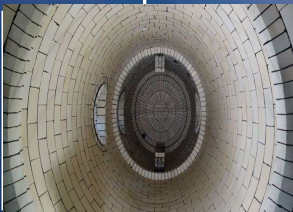
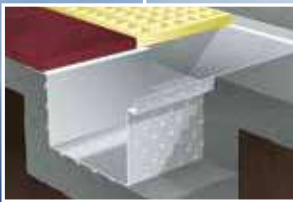




imperial
World Trade Pvt. Ltd.

Corrosion Protection Systems

PROTECTING PEOPLE, ASSETS, AND THE ENVIRONMENT





Sophisticated Corrosion Control Solutions **for the Most Demanding Environments**

Industries that use or produce corrosive or hazardous chemicals are challenged to maintain safe and reliable facilities while preserving the environment. Since the mid-2010, factory owners put their trust in acid brick linings, constructed with IWTPPL Engineering chemical-resistant mortars and membranes, to help them achieve these goals.

While many continue to rely on acid brick linings to address severe chemical, mechanical, and thermal service conditions, the range of corrosion resistant linings and materials available today provides more versatile means of achieving plant safety, reliability, and environmental goals. We Imperial World Trade Pvt Ltd offers a variety of corrosion protection solutions to meet the needs of industrial processors.

- » Anchored Thermoplastic Concrete Protection Liners
- » Cellular Glass Block Lining Systems
- » Graphite & Vitrified Tiles
- » Acid-Resistant Brick Mortars, Tile Grouts, & Adhesives
- » Polymer Concretes & Structural Grouts
- » Polymer Modified Underlayment
- » Potassium Silicate Concretes & Gunites
- » Urethane & Asphaltic Flexible Membranes
- » Laminate Linings
- » Flake-Filled Linings
- » Seamless Trowellable Floor Toppings
- » Slurry-Broadcast Flooring
- » Expansion Joint Sealants & Fillers



