



Winner of
National award '06
BY GOVT. OF INDIA



India's **No1** Engineer Plus 7 layer's Waterproofing Company Presents Full Range of Permanent & Guaranteed Waterproofing Solutions



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NATIONAL AWARD PHOTO



**Receiving National Award
(Mr. P.C. Bhandari, MD-ICO Ltd.)**

Quality Policy & Objectives

We, at **Indore Colour Organics Ltd.** believe in global harmony through happy living. We aim to save properties worth billions of rupees from water leakages problems as water ruins more properties than any destruction due to natural disaster or war.

It is our constant endeavor to develop water proofing chemicals and educate people on our product features to serve maintenance free dwelling for years to come. For this we shall constantly conduct qualitative improve our Quality Management System with inputs in improving human relations, packing, managerial and administrative efficiency and much more.

To develop range of products in the same family giving wide application base for all type of customers

- To ensure quality at all stage
- To enhance marketing all over India and abroad
- To encourage training of applicators so that they can generate independent employment

R&D Department (Laboratory)

We have pleasure to established a fully equipped, centrally air condition state of the art, advanced & high tech, totally computerized laboratory in the heart of Indore city. It is first laboratory in central India which are giving services for water permeability testing of cement, concrete mortar.

ICO LAB'S ASSETS

- Dedicated, competent technical staff.
- Timely, Accurate, Reliable test results.
- Responsive attitude & Team work.
- Customer's satisfaction.
- Convenient Central location.

UPDATED TECHNOLOGY

In ICO Lab the standard analytical methods are aided by the use of sophisticated instruments, high tech computer software, and other modern testing equipments with competent technical staff, for accurate analytical interpretation of consistent test results. ICO Lab is innovative for continuous improvement by updating knowledge, skill & technical capability to meet the challenges of latest development and global market demand.



About ICO Ltd.

Company

ICO Ltd. has been the pioneer in adhesives and sealants, construction chemicals and polymer emulsions in India. We started manufacturing WPC-99 in 1991, and have now grown to cater to various other categories including paint, chemicals, automotive chemicals, Cleaning Solutions, fabric care, maintenance chemicals, industrial adhesives, industrial resins and organic pigments.

Awards & Certifications

ICO Ltd. is only company in India who has awarded with national award in waterproofing category by Govt. of India. **ICO Ltd. brand “Engineer Plus”** has become a well recognized brand in India as well as international markets. Some of our popular products are Aquasil-99, HPC99, WPC-99, WAC-99, ICS-99, Kleanol, CAM-99, CAM-90, URP-99, Crack fill Paste, Smart Wall Putty, Duster Emulsion, Festive Primer, PSS-99, Smart Coat and more.

We take research very seriously and invest into creating new technology and products. We are pioneers of 7 Layer Waterproofing System which is one of the most successful waterproofing technologies in India & abroad.

State-of-the-Art Manufacturing

ICO Ltd. continuously invests in state of the art manufacturing facilities in India.

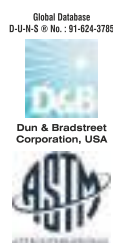


R&D Facilities

We develop most of our products in-house with the help of a strong, research-driven innovation led by consumer insights. innovation being one of the core values of the company, **ICO Ltd.** established a state-of-the-art research centre in Indore to expand the company’s product innovation strategy and attract international talent to work on its in-house global brands.



Our Credentials



About Waterproofing & Construction Chemicals Business

Construction Chemicals Division

ICO Ltd. has a unique mission to ensure that the latest in construction chemical technology reaches the Indian masses. To help achieve this mission **ICO Ltd.** has wide distribution network and an army of trained applicators who ensure that the correct solution is provided for Healthy Construction. Since Engineer Plus the **master of waterproofing**, was launched almost a three decade ago; It has become the undisputed leader in the organized waterproofing category in addition to waterproofing. Engineer Plus offers solutions in Tile Fixing, Building repairs, Sealants, Coatings Paints, Grouts, Flooring and Concrete Admixtures.

To Further propagate the message of “Permanent & guaranteed water proofing system”, **ICO Ltd.** has set up a not-for-profit organization Engineer Plus Institute of Structural Protection and Rehabilitation. The aim is to enlighten professional and applicators about the latest advances in technology and challenge the wrong conventional building techniques. It has also set up an Advanced Diagnostic Laboratory and library for the industry professional on its campus.



Global Presence

ICO Ltd. is growing its international presence through acquisitions, setting up manufacturing facilities and sales offices in important regions around the world. Our products have been very well received in international markets and are now exported to more than 10 countries. In order to achieve sustained growth in international business, we are expanding our distribution network in various countries and also deploying additional manpower.



ISO CERTIFICATE

CERTIFICATE OF COMPLIANCE



INTERNATIONAL CERTIFICATION SERVICES PVT. LTD.

This is to certify that the
QUALITY MANAGEMENT SYSTEM of

INDORE COLOUR ORGANICS LTD.

Head Office: 61, Jawahar Marg, Chemical House, Indore - 452 004, Madhya Pradesh, India.

Site: Survey No. 291/3, Indore Pithampur Bye-Pass Road, Village Bisnawada, Teh./Distt.
Indore - 453 001, Madhya Pradesh, India.

has been assessed and registered as complying with the requirements of the following international Standard:

ISO 9001:2015

The Quality Management System applicable to:

Scope: Formulator, Manufacture And Supply Of Construction, Water Proofing, Heat Proofing, Chemicals, Acrylic, Epoxy, Polyurethane Sealant And Coating, Multipurpose Cleaner And Instant Starch.

Registration No. : R091/2249
Registered Date : 12th July, 2004
Reassessment Date : 02nd August, 2019
Issue Date : 06th August, 2019
Expiry Date : 11th July, 2022



JAS-ANZ



www.jas-anz.org/sgnnet



Shula Katari

Director

International Certification Services Pvt. Ltd.

Accredited by Joint Accreditation System of Australia and New Zealand

Validity of this certificate is based on periodic audits of the management system defined by the above scope and is contingent upon prompt, written notification of significant changes to the management system and/or its components thereof shall be immediately communicated to ICS. Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2015 requirements may be obtained at www.icsan.com

22/23, Goodwill Premises, Swastik Estate, 17B CST Road, Kalina, Santacruz (E), Mumbai - 400 098, Maharashtra, India. Tel: 022-42200900



भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

भोपाल शाखा कार्यालय : 'मानकालय', ई-5, अरेरा कॉलोनी,
बिट्टन मार्केट, भोपाल-462016 (म.प्र.)
BHOPAL BRANCH OFFICE: 'Manakalaya', E-5, Arera Colony,
Bittan Market, Bhopal-462016 (M.P.)

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रपीड पोस्ट

हमारा संदर्भ : बीपीएल/एमडी/55:सीएम/एल - 8674396

विषय : प्रमाणन मुहर लाइसेंस क्रमांक सीएम/एल - 8674396 नवीनीकरण

मेसर्स इन्दौर कलर ऑरगेनिक लि.

खसरा नं. 291/3,

गाँव विसनवाड़ा,

जिला इन्दौर (म.प्र.)

महोदय,

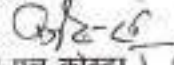
उपरोक्त प्रमाणन मुहरांकन लाइसेंस के नवीनीकरण के संबंध में आपके आवेदन पत्र दिनांक
05 10 2010 संदर्भ में आपको सूचित किया जाता है कि दिनांक 25 10 2010 से 24 10 2011
तक नवीनीकरण कर दिया गया है।

नोट करें कि आपका लाइसेंस उपरोक्त अवधि के पश्चात् समाप्त हो जाएगा तथा आपको लाइसेंस की
समाप्ति से कम से कम ढाई महीने (दो महीने पन्द्रह दिन) पहले इसके नवीनीकरण हेतु आवेदन करना
होगा।

आपको सलाह दी जाती है कि दिनांक 25 07 2010 से 24 07 2011 तक उत्पादन से संबंधित
जानकारी, जैसे कि कुल उत्पाद की मात्रा तथा मुहरांकित की गई उत्पाद की मात्रा आदि से इस कार्यालय
को दिनांक 31 08 2011 से पूर्व अवगत कराना आवश्यक है। आपको यह भी सलाह दी जाती है कि
परिकल्पित मुहरांकन शुल्क अथवा न्यूनतम मुहरांकन शुल्क जो अधिक हो, इस कार्यालय को
दिनांक 31 08 2011 से पूर्व प्रेषित करें। यदि मुहरांकन शुल्क की राशि निर्धारित तिथि तक प्राप्त नहीं हुई
तो आपके लाइसेंस के निरस्तीकरण हेतु कार्यवाही की जायेगी।

सामन्यवाद।

भवदीय


(एम एल कोस्टा) 11/10/2010

निदेशक

संततन - अनुलग्नक क्रमांक 06 दिनांक 1.11.2010

AMERICAN STANDARD CERTIFICATE (ASTM)

TEST REPORT

S A B S

Sabona Commodities
Att :Mr.S.Hansrajh
PO Box 840310
CLEVELAND
2022

Your ref: Mr. S Hansrajh
Enquire : J.Stoos
Tel. 428-6009
No.2538/1618/M107
Date: 2008-01-08

CHEMICAL ADDITIVES INTERIM REPORT

OBJECT TO TEST

1.1 To determine whether the samples of chemical additive complies to the requirements of ASTM(American Standard) C 494.

2 SAMPLE

2.1 SAMPLE DESCRIPTION

1 L Type B retarding chemical admixture marked "CAM-99"

2.2 DATE OF RECEIPT

1 October 2007

DATE OF TEST

30 October to 27 November 2007

2.3 CONDITION OF SAMPLES

The Sample was in a suitable condition to be tested.

2.4 Test Report

2.5 O.K.

3 EQUIPMENT INFORMATION

3.1 NAME : Compression testing machine
TYPE: Avery Denison
Calibration certificate no: 3000 KN 2332 AFIS 13-2
100 KN 2332 AFIS 13-3

4. NAME OF LABORATORY

Building and construction laboratory of SABS Commercial (Pty)Ltd.



