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## **BEST PRACTICES IN THE USE OF CEMENT AND CONCRETE**

TCL Guyana Inc. (TGI) Portland Pozzolan Cement is guaranteed factory fresh is best cement in Guyana for your construction needs.

Among the advantages of using TGI Portland- Pozzolan are easier workability, lower risk of cracking, and higher long term strengths. TGI Portland-Pozzolan cement also gives a cement mixture with lower porosity, creating concrete that is thicker in texture and therefore less permeable. This prevents entry of destructive substances.

Portland-Pozzolan Cement is also ‘more environmentally friendly’ as the production of this type of cement results in lower emissions of carbon dioxide than the production of Ordinary Portland Cement, primarily through the replacement of a portion of the clinker (the intermediate raw material in the production of cement) with a naturally occurring material known as ‘Pozzolan’. Indeed, the production of Portland- Pozzolan Cement can result in a 20% reduction of the carbon dioxide emissions as compared to the level generated in the production of Ordinary Portland Cement. The production of Portland-Pozzolan cement is therefore compatible with a low carbon approach to development.

### **PERFORMANCE**

- ❖ Getting the best performance from your concrete applications requires high quality ingredients such as aggregates (stone, sifting, sand), cement and water.
- ❖ Cement is the paste that binds the aggregates to make concrete.
- ❖ Since concrete is negatively affected by contaminants, the following guidelines should always be adhered to in order to achieve the best out of your concrete

### **WATER**

- ❖ You should use only potable water, which is water suitable for drinking and cooking purposes, when mixing concrete
- ❖ Water from canals etc. contains contaminants which are not suitable if you want the best concrete.
- ❖ Do not use excess water. Excess water reduces the strength of the concrete/ mortar.

## **AGGREGATES**

- ❖ Wash your aggregates before mixing your concrete. Your aggregates should always be free of silt and other contaminants.
- ❖ Excessive amounts of silt prevent cement particles from bonding properly with other materials which may result in weak concrete. Also, aggregates with high amounts of contaminants can greatly delay the setting of concrete.

## **MIXING**

- ❖ Use properly proportioned mixes of concreting materials.
- ❖ A minimum recommended mix design for reinforced concrete to be used in domestic building is;
  - One (1) part of TGI Portland Pozzolan Cement.
  - Two (2) parts fine aggregate (sifting, sand)
  - Four (4) parts coarse aggregate (stone)
- ❖ In mixing, ensure that all ingredients are **uniformly distributed**.
- ❖ Concrete must be placed within **one hour** of being mixed.
- ❖ Use mechanical vibrators or poke concrete mixture to remove air bubbles and pockets as excessive air in concrete reduces strength.
- ❖ Vibration reduces the risk of ‘honeycomb’ formation or “large voids”
- ❖ Once properly mixed, placed and compacted concrete will achieve a cube compressive strength as follows;
  - 28 Days curing = 20.7MPa or 3000psi.

**Remember**, always stick to your mix design and do not use excess water.

## **CURING**

- ❖ Curing is essential for the concrete to develop its strength.
- ❖ Concrete should be properly cured by wetting/misting, covering with plastic or using curing compound.
- ❖ Keep your concrete continuously wet for at least seven (7) days.
- ❖ Start curing immediately after the concrete has set for as long as practical

## **STORAGE OF CEMENT**

- Protect your cement from moisture, damp surfaces, draught, water or rain.
- Store cement in a fully enclosed and covered area.
- Do not store cement on bare concrete floor or dirt.
- Always place a moisture barrier such as plastic or a pallet between the floor and the cement.
- Store exposed or opened cement in a plastic garbage bag and seal properly.
- Do not stack cement more than 10 sacks high.

## **SAFETY TIPS**

- Freshly mixed cement, grout, mortar or concrete may cause severe skin irritation and burns.
- Avoid direct contact with skin if possible and wash exposed area properly with water.
- In case of eye contact, rinse immediately and repeatedly with water and seek prompt medical attention.
- When lifting cement, lift with legs and not by bending.
- Ask for assistance in lifting sacks

## **CONCRETE BLOCK MAKING**

*“It is preferable to use Sifting along with Sand and Cement in Block Making”*

Building your home is a lifetime investment and as such, you should use the best materials that you know will give you the finish and satisfaction you are looking for and truly deserve. In building your home, whether it is concrete or wood, cement is an important ingredient. If it is a wooden house you need concrete for your foundation. If it is a concrete house, you need cement for your foundation, columns and building blocks.

When making blocks, it is recommended that sifting be used along with sand and cement.

However, if it is inconvenient to use sifting or it is not easily available, quality blocks can be made with sand only, provided the correct mix design is used

## **Cement, Sifting & Sand Blocks**

- The mixture (cement to sand & sifting) is very important in the production of concrete blocks.
- It is recommended that you use one (1) sack of cement to three wheelbarrows of sand and sifting.
- There should be a fifty (50) percent split between the sand and sifting.
- TGI Portland Pozzolan cement, sifting and sand mixture will produce high quality blocks.
- TGI Portland Pozzolan cement and sand will also produce high quality blocks.
- Mixing must be properly done for good results.
- After properly mixing, the mixture should be well compacted in the mold to eliminate air spaces.
- Use of a vibration machine will produce excellent compaction. This allows for the development of good early strength.
- When curing your blocks, wet and expose them to heat from the sun.
- Cover your blocks with plastic to retain the moisture and heat.

- Cement works better when heat and moisture present.

### **Cement & Sand Blocks**

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- It is recommended that you use one (1) sack of cement to three wheel barrows of sand.
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- Your mixture must be properly mixed for good results.
- After properly mixing, the mixture should be well compacted in the mold to eliminate air spaces.
- Use of a vibration machine will produce excellent compaction. This allows for the development of good early strength.
- When curing your blocks wet and expose it to heat from the sun.
- Cover your blocks with plastic to retain the moisture and heat.
- Cement works well when heat and moisture is present.
- Your blocks will develop 20% to 25% more early strength when covered.
- When exposed to sun uncovered, the sun will extract the moisture at a fast rate and can slow the rate of early strength development.

### **Important Tips.**

- Always use potable water when mixing.
- Ensure that your sand and or sifting is free from stems, leaves etc.
- Ensure your blocks are properly cured before use.
- Maintain high quality at all times.

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