



# 3049-5-XX0-00-TS-001

## Glass Raw Materials - Technical Specification

Rev	Description	Edited	Check	Iss'd	Appr'd	Date
00	Revision 0	GMA	BER	INFO	MLG	25/09/20
01						
02						
03						
04						
05						

Here below the chemical analysis and grain size relevant the glass raw materials based on Italy availability. Other raw materials can be used after STM Technologies approval. All raw materials must be dry, free from metallic iron, arsenic, S reducer, phosphorus oxide, wood, straw, metallic wastes.

### **Storage**

General rules for the storage of the raw materials are:

- Relative humidity  $\leq 70\%$
- Temperature over dew point

### **1. QUARTZ SAND**

<b>Element</b>	<b>%</b>
SiO <sub>2</sub>	95.0%
Al <sub>2</sub> O <sub>3</sub>	2.7%
Fe <sub>2</sub> O <sub>3</sub>	0.2%
K <sub>2</sub> O	1.5%
<b>GRAIN SIZE FROM:</b>	<b>RIDDLING:</b>
0,8 - 0,6 mm	< 1,0%
0,6 - 0,3 mm	30,0 %
0,3 - 0,1 mm	60,0 %
< 0,1 mm	< 9,0 %

No particles more than 0.85 mm

**Similar chemical composition can be used to obtain STM target glass.**

**If so, Client shall send to STM all local glass Raw Material Chemical Analysis for STM check**

### **2. FELDSPAR SAND**

<b>Element</b>	<b>%</b>
SiO <sub>2</sub>	85.0%
Al <sub>2</sub> O <sub>3</sub>	8.1%
Fe <sub>2</sub> O <sub>3</sub>	0.2%
K <sub>2</sub> O	5.8%
<b>GRAIN SIZE</b>	<b>RIDDLING</b>
0,8 - 0,6 mm	< 2,0 %
0,6 - 0,3 mm	38 %
0,3 - 0,1 mm	55.0%
< 0,1 mm	< 5,0 %

No particles more than 0.85mm

**Similar chemical composition can be used to obtain STM target glass.**

**If so, Client shall send to STM all local glass Raw Material Chemical Analysis for STM check**

### 3. DOLOMITE

Element	%
CaO	30.7%
MgO	21.3%
SiO <sub>2</sub>	0.2%
GRAIN SIZE	RIDDLING
> 1,5 mm	< 1.0%
1,0 – 0,6 mm	70.0%
0,6 – 0,1 mm	35.0%
< 0,1 mm	< 3.0%

No particles more than 1.5 mm

**Similar chemical composition can be used to obtain STM target glass.**

**If so, Client shall send to STM all local glass Raw Material Chemical Analysis for STM check**

### 4. LIMESTONE ( Calcium Carbonate )

Element	%
CaO	55.20%
MgO	0.80%
GRAIN SIZE	RIDDLING
> 1.00 mm	< 5.0%
0,6 mm – 1,0 mm	40.0%
0,1 mm - 0.6 mm	45.0%
< 0,1 mm	< 10 %

No particles more than 1.5 mm

**Similar chemical composition can be used to obtain STM target glass.**

**If so, Client shall send to STM all local glass Raw Material Chemical Analysis for STM check**

## 5. SODA ASH (DENSE) ( Sodium Carbonate )

Element	%
Na <sub>2</sub> O	58.00%
Fe <sub>2</sub> O <sub>3</sub>	0.05%
NaHCO <sub>3</sub>	0.20%
GRAIN SIZE	RIDDLING
> 1.50 mm	< 1.0%
0,4 mm - 1.0 mm	60.0%
0.1 mm - 0,4 mm	35.0%
< 0,1 mm	< 4.0%

No particles more than 1.5 mm

**Similar chemical composition can be used to obtain STM target glass.**

**If so, Client shall send to STM all local glass Raw Material Chemical Analysis for STM check**

## 6. BORAX ( Rasorite )

Element	%
B <sub>2</sub> O <sub>3</sub>	47.50
Na <sub>2</sub> O	21.10
GRAIN SIZE	RIDDLING
> 1.250 mm	< 2.0 %
0,4 mm - 0.8 mm	55.0 %
0.1 mm – 0,4 mm	35.0 %
< 0.1 mm	< 8.0 %

No particles more than 1.5 mm

**Similar chemical composition can be used to obtain STM target glass.**

**If so, Client shall send to STM all local glass Raw Material Chemical Analysis for STM check**

## 7. CULLET

- INTERNAL CULLET
  - SAME CHEMICAL ANALYSIS OF STM GLASS (WASTE GLASS PRODUCED IN THE FACTORY)
- EXTERNAL CULLET (SODA LIME GLASS)
  - TYPICAL COMPOSITION:

Element	%	Tolerance %
SiO <sub>2</sub>	71.00	± 1
Al <sub>2</sub> O <sub>3</sub>	1.50	± 0.5
Fe <sub>2</sub> O <sub>3</sub>	0.10	± 0.1
CaO	9.00	± 0.5
MgO	3.50	± 0.5
Na <sub>2</sub> O	14.00	± 0.5
K <sub>2</sub> O	0.70	± 0.5
<b>GRAIN SIZE</b>	<b>RIDDLING</b>	
4 mm - 10 mm	/	

- CLIENT SHALL SEND CHEMICAL ANALYSIS TO CHECK THE AMOUNT THAT CAN BE USED COMBINED WITH OTHER RAW MATERIALS. IT IS IMPORTANT TO HAVE ALWAYS A KNOWN AND CONSTANT CHEMICAL COMPOSITION. DEPENDING ON THIS, IT IS POSSIBLE TO ADD MORE THAN 70% EXTERNAL CULLET
- BEST CULLET GRAIN SIZE : 4 – 10 mm