Description

Aquasil-99 is a 100% Reactive Organosilane Nano - Sealer. When applied on a siliceous substrate, it penetrates up to 2 mm inside the substrate and becomes an integral part of the structure. It converts the nature of the substrate from hydrophilic to hydrophobic. Aquasil-99 is water dilutable, safe, sprayable and easy to apply. Aquasil-99 acts like a 'skin' up to 2 mm deep for your building as against a polymer or paint film that acts like a 'Band-Aid' on your Building. The peel-off issues are eliminated as Aquasil-99 is non-leachable & UV-Resistant. It has a dual property of preventing of ingress of liquid water while allowing moisture vapours to escape.

Area of Application

- Waterproofing Membrane : Roof terraces, sunken portion of toilets & bathrooms, chhajas, balcony, etc.
- Concrete Repairs : Spalled concrete of slabs, chhajas, beams, columns, parapet, floor, etc.
- Waterproofing or Bonding Primer : Walls & slabs



Features & Benefits

- Novel Bacteria Based self-Repairing Nanotechnology of waterproofing.
- Easy to apply, economical, water repellent property maintained for years (20+years.)
- Breathable coating allows water vapour to pass. Keeps substrate dry. No deterioration occurs.
- The treated surface turns hydrophobic and no longer allows to penetrate water into cracks. It cannot be wetted by water.
- Reduces thermal conductivity.
- Through capillaries drastic reduction in water uptake.
- Resistant to Abrasion, Thermal, UV.
- No shining, no tackiness, No health risk.
- Environment friendly.

Method of Application

- The substrate should be cured, dry and free from internal voids (honey combs).
- If honey combs are present, drill a hole and inject Engineer Plus Aquasil-99 solution 1:20 in water. Allow it to dry and then inject a suitable grout to fill and close the hole.
- For substrates with oil, grease, fungal growth etc., clean and dry the surface thoroughly before application.
- Engineer Plus Aquasil-99 should be diluted with potable water (TDS <1000 ppm) to obtain a clear transparent solution.
- The diluted solution should be liberally sprayed with low pressure until flood saturation is achieved.
- Flood saturation on horizontal surfaces means no further absorption of Engineer Plus Aquasil-99 even after 5 minutes of saturation.
- On vertical surfaces apply Engineer Plus Aquasil-99 from bottom to the top to eliminate drip-mark formation.
- To achieve full saturation on vertical surface, after repetitive light spray (3-4 times after 30-45 seconds) the solution should drip down the wall.
- Both applications are best done at a temperature between 10°C (50oF) to 35°C (95oF). It is best to do the application during the morning or evening hours to avoid peak heat of the Sun.
- For doing any Screeding / Plastering / Tiles / Paint Work on the treated surface, Engineer Plus Aquaprime-99 (Acrylic Binder) must be added to the Engineer Plus Aquasil-99 Solution during preparation in the recommended ratio of 2 parts of Engineer Plus Aquaprime-99 1 part of Engineer Plus Aquasil-99 & 20 parts of water.

Technical Data Sheet

PROPERTIES	SPECIFICATION	RESULTS
Form		Rust Clear Liquid
Viscosity	@25°C	<100cps
Specific Gravity		0.91±0.01
Flash Point		12°C
Odour		Low Odour
Solubility (in Water)		Easily Soluble
pH	Approx	6±1
Dilutant	Clean Potable Water TDS	< 1000 ppm
pH		6.5 to 7



Description

Engineer Plus Aquaprime-99 is an Acrylic co-polymer emulsion, supplied as a ready to use bonding agent in liquid consistency. It is a versatile product and can be used as a cement modifier for repair of spalled concrete - slabs, balconies, beams, columns, floors & waterproofing of toilets, bathrooms and terraces. Aquaprime- 99 plays major role in facade coating system . It forms a dry water repellent zone beneath the coating consolidate the substrate and enhance bonding of the coating . It is gas permeable, durable, protects paints & plasters against harmful influences form within the masonry .

Areas of Application

- **Waterproofing Membrane** : Roof terraces, sunken portion of toilets & bathrooms, chhajjas, balcony, etc.
- **Concrete Repairs** : Spalled concrete of slabs, chhajjas, beams, columns, parapet, floor, etc.
- **Waterproofing or Bonding Primer** : Walls & slabs

Features & Benefits

- Fast drying, excellent adhesion to most building materials & no need to cure.
- Increase in durability & toughness of concrete.
- Increase flexural and bond strength of concrete .
- Forms a very tough bond with substrate having good permeability rating .
- High scrub & impact resistance.
- Excellent elastomeric and crack bridging capability.
- Good weathering characteristics.
- No water absorption, withstanding hydrostatic pressure .
- Not susceptible to alkali degradation. Resistance to high alkali, sulfates and salts.
- Good colour retention. High resistance to stain, dirt pickup & UV.
- Breathable coating, allows vapor transmission.

Method of Application

Clean the surface with wire brush, scrubber or air blower to remove hidden dirt, loose particles, laitance & dust. De-grease the surface by using suitable solvents, if needed.

- **Bonding Primer**
To be used as a clear bonding primer by diluting 1:5 with water. Apply on the walls before painting or during putty rendering.
- **Waterproofing Primer**
For priming of concrete substrate, the surface should be thoroughly saturated with Engineer Plus Aquasil-99 solution (Dilution Ratio - 1 part Engineer Plus Aquasil-99 : 20 parts potable Water : 2 parts of Engineer Plus Aquaprime-99).
- **Waterproofing Membrane**
For a waterproofing coating mix 1 part Engineer Plus Aquaprime-99 with 1 part of cement & 1 part of 100 mesh sand.
Add water for brushability.
Brush apply the mix in span of 4-6 hours on the prepared concrete substrate. It is recommended to saturate the surface with Engineer Plus Aquasil-99 solution prior to this application.
Overlay the coating with a protective screed to the desired slope and thickness.
Coverage : 4-5 m² for a 0.2 mm (200 microns) coat.
- **Repair Mortar & Renders, Floor Screed & PCC**
Prepare the Mortar in the following proportion:
Cement 50 kg
Washed Sand 75 kg
6 mm Down size aggregates 75 kg
Engineer Plus Aquaprime-99 (6 - 7.5 litres)
Water 10 litres
For PCC & Plaster work : Engineer Plus Aquaprime-99 200 ml per bag cement.

Coverage

- 3 sq.mtr per coat on a brick masonry surface (mixed with cement).



Aquaprime -99 Multiple Usages & Application Chart

No.	Application	Composition	Qty of Aquaprime-99
1.	Concrete & masonry surface Repair mortar	OPC : 50 kg Washed Sand :10 kg water : 10 ltrs.	6-7.5 ltrs.
2.	Bonding Primer	Water : 5 ltrs.	1 Ltr.
3.	Concrete /Plaster	OPC : 50 kg	150-250 ml
4.	Waterproofing	OPC : 1 kg Sand : 1 kg	1 Ltr.
5.	Putty	Putty-20 kg	150-250 ml
6.	Primer	Primer 20 ltr (water base)	1 Ltr.
7.	Coving	Water : 2.5 ltrs Cement : 5 kg Sand : 15 kg Mix manually / mechanically use the Mixture for smooth coving	1 Ltr.
8.	Enhance washability coverage Bonding, brightness & life of Water base paint	20 lit water base paint	Upto 4Ltr.
9.	Waterproofing with Aquasil-99	Portable water 20 parts Aquasil-99 1 part	2 Ltr.

Technical Data Sheet

PROPERTIES	SPECIFICATION	RESULTS
Physical form		Milky white free flow liquid
Odour		low characteristic
Specific Gravity		1.03 ± .02
Solids		35 % ± 1%
PH		7-9
Solubility		Radily soluble in water
Viscosity	@ 25°C	<500 cps
Dilutant	Clean Potable Water TDS	< 1000 ppm
Flash Point		Non Flammable

Description

Engineer Plus CAM-90 is triple action unique composition of Organic & Inorganic chemicals. Specially formulated for integral self waterproofing, free flow concrete, to resist growth of micro-organisms and fungus. For effective waterproofing to fill up capillaries in concrete and masonry work. Water reducer and plasticizer cement concrete to manufacture precast concrete elements, cantirileves, structure pretressed concrete, tiles etc. CAM-90.ensures substantial saving in cement, water, time, labour, cost etc. Long life of steel reinforcement is also considerably enhanced.

Areas of Application

Waterproofing of concrete and sand-cement mortars used in

- Basements
- Roof slabs and screeds
- Water tanks & water retaining structures
- External plastering
- Bathrooms and balconies
- Sumps and drains

Features & Benefits

- **Corrosion resistant** - Makes concrete more cohesive, hence protects steel better against corrosion
- **Compatibility** – Being a liquid, easily dispersible & compatible with concrete/mortar mixes.
- **Permeability** – It reduces the permeability of water into concrete.
- **Strength** – The setting time and compressive strength of the concrete remains within the specification limits.
- **Shrinkage** – Reduces shrinkage crack development in plaster & concrete.
- **Workability** – Improves workability of freshly mixed cement concrete.
- **Durability** – Increases durability by improving waterproofing of concrete.

Method of Application

- Add 200ml of Engineer Plus CAM-90 for every 50kg beg of cement in the concrete mortar mix.
- The recommended dose of Engineer Plus CAM-90 should be mixed into the gauging water while preparing concrete or of mortar. The concrete or mortar should be mixed 2 to 3 minutes throughly to -dispense the liquid.
- Cure the applied mortar or concrete as per good construction practice.



Chemical Test

Contents	Requirement of ISI 2645	In CAM-90
Total Chloride (cl)	0.05% max.	0.030%
Total Sulphate (So3)	0.05% max.	0.038%

PHYSICAL TEST OF M. 150 Concrete with 43 grade cement

Days	Requirement of ISI 2645	Without CAM-90	With CAM-90 2ml./kg. Cement
3 days	134.4 mpa	152.5 mpa
7 days	155.5 mpa	170.7 mpa
28 days	150kgs.	229.6 mpa	261.3 mpa
Slump		20 mm	35 mm.

Technical Data Sheet

PROPERTIES	RESULTS
Appearance	Free flowing liquid
Colour	Pink
Sp. gr. @ 25°C	1.04 - 1.09
Non volatile content	13.5 - 14.5%
pH value	11.0 - 14.0
Solubility	Water Soluble
Setting time, minutes	Passes
Chloride content	Max. 2.00%
Water permeability	Passes
Compressive Strength N/mm ²	As per the standard





Description

Engineer Plus CAM-99 is triple action unique composition of Organic & Inorganic chemicals. Specially formulated for integral self waterproofing, free flow concrete, to resist growth of micro-organisms and fungus. For effective waterproofing to fill up capillaries in concrete and masonry work. Water reducer and plasticizer cement concrete to manufacture precast concrete elements, cantirileves, structure pretressed concrete, tiles etc. CAM-99 ensures substantial saving in cement, water, time, labour, cost etc. Long life of steel reinforcement is also considerably enhanced.