INDUSTRIES SERVED



SULFURIC ACID PLANTS

Acid towers and sulfur pits in sulfuric acid plants



PHOSPHORIC ACID/FERTILIZER

Phosphoric acid attack tanks in fertilizer plants



COAL-FIRED POWER PLANTS

Coal-fired power plant ducts & chimneys in desulfurized flue gas service



PULP AND PAPER MILLS

Digesters and chlorination towers in pulp bleach plants



PIGMENT AND DYES

Chlorinators in titanium dioxide plants



STEEL MILLS

Pickle tanks, acid regen, and wastewater collection trenches & sumps



METAL & MINERAL PROCESSING

Smelters and cell house infrastructure corrosion protection



SPECIALTY & BASIC CHEMICAL PLANTS

Aluminum sulfate digesters. Chlor-alkali plant infrastructure



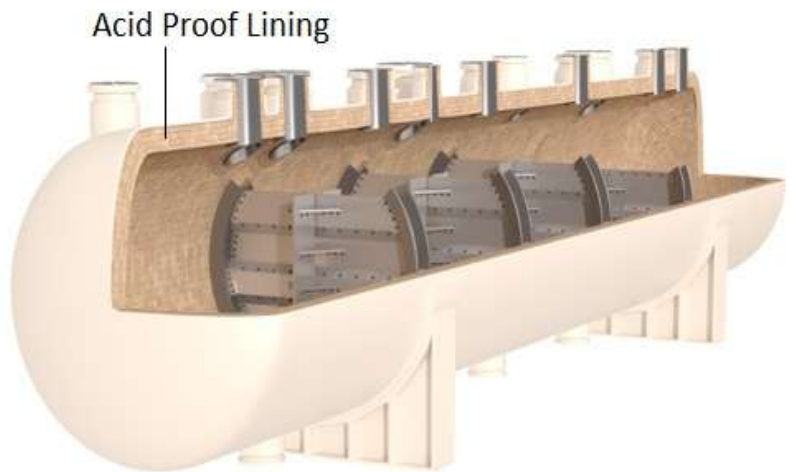
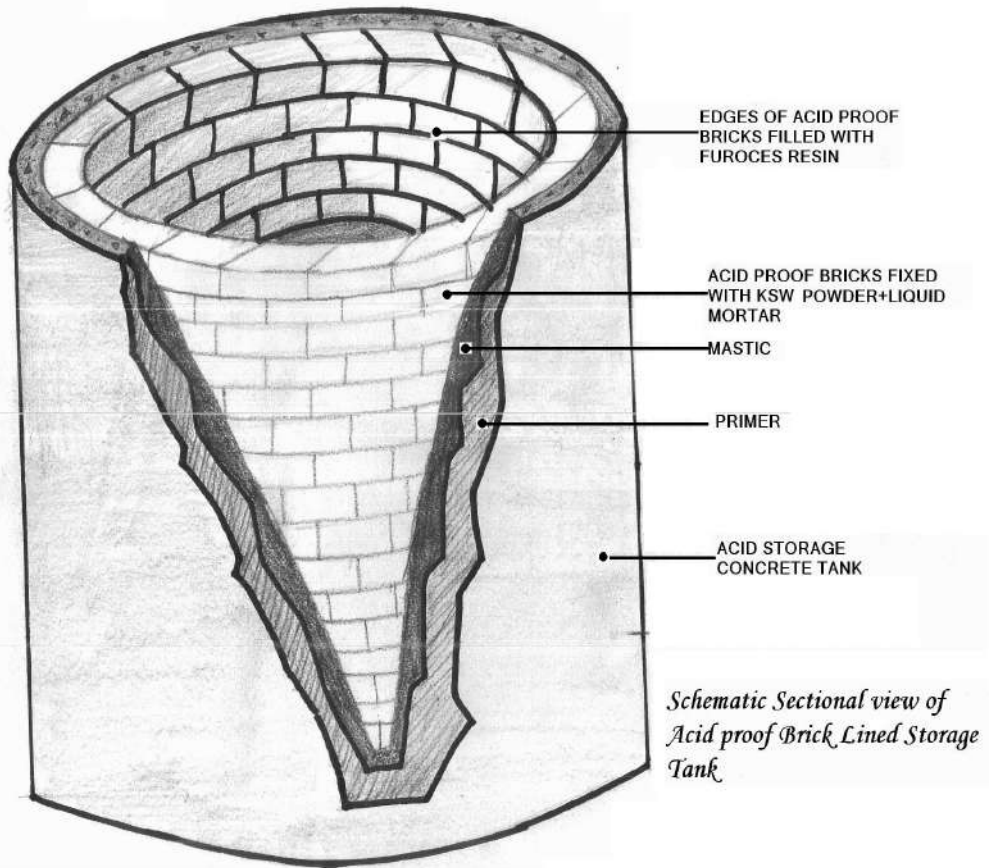
FOOD & BEVERAGE PLANTS

Durable, hygienic process flooring



BATTERY PLANTS

Acid battery formation rooms and reclamation bunkers





BRICK LINING SYSTEMS

From professional advice on materials, construction and design to qualified installation - competent service from a single source.

IWTPL brick and tile linings reliably protect your plant, process vessels and storage tanks against chemical attack corrosion.

In chemical process technologies or fume gas cleaning, in addition to exposure to chemicals, high thermal and mechanical wear often occur. Under these extreme conditions, our proven lining systems themselves need additional effective protection, to be able to perform their task safely and over the long term.

We ensure this protection by a well engineered system of acid-proof brick linings – always exactly suited to the plant's specific conditions.

Combined system build-ups are matched perfectly to the membrane – whether rubber lining or synthetic resin-based coating consisting of acid-proof bricks, carbon bricks, graphite or insulating bricks or wear-resistant ceramics, ensuring maximum service life and a cost-effective return.

On the basis of exact analysis of chemical and thermal exposure and mechanical or abrasive stresses, and by means of transfer calculations, suitable build-ups using appropriate materials will be engineered, matching the overall process control.

Apart from tiles, standard formats and shaped bricks, our bedding and jointing mortars ensure the construction of the combined system.

Whether they are pickling plants, autoclaves, sulfuric acid towers, reactors in phosphoric acid plants or quenches, we have a broad and versatile portfolio of mortar materials which cover a wide range of applications.

- bonding agents based on furan or phenolic resins
- unsaturated polyester resins
- vinyl ester resins
- epoxy resins
- or potassium silicate

In combination with high-quality inert fillers on quartz or carbon basis, they ensure optimum adhesion to the impermeable membrane layer and a strong bond, always with the maximum chemical resistance.

Depending on the level of exposure, products from the Series or the worldwide proven Asplit Series will be used.

Often high-alloy stainless steels are not suitable under certain process conditions. In that case our long-term proven acid proof brick linings are the ideal solution to achieve an economical service life of your plant.



Brick lining with Furan Mortar.

