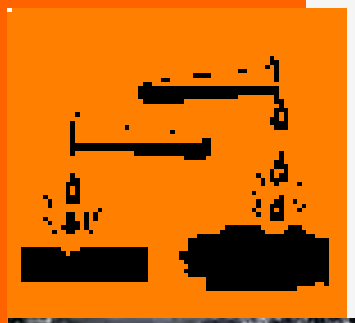
you can **RELY** *on*

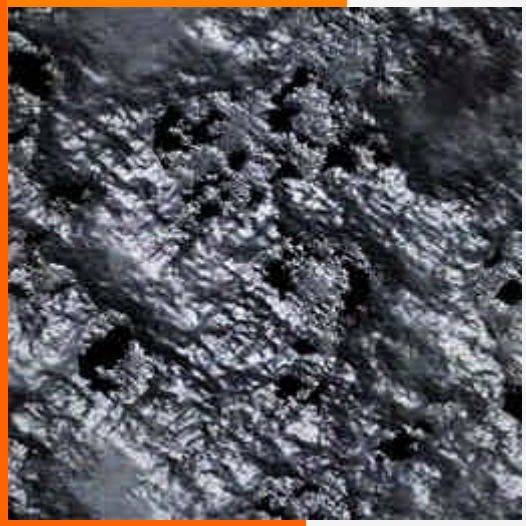
CEMENTAID

The Way To Better Concrete



Prevention of Corrosion

Protecting reinforced concrete from acid attack



Maintenance-Free Concrete in:

Hydrochloric acid factory

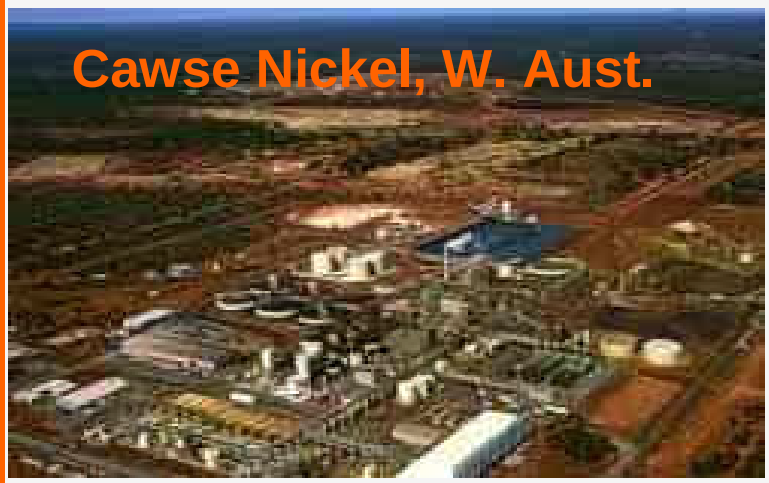
Sewage treatment plants

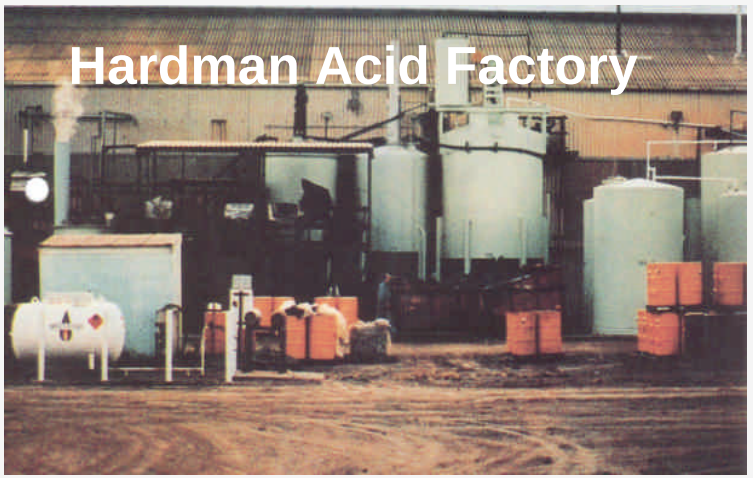
Food processing plants

Mining processing plants

BEYOND COATINGS...

