

SiO ₂	0 to 5 wt.%
Na ₂ O	0 to 1 wt.%
CaO	40 to 65 wt.%
MgO	10 to 30 wt.%
Al ₂ O ₃	0 to 1 wt.%
SO ₃	0 to 1 wt.%
Fe ₂ O ₃	0 to 0.5 wt.%

13. The method of claim 7, wherein the soda ash comprises:

SiO ₂	0 to 1 wt.%
Na ₂ O	40 to 70 wt.%
CaO	0 to 1 wt.%
MgO	0 to 1 wt.%
Al ₂ O ₃	0 to 1 wt.%
SO ₃	0 to 1 wt.%
Fe ₂ O ₃	0 to 1 wt.%

14. The method of claim 7, wherein the raw materials further comprise coal or graphite.

15. The method of claim 14 wherein the coal or graphite is in a range of 0.01 to 0.3 wt. %.

16. The method claim 14, wherein the coal or graphite comprises

SiO ₂	0 to 1
Na ₂ O	0 to 1
CaO	0 to 1
MgO	0 to 1
Al ₂ O ₃	0 to 1
SO ₃	0 to 1
Fe ₂ O ₃	0 to 5

17. A glass composition comprising

	Weight Percentage
SiO ₂	65 to 75
Na ₂ O	10 to 20
K ₂ O	0 to 5
CaO	5 to 15
MgO	2 to 10
Al ₂ O ₃	0 to 5
SO ₃	0 to 0.5
Cr ₂ O ₃	0.3 to 10 ppm
Fe ₂ O ₃	0.02 to 0.07
FeO	0.005 to 0.03
Redox (FeO/Fe ₂ O ₃)	0.2 to 0.6

18. The glass composition of claim 17, wherein the Fe₂O₃ is in an amount of 0.021 to 0.053 wt. %, and the redox is 0.30 to 0.46.

19. The glass composition according to claim 17 further comprising 50 to 500 ppm of TiO₂.

20. The glass composition of claim 17 further comprising a glass having the glass composition, wherein the glass comprises a luminous transmittance (L_{tc}) of at least 85%; an

ultraviolet transmittance (T_{uv}) of less than 90%; an infrared transmittance (T_{ir}) of less than 90%; a total solar energy transmittance (TSET) of at most 92%; a lightness value (L^*) of 90 to 99; an a^* color channel in the range of 1 to -2; a b^* color channel of in the range of 1 to -1; a dominant wavelength of 470 to 525 nm; and a purity (Pe) of not more than 2%.

21. The glass composition of claim 17 further comprising 25 to 500 ppm of SnO_2 .

22. The glass composition of 17 wherein the low content of iron oxide being modified in a glass batch by low iron raw materials, said low iron raw materials comprising low iron sand, low iron limestone, low iron dolomite, low iron clear cullet or a combination there.

23. The glass composition of claim 22, comprising low iron dolomite in a range of 5 to 20 wt. % in the glass batch.

24. The glass composition of claim 22, wherein the low iron dolomite comprises a maximum of 0.020 wt. % Fe_2O_3 .