



Pilot production of mix-2 CSA cement at pilot rotary kiln .

Mix-8 and mix-11 were produced with furnace and samples analyzed.

The main phase *ye'elimite* observed as it is expected with mineralogical analysis.

Comparing the physical properties of CSA cement with OPC, CSA has shorter setting times and it gains a compressive strength in 1 day whilst OPC gains the same compressive strength in 28 days.

This results show that produced CSA with SRMs meet the expectations.

Minerals (%)	Formula	mix-2	mix-8	mix-11
Yeelimite-cub	$\text{Ca}_4 \text{Al}_6 \text{O}_{12} \text{SO}_4$	38.1	25.6	26.9
Yeelimite-orth	$\text{Ca}_4 \text{Al}_6 \text{O}_{12} \text{SO}_4$	9.7	11.0	6.2
Anhydrite	$\text{Ca SO}_4$	10.2	11.2	10.3
Merwinite	$\text{Ca}_3 \text{Mg O}_8 \text{Si}_2$	22.4	22.7	12.7
Ellestadite	$\text{Ca}_5 (\text{SiO}_4)_{1.5} (\text{SO}_4)_{1.5} \text{Cl}_{0.2} \text{F}_{0.8}$	16.5	18.4	8.8
Perovskite	$\text{CaTiO}_3$	2.5	8.7	3.3
Larnite	$\text{Ca}_2 \text{O}_4 \text{Si}$	0.6	2.4	31.8

- Clinker, gypsum and waste mix were fed to the ball mill for each type of cement's production.

- 2 liters per tonne **liquid Sb<sub>2</sub>O<sub>3</sub> (antimony trioxide)** which is a **Chromium (VI) reducer** was used in the production of mix 22.



- By-pass line was constructed to transport the produced cement directly into the cement trailer after the production.

- Blended cement was filled into big bags and stored.





**1** - Two layers of wire mesh steel were placed above the base layer.



**3** - The concrete pumped into construction area.



**4** - The surface was smoothed by a surface vibrator screed respectively.



**5** - It was finished by a walk-behind power trowel.



**2**- Ready mix concrete was produced at a nearby plant using mix-22 blended cement and aggregates.



**6** - Its surface was broom-textured to increase the skid resistance.

## Green Ready Mix Concrete (CS-1)

- Green Ready mix Concrete 115 mx8mx0,2m
- Cement: Mix-22 (SRMs: 5% glass waste, 5% ceramic waste and 2% ladle furnace slag)
- GCs containing 882 kg of EAF slags aggregates /m<sup>3</sup>
- Heavy vehicle traffic

