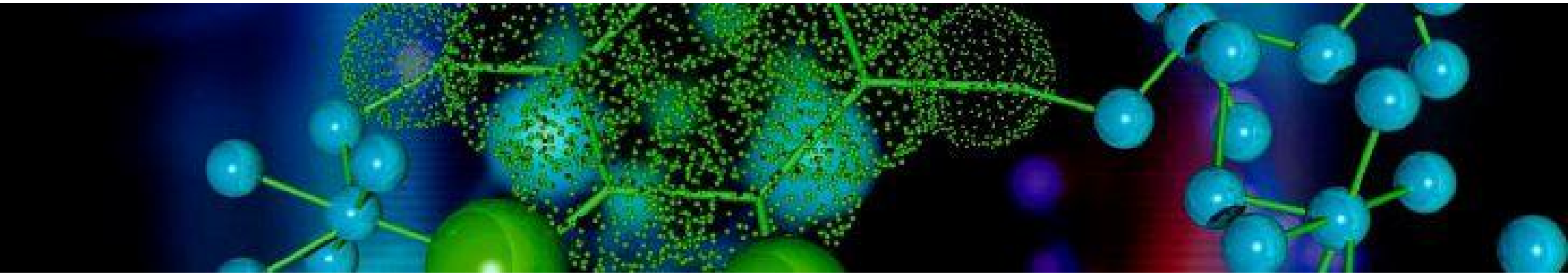


Highly Effective Polymer Technologies

June 2015

The Polymer Technology

- Penetrative action synthetic materials.
- The polymer compositions are initially monomers (homogeneous low viscosity liquid with light brown colour) and after polymerisation (hardening) become polymers.
- According to the technological objectives either single component or two-component polymer agents can be produced.
- The hardening is triggered by the contact of the composition with the salts and hydroxides contained in the host material (concrete, stone, ceramic, metal, wood etc.).
- The monomer crown or pseudo-crowner, and when applied to metal forms with the metal cation a ion pair, whilst the free anion triggers the process of hardening.
- When applied to surfaces the composition impregnates the the host upper layer, and after the chemical interaction with the host material (concrete, brick, metal, wood, etc.) forms a new composite material, which differs in its structure from the untreated one and possesses far better resistive properties.

- The resistive characteristics of the surface layer are considerably improved.
- Whilst penetrating into the structure the composition fills the pores of the host material.
- The upper layer is hydro-insulated and zero water and other liquid absorption is achieved.
- The outcoming polymer-host material composition protects from corrosion as the rust is transformed into protective coating.
- An adhesive layer is formed for further sealing and coating with polymers from the same family.

HEPT Advantages

Non-thermal machine application without fire-blazing of both:

- The two-component alternative and;
- The single component alternative.

The speed of hardening is controllable allowing technological time for problem free application.

The application of HEPT polymers is seamless and gap free.

HEPT polymers penetrate the surface layers of the host material and form a monolith structure

HEPT polymers are resistant to pressure, contraction, stretching, expansion, twisting and vibration.

The resistive properties endure within a wide temperature range.

HEPT polymers can be applied jointly with abrasives and fibers so that the smoothness, skidding and gliding are controlled.

After application dust levels are easily contained.

HEPT polymers are easy to maintain

Resistance to UV radiation makes HEPT a durable solution for exterior protective coating.

Adjustment and Tailoring of HEPT Materials

HEPT polymers can be adjusted and tailored in accordance with the ultimate objectives of their application.

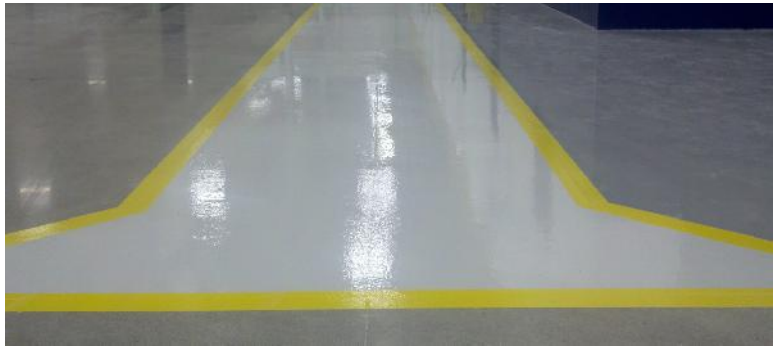
The basic adjustments are:

- Colour
- Elasticity
- Chemical resistance to particular agents
- Toughness parameters
- Penetrative and sealing characteristics

HEPT polymers can be adjusted to suit the host material:

- Concrete
- Stone
- Brick / Ceramics
- Wood
- Metal
- Synthetic materials

HEPT polymers can also be adjusted to suit the temperature range and exposure to UV and other adverse photo impact.



Hydro Insulation and Waterproofing

HEPT solution possess a wide range of use for hydro insulation and can be applied to

- Structure Foundations
- Premises
- Roofs and covers
- Pools, tanks and reservoirs
- High pressure injection for treatment of leakages when access is limited

HEPT Composites allow for the achievement of zero liquid absorption

The chemical resistance of the host material (concrete, metal etc.) is tremendously improved and the host material becomes resistant to all adverse factors of the surrounding environment,

Complete hydro-phobia towards water, chlorides and salty liquids is achieved,

Resistance to freezing is achieved and the host material can endure more than 300 cycles of freezing and unfreezing without material change of its properties.

The HEPT sealing of concrete, metal and wood can be performed in a fashion that the surface bans water penetration but remains permeable to vapour, air and other gaseous substances.