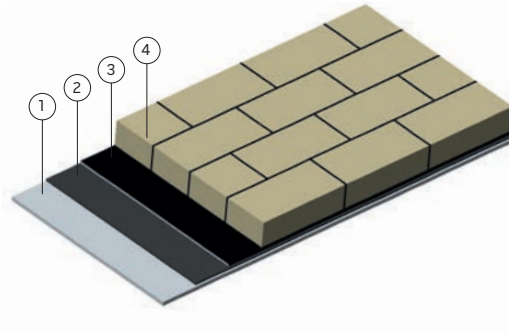
BRICK LINING SYSTEMS

BRICK LINED HYDROCHLORIC PICKLING TANK



Build-up of lining

1. STEEL BLASTED
2. IWTPM PRIMER & MASTIC
3. IWTPM FURAN MORTAR
4. ACID PROOF BRICKS - 65 MM

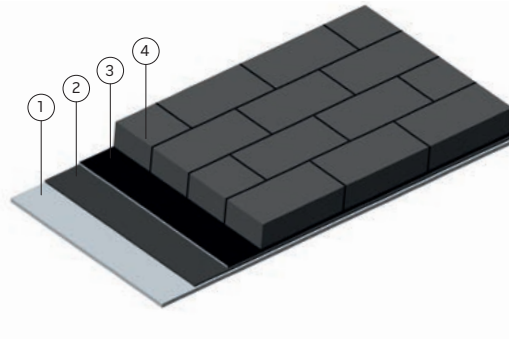


VESSELS FOR THE PHOSPHORIC ACID INDUSTRY

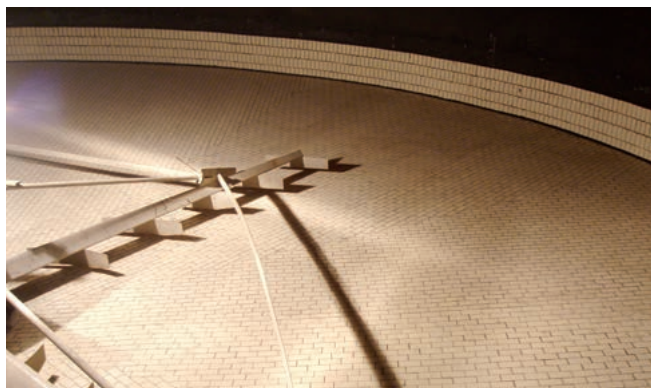


Build-up of lining

1. STEEL BLASTED
2. IWTPM PRIMER & MASTIC
3. IWTPM FURAN MORTAR
4. CARBON BRICKS - 65 MM



Brick lining a tank floor with Furan Mortar



Brick lining in a thickener for protection of the rubber membrane against mechanical abrasion.



BRICK LINING SYSTEMS

At IWTP, all available brick formats and qualities are cataloged as shown in the following sketches. Using the latest CAD technology, we are furthermore able to present promptly complex constructions and meet customer requirements down to the last detail.

08 € Acid-proof shell bricks

Abbreviation	R	Weight kg/pc.					
		s=30	s=40	s=50	s=65	s=80	s=100
M8	400	2,26	2,97	3,66	4,67	5,63	6,85
		08001	08002	08003	08004	08005	08006
M12	600	2,29	3,03	3,75	4,81	5,84	7,00
		08007	08008	08009	08010	08011	08012
M16	800	2,30	3,05	3,79	4,88	5,94	7,16
		08013	08014	08015	08016	08017	08018
M20	1000	2,31	3,08	3,82	4,93	6,01	7,26
		08019	08020	08021	08022	08023	08024
M30	1500	2,33	3,10	3,86	4,98	6,11	7,41
		08025	08026	08027	08028	08029	08030

© June 2013 J. Roms H. Pfeil Dr. Keller
Revision: Date: Designed: Checked: Approved:

16 € Acid-proof runners

Designation: R1
Weight: 34,40kg/pc.
Item code: 16001

Designation: R2
Weight: 11,50kg/pc.
Item code: 16002

© June 2013 J. Roms H. Pfeil Dr. Keller
Revision: Date: Designed: Checked: Approved:

101 € Tank nozzle with ceramic sleeve (special version)

DN	Pipe		Ceram. sleeve	
	d1	s1	da	s
80	159,0	4,5	120	20
	168,3	4,5	130	25
	193,7	5,4	150	35
100	193,7	5,4	160	40
	219,1	5,9	180	40
125	219,1	5,9	180	27,5
	267,0	6,3	220	27,5
	267,0	6,3	220	47,5