Maintenance-Free Concrete for Acid / Sulphate Environments

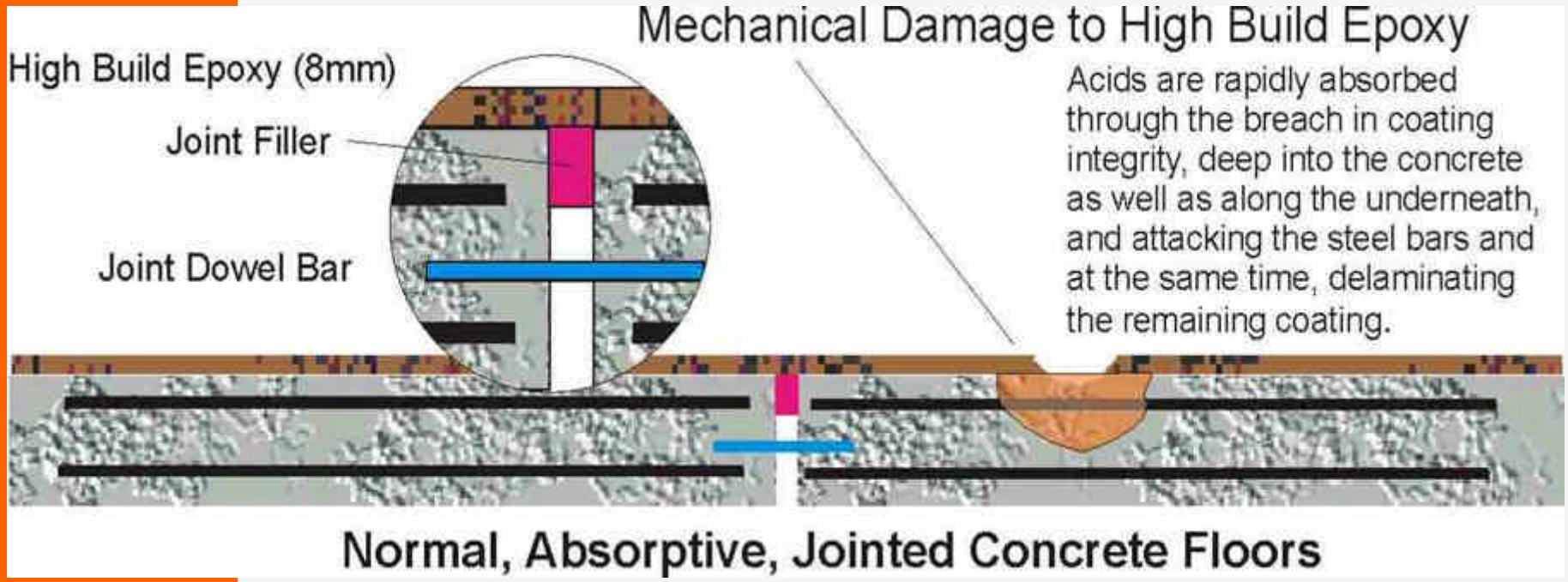




CONCRETE ABSORPTION – The Coating-Killer

Good quality coatings do not fail –

It is the absorptive concrete substrate that fails…



HPI CONCRETE –Caltite System

Long term Coating Protection

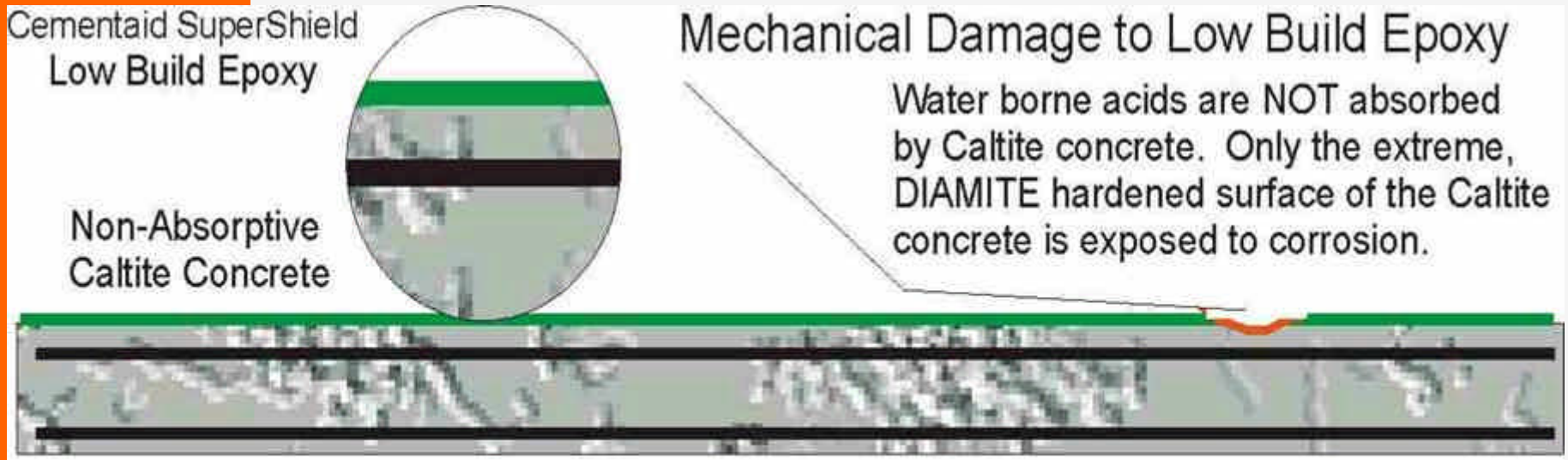
Concentrated acid conditions

Composite Slab Protection:

1. Coating protects outer surface..
2. Caltite *Hydrophobic Matrix™*

Protects Concrete Slab PLUS

Protects coating from delamination at defects…



Cementaid Everdure Caltite System

Joint-Free, Seamless, Corrosion-Proof Concrete Floor

Hardman Chemicals, NSW Australia

The Acid Test; *Long Term Performance*

Hydrochloric Acid Facility

1970 - 2003

Hardman Chemicals, NSW Australia

Daily exposure to 32% Hydrochloric Acid, and Zinc Chloride solutions

•***Pre-1970:*** *Initial 6 inch (150mm) thick* ***plain concrete*** *slab reduced to "rubble" after approx. 6 months.*

•***Deterioration rate*** *average* ***1" per month***

• *Replacement slab plus epoxy coating un-useable after approx. 9 months*

• **1970:** New Everdure Caltite System slab was cast (6" / 150mm thick)

• No Epoxy coating used initially

• After 18 months, the Caltite surface had been gradually eroded to a depth of ~1" (25mm) by constant acid "etching"

• **Deterioration rate 1" per 18 months**

• **18 fold improvement over plain slab**

• Test cores showed slab remained structurally sound @ over 6,000 psi

• **1972:** Etched surface washed with caustic, and reinstated in with bonded Caltite screed (25mm 1:3 sand:cement)

• A 1mm epoxy coating applied to protect the extreme surface of the Caltite topping against acid-etching.

