HIGH TEMPERATURE ADHESIVE LIMITED

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Introduction

I am an experienced fireproofer who has had a long and varied career working within the construction, civil engineering and petro chemical industries. I embarked on a course of continuous professional development and Health and Safety has been one of my main themes.

I have used various systems to fix cementitious PFP reinforcement mesh to substrates and I have found that the high temperature adhesive (HTA) system has many advantages over established surface preparation methods. I understand that there will always be a reluctance to move away from tried and trusted work processes. In reference to this the purpose of this document is to provide an unbiased / independent summary of the main health and safety advantages of this system's use and to focus on areas where the HTA system can significantly reduce risk.

High Temperature Adhesive (HTA) system

This method was initially developed as an alternative method of attaching studs / pins to a surface to facilitate the attachment of cementitious PFP reinforcing mesh. It employs a perforated galvanised / stainless steel plate which incorporates a pin/ stud. A silicone adhesive is applied to the base of the plate via a standard mastic gun, the plate is then pushed onto the substrate until the adhesive is forced through the perforations of the plate. HTA can also be used to attach PFP boards to a range of substrates.

From a health and safety perspective this is a benign process. Under well ventilated circumstances RPE is not required. The main resultant risk is irritation to skin and eyes which is easily controlled with the appropriate PPE. Historically the three main methods of attaching PFP reinforcement mesh to concrete structures and structural steel have depended on mechanical fixings such as drilled anchors, powder actuated direct percussion fixings (Hilti) and stud welding. The following text will provide a brief summary of the **significant** risks presented by these forms of fixings.

1) Drilled anchors

The action of destructive drilling concrete to gain a fixing creates the production of **respirable crystalline silica** (RCS) dust which causes irreparable long term lung damage called Silicosis. This is the second highest cause of industrial deaths within the UK and is widely described in terms of its devastating effects on health as "the new asbestos".

The drilling of concrete using percussion drills creates other risks such as:

- Hand arm vibration syndrome
- Eye damage
- Ear damage
- Repetitive strain / muscular skeletal injury

2) Powder actuated direct fixings (percussion Hilti guns)

Powder-actuated tools should not be used in areas where flammable or combustible atmospheres may be present – the tool is a source of ignition and could cause an explosion. In these environments this process would be controlled by a permit to work system. The work would be regarded as **Hot Work** and would require high levels of focused safety management /supervision.

The use of this system on either concrete or steel structure creates other significant risks such as:

- Eye damage
- Ear damage
- Penetration injury

Another limiting factor of this method is that it can only be carried out by trained, competent operatives.

3) Stud welding

This method has been widely used in the past and requires that the steel substrate is destructively ground back to bare steel in order to successfully weld the stud. This method is a source of ignition and could cause an explosion in areas where flammable or combustible atmospheres may be present. In these environments this process would be controlled by a permit to work system. The work would be regarded as **Hot Work** and would require high levels of focused safety management /supervision.

The use of this system on steel structure creates other significant risks such as:

- Eye damage
- Ear damage
- Lung damage
- Cuts to skin
- Muscular skeletal injury

Conclusion

Elimination and substitution is the most effective means of reducing hazards and risks. The use of the HTA system would remove the hazard and significantly reduce and in some cases eliminate risks. Elimination and substitution in this context would be less expensive and simple to implement. The HTA system does not require sophisticated equipment or advanced training and from the perspective of the work permit holder - a low risk / low supervisory load.

Finally the HTA system, due to its use of light weight equipment imposes less stress on the body and in some cases fixing can be applied to soffit / deck head area using a simple ergonomic extension pole.

Additional Information

To validate the above observations I have included a brief statement of my experience and qualifications.

I served an apprenticeship as a painter and decorator. From 1978 to 1982 I worked for a company called AAronite extensively offshore and around Europe as a fireproofing sprayer. At this company I applied Mandolite 40 & 25

cementitious fire protection. I was instrumental in developing application techniques for Thermolag 330-1 subliming compound, the new generation of PFP materials and I then went on to provide in-house training in the spray application of this product. I completed a trip on the Piper Alpha where I applied thin film intumescent PFP to a temporary accommodation module and took part in a general integrity survey of the platform's existing PFP material.

I left this industry for a while and embarked upon a career in craft training. I returned to the petro-chemical industry in 2014 and secured a position offshore for Bilfinger / Salamis as a fireproofer applying Chartek 7, Sherwin and Williams M89/02, M90/02 and Nofirno fire stopping materials. I worked for Stork Technical services for a three year period on and offshore as a FM supervisor and coatings inspector.

I have provided support for Nestaan NV in spraying fire test samples in Holland and Belgium. I also trained up a new crew in the application of sprayed limpet vermiculite SLV on a live site in Malta. On the back of this work I secured a short contract to Japan to demonstrate to the Kansai Paint's product development team methods of applying their newly formulated epoxy AlesChar U PFP material.

During recent years I have been employed on a gas terminal in the capacity of a permit to work authority and as a safety officer.

Relevant qualifications gained

NEBOSH Certificate	NVQ Level 3 Occupational Health & Safety
HNC in Construction Studies	ONC in Construction Studies
NACE level 1 Paint Inspector	Certificate of Education
Train The Painter Tutor	OPITO Competence Assessor
Confined Spaces Training	Offshore Minimum Industry Safety Training MIST
Centrica Permit Authority	IRATA level 1 Rope Access Technician

Approved applicator for SLV, Chartek 7, Sherwin and Williams M89/02, M90/02 and AlesChar U

Neil Ward