DN	pipe		Ceram. sleeve	
	d1	s1	da	s
150	267,0	6,3	220	35
	273,0	6,3	230	40
200	323,9	7,1	280	40
	250	368,0	8,0	320
300	406,4	8,0	360	30

© June 2013 J. Roms H. Pfeil Dr. Keller
Revision: Date: Designed: Checked: Approved:

Whether you want to use a cleaning device to remove gypsum deposits in an absorber or operate a quench with a 700 °C fuel gas inlet temperature or plan a sulfuric acid drying tower with a ceramic self-supporting dome, we are able to offer you a customized solution to meet your needs, consisting of rubber linings or coatings combined with IWTP brick linings – both long-lasting and cost effective.



Self-supporting ceramic dome

Above and beyond protection against thermal and mechanical stresses, brick linings offer improved chemical resistance since they reduce the direct contact of the medium to the impermeable membrane layer.

Besides the optimal material choice consisting of IWTP rubber linings, respectively coatings such as IWTP LINING in combination with high-quality bricks and mortars only achieve a truly high quality lining through the design tailored to suit the most complicated geometries.

Our experienced constructors design every detail based on CAD drawings and define exactly how every single brick ties into one another to support the complete acid-proof lining, which represents quality brick by brick.

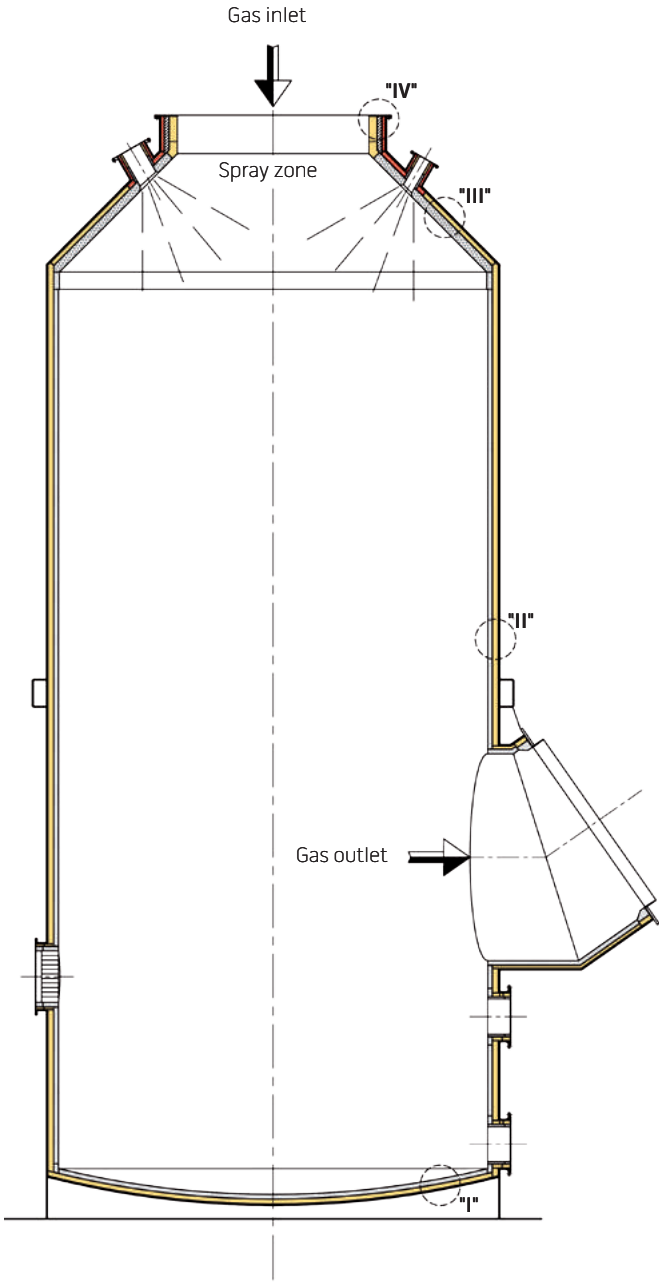
Efficient site planning minimizes assembly times, the flexibility that characterizes our project management and how we handle projects on-site these are things we practice in nearly all countries of the globe.

