

# Health & safety guidelines for factory produced mortar for masonry & render

## Factory Produced Mortar for Masonry & Render

All mortar mixtures, both wet and dry, are abrasive and alkaline and the following guidance is important to all users.

### 1 Product identification

**Product:** Wet ready-to-use mortar  
Dry silo mortar  
Dry bagged mortar  
Lime:sand

**Produced by:** Members of the Mortar Industry Association

Also see individual product safety data sheets provided by the supplying Member Company.

## Hazard Information

### 2 Composition

#### 2.1 General

**Mortar** is a mixture of fine aggregate, cement and water. Hydrated lime, pulverised fly ash (pfa), ground granulated blast-furnace slag (ggbs) and admixtures such as plasticizers, water repellents and polymers may be added to improve the properties of the fresh and hardened mortar. Pigments and fibres may also be added to the product.

**2.2 Wet ready-to-use mortar** has the water and set retardants added at the factory during preparation and is then delivered to site ready-to-use.

**2.3 Dry silo mortar. Dry bulk product** is delivered and stored on-site in a silo complete with integrated mixer in which the addition of water produces the wet product on demand.

**2.4 Dry bagged mortar** is batched and bagged at the factory and mixed with water on-site to produce the wet product.

**2.5 Lime:sand. Hydrated lime and fine aggregate (sand)** batched at the factory and mixed with cement and water on-site to produce the wet product.

**2.6 Chemical description.** The principal constituents of cement are calcium silicates and aluminates. Small amounts of sulfates, alkalis, lime and chlorides are also present. Whilst reducing agents are added to comply with the regulatory limit for Chromium (VI) their effect decreases with time and hexavalent chromium salts may be present, which give rise to a potentially hazardous solution when mixed with water. Additional constituents may also be present e.g. pfa, ggbs and limestone, along with other minor chemical additives. The fine aggregates mortar contain a combination of minerals, including silica.

#### 2.7 Hazardous ingredients

**2.7.1** The lime, calcium silicates, alkalis and hexavalent chromium salts within the cement are soluble and when mixed with water will give rise to a potentially hazardous alkaline solution.

**2.7.2** Salts of organic acid within some of the air entraining admixtures are soluble and when mixed with water will contribute to the alkalinity of the solution.

**2.7.3** Airborne dust from the fine aggregate in dry mortar mixes may contain respirable crystalline silica (RCS). Further guidance is available from HSE Publications.

### **3 Hazard identification**

**3.1 General:** Wet mortar is a strong alkali. Contact with the eyes or skin may cause serious burns and ulcerations. The eyes are particularly vulnerable and damage will increase with contact time. Strong alkaline solutions in contact with the skin tend to damage the nerve endings before damaging the skin, therefore, chemical burns can develop without pain being felt at the time.

**3.2 Skin contact:** Until set, mortar mixes may cause both irritant and allergic contact dermatitis:

- Irritant contact dermatitis is due to a combination of the wetness, alkalinity and abrasiveness of the constituent materials.
- Allergic contact dermatitis is caused mainly by the sensitivity of an individual's skin to hexavalent chromium salts.

**3.3 Ingestion:** Strong alkaline solutions can cause chemical burns to the digestive tract. Large quantities may lead to blockages of the digestive and gastro intestinal tracts.

**3.4 Inhalation** of silica particles from dry-mix products or from the cutting or grinding of hardened mortar may cause respiratory damage.

**4.2 Skin contact - all products:** Immediately wash with copious amounts of soap and water. Remove contaminated clothing and wash thoroughly before further use. If irritation, pain or other skin condition occurs, seek medical advice.

**4.3 Ingestion - all products:** Wash out mouth and drink plenty of water. Do not induce vomiting. Seek medical advice if a large amount is swallowed.

**4.4 Inhalation - dry products:** Move to fresh air. If nose or airways become inflamed seek medical advice.

### **5 Fire Fighting Measure**

Both wet and dry-mix mortars containing less than 1% organic material are non-combustible and will not facilitate combustion with other materials. Also see individual product safety data sheets provided by the supplier.

