



## UNACEM PERU S.A.

### MATERIAL SAFETY DATA SHEET (MSDS)

#### PORTLAND CEMENT CLINKER

#### SECTION 1: PRODUCT INFORMATION

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**PRODUCT NAME:** PORTLAND CEMENT CLINKER, CLINKER  
**OTHER NAME:** CLINKER TYPE I, II, IA y V.

**MANUFACTURER:** UNACEM PERÚ S.A.  
**ADDRESS:** AV. ATOCONGO 2440, VILLA MARIA DEL TRIUNFO – LIMA, PERU  
**TELEPHONE NUMBER:** 511 2170200  
**EMERGENCY CONTACT:** 511 2170221

**REVISION DATE MSDS:** August 02th, 2023

**APPEARANCE:** Synthesized material (Agglomerated), dark gray color, produced by temperature heating around 1500 ° C of a mixture of Lime Minerals with contents of Iron and Aluminum, presents various mineralogical phases and some free Calcium Oxide sells in bulk.

**NOTE:** This MSDS covers many types of clinker

#### SECTION 2: COMPOSITION AND INFORMATION ON INGREDIENTS

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PORTLAND CEMENT N° CAS: 65997-15-1

<u>COMPONENTS</u>	<u>N° CAS</u>	<u>%</u>	<u>CONCENTRATION %</u>
C3S Tricalcium Silicate	12168-85-3	58%	47 to 72%
C2S Dicalcium Silicate	10034-77-2	15%	5 to 30%
C3A Tricalcium Aluminate	12042-78-3	10%	3 to 13%
C4AF Tetracalcium Aluminate	12068-35-8	11%	5 to 15%
Free Calcium Oxide (CaO (I))		<1.6%	

#### SECTION 3: HAZARD IDENTIFICATION

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A brief exposure to cold Clinker is not likely to cause serious injury. Long exposure to hot Clinker can cause serious burns to exposed tissues. Portland Cement Clinker dust can cause irritation of the throat and respiratory tract. When the Portland Cement Clinker accidentally comes in contact with water or its powder gets wet, it generates Calcium Hydroxide and Silicates, which is an alkaline solution. Due to its high alkalinity, wet Portland Cement Clinker can cause skin and eye irritation, additionally, because of their Cr trace content some individuals may develop an allergic reaction.

#### **SECTION 4: FIRST AID MEASURES**

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**INHALATION:** Move person to fresh air. May be necessary to provide oxygenation and if discomfort and symptoms persist the recommendation is to visit a doctor.

**EYE CONTACT:** Rinse eyes thoroughly with water for at least 15 minutes, including under lids. **REMOVE** Contact lenses if it is used. Seek medical attention if discomfort or pain persist.

**SKIN CONTACT:** Remove/take off contaminated clothing, rinse with water and PH-neutral soap. Visit to a Doctor in case of rash or dermatitis.

**INGESTION:** Do not induce vomiting. If conscious have person drink plenty of water and seek medical attention immediately.

**Note:** Workers in charge to give first aid measures should not contact to wet Portland Cement Clinker or wet components added.

#### **SECTION 5: FIRE FIGHTING MEASURES**

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Clinker is non-combustible and not explosive. Cement poses no fire related hazard, in case of fire use extinguishing media appropriate for surrounding fire.

Portland Cement Clinker in contact with water can evolve alkaline substance.

#### **SECTION 6: ACCIDENTAL RELEASE MEASURES**

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Place spilled material into a container.

Use dry cleanup methods that do not disperse dust into the air.

Collect and place in suitable container for reuse or disposal.

Protect yourself, avoid inhalation of Clinker and contact with skin.

Scrap wet Clinker and place in container.

Allow material to dry or solidify before disposal.

Do not wash Clinker down sewage and drainage systems.

**Waste disposal method:** Clinker can be reused if it is not contaminated, or on the contrary, dispose of waste material according to local regulations. Clinker is not a hazardous waste.

#### **SECTION 7: HANDLING AND STORAGE**

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Keep Clinker dry until used. Avoid contact with water to prevent hardening.

Clinker can build up or adhere to the walls of a confined space. The clinker can release, collapse or fall unexpectedly. To prevent burial or suffocation, do not enter a confined space without the security measures.

#### **SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION**

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Tolerable exposure limit with regard to chemical contaminated are settled by DS-015-2005-SA according to workplace exposure standards: (WES)

Portland Cement Wes-Twa inhalation fraction: 10 mg/m<sup>3</sup>  
Wes-Twa breathable fraction: 3mg/m<sup>3</sup>

**General protection:** No eat, no drink while handling Clinker to avoid skin or ingestion contact. Periodically wash areas contacted by dry Portland Cement or by wet Cement with PH neutral soap. Wash again at the end of work. If clothing becomes saturated with wet concrete, it should be removed and replaced with cleaned dry clothing.

**Respiratory protection:** Use NIOSH disposal respirators and in poorly ventilate areas use respirator and filters SCBA.

**Skin protection:** Use nitrile rubber gloves and clothes with long sleeved for long exposure or spilling. If cement Portland gets into gets into boots, remove socks and boots immediately and wash skin thoroughly.

**Eyes protection:** Use tight fitting goggles or protective eyewear in dusty environments. Do not use contact lenses.

## **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES.**

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**Appearance:** Solid nodular similar at rock

**Color:** Grey

**Odor:** None

**Vapor pressure:** Not applicable

**Vapor density:** Not applicable

**Melting point:** Not applicable

**Evaporation rate:** Not applicable

**PH in water:** 11 to 13

**Boiling point:** Not applicable

**Freezing point:** None, solid

**Viscosity:** None, Solid

**Solubility in water:** Slightly (0.1 -1.0%)

## **SECTION 10: STABILITY AND REACTIVITY**

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**Stability:** Stable. Keep dry until use. Avoid contact with incompatible materials.

**Incompatibility:** Clinker and the cement are alkaline and is incompatibility with acids, ammonium salt and aluminum metal. Cement dissolves in hydrofluoric acid, producing corrosive silicontetrafluoride gas. Cement reacts with water to form silicates and calcium hydroxide. Silicates react with powerful oxidizers such as Fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride and oxygen difluoride.

**Hazardous polymerization:** None

**Hazardous decomposition:** None

## **SECTION 11 AND 12 TOXIOLOGICAL AND ECOLOGICAL INFORMATION**

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It is unknown toxicological on plants and animals.

### **SECTION 13: DISPOSAL INFORMATION**

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Dispose of waste material according to local regulations.

### **SECTION 14: TRANSPORT INFORMATION**

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This product is not classified as a hazardous material under Peruvian regulations, nor dot of USA, NOR TDG of Canada.

### **SECTION 15: REGULATORY INFORMATION**

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Law 28256 that regulates transport material and hazardous residual indicates that Portland Cement Clinker is not considered a hazardous material.

Status under OSHA / MSHA: OSHA /MSHA: Portland Cement Clinker is considered a hazardous chemical and should be a part of any hazard communication program.

Status under ONU (Orange book): Cement Portland Clinker is not considered on the list of hazardous material.

### **SECTION 16: ADDITIONAL INFORMATION**

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