

Report on Concrete Blocks



24 Wheatfield

Muff.

F93Y500

16/4/2024.

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Charles Byrne Engineering Limited



Foxhall, Letterkenny, Co Donegal F92 YH04

Tel 0876697406 Email whitefoxengineering@gmail.com VAT REGISTRATION NUMBER 3697832SH

Instruction from: [REDACTED]

Address of Property: 24 wheatfield Muff, F93Y500

Instruction: Extract a 100mm core from the dwelling at 24 Wheatfield Muff F93Y500 and arrange a chemical test to provide Total Sulphur, Acid Soluble Sulphate & Water Soluble Sulphate contents and to provide a report which would be read in conjunction with a previously issued report on the dwelling.

Testing Schedule

- Chemical (Total Sulphur, Acid Soluble Sulphate, Water Soluble Sulphate), one sample.

Core Extraction:

The property was surveyed (visual) on 11/1/2024 and one site was chosen for core extraction (Core 51610) from the north gable, right of the chimney (above ground) and from the same concrete block as core HC1166 from the previous report.

Core 51610 was extracted using a dry-core sampler bit 103mm internal diameter in accordance with clause 6.3 of I.S. 465:2018.

The concrete core was dispatched by registered post to Petrolab laboratory in Cornwall, U.K.

Laboratory Testing & Reports

Core 51610 was sent for chemical testing.

The Key Findings were:

1. A **Chemical** test was carried out to quantify the suspected presence and abundance of potentially reactive sulphides.

The chemical test returned the following results:

Acid Soluble Sulphate (ASS) = 0.4% SO₄ (allowable 0.5% SO₄ mentioned in Annex E of IS 465:2018+A1:2020)

Water Soluble Sulphate (WSS) = 50mg/l SO₃ (no upper limit in Annex E of IS 465:2018+A1:2020)

Total Sulphur (TS) = 0.14% (the TS contribution from the cement paste is taken as 0.1% in accordance with Annex E of IS 465:2018+A1:2020 leaving 0.04% contribution from the aggregate).

Irish Standard I.S. EN 12620:2002 and Irish national guidance S.R. 16:2016 limit Total Sulphur in aggregate for use in concrete to 0.1% where there is pyrrhotite present.

In summary the levels of sulphides in the aggregate pose a Negligible Risk.

2. Conclusions

Sulphur

The European Standard EN12620 and guidance document SR16 limit Total Sulphur in aggregates to 0.1% where there is pyrrhotite present, otherwise a level of 1.0% applies. Accordingly the sample is compliant with European and Irish standards.

Note: Recently published peer reviewed research ¹ has determined that the cause of the damage to buildings in County Donegal is iron sulfide (Pyrrhotite or Pyrite) in the aggregate used in the manufacture of concrete blocks and that Muscovite Mica played only an enabling (if any) role. Engineers practicing in the field, in general, subscribe to this position.

¹The "mica crisis" in Donegal, Ireland – A case of internal sulfate attack?

Andreas Leemann [a,b,*](#), Barbara Lothenbach [a,c](#), Beat Münch [a](#), Thomas Campbell [d](#), Paul Dunlop [b](#)