### **6 Accidental release measures**

**6.1 Personal protection:** Wear appropriate protective equipment, as specified in section 8.3 at all times during cleaning up operations to avoid skin and eye contact.

**6.2 Cleaning up wet mortar:** While material is still in the fresh state use suction system where available or mechanical or hand shovel. The product can be slurried by the addition of water but will subsequently set as a hard inert material.

**6.3 Cleaning up dry-mixes:** Use suction system where available and minimise generation of airborne dust.

**6.4 Environmental measures:** Prevent entry into drains, sewers or watercourses.

and protected from freezing and high temperatures.

**7.1.2 Dry silo mortar:** Bulk dry products must only be stored at site in the silos provided by the supplier before being mixed with water and used. Product dispensed from the silo usually sets to solid material within three hours. Use within stated shelf life.

**7.1.3 Dry-mix mortar bags:** Bulk bags and packed products must be stored clear of the ground in dry conditions and protected from wind, rain and external physical damage. Packed products must be stored in unopened bags. Use within stated shelf life.

**7.1.4 Lime:sand:** Bulk bags and stockpiles should be protected from wind and rain. Lumps should be broken down before use.

### **7.2 Handling:**

**7.2.1 Wet mortar:** Avoid skin and eye contact. The risks of dermatitis and burns are increased if the material is allowed to continue rubbing against the skin (e.g. inside boots, in gloves or through saturated clothing). Do not stand, kneel or sit on the wet materials without the correct personal protective clothing (see 8.3).

**7.2.2 Bagged dry-mix mortar:** When handling bags take care when lifting - see Manual Handling Operations Regulations 1992. Bags may have a small amount of cement on the outer surface and appropriate personal protective clothing should, therefore, be used when handling (see 8.3).

**7.3 Mortar dust:** The creation of dust from the cutting or grinding of hardened mortar should be kept to a minimum, with workplace control measures such as containment and local air extraction or ventilation applied to ensure that airborne dust exposure levels are not exceeded. The use of respiratory protective equipment is advised in such circumstances.

## Emergency Action

### **4 First Aid measures**

**4.1 Eye contact - all products:** Irrigate immediately with copious amounts of clean water. Seek medical attention without delay.

## Precautions

### **7 Storage & Handling**

#### **7.1 Storage**

**7.1.1 Wet ready-to-use mortar:** Fresh material must only be stored in purpose-made tubs, be kept covered

## **8 Exposure controls/personal protection**

### **8.1 Workplace Exposure Limits:**

Workplace Exposure Limits (WELs) of 10mg/m<sup>3</sup> total inhalable dust and 4mg/m<sup>3</sup> respirable dust (8 hour TWA) are listed in EH40 for calcium silicate, pfa, ggbs and ground limestones. WELs of 0.05mg/m<sup>3</sup> and 0.1mg/m<sup>3</sup> are listed for Chromium (VI) compounds and respirable silica respectively (8 hour TWA).

(TWA - Time Weighted Average)

**8.2 Engineering Measures:** Where reasonably practicable dust exposures should be controlled by engineering methods, such as local exhaust ventilation.

### **8.3 Personal Protective Equipment:**

**8.3.1 Respiratory protection:** Suitable respiratory protection (HSE approved standard) should be worn to ensure that personal exposure is less than the workplace exposure limit (WEL).

**8.3.2 Hand and skin protection:** Protective clothing should be worn which ensures that wet mortar does not come into contact with the skin. Waterproof gloves, long sleeve clothing with full length trousers and waterproof boots are recommended. Particular care should be taken to ensure that wet mortar does not enter the boots or gloves. If this does occur, such protective clothing should be removed immediately and the skin thoroughly washed as well as the protective clothing/footwear.

**8.3.3 Eye protection:** Dust-proof goggles to HSE approved standards should be worn whenever there is a risk of any wet or dry mixture entering the eye.

### **9 Physical and chemical properties**

See suppliers' individual data sheet.

### **10 Stability and reactivity**

Reacts with water to become alkaline. Sets to hard inert material.