A functional lining quality is achieved in many small steps:

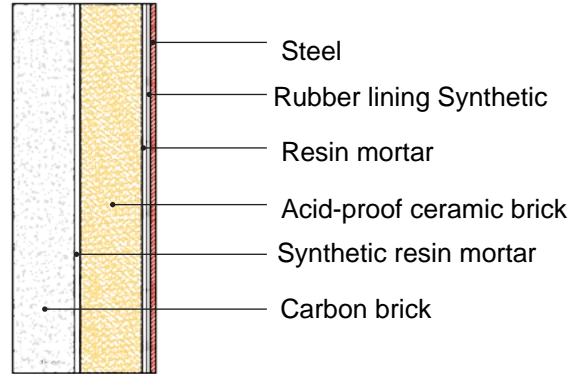
- own research and development
- own production with products matched to one another
- professional advice and design
- premium quality installation and site management



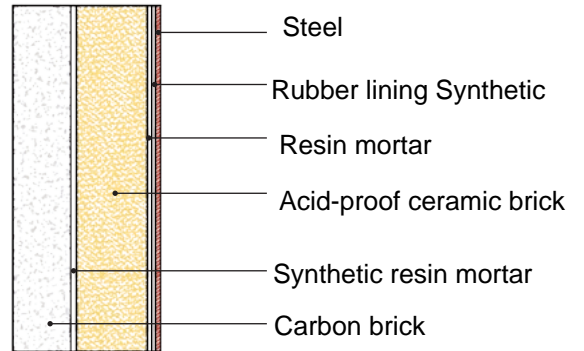
**DESIGN EXAMPLE OF A LINING
QUENCH TOWER**



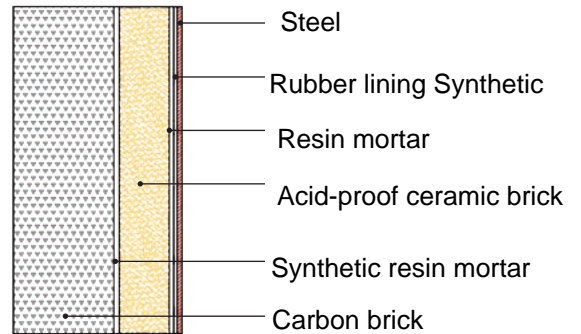
Typical I



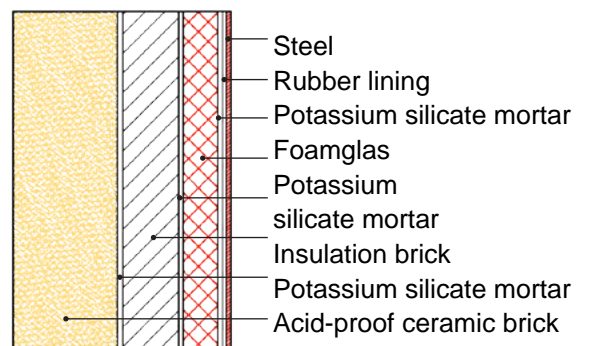
Typical II



Typical III



Typical IV



TANKS AND PROCESS EQUIPMENT

Imperial world trade offers durable primary containment lining solutions for demanding environments. Hot corrosive chemicals, exothermic reactions, agitated sediment – these conditions often call for acid resistant brick or tile linings. For cooler service temperatures, flake-filled Penncoat Linings are an economical choice. With a broad product line from which to choose, IWTPPL can help you evaluate options to meet your needs.



Anchored thermoplastic Acroline Systems, available in HDPE, PP, PVDF, and ECTFE, are a great option for concrete tanks. Acroline Systems have been installed in diverse applications ranging from potable water treatment tanks, to phosphoric acid attack tanks.



Historically, **brick linings** are utilized in the most demanding environments, and provide reliable service with minimal maintenance.



Flake fillers in our **Acid Proof Lining** formulations reduce the lining's permeability for longer life in immersion service. Systems are designed for brush, roller, trowel, and spray application.



Phosphoric acid attack tanks are lined with **carbon brick** set in **Carban base Furan Mortar** over a chemical-resistant membrane such as **Imprivious Membrane**.



In acidic environments subject to thermal cycling, adding a layer of **Furan Mortar Block Lining System** behind the brickwork insulates the membrane and extends its service life.



Urethane-asphalt Tufchem II Membrane was used to coat the exterior surface of this sulfur pit made of **Tufchem Silicate Concrete**. The sulfur pit was precast in two pieces then joined in the field.



Vinyl ester mortars have historically been used in tile-lined, pulp bleach plant equipment. Our family of **vinyl ester Pennchem Mortars** provides customized performance to address variations in pH and temperature for optimal mortar longevity.