Areas of Application

Waterproofing of concrete and sand-cement mortars used in

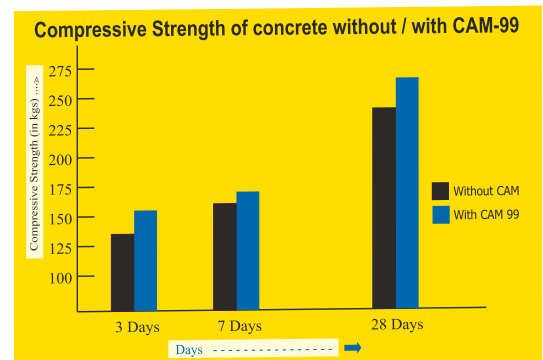
- Basements
- Roof slabs and screeds
- Water tanks & water retaining structures
- External plastering
- Bathrooms and balconies
- Sumps and drains

Features & Benefits

- **Corrosion resistant** - Makes concrete more cohesive, hence protects steel better against corrosion
- **Compatibility** – Being a liquid, easily dispersible & compatible with concrete/mortar mixes.
- **Permeability** – It reduces the permeability of water into concrete.
- **Strength** – The setting time and compressive strength of the concrete remains within the specification limits.
- **Shrinkage** – Reduces shrinkage crack development in plaster & concrete.
- **Workability** – Improves workability of freshly mixed cement concrete.
- **Durability** – Increases durability by improving waterproofing of concrete.

Method of Application

- Add 100ml of Engineer Plus CAM-99 for every 50kg bag of cement in the concrete mortar mix.
- The recommended dose of Engineer Plus CAM-99 should be mixed into the gauging water while preparing concrete or of mortar. The concrete or mortar should be mixed 2 to 3 minutes thoroughly to -dispense the liquid.
- Cure the applied mortar or concrete as per good construction practice.



Technical Data Sheet

PROPERTIES	RESULTS
Appearance	Free flowing liquid
Colour	Blue
Sp. gr. @ 25°C	1.04 - 1.09
Non volatile content	13.5 - 14.5%
pH value	11.0 - 14.0
Solubility	Water Soluble
Setting time, minutes	Passes
Chloride content	Max. 2.00%
Water permeability	Passes
Compressive Strength N/mm ²	As per the standard





Description

Engineer Plus 333 SuperCrete URP is based on modified styrene butadiene latex supplied as a ready to use bonding agent in liquid consistency. It is used for repair of spalled concrete – floors, columns, beams, chhajjas, slabs. waterproofing of toilets & bathrooms, small terraces etc. It bonds strongly to old & new concrete and to plasters. It reduces shrinkage, prevents cracking, dust pick up & improves abrasion resistance.

Features & Benefits

- Multipurpose – it is multipurpose & economical product, easy to use.
- Cracking – it prevents cracking by improving flexural strength.
- Hardness – improves the hardness & prevents dust generation.
- Shrinkage – Reduces drying & aging shrinkage cracks.
- Bonding – Bond strongly to concrete, masonry, stonework, plasters, cementitious surfaces, asphalt & most of the building materials.
- Erosion & corrosion – improves erosion resistance & prevents corrosion.
- Abrasion resistance – improves abrasion resistance of the cement mix.
- Grouting – Reduces viscosity of cement injection grout for better fluidity & bonding.

Method of Application

1. SURFACE PREPARATION

- Clean the surface with wire brush or scrubber to remove hidden dirt, loose particles, laitance & dust. degrease the surface by using suitable solvents.
- Repair the spalled concrete portion by saw, cutting the extreme edges of the repair location to a depth of at least 10 mm to avoid featheredging & to provide strong bond.
- Clean the concrete surface to remove any contamination where breaking is not possible. Roughen the surface by light scabbling or grit blasting.
- Expose corroded rebar in the repairing area fully. Remove all loose scales & corrosion deposits and immediately clean the surface.

2. PRIMING

- For priming of steel surface, apply Engineer Plus Rust Arrest to all exposed reinforcement area and wash it with water jet before applying Engineer Plus Epoxy Zinc Rich Primer on the rebars.
- For priming of concrete substrate, the surface should be thoroughly saturated with potable water. Remove any excess of water prior to application. Slurry of primer coat is prepared by mixing of one part **Engineer Plus 333 SuperCrete URP**, one part of water and 3 parts of fresh OPC cement. Slowly mix cement with binder to obtain a smooth consistency. Continue mixing the slurry during application to prevent settlement.

3. MIXING

- A forced action mixer is essential (Pan Mixer) & recommended to ensure that **Engineer Plus 333 SuperCrete URP** mortar is thoroughly mixed or Use a suitable sized drum with heavy-duty electrical drill machine fitted with spiral paddle mixer at slow speed of 400-500 rpm.
- Hand mixing is permissible only for 25 kg or less quantity.
- Charge the mixer with required quantity of clean & dry sand, cement & mix for 1-2 minutes, then add **Engineer Plus 333 SuperCrete URP** as per the dosages recommended. Mix for 2-3 minutes to avoid air entrapment. Keep on slowly adding water until the required consistency is achieved. do not add extra water





333 SuperCrete URP Multiple Usages & Application Chart

- Surface for treatment must be perfectly cleaned of all latent. oil, greases, mechanically and chemically finally vacuum cleaned & water washed to remove all loose material.
- **For waterproofing** : Mix Engineer Plus **333 SuperCrete URP** with neat cement in ratio of 1:1.5 by weight. Apply 2 coats in the interval of 2 hours. After 2nd coat when it is tacky protective screed is must.
- **As a mortar** : for repairs prepare a mortar with Engineer Plus **333 SuperCrete URP** in the following protection in the given sequence to get workable consistency.

333-URP	Water	Cement	Sand
150gm	200ml	1kg.	3kg

- **As Screed Concrete** : Concrete screeding mix Engineer Plus **333 SuperCrete URP** with other ingredients in the following ratio as per the sequence for uniform consistency.

333-URP	Water	Cement	Sand	6mm crushed stones
150gm	200ml	1kg.	1.5kg	1.5kg

- **As a bond Coat** : Mix Engineer Plus **333 SuperCrete URP** and neat cement in 1:1 ratio by weight. Apply on pre wetted substrate immediately overlay repair mortar on the tacky surface.
- **As a protective coating** to robar's and cementitious substrate. Mix Engineer Plus **333 SuperCrete URP** with neat cement in 1: 1:5 proportion by weight and apply.

Areas of Application

- For concrete repairs - spalled concrete of floors, columns, beams, chhajjas, slabs, parapets, etc.
- For waterproofing – small roof terraces, sunken portions of toilets & bathrooms, chhajjas & lift pits, balconies & staircases.
- For waterproofing – liquid & effluent tanks, car decks & walkways.
- As a bonding agent – bonding mortar for tiles & panels, as undercoat for special finishes such as top rendering coat for chemical resistant floors.
- As a bond coat – for bonding of new concrete to old concrete, masonry stone work, plastering.
- For cladding – fixing or re-fixing of slip bricks, tiles, stones & marble bedding.
- As external rendering – weatherproof & frost resistant render, high wear & erosion resistant render. As bonding slurry coat for pinhole treatment on concrete surface & as repair mortar for overhead application.

Coverage

- 2 - 2.2 sq.mtr/kg for 2 coats. (URP+cement in the proportion 1:1.5)

Technical Data Sheet

PROPERTIES	RESULTS
Base	SBR Latex (styrene, butadine rubber)
Coverage OPCS:URP 1:5	20-22 sq ft/kg for two coats
pbwt	1:1.5
Total active solid content	34 ± 2%
pH	8 - 9
pot life @ 30°C	30 - 45 minutes at 30°C
Speciic gravity at 30°C	1.01 +/- 0.02
pH	7 to 9
Compressive strength, N/mm ² -7 days	Passes the specification.
Tensile strength, N / mm ²	Passes the specification
Flexural strength, N/mm ²	9>
Slant shear bond, N/mm ²	30
Chemical resistance to mild acids, alkalies, sulphates.	Resists
Resistance to water pressure, bar	Upto 2
Freeze thaw resistance	Excellent

Description

Engineer Plus SmartCrete-501 is an acrylic based Polymer Modified Cementitious Flexible Composite coating system. Engineer Plus SmartCrete-501 in conjunction with cement provides properties to combat the shortcomings of plain cement, particularly its poor adhesion properties, low impact strength, low flexural strength and thin section fragility. Engineer Plus SmartCrete-501 polymer adds to the potential use as well as enhances the properties of cement slurry/ mortar/concrete making them excellent choice for use in new as well as renovation work.

Area of Application

Engineer Plus SmartCrete-501 is used for surface treatment, protecting, waterproofing and repairing concrete and masonry. Waterproofing of basements, toilets, terraces, roofs, swimming pools, water towers etc. General concrete repairs. Protection of concrete against corrosion, salt attack etc.



Features & Benefits

- Combines a tough, flexible, hard-wearing surface with waterproofing.
- Allows trapped vapour to escape thus preventing peeling and blistering.
- Can be applied in uniform thickness to horizontal and vertical surfaces.
- Develops excellent bond to most building materials.
- Reduces or prevents salt penetration into concrete.
- Is not affected by ultraviolet light or by chemicals ranging from mild acids to strong alkalis.
- Is highly durable in continuous wet condition.
- Is non-flammable and does not give off toxic gases, when exposed to fire.
- Will not rot or corrode.
- Most properties improve with age.
- Is not harmful to the health of workman.

Method of Application

Surface Preparation

Prior to application of **Engineer Plus SmartCrete-501**, surface must be prepared as mentioned below to avoid failure and to achieve maximum beneficial properties.

