AIDAN O’CONNELL & ASSOCIATES have been in business since 1996 and since our inception we have established ourselves firmly as a leading Engineering Consultancy in the Construction Industry in Ireland. With regard to Pyrite identification and remediation, we are amongst the leading Engineering practices in Ireland, having been engaged as the sole Engineering Consultancy responsible for the roll out of the Premier Guarantee schemes Pyrite remediation process since 2009.

In recognition of our position as an expert service provider within the Pyrite remediation sector, we were invited to participate on the NSAI (National Standards Authority of Ireland) committee tasked with producing the new Irish Standard on Reactive Pyrite in sub-floor hardcore material, which has been published in two parts. Part 1 refers to the Testing and categorization protocol, while Part 2 refers to the Methodology for remediation works. Our office was represented on both of these sub-committees and fully partook in the discussions which lead to the publication and adoption of the standard.

As part of our ongoing commitment to excellence in all areas of our business, we provide a service for Pyrite affected individuals and properties which delivers the full package of required services, through our in house Engineering experts, in conjunction with our partners in the required fields of proficiency.

Should you wish to discuss further any of the services we provide, we would be delighted to talk to you and identify how our expertise may be of benefit to you.
How can we help if you suspect you have Pyrite?

In accordance with I.S. 398 parts 1 & 2, the engagement of a Chartered Engineer is recommended, to undertake a Building Condition Assessment to determine the presence or absence of damage consistent with pyritic heave, and also to quantify the extent of this damage. We have been involved in inspections of this nature since the Pyrite problem first arose in Ireland, and to date have inspected upwards of 650 dwellings. We are currently involved in the remediation of 50 dwellings on an ongoing basis and have successfully remediated over 500 dwellings to date.

What are the Steps following the Engineering Inspection?

If you are seeking to have your home Green Certified in accordance with I.S. 398, it will be necessary to undertake some level of geological testing. If the underfloor hardcore passes these tests, your home can be certified as Pyrite free (Green Certificate). If the hardcore fails the geological testing your home will receive either an Amber or Red Certificate. The colour of the Certificate in this instance will depend on the Damage Condition Rating achieved in the Engineering Inspection, which will be 0, 1 or 2. In general a damage condition rating of 0 means no damage, 1 some damage and 2 significant damage consistent with Pyritic heave.

What is Pyrite?

Pyrite or Iron Pyrite (FeS2) is a very common mineral that occurs in many sedimentary rocks as frambooidal crystals. Subject to the correct conditions, pyrite is problematic in confined construction, such as under floor fill and bridge embankments. This is due to a chemical reaction that can cause pyritic backfill to swell. Construction material containing relatively large amounts of pyrite minerals are likely to expand, crack and/or crumble over time. This occurs when frambooidal crystalline pyrite, air and moisture mix causing a chemical reaction to occur that creates expanding crystals within the material.

What are the tell-tale signs of Pyrite Damage?

If a building is suspected of having a pyrite problem some of the typical observable signs are as follows:

- Heaving (lifting) of a floor slab resulting in slopes and cracks.
- Cracks to floor tiles/damage to floor finishes.
- Uplift at external door thresholds.
- Doors catching on floors.
- Cracks over doors on internal walls.
- Ground floor stud partitions with cracks bulging of plasterslabs.
- Horizontal cracking externally at DPC level.

Green Certificate – hardcore not susceptible to expansion & damage condition rating (DCR) 0 OR hardcore not susceptible to expansion & damage condition rating 1 or 2 with an alternative probable cause for the damage.

Amber Certificate - Hardcore susceptible to limited or significant expansion and DCR 1 (without progression)

Red Certificate - Hardcore susceptible to limited or significant expansion and DCR 1 (with progression) or 2

If you receive a Green Certificate – you do not have a pyrite problem. If you receive an Amber Certificate – you may have a pyrite problem and monitoring of the damage is most likely required. If you receive a Red Certificate – you have a pyrite problem and removal of the stone infill is required.

How is Pyrite-Heave Repaired?

All pyritic aggregate must be removed from beneath the floor slab and any damage caused by the uplift caused repaired. Hence, this will require the removal and replacement of the floor slab, insulation and DPM. All works undertaken must be certified. This will include certification of the new stone and all structural works undertaken.

Other related Questions which are answered on our new website www.pyrite-resolution.com include:

- Who do I engage?
- Who will pay for it?
- How do I get the government grant?
- I need a cert for my property tax exception?

Please do not hesitate to contact if your question is not answered on our website.