FLOORING SYSTEMS

From dropped tools to vehicle traffic, process and containment area floors can take a beating. We design effective corrosion protection linings with abrasion and impact loads in mind. Choose from Corrosion Engineering's flooring systems to fill your requirements for durability and chemical resistance.

Imperial World Trade seamless flooring solutions include:
incorporate reinforcing fabric for enhanced durability and crack bridging capabilities. Consider several resin formulations to suit your chemical resistance requirements.



Compared with trowellable Penntrowel Surfacers using less labor-intensive slurry-broadcast installation techniques. These methods yield a non-slip, durable broadcast floor finish.



Tiling Systems are the ultimate solution for wet dairy, beer, and meat processing facilities, where sanitary design, durability, and a safe walking surface are critical.





imperial
World Trade Pvt. Ltd.



When installation time is limited, consider a pre-cured, adhesively bonded sheet membrane like . Seams are sealed with **heat and chemical-** resistant tape.



With unparalleled durability and thermal shock resistance, few alternatives outlast a properly specified, installed, and maintained **acid brick and membrane floor**.



Aircraft maintenance facilities utilize aggressive chemistries for parts and engine cleaning and paint stripping. Properly selected **Lining** or **SB Flooring** provides effective concrete protection in these facilities.



When your project schedule doesn't provide enough time to install acid brick flooring, substitute cast-in-place polymer concrete for faster turnaround. For battery plants and other acidic environments, consider cast-in-place **Tufchem Silicate Concrete** or **Tufchem Epoxy Concrete** flooring.



imperial
World Trade Pvt. Ltd.



SECONDARY CONTAINMENT & EXPANSION JOINTS

Practical and economical, Corrosion Engineering's secondary containment lining systems provide just the right amount of protection against occasional chemical spills or short-term immersion.

Strong acid containment dikes demand robust protection against thermal shock. Thermal shock produced when strong acid leaks into standing water can delaminate thin liquid-applied linings. Thicker linings, such as acid brick or polymer concrete, offer excellent protection against thermal shock.

A chemical containment system is not complete until expansion joints are filled. Chemical-resistant Flexjoint Sealants are hard enough to withstand a variety of wheeled cart and vehicular traffic.



User-friendly **Linings** and **MR Linings** are practical and cost-effective solutions for secondary containment structures designed to resist occasional chemical splash and spill.



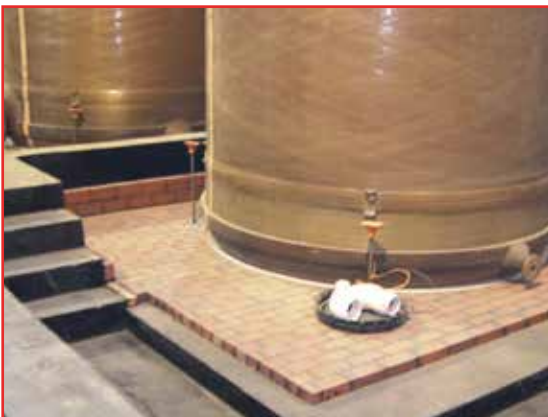
The elastomeric nature of **Tufchem II** and **97 Membranes** allow them to accommodate some movement in the substrates over which they are applied. Both are useful secondary containment linings.



imperial
World Trade Pvt. Ltd.



Silicate Concrete is an acid-resistant substitute for Portland cement concrete. This active pharmaceutical ingredient plant, which uses strong sulfuric and acetic acids, constructed secondary containment dikes using Tufchem® Silicate Concrete that was mixed on site in a continuous volumetric mix truck.



EFFLUENT COLLECTION SYSTEMS

Often characterized by a variable mixture of constantly flowing chemical spills, steam condensate, storm water runoff, and process contact water, industrial wastewater streams give collection systems the corrosion-erosion “one-two punch.” With many trenches, sumps, and manholes below grade, effective groundwater protection can be as critical as corrosion protection.



Durable fiberglass reinforced **MR and L/F Systems** can withstand constant chemical immersion and abrasion from sediment entrained in process effluent streams. The fabric also helps these linings maintain their integrity along inside corners, where seasonal thermal cycling could undermine a weaker lining system.



Many “off-the-shelf” precast polymer concrete trench drains just don’t provide sufficient chemical resistance for corrosive industrial environments. When your effluent collection system demands a more robust, custom solution, think of Corrosion Engineering. Choose from **Acrocast Vinyl Ester Concrete, Tufchem Epoxy Concrete**, and **Novolac Concrete**, available in silica and carbon grades.