- The surface shall be cleaned to remove all dust, foreign matters, loose materials or any deposits of contamination which could affect the bond between the surface and the **Engineer Plus SmartCrete-501** coating. This can be done by scarifying, grinding, water blasting, sand blasting, and acid washing or by any other approved method.
- New flat surface like sub-base concrete shall be made reasonably smooth so as not to impede the application of Engineer Plus 501 SmartCrete coating and to avoid sharp projections.
- All concrete surfaces shall be thoroughly pre-wetted prior to the application of Engineer Plus 501 SmartCrete coating by pouring water on flat surface or by spraying water on vertical/inclined surfaces.
- When placing Engineer Plus 501 SmartCrete coating, water should be removed so that surface is only damp. In no case there should be standing water.
- Depressions are to be filled and levelled using Engineer Plus 501 SmartCrete fillers. For filler, the mixing ratio is 1 kg cement: 1.5 kg silica sand: 0.50 kg of ENGINEER PLUS 501 SMARTCRETE.



Application

- ENGINEER PLUS 501 SMARTCRETE -polymer is mixed with neat fresh cement in the ratio of 1:2 by weight. The mix has to be stirred thoroughly until smooth homogeneous slurry is obtained. Wait for 5-10 minutes to release entrapped air bubbles. Any lump found in the mix should be removed or mixed thoroughly. The mix has to be applied by brush on rendered and/or prepared surface. Two or more coats are recommended. First coat should be allowed to air dry for 5-6 hours prior to apply subsequent coat.

Curing

- After application of final coat of ENGINEER PLUS 501 SMARTCRETE-, initial air drying shall be done for 2-6 hours. During this period no water is to be used for curing. In case of high temperature and low humidity combined with high wind condition, the coating shall be covered with polythene sheet to avoid rapid drying of the coating. After maximum period of 6 hours after the final application, moist curing shall be done for the next 24 hours by spraying/sprinkling of potable water on **ENGINEER PLUS 501 SMARTCRETE COATING**. During this period at no point of time should the **ENGINEER PLUS SMARTCRETE-501** coating be left completely dry or submerged in water. Following moist curing, the **ENGINEER PLUS 501 SMARTCRETE** coating shall be allowed to air dry for 2 days before submersion in water.

Precautions

- ENGINEER PLUS 501 SMARTCRETE system must be applied with temperature above 10°C and below 40°C.
- ENGINEER PLUS 501 SMARTCRETE should not be used without addition of cement.

COVERING CAPACITY: SMARTCRETE-501 COATING/SLURRY

Mix proportion: 2 kg cement: 1 kg 501 SMARTCRETE Polymer

Material	One coat on concrete Kg/m ²	Two coat on concrete Kg/m ²
Cement	0.5	0.750
SmartCrete-501 Polymer	0.25	0.375

SMARTCRETE-501 BRUSH TOPPING

Material	Quantities of Material in Kg for One cubic meter	1 sq.m. of 1.5 thickness
Cement	860	1.30
SmartCrete-501 Polymer	430	0.65
Fine Silica Sand	860	1.30
Total Weight in kg	2150	3.25

Technical Data Sheet

PROPERTIES	SPECIFICATION
Appearance	Milky white coloured free flowing liquid.
Viscosity, Seconds	12 ± 1
Solid content	30 ± 3 (w/w)
pH Value	>7
14 days Bond Strength, N/mm ²	2.0 (Minimum or concrete failure)
28 days Compressive strength, N/mm ²	30 (Minimum)
Recoating Time, at 27°C , 65% RH, Hours	4-6
Full Cure	14 days
Ash Content, % (w/w)	<1.0%





Description

Engineer Plus Smart Coat is a fiber reinforced elastomeric liquid applied water proofing membrane. It is formulated with select elastomeric and resilient acrylic polymers and reinforcing polyester fibers. Upon curing, it forms a thick, seamless, durable membrane thus offering ultimate waterproofing..

Area of Application

Can be used for building roofs, terraces, parapet, sunshades and exterior vertical walls. It can also be applied on existing IPS, sound brick-bat coba or cementitious waterproofing.



Features & Benefits

- **Waterproofing:-** Waterproofing protection of up to 7 bars hydrostatic pressure.
- **Crack bridging:-** Unmatched crack bridging ability due to elastomeric properties.
- **Mechanical strength:-** Reinforced with glass fibers for superior abrasion resistance.
- **Adhesion:-** Strong adhesion to masonry substrates.
- **High sheen:-** High sheen, brilliant white colour and thick coat results in high levels of heat reflectance.
- **Anti carbonation:-** Reduces carbon dioxide and chloride ion diffusion thus protecting re-bars against corrosion.
- **Use & maintenance:-** Single pack, easy to apply and simple re-coating.

Method of Application

SURFACE PREPARATION

- Prepare the surface by cleaning and ensure that it is free of dust, oil, grease, grime and loose particles etc.
- The substrate must be checked for its soundness small crack (3mm or less) should be opened cleaned and filled with Engineer Plus Crack Fill Paste Bigger cracks, damaged portions & hollow areas must be repaired with polymer modified screed.

APPLICATION METHOD HORIZONTAL SURFACE

- Apply a self-priming coat of Smart Coat (diluted with water in 3:1 ratio.)
- Apply a second coat of Smart Coat without dilution .
- Apply two perpendicular coats of Smart Coat without dilution.
- Achieve a forced system coverage of 10sq .ft./ltr.
- Allow it to dry for 4-6 hours between coats
- For best performance on terraces, ensure that the product is applied on the entire roof including parapet wall

APPLICATION METHOD VERTICAL SURFACE

- Fresh painting: Apply a self-priming coat of Smart Coat (diluted with water in 3:1ratio)
- Achieve a forced system coverage of 25 sq. ft./ ltr.





Precaution

- Repair the hallow surface area before applying Smart Coat.
- For miscelleneous surface like tiling, smooth and glossy cementitious surface, product should be used with Engineer Plus Smart Coat terrace tile primer.
- For horizontal surfaces, use Engineer Plus Smart Coat fibermesh at all joint & corners for better reinforcement.
- For oily, existing failure coating surface, carry patch tests to check adhesion of product to substrate.
- The forced coverage leads to long term performance hence it is recommended to ensure coverage as per datasheet only.
- Do not apply during rains or extreme temperatures.
- Not recommended for rain water harvesting purpose. Avoid abuses which may lead to puncturing of membrane.
- Ensure that the product is applied at least 6 inches inside the drain pipe.
- For best results, apply coating on parapet walls as well.



Coverage

RECOMMENDED SYSTEM

On RCC or plaster using brush or roller

Horizontal Surface 0.93 Sq. mtr/Ltr

Vertical Surface

Fresh painting: 2.32 Sq. mtr/Ltr

Re-painting: 2.79 – 3.25 sq. mtr/ltr

Technical Data Sheets

Properties	Results
Appearance	Viscous liquid
Colour	White
Specific Gravity	1.25
Water Resistance	10
Alkali Resistance	8
Viscosity Sormer	122-134 KU
Solids by wt, %	54.6 - 60.4
Tensile Strength	2.82
Elongation	220
Adhesion to dry concrete	5.47
CBA, mm	1 mm (Horizontal)
Water vapour permeance Anti Carbonation, R Value (@ 207 DFT)275	4.41
Form	Ready to use vicours liquid
MixDensity :	1.26
Application Temperature	5°C to 35°C

CRACK FILL PASTE



Description

Engineer plus Crack Fill Paste is a ready to use fiber glass reinforced crack filling compound for both interior and exterior surfaces. It ensures unmatched crack bridging ability for plaster cracks of up to 3 mm.

Areas of Application

- Internal & external plastered masonry wall.
- To fill crack up to 3mm width of masonry surf.

Features & Benefits

- **Crack Filling Ability**:- Strong filling capacity for cracks of up to 3mm width.
- **Flexibility** :- High elongation film that accommodates movement.
- **Mechanical Strength** :- Reinforced with glass fibers for superior mechanical strength.
- **Waterproofing** :- Water resistant film stops water ingress through cracks.
- **Adhesion**:- Very strong adhesion on all absorbent surfaces like plaster, wood, gypsum, POP, asbestos, etc.
- **Usage** :- Single pack and easy to apply
- **Over Coating** :- Easily over coated by emulsion paints.

Method of Application

- Surface must be free from dust, oil, grease, loose particles, etc.
- Moisten the surface before applying Engineer Plus Crack Fill Paste.
- Before filling widen hair crack in V Shape minimum for 1mm.
- For filling engineer Plus Crack Fill Paste on internal surface expose plastered surface by removing existing POP or painter's putty.
- For porous surface, apply primer coat prepared with engineer Plus Crack Fill Paste and water in 1:1 proportion over crack. Fill Engineer Plus Crack Fill Paste on tacky surface before primer dries.
- To level with surface press Engineer Plus Crack Fill Paste firmly into crack with a spatula or putty knife.
- Care must be taken to avoid formation of cavities or bubbles during application.
- For perfect leveling allow it to set for 24 hours and then apply another coat of Engineer Plus Crack Fill Paste.
- POP or painter's putty can be applied on it after drying it fully.
- For best results allow Engineer Plus Crack Fill Paste to dry 7 days.

1. Apply Crack Fill Paste at least 3 cm on either side of the crack for better adhesion.
2. Apply an additional coat of Crack Fill Paste in case of severe dampness.
3. For best results, follow the recommended application procedure.

Precautions

- Do not apply for cracks of more than 3mm width.
- Do not apply on wet surfaces. Meant for plaster cracks.
- Do not apply on structural on joint cracks.

Technical Details

PROPERTIES	SPECIFICATION	RESULTS
Form		Ready to use paste
Density	at 25°C:	1.28
Drying Time :		Minimum 6 hours depending on temperature and humidity
Flash Point :		Crack Fill Paste is a water based which is not flammable
Consumption		75-80 running feet/kg/2 coats (3mm wide and 5mm deep)



Description

ENGINEER PLUS DAMP LOCK 2K is 2 parts polymer-modified flexible cementitious waterproofing membrane coating specially formulated for Concrete and Masonry Surface which is supplied in ready-mix kits (2 parts). When the dry part is mixed with acrylic-modified emulsion and applied according to direction, the cured.

ENGINEER PLUS DAMP LOCK 2K will become a tough, flexible and seamless waterproof membrane and acts as an excellent water barrier to Concrete and Masonry Surface.

Process of Application

1. Surface preparation

- The surface of application must thoroughly prepared by mechanical means, to remove all loose particles, laitance, grease, etc and washed off with water.
- Cracks and crevices must be duly filled or repaired with polymer modified mortar (PMM) made with appropriate products such as Engineer Plus Damp Lock 2K / Engineer Plus Aquaprime -99, Engineer Plus Supercrete URP / Engineer Plus Power Latex .

