

## Spiralite Insulated Ductwork Technical Data Sheet

### Sustainability, Energy Efficiency and Environmental Compliance

**Key consideration:** the maximum energy and environmental benefits can be gained by specifically designing Spiralite into buildings at an early stage, saving significant materials, costs, space, weight and energy, to ultimately deliver a design solution that can be certified to perform optimally both now and well into the future. Our design services are available to assist MEP consultants and Contractors to ensure that the correct quantity of air is delivered at the correct temperature and rate (velocity) to meet the building's specified air delivery requirements in the most environmentally friendly and energy efficient manner and to optimise the comfort of the occupiers and users.

#### Sustainability

In summary, the use of Spiralite ducting provides optimal sustainability through:

- Minimal air leakage, enhanced insulation and greater airflow efficiency reduces energy costs and carbon footprint of any building
- Minimal risk of condensation and thermal transfer, resistant to mould growth
- Lower initial and on-going costs - energy, maintenance and repairs, cleaning
- CFC/HCFC and HFC free
- Zero Ozone Depletion Potential (ODP), Low Global Warming Potential (GWP)
- BREEAM/LEED/DM/Estidama (Pearl)/Green Star benefits and potential innovation credits (see below)
- Optimal use of recycled raw materials in production process; product re-usable and recyclable
- Close to zero wastage on site - all waste is removed and recycled
- Very low carbon footprint/embodied energy - a fraction of the 1,330kg's for steel (GI) insulated

#### Energy Savings

As can be seen above, not only is there a significant carbon saving on the installation of Spiralite, but there are also meaningful energy savings (measured at up to 48%) on the subsequent operation of the HVAC system. This is due, in main, to:

- Its excellent thermal performance characteristics - the rigid phenolic insulation panels used in its manufacture have a very low thermal conductivity, (0.018 - 0.022 W/m-k) and are of a closed cell construction which means that they are highly resistant to moisture absorption and heat losses/gains are minimised, and the fact that the ducting is insulated over its entire length with inbuilt vapour seals
- The circular shape and low roughness factor optimises air flow efficiencies and reduces pressure drops
- Maximum airtightness results in minimal air leakage rates
- The internal connections allow no thermal bridge for temperature loss and are also airtight

#### Compliance, Approvals and Certifications

1. BREEAM - maximum credits in two material sections and innovation credits, as detailed later
2. LEED - optimal contribution to earning points in 3 categories, as detailed later
3. Dubai Municipality Green Ratings - lowest lambda values and thinnest insulation, as detailed later
4. Trustmark certification from the Abu Dhabi Quality & Conformity Council
5. Estidama - credits awarded under the Pearl rating system, as detailed later
6. The Future Build - product approved on the MASDAR portal (refer [www.thefuturebuild.com/products/search/spiralite](http://www.thefuturebuild.com/products/search/spiralite))

7. Green Building Council - products installed at new UK offices (refer [www.ukgbc.org/membership-impact/view-current-members/member-directory/spiralite-holdings-ltd](http://www.ukgbc.org/membership-impact/view-current-members/member-directory/spiralite-holdings-ltd))
8. Low Carbon Business - UK Certification
9. Green Star - Australian Green Building Council Environmental rating system
10. Singapore Green Building Product - product rated as Very Good, the highest possible for air ducts

### **BREEAM Assessments:**

BREEAM is an environmental assessment method for buildings:

- Credits are awarded in ten categories according to performance
- These are then added together to produce a single overall score of Pass, Good, Very Good, Excellent or Outstanding

Two credits relevant to insulation in BREEAM section Materials 6:

Credit 1: Embodied Impact - volume weighted thermal resistance of insulation assessed against the Green Guide rating (insulation panels are A-rated in BRE Green Guide- Jan 2010)

Credit 2: Responsible Sourcing - 80% of insulation designated as being responsibly sourced (insulation panels are 100% responsibly sourced and manufactured to the highest standards under a management system certified to ISO 14001: 2007)

The use of Spiralite ducting will contribute towards both credits

### **BREEAM Innovation Credits:**

There are two ways in which BREEAM awards 'innovation credits' to recognise innovation in building design and procurement. The first is by meeting exemplary performance criteria defined within an existing BREEAM issue (not all assessment issues have exemplary performance criteria). The second is where an application is made to BRE Global by the BREEAM Assessor in connection with a project registered for BREEAM assessment to have a particular building technology or feature, design or construction method or process recognised as 'innovative'. If the application is successful and subsequently building compliance is verified, an 'innovation credit' can be awarded.