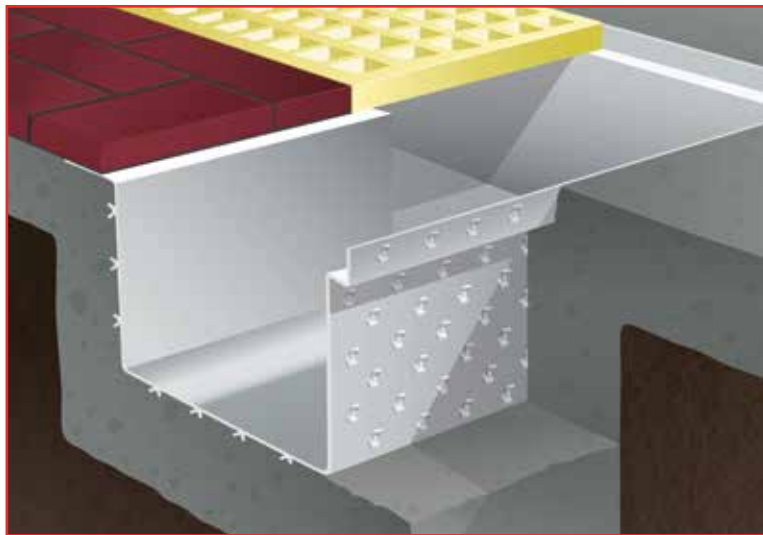
Though coatings have gained favor for their low initial cost, durable **acid brick linings** typically provide corrosion protection at a lower cost per year of service.



Acroline® Anchored Thermoplastic Concrete Protection Liner Systems

Available in several thermoplastic materials, Acroline Anchored Thermoplastic Concrete Protection Liner Systems provide reliable corrosion protection and chemical containment.

Integrally extruded anchors on the back of our Acroline Systems mechanically lock the thermoplastic sheeting into the surface of the concrete structure. This robust anchoring system enables the liner to resist delamination from hydrostatic backpressure (below grade) or thermal expansion.



Liners may be fabricated with grating seats, pipe stub-outs, and overlap flanges. Fabric-backed **Acroline Systems** provide a bonding surface over which other chemical-resistant linings may be applied at tie-ins, such as between a trench liner and adjacent **acid-proof brick flooring**.



When downtime is critical, **shop-fabricated Acroline Systems trench and sump liners** save precious field construction time – concrete can be restored and lined in the same step.

Acroline Systems are Available in Several Thermoplastics:

- » High-Density Polyethylene (**HDPE**), gray and UV stable black
- » Random Copolymer Polypropylene (**PP-R**), gray and UV stable black
- » Flexible Polyvinylidene Fluoride (**PVDF**), UV stable natural
- » Ethylene-Chlorotrifluoroethylene Copolymer (**ECTFE**), UV stable natural



PADS, PIERS, & PEDESTALS

When corrosion threatens the structural integrity of tank pads, pump piers, and column pedestals, the safety of your workers may be at risk. To protect these structures against chemical attack, consider building them out of chemical-resistant polymer concrete or seal them with a corrosion barrier. Polymer concretes include: Tufchem Silicate Concrete, Acrocast Vinyl Ester Concrete, Pennchem Novolac Concrete, and Tufchem Epoxy Concrete.



Silicate Concrete offers unmatched resistance to strong nitric, sulfuric, phosphoric, and hydrochloric acids. Construction tools and techniques are similar to those used for conventional Portland cement concrete.



Column base plates need solid support for efficient load transfer. High-strength **Grout** is a great choice for pours up to one foot deep.



Leaking pump fluids can corrode Portland cement concrete pads from under base plates and mounting bolts. For structural support that is corrosion resistant, consider using **Corrosion Engineering polymer concrete**.



FLUE GAS HANDLING EQUIPMENT CHIMNEYS & DUCTS

The chimneys and ducts of coal-fired power plants equipped with flue gas desulfurization systems demand sophisticated corrosion protection. Corrosion Engineering systems resist acidic condensate produced when gas temperatures fall below the acid dew point. Whether you are reheating the gas after scrubbing or running wet, Corrosion Engineering linings can provide the protection you need.



The global power generation industry relies on our unique **Block Lining System** for long-term corrosion protection in their stacks. This versatile lining system is even suitable for seismic zones and can be applied over steel, concrete, gunite, brick, and fiberglass structures.



