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FIRE-SHIELD PAINT: A NEW TECHNOLOGY APPROACH

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PRODUCT DESCRIPTION

During a fire hazard, fire directly contacts with the building structures, causing the heat transfer into the structures in very fast moments. This leads to the substantial deterioration of strength of support structures such as cement/ concrete/ slabs due to high temperature. Moreover, the steels embedded inside the column structures will also eventually expand during the fire, inducing structural failure. All these contribute to the collapse/ destroy of building in short time.

FIRE-SHIELD paint is invented as passive fire protection system. FIRE-SHIELD protective paint is formulated to prevent direct contact of fire with substrate, slow down the heat transfer, and protect building structures, allowing sufficient time for rescue operation of fire rescue teams and for fire victims to escape for life.

FIRE ANALYSIS



PHYSICAL & MECHANICAL PROPERTIES

Table with 2 columns: Items, Remarks. Rows include: Drying Time (2-5 hours), Adhesion Strength (Excellent adhesion to substrate/existing coating/inter-coating), Application Method (Brush/ Roller/ Sprayer), Thickness (Single/Multiple coat (< 0.2mm)), Resistance (Water/Chemical/Wear)

FIRE/ THERMAL PROPERTIES

Table with 2 columns: Test, Properties. Rows include: Fire Test (30 minutes fire rating), Thermal Conductivity (0.20-0.60 W/m°C), Direct flame test (40 minutes at ≈1950°C), Flame Spread Index, Smoke Developed Index (Class A)

DIRECT FLAME TEST.



FIRE-SHIELD



Without FIRE-SHIELD

NOVELTIES

- Environmentally friendly - VOC free
Good adhesion between substrate
Low smoke emission
Abundant raw materials resources
Low energy consumption process
Maintenance free



INVENTION ADVANTAGES

FIRE-SHIELD PAINT is specially design for flame protection to enhance the fire resistance of combustible surfaces such as cement walls. Products made in fluid type that dries to form a continuous solid film when spread over a surface while not ignoring the functions of paint for decoration of surfaces with variety of color, texture, finished.

POTENTIAL APPLICATIONS

- Refuge floor
Nuclear power station
Commercial and residential construction
Tunnel concrete
Underground mining
Operating room in hospitals



PROCESS DESCRIPTIONS



COMMERCIAL POTENTIALS

COLLABORATION/ FUNDING BODY

- Collaborative project between UniMAP & KACST (King Abdulaziz City and Science Technology, Saudi Arabia).

PUBLICATIONS

1. C.Y. Heah et al., "Kaolin-based geopolymers with various NaOH concentrations", International Journal of Minerals, Metallurgy and Materials, 20, 313-322.
2. Y.M. Liew et al., "Optimization of solids-to-liquid and alkali activator ratios of calcined kaolin powder", Construction and Building Materials, 37, 440-451.
3. Abdullah Mustafa Al Bakri Mohd et al., "Geopolymer for Coating Applications", Advanced Materials Research (Vol. 686, 227-233)
4. J. Liyana et al., "Geopolymer Materials for Protective Coating Field Implementations", Australian Journal of Basic and Applied Sciences, 7(5), 182-186