An additional 1% can be added to a building's overall score for each 'innovation credit' achieved. The maximum number of 'innovation credits' that can be awarded for any one building is 10, therefore the maximum available additional score for 'innovation' is 10%. Innovation credits can be awarded regardless of the building's final BREEAM rating i.e. they are awardable at any BREEAM rating level.

### **LEED (Leadership in Energy and Environmental Design)**

LEED is an internationally recognized certification system for the design, construction and operation of buildings. Developed by the US Green Building Council (USGBC), LEED certification offers third party validation of a project's green features. The LEED certification is available for all building types including new and existing commercial, institutional, and residential buildings. It evaluates environmental performance from a whole building perspective over the life cycle of a building, providing a standard for what constitutes a green building in design, construction and operation.

LEED is a point based system where building projects earn LEED points for satisfying specific green building criteria. Products & services do not earn points - they contribute towards achieving points as part of a holistic approach. By fulfilling credits, projects earn points that determine its certification level: Certified (40-49 points), Silver (50-59 points), Gold (60-79 points) and Platinum (80+).

Spiralite insulated ductwork can help a project obtain credits by satisfying the LEED specifications in the following categories:

- IEQ - Indoor Environmental Quality (IEQ 1 and IEQ 4.1)
- Integrative Process - early adoption of Spiralite in the design process can assist in earning this credit

- EA - Energy and Atmosphere (EA 2)
- MR - Materials and Resources:
  - **MRc3: Materials Reuse** - Use salvaged, refurbished or reused materials such that the sum of these materials constitutes at least 5%, based on cost, of the total value of materials on the project.
  - **MRc4: Recycled Content** - Use materials with recycled content.
  - **MRc5: Regional Materials** - Use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site.

Spiralite would assist in obtaining credits under all these headings. However, mechanical, electrical and plumbing components and specialty items such as elevators must not be included in the calculation, and so neither Spiralite nor any other mechanical, electrical or plumbing component can help qualifying because they are not included in this calculation.

### Dubai Municipality Green Ratings

Commencing on 1<sup>st</sup> September 2016, new buildings in Dubai will be rated based on a green building rating system designed to achieve high sustainable performance. Structures that do not meet the minimum bronze rating will not be given permits; higher levels are silver, gold and platinum.

The system, applicable to all types of buildings, is part of Dubai's sustainable city goals for 2021 and one of the key objectives is to reduce energy consumption by 34%,

The ratings for insulation materials considers both the thicknesses and lambda (co-efficient of thermal losses) values of the material and phenolic insulation, from which Spiralite is fabricated has the lowest  $\lambda$  values (0.018 - 0.022 W/m-k) for standard insulation material, allowing it to be the thinnest for achieving thermal performance, thereby optimising the ratings under this system.

### Estidama and Pearl

Estidama, which is the Arabic word for sustainability, is a sustainable urban planning initiative developed by the Abu Dhabi Urban Planning Council and is based on the four pillars of sustainability: environmental, economic, cultural and social. The initiative includes the Pearl building rating system as part of the Estidama integrated design initiative.

The purpose of Estidama is to create a new sustainability framework that will direct current thinking while allowing adaptation as new understanding evolves. The Pearl system is based on both BREAM and LEED, but has been developed to encourage the sustainable design, construction and operation of communities, buildings and villas in Abu Dhabi's hot and arid climate where temperatures can reach 50°C and 100% humidity.

The Pearl Rating System is also strongly linked to the Estidama Integrative Design Process, which seeks to promote the concept of Integrated Design process (IDP) as a design approach amongst design professional by encouraging design coordination at the early stages of the project. Maximum benefit can be gained by integrating Spiralite ductwork at the design stage, with savings on money, space and energy.

For a product to be credited under the Pearl system, it requires Trustmark Certification from the Abu Dhabi Quality & Conformity Council, which Spiralite has secured.



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