When initial cost considerations drive the chimney lining selection process, power generators turn to **ACID Linings**, which incorporate flake fillers. These linings, as well as fiberglass reinforced **L/F Systems**, find application in **ACID Linings** other parts of the FGD plant including tank linings, neutralization basins, and cooling tower bases.



In predominantly hot and dry stacks, plural component **Silicate Gunite** lining is an economical choice. For best performance, the substrate and anchoring system are first lined with a chemical-resistant membrane, such as Pacmastic 325, prior to installation of the gunite.

CORROSION ENGINEERING LINING SYSTEMS & MATERIALS

Lining Systems



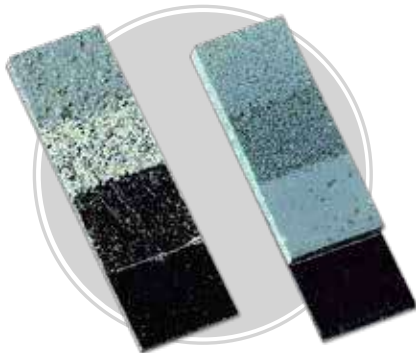
**MR Linings
(Mat Reinforced)**



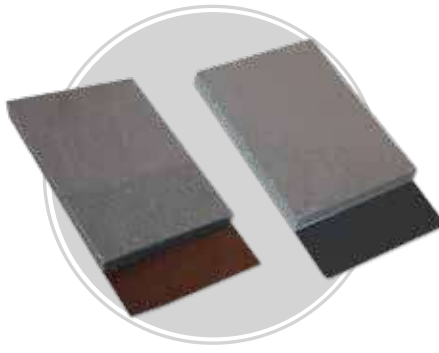
**97 Membrane
with Penncoat 331 Lining**



**SBR Flooring Systems
(Slurry-Broadcast, Reinforced)**



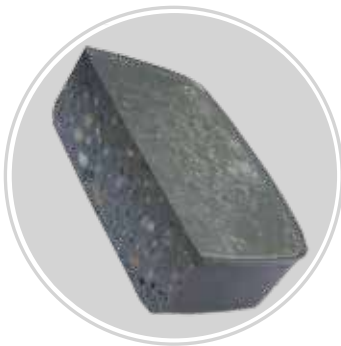
**Surfacers
(Trowel-Applied)**



**L/F Systems
(Lining/Flooring)**



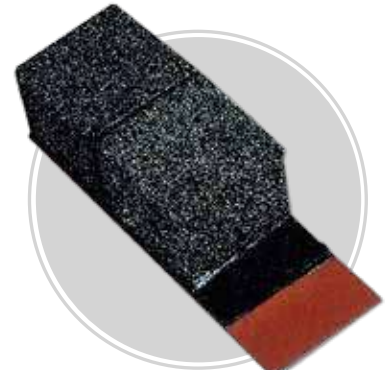
Polymer Concretes



Flexjoint Sealants

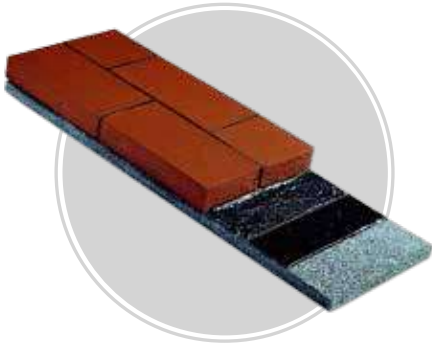


Block Lining Systems



CORROSION ENGINEERING LINING SYSTEMS & MATERIALS

**Acid Brick over
101 Membrane**



**Tile Grouts and Thinset
Adhesive Bed Joint**



**Vitrified Tufchem Tiling
Systems**



**Acroline Anchored Thermoplastic
Concrete Protection Liner Systems**



Choosing the right lining system to protect your plant equipment and infrastructure against corrosion is complex. Choosing a material supplier who will take the time to guide you through the process is simple.

Contact Corrosion Engineering for lining recommendations, design details, material specifications, and installer referrals at imperialworldtrade@gmail.com

Visit www.imperialworldtrade.com for access to our comprehensive online product catalog.



imperial
World Trade Pvt. Ltd.

imperial

World Trade Pvt. Ltd.



Corporate address :

D-303, The Imperial Heights,
Opp. Big Bazaar, 150 ft. Ring Road,
Rajkot - 360005 Dist: Rajkot,
GUJARAT-INDIA

Web : www.imperialworldtrade.com
Email : info@imperialworldtrade.com
Skype : imperialworldtrade
Cell : +91 94277 26335 (24 X 7)