2. Mixing

- Shake the liquid component well to get homogenous milky colour.
- In a mixing vessel, slowly add the powder component in to the liquid under continuous stirring, with a heavy duty mechanical mixing machine, continue to stir thoroughly to achieve a lump free homogenous slurry.

3. APPLICATION

- Thorough surface preparation of the surface is a must.
- The surface of application must be pre-wetted thoroughly with water & brought to a touch dry state. Take up the first coat application with a stiff nylon brush. Work well into the substrate, to ensure that all small undulations are completely filled with the coating.
- 6 to 8 hrs after completion of first coat, take up second coat application in a direction perpendicular to the first.
- Complete the application and leave to air cure for 2 days. A moist hessian cloth can be kept over the coated surface to protect it from the effect of direct sunlight, in case of small open balconies of terraces, in bathrooms and internal areas. Leave the coating without water curing for 2 days at least.
- For plumbing pipe intents, grouting details etc. refer the product data sheet.



Areas of Application

- Excellent as a waterproof coating for bathrooms, kitchen sinks, balconies, etc.
- Ideal as a coating for waterproofing of chhajjas, canopies, etc.
- As waterproof coating on internal sides of domestic water tanks.
- Good for waterproofing of sloped roofs.
- As a waterproof coating for terraces of areas up to 100-150m².

Features & Benefits

- Elastomeric - elastomeric flexible flexing coating that accommodated crack up to 2 mm with an elasticity of 40-50%.
- Low water permeability - excellent resistant to ingress of water.
- Adhesion - excellent concrete and masonry surfaces.
- Eco-friendly - Non - toxic with low VOC content.
- Conforms to US-FDA - as a "potable water safe" coating for waterproofing for water tanks.

Coverage

Approximately 0.6- 0.75 m²/kg at 1mm thickness in 2 coats depending on the level of the substrate.

Technical Data Sheet

PROPERTIES	RESULTS
Mix Component	Mix Ratio 1 : 2 (A : B)
Polymer Content	>18 %
Water Absorption	<6%
Proprietary Polymer	High quality modified acrylic polymer
Set-to-touch time	45 min
Tensile Strength -as cast	2.5 N/mm ²
Elongation at Break -as cast	60%
Adhesion to Substrate	0.80 N/mm ²
Immersion in water Adhesion to Concrete at 7 day	1.75 N / mm ²
Crack Bridging	1.00 N/mm ²





Description

Engineer Plus Power Latex is based on modified Styrene butadiene latex used for high performance applications in waterproofing and repairs. It is used for repairs of spalled concrete such as – floors, columns, beams, chhajjas, slabs & waterproofing of toilets & bathrooms & terraces. It bonds strongly to old & new concrete & plaster.

Typical Application

- As a bond coat - Plaster to plaster, concrete-to-concrete, plaster to concrete for plastering over brick masonry.
- Bonding coat & mortar for tiles & panels, under lays for special finishes such as top rendering coat for chemical resistant floors.
- As waterproofing – Waterproofing of small roof terraces, sunken portions of toilet & bathrooms, chajjas & lift pits, balconies & staircase.
- As crack repair - Repairs of plaster cracks more than 5 mm & in gaps developed between masonry and RCC members.
- As rebar coating – Coating for prevention of corrosion over rebars.
- For Cladding – Fixing or refixing of slip bricks, tiles, stones & marble bedding.
- Concrete repair mortars - Improves the durability of the mortars and it can be used for making polymer modified mortars for patching and concrete repair.
- Cement mortars - For filling holes, reconstructing damaged areas and finishing surfaces on buildings and precast elements in concrete .

Features

- Multipurpose – It is multipurpose & economical product, easy to use
- Cracking – It prevents cracking by improving flexural strength
- Hardness – Improves the hardness & prevents dust generation
- Shrinkage – Reduces drying & aging shrinkage cracks
- Bonding – Bonds strongly to concrete, masonry, stone work, plasters, steel & most of the building materials.
- Erosion & corrosion – Improves erosion resistance & prevents corrosion.
- Abrasion resistance – Improves abrasion resistance of cement mix.
- Waterproofing - Prevents leakage & dampness.
- Durability - Enhances strength of a repair mortar & provides durability.
- Rebound loss - Less material wastage- material does not fall back/ rebound, when used as bonding agent.
- Coverage - Excellent Coverage -70-80 sq.ft per kg/ in 2 coats, hence economical.

Method of Application

SURFACE PREPERATION

- Clean the surface with wire brush or scrubber to remove hidden dirt, loose particles, laitance, & dust. Degrease the surface by using suitable solvents.
- Repair the concrete spalled portion by saw cutting the extreme edges of the repair location to a depth of at least 10 mm to avoid featheredging & to provides strong substrate.
- Clean the concrete surface to remove any contamination where breaking is not possible. Roughen the surface by light scabbling or grit blasting.
- Expose corroded rebars in the repairing are a fully. Remove all loose scales & corrosion deposits & immediately clean the surface.





Application Mixing

Sr. No.	AREAS OF APPLICATION	MIX (POWER LATEX : WATER : CEMENT)	METHOD OF APPLICATION
1	As bond coat	1 : 4 : 7	Apply a single coat of the mixed quantity of Engineer Plus Power Latex. When coat is tacky, apply the plaster or concrete according to the situation. Always add cement to the liquid (Engineer Plus Power Latex : water = 1 : 4).
2	As waterproof coating	1 : 4 : 7	Brush apply the 1st coat. Apply 2nd coat after 1st coat is dry approximately 4-6 hrs between two coats. Overlay the 2nd coat with screed/plaster for protection and finish.
3	Rebars coating	1 : 4 : 7	Rusted rebars must be thoroughly scraped, by mechanical means if required. Brush apply a single coat of prepared mix over the rebars. Apply concrete/mortar when the coat is tacky.
4	For 'salt petre'- free plaster Brick masonry	1 : 4 : 7	Brush apply the 1st coat on brick. Apply 2nd coat after 1st coat is dry. When 2nd coat is tacky, place plaster as per instruction in no. 5
5	Renders, Patching & Crack Repair Mortar	5 kg Engineer Plus Power Latex +15 ltr Water 50 kg Cement + 150 kg Sand	Mix 5 kg of Engineer Plus Power Latex with pre-measured water for 50 kg of cement. Use this mix to add to the recommended dry mortar mixes. Mortar mixes may be as rich as 1:3 (cement: sand) Keep water-cement ratio in Mortar as low as 0.4 but not more than 0.45. Clean the cracked area properly of all loose materials. Wet the crack completely using a bottle spray. Apply a single coat as a bond coat prior to the crack filling of the Engineer Plus Power Latex as per the mixing proportions mentioned earlier. Fill the crack with above prepared mortar. Compact it into the crack fully and trowel finish to level.
6	As waterproof plaster	50 kg OPC cement 150 kg Sand 1 kg Engineer Plus Power Latex	Mix 1 kg of Engineer Plus Power Latex with pre-measured water for 50 kg cement. Use this mix to add to the recommended dry plaster mixes. Plaster mixes may be as rich as 1:3 (cement : sand) Keep water-cement ratio in Plaster as low as 0.4 but not more than 0.45. For better application apply a bond coat with power latex as suggested earlier. 2nd and final layer of plaster must not be mixed with Engineer Plus Power Latex. Add Engineer Plus CAM-90 to the second coat plaster. Take care to scratch-key the 1st coat surface for effective bond with the 2nd coat.

Coverage

Preparing the Mixes for Bonding & waterproofing applications

- 1 kg of Power Latex will cover 70 - 80 sq. ft. area in 2 coats for a proportion mix 1 : 4 : 7 (Power Latex : Water : Cement).

For Patching and concrete repair

- Recommended mixing ratio: 5 kg Engineer Plus Power Latex-502 + upto 15 ltr Water 50 kg Cement + 150 kg Sand.

Technical Data Sheet

PROPERTIES	RESULTS
Appearance	Free flowing liquid
Colour	Milky white
Specific Gravity @30°C. gms / ml	1.02 ± 0.02
pH Value	7 – 9
Non Volatile matter, %	42 – 44
Bond strength, N/sq mm	5 +
Chemical resistance	Resists mild acids & alkalies
Freeze thaw resistance	Excellent





Description

Engineer Plus PSS-99 is a two component, self smoothing, elastomeric sealant which when mixed and applied cures by chemical reaction to form a tough, flexible rubber seal.

Typical Application

- Concrete pavements.
- Factory floors.
- Car parks.
- General construction and expansion joints

Features & Benefits

- Self smoothing.
- Highly elastic.
- Excellent adhesion.
- Accommodates continuous and pronounced cyclic movement.
- Non shrink.
- UV resistant.
- Chemical resistant.

Method of Application

1 SURFACE PREPARATION

- Joint surfaces must be sound thoroughly clean and dry and free from grease, oil and any other contamination. All dust and debris must be removed by wire brushing, grinding and vacuuming. Damaged joints should be repaired first using a suitable mortar from the Engineer Plus range.
- Ensure that the filler material such as closed cell polyethylene sheet or rod is tightly packed and no gaps or voids are evident at the base of the joint. Where backing rod is not fitted a bond breaker tape must be used.
- Fix masking tape on both sides of joint surface to provide a neat appearance.

2 PRIMING

- Prime with Engineer Plus Aquaprime-99A by brush (avoiding ponding at the base of the joint). Particularly porous surfaces should be primed twice. Apply the second coat of primer when the first is tack free but within 3 hours. Sealants should be applied as soon as the primer is touch dry and within 8 hours. If this time is exceeded a fresh coat of primer should be applied.

3 MIXING

- Add curing agent to resin and mix thoroughly with a slow speed electric mixer (300 – 450 rpm) for approx. 1-2 minutes until a homogenous and uniformly grey coloured material is obtained.

4 APPLICATION

- PSS-99 is a self smoothing material, after mixing it can be poured directly from the container.

