‘CONCRETE FROM PLASTIC’

NHMF Eastern Asset Management Forum

Homerton College

Cambridge

Tuesday 17th May 2016

WINNER 2010

Supported by

CARBON TRUST

AFFRESOL

What is TPR® ?

- ‘Thermo-Polymerised Rock’
- Synthetic concrete manufactured from reclaimed minerals and hard plastics
- 6 times as strong as equivalent (Gen 3) concrete
- 30% lighter than equivalent concrete
- Factory moulded, not site poured
- 93% recyclable at end of life

CIWM awards
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

What is TPR® ?

- Developed in conjunction with The Carbon Trust and Cardiff University
- Affresol started research and development in 2004
- TPR has won ‘National Sustainable Product of the Year’ (CIWM)
- All waste used is traceable and non-toxic
- Manufactured under ISO9001 Quality Management System

CIWM awards
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

Plastics and the Environment:

- UK produces 5 million tonnes of plastic waste per year
- Majority is ‘dirty’ waste which cannot be recycled into new consumer products

CIWM awards
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

Plastics and the Environment:

- Estimated that only 25% of plastic waste is recycled
- 75% of UK consumer plastics end up in landfill

CIWM awards
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

Plastics and the Environment:

- Plastics take up to 1,000 years to degrade in landfill, and 400 years in our oceans
- Growing concerns over the impact of plastics on the food chain

CIWM awards
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

Plastics and the Environment:

AFFRESOL

How is TPR® manufactured?:

- Hard plastics granulated to 3-5mm
  - UPVC
  - Acrylics
- Waste from manufacturing – Worcester Bosch

CIWM awards
SUSTAINABLE PRODUCT DEVELOPMENT OF THE YEAR
FOR ENVIRONMENTAL EXCELLENCE
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

How is TPR® manufactured?:

- Cold process – no heat or melting involved
- All waste is traceable and non-toxic
- Plastics make up approximately 70% of volume

CIWM awards
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

How is TPR® manufactured?:

- Mixed with recycled minerals:
  - Calcium balls and dust – waste from construction products
  - Fills voids between angular granulated plastic
  - 15% of volume – provides mass

WINNER 2010

Supported by

CARBON TRUST

AFFRESOL

How is TPR® manufactured?:

- Combined with polymer resins, giving strength
- Gel coat finish on glass fibre backing – highly resilient & waterproof
- Cured in 3 hours