## **11 Toxicological information**

### **11.1 Exposure effects:**

**a Eye contact:** Mild exposure to both wet and dry-mix products can cause soreness. Gross exposure or untreated mild exposures can lead to chemical burning and ulceration of the eye.

**b Skin contact:** Short-term exposure to both wet and dry-mix products may cause alkali burns and acute allergic dermatitis where individuals are sensitised to chromium compounds. Chronic long-term exposure may cause irritant contact dermatitis and may lead to sensitisation of the skin to chromium compounds

**c Ingestion:** The swallowing of small amounts of any cement/water mixtures is unlikely to cause significant reaction. Large amounts may result in irritation to the gastro intestinal tract and may lead to blockages.

**d Inhalation:** Dry powder products may cause inflammation of mucus membranes. Inhalation of large quantities of dust or dust containing respirable silica (generated by cutting, drilling etc) may cause progressive lung damage, leading to permanent disability and, in extreme cases, to premature death. Long-term exposure to silica dust may cause silicosis and lead to an increased risk of developing lung cancer

**11.2 Chronic effects:** Skin exposure has been linked to allergic (chromium) dermatitis. Allergic dermatitis more commonly arises through contact with cement/water mixtures than dry cement or dry pre-mixed mortars.

## **12 Ecological information**

Wet product may be toxic to aquatic life. No long-term ecological effects when used as intended, no environmental impact is anticipated.

## **13 Disposal considerations**

Wearing appropriate personal protective equipment, place spilled wet product in a suitable container. The product will set as a hard inert material and should be disposed of in accordance with current regulations.

## **14 Transportation - wet and dry pre-mixes**

Designated as 'non-hazardous'. Classification for conveyance is not required.

## **15 Regulatory information**

**15.1 Dry mix bags:** Chemicals (Hazard Information and Packaging for Supply) Regulations. Classification: Irritant

### **15.2 Risk phrases**

- Risk of serious damage to eyes - R41
- Irritating to respiratory system - R37 (dry product)
- Irritating to the skin - R38 (dry product)
- Contains Chromium (VI) may cause allergic reaction
- Contact with wet or dry mortar may cause irritation, dermatitis or burns
- Contact between cement powder and bodily fluids (e.g. sweat and eye fluid) may also cause skin and respirable irritation, dermatitis or burns.

### **15.3 Safety phrases**

- Avoid eye and skin contact by wearing suitable eye protection, clothing and gloves - S36, S37
- Avoid breathing dust - S22
- Keep out of reach of children
- After contact with eyes or skin, wash immediately with plenty of clean water. Seek medical advice after eye contact - S28
- Store dry-mix products securely

## **16 Legislation and other guidance information**

Available from HMSO, HSE area offices or local authority Environmental Health Departments.

- CONIAC Health Hazard Information Sheet No. 26 (CEMENT)
- Health & Safety at Work etc Act 1974
- Consumer Protection Act 1987
- Control of Substances Hazardous to Health Regulations (COSHH) 2002
- Control of Substances Hazardous to Health (Amendment) Regulations 2004
- Environmental Protection Act 1990
- HSE Guidance Note EH40 (Workplace Exposure Limits)
- Any authorised manual on First Aid by St. John's/St. Andrew's/Red Cross or other approved

- Manual Handling Operations Regulations 1992 (as amended).
- Workplace Exposure Limits - EH40
- A step-by-step guide to COSHH Assessment - HS(G)97
- Local Exhaust Ventilation - HS(G)37
- Crystalline Silica - EH59
- Dust, General Principles of Protection - EH40
- Waste Management - Environmental Protection (Duty of Care) Regulations 1991 (as amended)



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The Mortar Industry Association is part of the Mineral Products Association, the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and silica sand industries

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There is a real danger of contact dermatitis or serious burns if skin comes into contact with wet mortar. Wear suitable protective clothing and eye protection. Where skin contact occurs either directly or through saturated clothing wash immediately with soap and water. For eye contact immediately wash out eyes thoroughly with clean water. If swallowed wash out mouth and drink plenty of water.

The relevant codes of practice, standards and statutory regulations must always be observed.

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