5 FINISHING

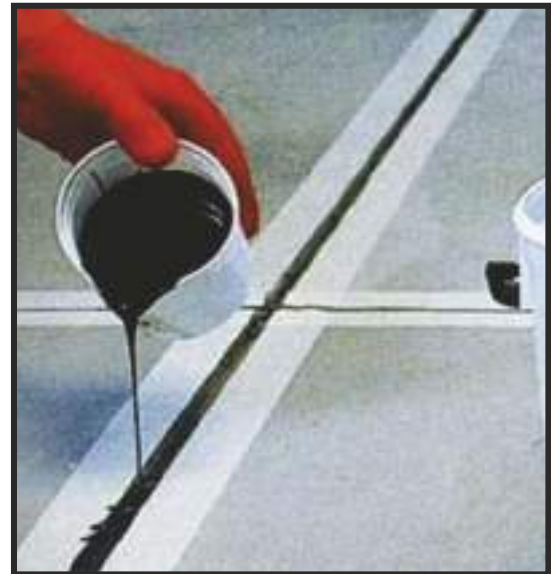
- Due to the liquid nature of the material it should require no finishing. Allow the material to cure for approximately 1 hour, as the viscosity increases due to curing the tape can be removed.

6 CLEANING

- After sealing the joint the tools and equipment should be cleaned immediately with cleaning solvents/thinners.

7 CURING

- Allow sealant to cure for 7 days before carrying out any testing. Protect the joints from water for at least 24 hours and chemicals for 7 days.



S.No.	Size in MM	Running Ft. 1 Kg.
1.	5x5	164 Running feet
2.	10x5	82 Running feet
3.	10x10	41 Running feet
4.	20x10	20.5 Running feet
5.	40x20	5.04 Running feet

Technical Data Sheet

PROPERTIES	RESULTS
Form	Base : Viscous liquid Curing Agent : Paste
Colour	Grey Solids
Content	100%
Density	1.60kg/litre
Physical/Chemical Change	Chemical Cure
Hardness Shore 'A' @ 25°C	15-23
Application Temperature	10°C to 50°C
Service Temperature	-20°C to 80°C
Cure Time	2 weeks @ 15°C 1 week @ 25°C





Description

- Engineer Plus PSS-99 is a two part elastomeric sealant which when mixed and applied cures by chemical reaction to form a tough, flexible rubber seal. It is recommended for sealing construction and expansion joints.

Typical Applications

- Internal and external wall cladding.
- Structural concrete.
- Water retaining structures such as dams, canals and culverts.
- Brick and blockwork.
- High rise structures.

Features & Benefits

- Gun grade suitable for vertical joints.
- Highly elastic.
- Excellent adhesion to a wide range of construction materials.
- Accommodates continuous and pronounced cyclic movement.
- Non shrink.
- UV resistant.
- Chemical resistant.
- Non-toxic.

Method of Application

1 SURFACE PREPARATION

- Joint surfaces must be sound thoroughly clean and dry and free from grease, oil and any other contamination. All dust and debris must be removed by wire brushing, grinding and vacuuming. Damaged joints should be repaired first using a suitable mortar from the Engineer Plus range.
- Ensure that the filler material such as closed cell polyethylene sheet or rod is tightly packed and no gaps or voids are evident at the base of the joint. Where backing rod is not fitted a bond breaker tape must be used.
- Fix masking tape on both sides of joint surface to provide a neat appearance.

2 PRIMING

- Prime with Engineer Plus Aquaprime-99A by brush (avoiding ponding at the base of the joint). Particularly porous surfaces should be primed twice. Apply the second coat of primer when the first is tack free but within 3 hours. Sealants should be applied as soon as the primer is touch dry and within 8 hours. If this time is exceeded a fresh coat of primer should be applied.

3 MIXING

- Add curing agent to resin and mix thoroughly with a slow speed electric mixer (300 – 450 rpm) for approx. 1-2 minutes until a homogenous and uniformly grey coloured material is obtained.

4 APPLICATION

- PSS-99 is a self smoothing material, after mixing it can be poured directly from the container.

5 FINISHING

- Due to the liquid nature of the material it should require no finishing. Allow the material to cure for approximately 1 hour, as the viscosity increases due to curing the tape can be removed.

6 CLEANING

- After sealing the joint the tools and equipment should be cleaned immediately with cleaning solvents/thinners.

7 CURING

- Allow sealant to cure for 7 days before carrying out any testing. Protect the joints from water for at least 24 hours and chemicals for 7 days.



Technical Data Sheet

PROPERTIES	RESULTS
Form	Two Component Paste
Colour	Grey
Solids Content	100%
Density	1.56kg/litre
Physical/Chemical Change	Chemical Cure
Hardness Shore 'A' @ 25C	23 - 26
Application Temperature	100C to 500C
Service	-20C to 80C
Cure Time	2 Weeks @ 15C 1 Week @ 25C





Description

Engineer Plus WAC-99 is a highly Concentrated multipurpose Latex Emulsion based liquid modifier useful as an additive for concrete mortars in repair/Water proofing application as well as protective coating to cementitious substances.

Areas of Application

Bridges, decks, parking areas in highways, Reinforcement steel to prevent corrosion. Stepping terraces and flats roofs. Repairs of worn, damaged & spoiled concrete. For injection, pressure & precision grouting. Kitchen, bathrooms, Side Wall, Swimming pools, Safety Tanks etc.

Feature & Benefits

- Produces high compressive flexural and tensile strength for durable repairs.
- White brushable liquid.
- Useful as bonding agent for old and new concrete.
- Useful as an additive to water proofing mortars/concrete.
- Excellent as a protective coat cementitious substances.
- Antimicrobial prevent fungal & bacterial growth economical in application.
- Excellent barrier to carbon dioxide , chloride, sulphate & nitrates ions, for carbonation resistance coating for
- protection of concrete subject to adverse climatic condition .
- Highly elastomeric and crack bridging characteristics.
- Prevent corrosion
- Very low water absorption.

Method of Application

Surface for treatments must be thoroughly cleaned of all laitance, loose materials, oils, greases etc. Mix Engineer Plus WAC-99 water and cement thoroughly in 1:1:3 proportion in weight. Pre wet the surface before application. Apply 1st coat, allow it dry for 30 minutes. Apply second coat and allow it to dry. If required overlay concrete screed/mortar when 2nd coat is tacky. Cure the screed/mortar for minimum 3 days

At the time of Construction

When used as an admixture with cement concrete mortar it works as a hardner, wetting and finishing agent. For fast setting it is recommended in cement concrete mixture @ 100gms. To 500gms. Per bags of cement (50kgs.) when used with cement curing is must as per norms.

Coverage

- 4 Coats 25 sq. ft./kg.

Technical Data Sheet

PROPERTIES	RESULTS
Appearance	Milky White
Base	modified polymer
State	liquid Emulsion
pH	8 to 9
Solid Content	50 ± 2 %
Coverage	60-70 sq.ft/kg (Depends on surface)
specific Gravity	1.1
Pot-Life @30°C	30 min
Application	Above 10°C & below 45°C Temp.





Description

Engineer Plus ICS-99 is a Latex Based cement diluter to get workable mix waterproofing solutions, multipurpose Latex Emulsion based liquid modifier useful as an additive for concrete mortars in repair/Water proofing application as well as protective coating to cementitious substances.

Areas of Application

Bridges, decks, parking areas in highways, Reinforcement steel to prevent corrosion. Stepping terraces and flats roofs. Repairs of worn, damaged & spoiled concrete. For injection, pressure & precision grouting. Kitchen, bathrooms, Side Wall, Swimming pools, Safety Tanks etc.

Method of Application

Surface for treatments must be thoroughly cleaned of all laitance, loose materials, oils, greases etc. Mix Engineer Plus ICS-99 with cement thoroughly in 1:2.5 proportion in weight and add 1kg. WAC-99. Apply 1st coat, allow it dry for 60 minutes. Apply second coat and allow it to dry and Apply 3rd coat If required.

Grouting Work Procedure

Grouting work : The procedure of waterproofing is injection grouting with chemical & cement. Grouting work with the cement slurry inreached with grouting additive of ICS-99 water & cement. The slurry be properly mix & grouted with standard pressure grouting pump including drilling the hole of suitable dia, fixing GI/plastic nosel with cement mortar etc. After grouting remove nipple & fill the nipple hole by mix of cement & ICS-99.

Coverage

- 4 Coats 25 sq. ft./kg.

Technical Data Sheet

PROPERTIES	RESULTS
Appearance	Milky White
Base	modified polymer
State	liquid Emulsion
pH	8 to 9
Coverage	60-70 sq. ft/kg (Depends on surface)
specific Gravity	1.1
Pot-Life @30°C	30 min
Application	Above 10°C & below 45°C Temp.





Description

Engineer Plus WPC-99 is a boon for modern living. It is an amazing, powerful chemical to stop water leakage & dampness from cement concrete structure like terraces, water tanks, kitchens, bathrooms, sidewalls, swimming pools, safety tanks, bridges, dams, cannels etc. It is easy to handle eco-friendly, water thinnable, stable on dilution, economical, ready to use anywhere anytime.

Areas of Application

Bridges, decks, parking areas in highways, Reinforcement steel to prevent corrosion. Stepping terraces and flats roofs. Repairs of worn, damaged & spoiled concrete. For injection, pressure & precision grouting. Kitchen, bathrooms, Side Wall, Swimming pools, Safety Tanks etc.



Features & Benefits

- Fast drying, excellent adhesion to most building materials & need to cure.
- Increase in bonding of new wet concrete to old concrete.
- Increase in durability & toughness of concrete.
- Increase flexural and bond strength of concrete .
- Forms a very tough bond with substrate having good permeability rating .
- Excellent elastomeric and crack bridging capability.
- Good weathering characteristics .
- Very low water absorption, withstanding hydrostatic pressure .
- Not susceptible to alkali degradation. Resistance to high alkali, sulfates and salts.
- Good colour retention and low dirt pick up. Breathable coating, allows vapor transmission.
- Repairs asbestos roofs, gutters, drain pipes and tile joints.



Method of Application

Surface for treatments must be thoroughly cleaned of all laitance, loose materials, oils, greases etc. Mix Engineer Plus WPC-99 in water throughly in 1:1 proportion in weight. Apply 1st coat, allow it dry for 60 minutes. Apply second coat and allow it to dry. If required overlay concrete screed/mortar when 2nd coat is tacky. Cure the screed/mortar for minimum 3 days.

Coverage

- 2 Coats 100 sq. ft./kg.