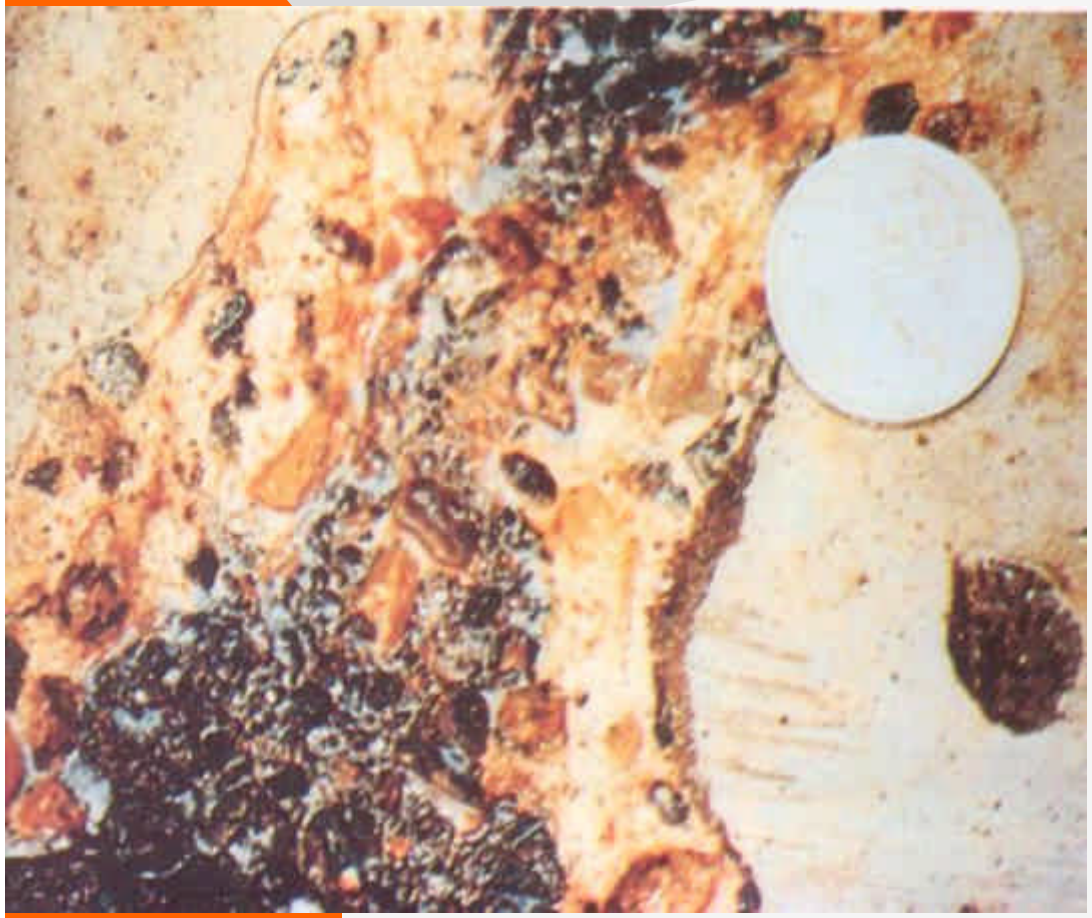
Hardman Chemicals, NSW Australia

Daily exposure to 32% Hydrochloric Acid, and Zinc Chloride solutions

- Coating not able to bridge early-age micro-cracks in un-reinforced Caltite topping
- *Hydrophobic Matrix* - Acids only able to access or contact extreme outer surface of the exposed crack “walls”
- CALTITE / Epoxy composite slab subject to acids, abrasion & impacts from wheeled & forklift traffic
- Photo after 20 years exposure
- 26 X extended service life compared to plain concrete slab plus epoxy coating
  (240 months / 20 years vs. 9 months)

Hardman Chemicals, NSW Australia

Daily exposure to 32% Hydrochloric Acid, and Zinc Chloride solutions



- Only exposed crack walls are subject to gradual etching effect

- Close-up photo shows the effect of 20 years acid etching on the exposed crack “walls“
(Coin diameter approx. 1”)

- NO de-bonding or delamination of coating

- Coating remains tenaciously bonded and intact, right up to the edge of the break, without failure, as otherwise occurs when normal, absorptive concrete is used.

Hardman Chemicals, NSW Australia

Hydrochloric Acid Facility 1970 - 2003

1979: ***"Our Caltite floor is now 19 years old, in constant use – which compares extremely well with the life of our ordinary earliest floors"***

Iain Murray, ***Engineering Manager***

2003: Harman Chemicals' Caltite / Epoxy slab continues in service today.

After 31 years, the benefit of the 'composite' Caltite / Epoxy floor has been to deliver a more than 40 fold increase in maintenance-free, useable service life over epoxy alone

(31 years / 372 months vs. 9 months)

Chemical Plants
Industrial Floors
Mine Processors

Time-Proven
Corrosion Resistance

Hydrochloric Acid, Sulphuric Acid, Calcium Chloride, Sodium Chloride, Ammonium Chloride, Nitric Acid, Sulphurous Acid, Pineapple juice, Apple juice, Soft Drink, Wine, Beer, Urine, Blood, Faeces, Urea, Sugar, Sewage, Ammonium Sulphate, Farm Silage, Zinc Chloride, Palm Oil, Fish & Seafood, Household Refuse, Vegetable matter, Bacterial Acids, Calcium Hydroxide, Sodium Hydroxide, Potassium Hydroxide, Low-Yield Radioactive Waste, Sodium Cyanide, Mining leachate, etc.