The HEPT polymers are not toxic after hardening and virtually no monomers detach from the monolithic composite structure.

The thermal resistance of HEPT is tremendous - above +200 C;

Hardening of Concrete Surfaces

The resistance properties of the concrete surface layer are considerably improved.

The longevity of the structure is tremendously improved.

HEPT materials penetrate the host structure and thus fill and seal its pores.

The rate of improvement of concrete depends on its initial grade and level of degradation.

The worse the degradation, the greater the positive effect of HEPT treatment.

The HEPT impregnation and sealing improve the concrete resistive properties to virtually all types of loads and stress including tension.

Durability to surface cracks due to cyclical and alternating loads is increased eight times.

The strength of the surface layer of HEPT treated concrete is three times higher than that of untreated one.

Internal strengthening of concrete can be achieved through high pressure packer injection technology.

HEPT is also used for fast termination of leakages in concrete structures, achievement of monolith properties and improvement of their resistance to stress and loads without prior removal of penetrated water.

The gel formation can be controlled in the range between 2 min to several hours.

Resistance to cracks and gaps as a result of shock stress and loads is improved several times.

Floor Covers

Depending on initial conditions HEPT treatment can achieve:

1. Hardening of the strength of the surface through penetration;
2. Filling of cracks and gaps with elastic polymer composite allowing for targeted and controlled elasticity corresponding to the properties of the host material;
3. Leveling of dents caused by detachments and breakings through polymer puttying;
4. Protective coating which can be pigmented for subsequent visual control
5. Chemical resistant coating
6. Coating with abrasive and fibers (glass or synthetic) to control adhesion, smoothness, traction, skidding and gliding.

Chemical Resistant Floor Covers

Depending on the pH parameters of the expected adverse impact on behalf of aggressive chemical agents,

THE HEPT POLYMERS ARE ADUSTED ACCORDINGLY AND THOROUGHLTY TESTED.

The accompanying procedures for impregnation, sealing, gap-filling and puttying may remain the same as usually applied for ordinary floor covers.

HOWEVER THE LAST LAYER IS CHEMICAL RESISTANT.

The HEPT chemical resistant layer can be:

- Pigmented (stained),
- With chosen roughness through glass fiber to control traction properties whilst allowing for easy washing and cleaning of the aggressive chemical agent.

The HEPT polymer solutions are effective for:

- Organic acids and hydroxides;
- Their non-organic eqivalents.

Interior and Exterior Coatings

The usage and applicability of HEPT polymers is wide:

- Walls – both interior and exterior
- Floors
- Ceilings
- Roof tops

The main HEPT advantages are:

- Seamlessness and continuity
- Non-thermal and fire-free application
- Suitability for various types and levels of porosity
- Durability to UV and other photo impact
- Air permeability
- Wide temperature range of preservation of properties
- Penetration into host material to form monolithic structure
- Elasticity control
- Traction and roughness control
- Selected pigmentation

Clean Rooms and Dust Control

HEPT polymer solutions can be applied for execution of:

- Sanitary floors
- Dust free premises
- Hermetic premised
- Clean rooms

All target characteristics are achieved through seamlessness and uninterrupted continuity of HEPT covers and coatings and control of the elasticity of the coating polymer materials so that it is not compromised by temperature variations.

Suitable pigmenting and staining can allow for subsequent control of the effectiveness of the protection.

Depending on the initial conditions the HEPT solution may require and include:

- Removal of porosity through initial impregnation and sealing of the host surfaces.
- Treatment (filling) of gaps, cracks and detachments with HEPT polymer possessing suitable elasticity to achieve same expansion and compression to temperature variations
- Leveling of the surface

Anticorrosion Solutions – Go Stainless

Any metal surfaces can be protect by HEPT composites including:

- Non-ferrous (e.g. Al, Cu)
- Ferrous

Preliminary transformation of the oxidized and corroded surface is not required.

The existing rust (oxides and hydroxides) is transformed into protective coating through the chemical interaction with the respective HEPT polymer.

The application of HEPT to the corroded metal allows it to impregnate the corroded layer, reach the unaffected metal structure and form a monolithic anti-corrosive protection.

The same can be achieved for steel armature inside the concrete structure

The only preliminary action required for HEPT application is the removal of the detached oxides and hydroxides.

Staining and pigmentation can be included to allow for subsequent control.

Whilst treating welded bonds elements only the seams can be treated where the stainlessness is normally damaged.

Structure Rehabilitation

Basins, pools, tanks, reservoirs

Spray and flow pools

Water tanks

Tanks for acid water

Cooler towers

Low pressure ducts

Pressurized pipes and ducts

Seamless floor, walls, roof tops and other surface cover

Machine premises

Seamless whole internal covers for prmises

Complete foundation solutions

Roofs

Mains and Pipelines

Seamless coatings

The HEPT Approach

Thorough study of available documentation

Probes and tests execution

Interviewing key figures in charge of maintenance and operation

Devising adequate and complete engineering solution

- Approach selection
- Suitable HEPT agents and materials selection

Definition of criteria for transfer and acknowledgment of completed works

Definition of methodology for subsequent independent quality and property control

Free trial demonstration

Application of the HEPT engineering solution

Contacts

Orlin Petkov
CEO
HEP Technologies Ltd
orlinpetkov@hep-technologies.eu
www.hep-technologies.eu
+359 889 801768
Sofia 1113
Academic Methodi Popov" 22A-
Office 1