Technical Data Sheet

PROPERTIES	RESULTS
Physical form	Free Flow liquid (Transparent)
Solids	50% + _2%
pH	8-9
Solubility	Readily soluble
Odour	Characteristic
Specific Gravity	1.1
Surface Drying	5 minutes
Dried film	Transparent
Solubility after drying	Fully stable, not soluble in water



Description

An acrylic co-polymer emulsion, used to form on-site seamless, cross-linked elastomeric membrane on the concrete. The polymer composition ensures excellent UV stability, high strength and elongation of up to 250%..

Area of Application

Roof Terrace, Sunken, Balconies & Utilities, Podiums, Water Tanks and STP (Sewage Treatment Plants), Basements, Retaining Walls, Water Reservoirs etc.

Features & Benefits

- Stretchable membrane for leakage proofing of concrete surfaces
- Excellent UV stability
- High bonding strength
- Water-resistant
- Up to 250% elongation

Method of Application

Surface Preparation

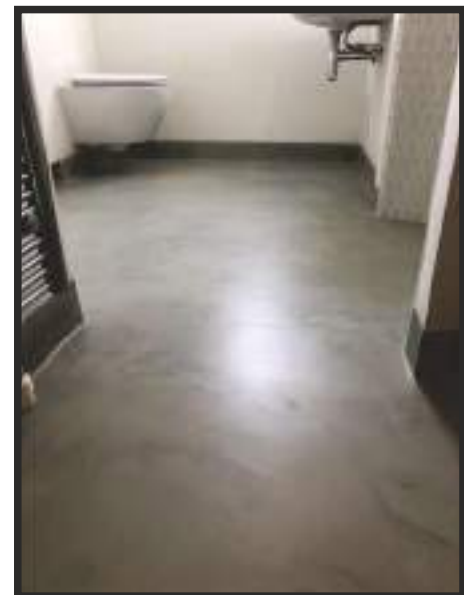
- Clean the surface and remove all dust, foreign matters, loose material or any deposits of contamination which could affect the bond between the surface and Elastoproof-99 coating. The surface cleaning can be done by wire brush, air blower, grinder, high pressure water spray, sand blasting followed with air blowing or water wash.
- Smoothen the horizontal / vertical concrete surface.

Repair Work

- Attend damaged / spalled concrete with Elastoproof-99 mixed mortar. For filler, the mixing ratio is 1 kg cement : 1.5 kg fine sand : 0.25 kg of Elastoproof-99 : Water 0.4 to 0.5 litre. Cure with water for 2-3 days.

Membrane Top Coat

- Mix 1 part (by volume) of Elastoproof-99, 1 part (by volume) of cement, 1 part (by volume) sand and stir to get a uniform paste. Add required amount of water to bring this mix to desired consistency apply by brush or roller.
- **Curing & Drying** : Sun dry for ($\geq 25^{\circ}\text{C}$) 6 - 12 hours & reapply.



Technical Data Sheet

PROPERTIES	SPECIFICATION	RESULTS
Form		Milky White, Free Flowing, Liquid
Specific Gravity		1.02 ± 0.01
Solid Content		50 ± 1%
Viscosity		< 500 cps
PH	@ 25°C	7.5 to 8.5
Diluent		Clean Potable Water TDS < 1000ppm
Flash Point		Non Flammable
Elongation		up to 250%





Description

Engineer Plus HPC-99 is a matchless heat proof compound which wonderfully works on masonry surface. It stops heat penetration and keeps cool by reflecting more than 90% heat of the sun from surface. It makes you comfortable to walk on, to live with and to save electric energy. It keeps water cool in any type of water storage tank.

Area of Application

- Terrace of Commercial Buildings/Offices
- Hospitals
- Shopping Malls
- Home
- Apartments
- Oil Storage Tanks
- Factories
- Sintex tanks / water tanks and pipe lines
- Any type of old or new sheets and RCC roofs

Features & Benefits

- Very low heat penetration.
- Very high heat reflection.
- High resistance to ultra violet light.
- Considerable decrease in room temperature and electric consumption.
- High heat stability (between 0°C to 90°C).
- High freeze thaw stability.
- Good weathering characteristics.
- Excellent adhesion to most building materials and no need to cure.
- It produces excellent result on almost all absorbent mineral substrates by increase durability, toughness, flexural and bond strength.
- Excellent elastomeric and crack bridging capability.
- Very low water absorption.
- Resistance to high alkali, sulphates and salts.
- Low dirt pick up.
- Anti corrosive, protects reinforcement steel and increase life of building.
- Anti-Fungal, Anti Microbial.
- Economical
- Safe, eco-friendly, hygienic.

Method of Application

- Clean the surface by rubbing with wire brush and other tools as per required to remove dust, fungus, grass root, rust, tar coal & loose material.
- Wash with clean water. Repairing of Cracks work will be carried out as per requirement on terrace
- Apply 1st coat of HPC-99 layer for Heat proofing & mix with water in the ratio of 1: 0.5 kg.
- Then apply 2nd & 3rd coat of Pure HPC-99 layer for giving Final touch of Heat proofing,

Coverage

- 3 Coats 25 sq. ft./kg.

Technical Data Sheet

PROPERTIES	RESULTS
Appearance	Free, flowing, homogeneous & uniform paste
Colour	Ultra White
Solid Content %	>60%
Sp. Gravity	1.1 to 1.2
SRI value %	120 to 125
Total solar energy rejected	95%
Elongation, %	200
Thermal Conductivity	0.029 w/mk





Description

Engineer Plus Transparent WPC-99 is a boon for modern living. It is an amazing, powerful chemical to stop water leakage & dampness from cement concrete structure like terraces, water tanks, kitchens, bathrooms, sidewalls, swimming pools, safety tanks, bridges, dams, cannels etc. It is easy to handle eco-friendly, stable on dilution, economical, ready to use anywhere anytime.

Area of Application

Bridges, decks, parking areas in highways, Reinforcement steel to prevent corrosion. Stepping terraces and flats roofs. Repairs of worn, damaged & spoiled concrete. For injection, pressure & precision grouting. Kitchen, bathrooms, Side Wall, Swimming pools, Safety Tanks etc.

Feature & Benefits

- Fast drying, excellent adhesion to most building materials & need to cure.
- Increase in bonding of new wet concrete to old concrete.
- Increase in durability & toughness of concrete.
- Increase flexural and bond strength of concrete .
- Forms a very tough bond with substrate having good permeability rating .
- Excellent elastomeric and crack bridging capability.
- Good weathering characteristics .
- Very low water absorption, withstanding hydrostatic pressure .
- Not susceptible to alkali degradation. Resistance to high alkali, sulfates and salts.
- Good colour retention and low dirt pick up. Breathable coating, allows vapor transmission.
- Repairs asbestos roofs, gutters, drain pipes and tile joints.

Method of Application

Surface for treatments must be thoroughly cleaned of all laitance, loose materials, oils, greases etc. Mix Engineer Plus Transparent WPC-99 proportion in weight. Apply 1st coat, allow it dry for 30 minutes.

Coverage

- 1 Coats 75 sq. ft./kg.





Description

Engineer Plus Smart Coat Advance(PU) is a fiber reinforced elastomeric liquid applied waterproofing membrane. It is formulated with PU hybrid polymers and reinforcing acrylic fibers. Upon curing, it forms a thick, seamless, durable membrane thus offering ultimate waterproofing.

Area of Application

- Roof, terrace, parapet wall and vertical walls.

Features & Benefits

- **Water proofing:-** Resists positive hydrostatic pressure of upto 10 bars
- **Crack bridging:-** Effectively bridges cracks up to 2.5 mm
- **Surface Temperature Reduction :-** Provides surface temperature reduction up to 10°C.
- **Special Additive:-** Reinforced with fibers to improve mechanical properties and abrasion resistance.
- **Adhesion:-** Excellent adhesion to substrates like concrete and masonry.
- **Durability:-** Excellent resistance to water, UV rays and ageing.
- **Anti-fungal and Anti-algal :-** Excellent anti-fungal and anti-algal properties.
- **Excellent Anti-Carbonation :-** Acts as an effective barrier against carbon dioxide thus prolonging the life of the structure

Method of Application

• HORIZONTAL SURFACE

Prepare the surface by cleaning with a high pressure water jet/wire brush and ensure that it is free of dust, oil, grease, grime and loose particles etc. In the existing terraces, the substrate must be checked for its soundness, damaged portions & hollow areas must be repaired with Polymer modified mortar. Small cracks 3mm or less should be open out, cleaned & filled with Engineer Plus Crack Fill Paste & wider cracks should be filled with Polymer modified mortar. All corners and joints of drain pipes, channels etc. must be treated with polymer modified mortar prior to coating application. Ensure that the coating is applied at least 6 inch inside the drain pipe. Horizontal Slab area: Apply self-priming coat (diluted with water in 3:1 ratio by volume). Allow to dry for at least 3-4 hrs prior to application of subsequent coat. Apply two coats of Smart Coat Advance(PU) without dilution to achieve forced coverage of 10 sq ft /lit for all coats put together. For best performance on terraces, ensure that the product is applied on the entire roof including parapet wall to form a continuous blanket.

• VERTICAL SURFACE

On vertical surfaces, Smart coat Advance(PU) is to be applied followed by top coat application in the manner detailed below:

• Smart Coat Advance(PU) Application

Fresh surface (Must be a cement plaster in sound condition with no debonding. Localized repairs done as per standard civil practices in case it is required). Apply a fresh coat of Smart Coat Advance(PU) mixed in ratio of 3:1 and applied with a spreading rate of 5.5 Sq meter/Ltr (60 sq feet/ltr). Allow to dry for 4-6 hours and then apply another coat of Smart Coat Advance(PU) without dilution with a spreading rate of 4.6 to 5.1 Sq meter/Ltr (50-55 sq feet/ltr).

Precautions

- Do not apply during rains or extreme temperatures.
- Avoid abuses which may lead to puncturing of membrane.
- Ensure that the product is applied at least 6 inches inside the drain pipe.
- For best results, apply parapet to parapet to envelope the entire building.

Coverage

On RCC or plaster using brush or roller

- **Horizontal Surface** 10 sq. ft. / ltr.
- **Vertical Surface** Fresh painting: 25 sq. ft. / ltr.
Re-painting: 35 - 40 sq. ft. / ltr.