Everdure Caltite Concrete: Keeping production going! NO DOWNTIME

Other Acidic Environments

Caltite System Concrete (Coating-free)

- Strategic Sewage Disposal Scheme Hong Kong (SSDS)
- Tolo Harbour Effluent Tunnel (1992)
- Tunnel passing over potable water mains
- Reinforced CALTITE concrete invert lining

Other Acidic Environments

Strategic Sewage Disposal Scheme, (SSDS) Hong Kong, 1995

- Caltite System concrete
- No coatings, No membranes
- Multiple Pumping Stations handle sewage / sea-water mixture

Other Acidic Environments

Caltite System concrete (Coating-Free)

- Strategic Sewage Disposal Scheme, (SSDS) Hong Kong, 1995
- Pumping Stations + roofs

Other Acidic Environments

Caltite System concrete (Coating-Free)

- Strategic Sewage Disposal Scheme, (SSDS) HK 1995
- Pumping Stations + roofs

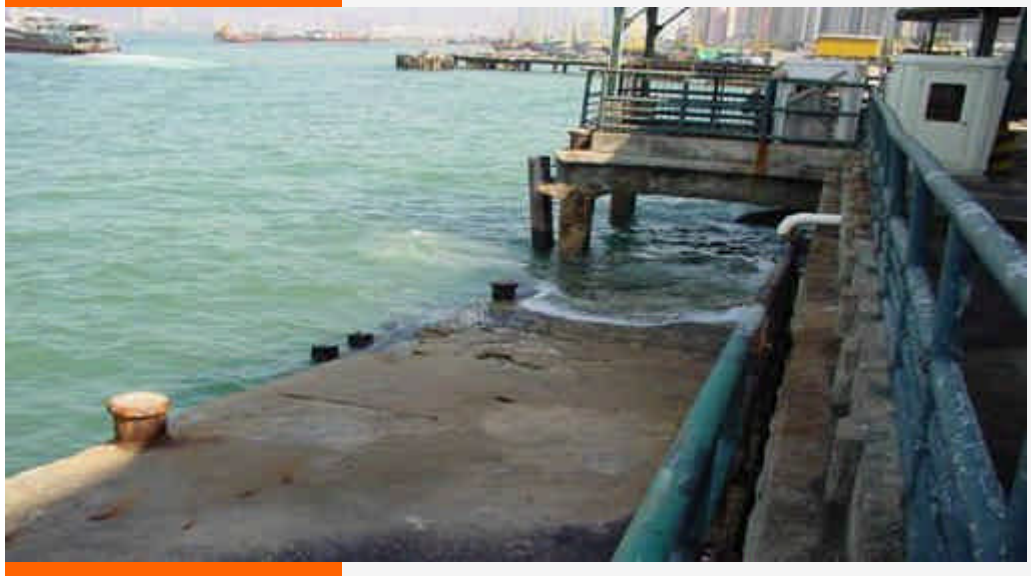
Other Acidic Environments

Strategic Sewage Disposal Scheme, Hong Kong (SSDS)

- Sewage / Seawater Holding Tanks
- Roof slabs over Holding Tanks
- Caltite System concrete
- Membrane - Free
- No Coatings required

Other Acidic Environments

Kennedy Town Abattoir, HK - Killing Floor



(Location photo)

- Livestock off-loaded at jetty
- Previous Killing Floor using high-density tiling + epoxy grout destroyed by impacts and (organic / bacterial) acid attack
- Severe acid and chloride corrosion attack, bacterial infestation / hygiene and health deficiencies required complete replacement of killing floor and livestock holding areas
- Long term, maintenance-free solution required to avoid impractical shut-downs

Other Acidic Environments

Kennedy Town Abattoir, HK - Killing Floor 1978 - 1998

- New **Cementaid Special Food Floor (SFS)** installed in 1978

CALTITE slab (corrosion & hygiene) +

- **STEELITE Metallic Aggregate (impact)**

- **Photo after 20 Years ('24 / 7')**

Other Acidic Environments

Kennedy Town Abattoir, HK - Livestock Areas 1982 – 1998

Cementaid Special Food Floors (SFS)

- **CALTITE concrete slab (corrosion & hygiene)**
- **Photo after 16 years**

Go to CA Quality Assurance?