

## New Solutions to Old Roof Problems

### Polyurethane Spray Foam – a new solution for old roof problems

Polyurethane spray foam is one of the more versatile products in the construction industry and correctly specified affords 'new' solutions to 'old' problems. Iso Spray Foam has superior cost to performance attributes; no other building material is comparable as an insulating material, as a roof stabiliser, as a light weight and practically non load bearing material, as a sound proofer, as a quick and easy retro fit that fits the space exactly, as a draft proofer, as a weather sealer, as a roof bonder and all for a fraction of the cost of a new roof. Modern polyurethane foams can be made to Class 1 or 0 fire rating so posing less of a fire threat than roofing felt. Polyurethane foam is a versatile product that solves 'old' problems; slipping tiles and slates, nail fatigue, perished underfelt, perished back pointing or touching, poor insulation, poor sound proofing and dusty and drafty loft spaces.

Polyurethane foam can be used in the new buildings for insulation and sound proofing too. It is perfect for air sealing and preventing energy sapping drafts draining the heat out of a building. In older buildings polyurethane foam is easily retro fitted by spray foaming. The foam sprayed at 120 degrees and 600 psi acts to stabilise an older roof suffering from slipping slates and tiles foam and prevents the ingress of wind blown rain, snow and debris. It is a replacement for back pointing or touching where roofing felt is absent. Around the UK roof problems are increasing due to the aging profile of the building stock, we do not replace buildings or roofs at anything like the rate buildings wear out. Roofs as young as 30 years need maintenance, roofs older than 50 years typically have a number of problems that polyurethane foam will quickly and cost effectively solve. Factors such as weathering, absence of proper maintenance and defects in the constructions of the building all play their part. Low pitched roofs (less than 30 degrees) are particularly vulnerable to frost damage and torn roofing felt as the wind will blow up through the tiles and strain and eventually rip the roofing underlay. Immediate attention is essential in any building once a roof problem is discovered since negligence will lead to more serious structural problems, rotting of structural timbers, dry rot, mould growth causing health issues for the occupants and general building decay.

Polyurethane foam correctly specified represents a quick, long lasting and cost effective solution. It is quick to apply; most domestic properties can be completed in one to two days, affordable, typically half the cost or even less than of installing a new roof, a long lasting solution as further wear in tiles or slates is much reduced (no tile wind chatter causing stress lines and fractures, no under shaling in frosty weather) and notice of the problems will help to solve them without much effort. Polyurethane is one

of the most effective building materials with quite a number of applications and outperforms comparable solutions for insulation and roof stabilisation.

Chemically, polyurethane is a polymer of toluene diisocyanate and polyether glycols. It is available in flexible and rigid type according to the proportion and type of polyol. Polyurethane utility is mainly attributed due its characteristic properties such as very low thermal conductance, moderate resistance to organic solvents and good load bearing capacity. The very low thermal conductivity of polyurethane foam at less than 0.025 K/m.K makes it a very efficient insulator. Polyurethane spray foam is increasingly being specified for roof insulation and roof maintenance and over a range of applications; domestic roofs, agricultural buildings, industrial roofs and even the hulls of ocean vessels because of its unique ability to insulate all type of roof materials such as slate, tile, timber and metal.

Polyurethane in the construction industry is generally used in the form of foam spray. In the roof repair process, the roof surveyor will primarily assess the actual reasons for the roof problems and will do necessary repairs such as replacing the broken tiles or slates. Essential repairs to the roof must be done first. After repairs are made polyurethane spray foam is installed to stabilise the roof, prevent ingress of dust, debris and rain and to prevent future problems. Polyurethane foam as long as it does not get prolonged exposure to UV light (sunlight) will provide a long and durable solution with an indefinite life span. In new buildings, it can be applied directly under the roofs for the thermal insulation and help to meet our energy conservation objectives. Spray applied polyurethane foam professionally installed is sprayed into every nook and cranny and goes where other materials cannot be installed. However the airtight nature of polyurethane foam does not block the natural breathing properties of timber roofs since the composition of foam will have 5% open cells which allows for timber to 'breathe', so essential if wet and dry rot problems are to be prevented. Moreover the cell structure will act as a slow draw blotting paper and help dry excess moisture by evaporating the remaining damp on the roof material through the 5% open cells, whereas the closed 95% cell structure afford the property of high water resistance and ensure the prevention of the further water entry and condensation. As the polyurethane foam is non nutritive, the vermin are less likely to attack this building product.

Use of polyurethane foam as a building product helps builders meet demanding new Building Regulations since April 2006. The unique performance of polyurethane foam and its different properties such as vapour resistance, durability, fire resistance, water resistance and thermal resistance make it a good solution in a wide number of applications. Professional installers of spray foam polyurethane use fire rated Class 1 or 0, high density (the higher the density the better its thermal qualities) 95% closed cell composition of polyurethane that is sprayed to a depth to achieve the required U value required under Building Regulations. The odourless property and the inert nature make polyurethane foam a user friendly and safe product, which does not induce any respiratory problems and other health risks the material. Polyurethane foam is CFC and HCFC and makes it an eco-friendly

product.

The properties of polyurethane naturally recommend it as an ideal product for roof insulation, wall insulation, attic insulation and loft insulation of both old and new buildings. Professionally installed polyurethane foam requires qualified and experienced technical personnel to meet exacting standards. Making of polyurethane foam is done on site and industrial grade machinery is required. Essentially, the polyurethane is made on site by a portable small scale factory. The accurate mixing and regulation of the physical and chemical process require expertise to get a good result and high quality foam.

Iso-Spray Foam now also supplies DIY spray foam kits for builders, roofers and the DIY market. This is a two component foam that is mixed from two cylinders and produces professional results.

Polyurethane is thus a cost effective roof insulation tool that ensures energy conservation, weathering resistance and a long lasting solution helping to reduce the lifetime carbon footprint of a building. Polyurethane foam is a 'new' solution to 'old' problems but is also part of another 'new' solution to another 'new' problem; global warming and the need to reduce green house gases in the 21st Century.