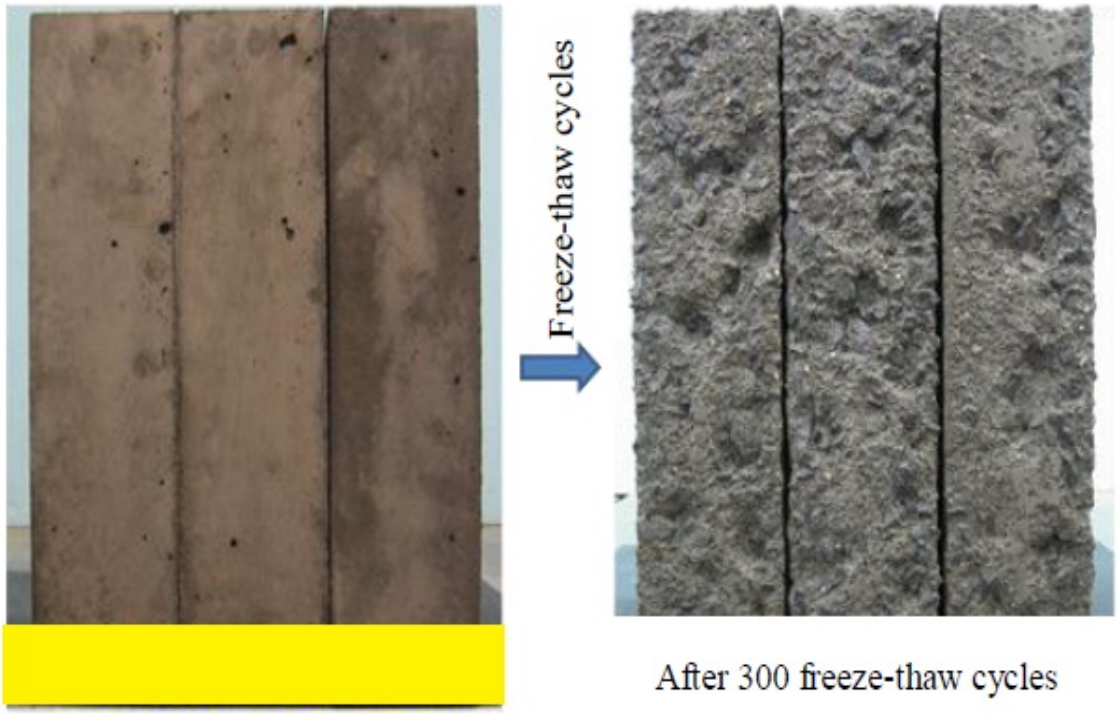
WINNER 2010

Supported by

CARBON TRUST

AFFRESOL

Testing and Accreditation



After 300 freeze-thaw cycles

- BRE – Freeze/thaw test
- rated to 80 years life

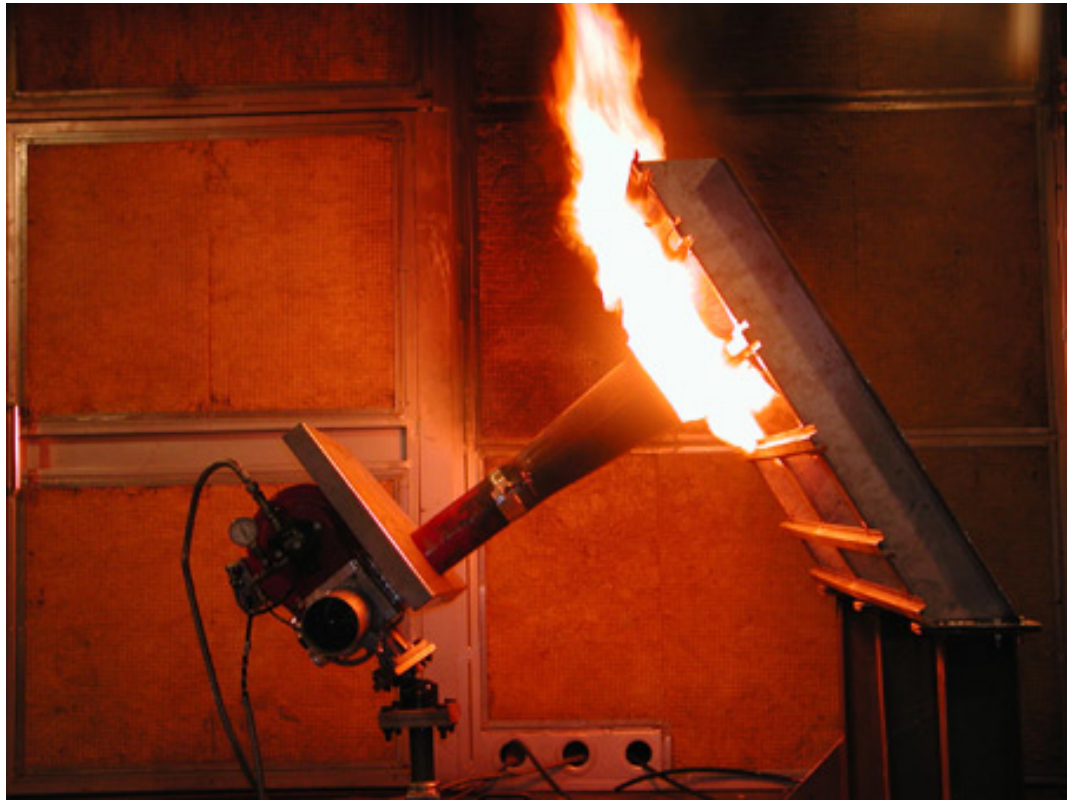
WINNER 2010

Supported by

CARBON TRUST

AFFRESOL

Testing and Accreditation



- Exova Warrington Reaction to Fire – Classification E
  (suitable for use in construction applications)
- Full BRE Fire Resistance testing –

  79 mins (40 tonne loaded wall)

CIWM awards
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

Testing and Accreditation

- Compressive strength - 42.03MPa (BS 6319-2 : 1983)
- Flexural Strength - 11.5 Mpa
- Tensile splitting strength – 6.83 Mpa
- Very low permeability

CIWM awards
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

TPR ® – features and benefits

- 6 times stronger than equivalent (C20/Gen3) concrete
- 30% lighter than equivalent (C20/Gen3) concrete
- Zero maintenance
- Waterproof
- Mould & Rot-proof
- Infestation-proof
- Zero-leaching

CIWM awards
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

TPR – current uses and products

- Garages

CIWM awards
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

TPR – current uses and products

- Mobility scooter stores

CIWM awards – Sustainable Product Development of the Year – Environmental Excellence – Winner 2010

Supported by Carbon Trust

AFFRESOL

TPR – current uses and products

- Sheds

CIWM awards
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

TPR – current uses and products

- Cable troughs – developed in conjunction with Network Rail
- 18,000 miles per annum by end of 2019

CIWM awards
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

TPR – current uses and products

- Bin stores
- Cycle stores
- Beach huts
- Plant and equipment stores

CIWM awards
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL

TPR – in summary

CIWM awards
SUSTAINABLE PRODUCT DEVELOPMENT OF THE YEAR
FOR ENVIRONMENTAL EXCELLENCE
WINNER 2010

Supported by
CARBON TRUST

AFFRESOL