Technical Details

- Form:** Ready to use viscous liquid
- Application temperature:** 5°C to 35°C
- Appearance:** Viscous Liquid
- Color:** White
- Specific Gravity:** 1.15 gm/cc
- Water Resistance:** 10
- Alkali Resistance:** 8
- Viscosity Sormer:** 124-138 KU
- Solids by wt. %:** 50.5 to 55.90%
- Tensile strength:** 2.90 Mpa
- Elongation:** upto 350%





Description

Engineer Plus Super Flex is two component cementitious coating system for waterproofing of wet areas and any water retaining structures such as swimming pools and water features.

Typical Applications

- Any concrete, cement or masonry surface that are subject to moisture ingress.
- Swimming pools, water features and water tanks.
- Bathrooms, toilets, balconies, planters etc.

Features

- Seamless, impervious membrane.
- Elastomeric. High film build- up.
- Excellent adhesion to concrete and masonry substrates.
- Low VOC.
- Easily applied by brush, roller or trowel.
- can be applied on damp surface.

Method of Application

1. Surface preparation

- The substrate must be sound, clean and free from dirt, oil and loose material.
- Masonry surfaces should be fully cured (minimum 28 days) prior to application.
- All surface cracks, undulations and voids must be repaired before application using a suitable Engineer Plus repair material.
- Substrates must be surface dry prior to application.

2. Mixing

- Using a slow speed mechanical mixer and a clean suitable mixing vessel, slowly add the powder component to the liquid polymer and stir until a smooth and homogenous slurry, is achieved.
- Allow the mixed slurry to stand for 5-10 minutes before use.
- Do not dilute with water.

3. Application

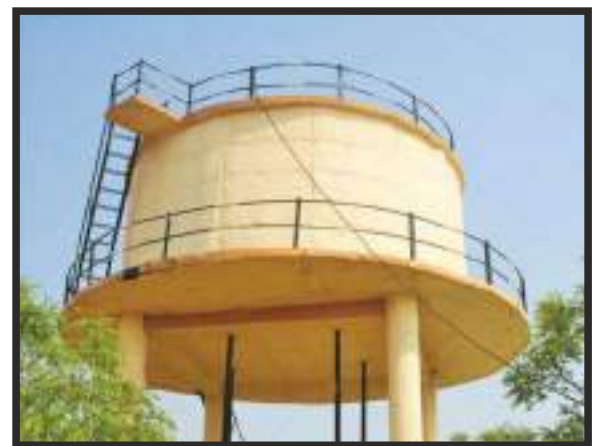
- Apply Engineer Plus Super Flex slurry by brush, roller or trowel.
- Allow the first coat to dry completely for 6-8 hours before applying the second coat.
- Apply second coat at right angles to the first coat

Coverage

- 1.25 ltrs/mm/sq.mt per coat (DFT 1 mm).

Technical Data Sheet

PROPERTIES	SPECIFICATION	RESULTS
VOC Content	Maximum allowable 140 g/ltr	1:1.4
Mix ratio (Liquid :Powder) parts by wt.		45
PH		>10
Inter Coat Application Time Hours		6-8
Cure Time after 2nd coat		7 Days
Tensile Strength N. mm ²		>1.0
Elongation at Break		145%
Adhesion Strength N/mm ²		0.8 Minimum
Crack Bridging		No cracking up to 2 mm
Water Penetration (5 bar pressure)		1%
Hardness Shore A		60
Reduction of Rapid Chloride		92%
Permeability (Compared to Control)		



flexicoatTM Black



Description

Engineer Plus FlexiCoat-Black is cold applied liquid waterproofing membrane, specially designed from a blend of special resin and rubber, reinforced with special water repelling fillers, minerals stabilizers and gelling agent.

Uses

Ideal waterproofing system for concrete roofs, polyurethane foam slabs, polyester built up roofs, maintenance of existing roofs, masonry and concrete walls, bathrooms, basements, bridges, decks, metal surfaces etc. Used as a sandwich membrane in new construction and as surface treatment on existing slabs

Method of Application

SURFACE PREPARATION

The surface must be thoroughly cleaned and should be free of dirt, gravel, dust and oil. The concrete should be dry and smooth. When applying directly over concrete or old, dry asphalt, prime first with primer coat. When using as a top coat to protect and rejuvenate existing smooth asphalt roofs, first repair all blisters, cracks, split seams and flashing.

PRIMER: For priming, primer coat of Engineer Plus FlexiCoat-Black is applied on prepared surface. For primer coat use Engineer Plus FlexiCoat-Black diluted with water in ratio of 1:2

FIRST AND SUCCEEDING COAT

The coating is applied straight by using standard roofing brooms, brushes, squeegees or airless spray equipment, please check the viscosity to insure smooth spray of the product. Allow full curing of coating, (8 – 10 hours) before applying succeeding coats. For better results use Glass Fibre Reinforcement embedded into 1st Coat while it is still wet. To make the material more workable dilution with water upto 20% for 1st coat & upto 10% for 2nd coat is allowable

Outstanding Features

- **Engineer Plus FlexiCoat-Black** is a highly elastic product, and cures to a rubber like membrane capable of withstanding severe cases of expansion, contraction and deck movements.
- Highly resistant to oxidation, UV light and ozone because of unique additives used in compounding it. It does not crack.
- More durable than normal asphalt coating and lasts longer than most other coatings.
- Superior wetting and adhesion properties ensure durable bond and resistance to peeling, chipping, and/or separation and a longer life.
- Has the unique property of adapting itself over the irregular contours of the deck and forming a waterproof and impervious blanket.
- Single component, cold applied requiring no mixing or heating; saves labor costs.



Storage & Shelf Life

Shelf life is 12 months in unopened container. Store away from sunlight and preferably below 30°C. Storage should be frost protected.

Cleaning

Tools: Clean all the tools immediately with water. Use of thinner may be necessary for dried up material.

Hands: Use a hand cleaner or water followed by soap.

Health & Safety

As with all chemicals, caution should always be exercised. Protective clothing such as gloves and goggles should be worn.

Coverage

- Approximate coverage of Engineer Plus FlexiCoat-Black for a 2 coat application is around 20-25 sq. ft / kg in Metals ; 15-20 sq. ft / kg in Asbestos & 13-17 sq. ft in Concrete depending on surface porosities. DFT of approx 200-300 microns will be achieved in 2 coats.

Technical Data Sheet

Sr. No.	Properties	Result's
1.	Appearance	Smooth, Thick Paste
2.	Color	Black
3.	Specific Gravity	0.95 ± 0.10
4.	Solid Content %	55 ± 2
5.	Elongation @ Break	> 1365 %
6.	Viscosity (Spindle No: 7; RPM : 10 @ 25° C	50000 – 70000 CPS
7.	Water vapor Transmission (g / h – m ²)	0.46
8.	Tensile Set recovery, %	95
9.	Tear Resistance, KN/m	28 ± 10
10.	Service Temperature, 24 hrs @ 120°C	No shrinkage, brittleness
11.	Chemical Resistance, % Weight Change - 10 % Salt (Sodium chloride) - 5 % Alkali (Caustic Soda) 5 % Acid (Sulphuric)	3 . 0 2 . 0 3 . 0
12.	Tack Free Time @ 35° C	10 - 12 hrs
13.	Drying Time @ 25° C	10 - 20 m l n
14.	Flammability & Toxicity	0 . 9 5 ± 0 . 1
15.	Tensile Strength	0 . 5 1 N / m m ²



Description

Engineer Plus KrystalProof is composed of high quality cement, properly selected & graded inert aggregates, proprietary waterproofing active chemicals & additives. It is used as a chemically active waterproofing treatment for concrete. Engineer Plus KrystalProof when mixed with water and applied as a brush coat to concrete, it penetrates deeply into the capillaries of the concrete & protects it against the permeability of water.

How Engineer Plus Krystalproof Works ?

- The proprietary waterproofing active chemical plays very important role & it is a very simple reaction with the natural chemical by products of cement hydration, such as calcium hydroxide, various mineral oxides, hydrated & unhydrated cement particles of the concrete in wet condition. The result of chemical reaction is the formation of billions of needles like non-soluble crystals which block the pores of the capillaries, voids & micro-cracks in concrete. After blocking, the pores & capillary tracts of the concrete become discontinuous which stops the permeability from all directions of the treated concrete. Engineer Plus KrystalProof remains active whenever water is present.
- Pre-saturation & subsequent re-wetting of the surface will cause diffusion of the organic chemicals & formation of crystals by reaction at greater depth. It may take from seven days to one month to reach its maximum waterproofing capability, depending on the thickness of the concrete.
- Environmental factors such as ambient temperature, density of concrete, moisture presence & weather conditions can affect the timing of sealing process. Under dry conditions, Engineer Plus KrystalProof lies dormant. However it becomes reactive whenever it is re-exposed to moisture.
- It penetrates even against strong hydrostatic pressure, becoming an integral part of the concrete. The waterproofing chemicals remain active for the life of the structure, permanently sealing it for water seepage.

Coverage

- 1.4 - 1.6 sq. m / Kg in single coat

Technical Data Sheet

PROPERTIES	RESULTS
Appearance	Grey powder
Bulk Density, g/cc	1.35 to 1.55
Water permeability	Nil
Water pressure head, mtr	40 - 50
PH (mixed with water 1:1)	11 - 14
Particle size, micron	40 - 150
Penetration rate	2 mm / week



Typical Application

Water Retaining Structures.

- Water tanks & reservoirs.
- Swimming pools.
- Water treatment works.
- Dams & canals.
- Concrete pipes.
- Harbours.

Water Excluding Structures

- Foundation & Basements.
- Tunnels & subways.
- Inspection pits & lifts shafts.
- Retaining walls & sea defence walls.
- Construction joints.
- Bridge decks.
- Jetties.
- Parking structures.



Features

- **Application advantage** – Does not require protective plaster, applicable over SSD & wet surface.
- **Waterproofing** - Stops water movement through concrete, becomes integral part of the structure.
- **Corrosion** - Protects reinforcing steel against corrosion.
- **Sealing** - Waterproofs minor cracking & seals shrinkage cracks up to 0.4 mm width.
- **Permeability** – Resists permeation of water from positive & negative side of the concrete.
- **Chemical activation** - It's waterproofing capability increases with time. i.e. It remains permanently active.
- **Abrasion** - Does not get affected by surface wear or abrasion, once the penetration is complete.
- **Hydrostatic pressure** - Treated concrete withstands hydrostatic water pressure up to 15 metre head.
- **Ease of application** - Easy in application, only to be mixed with water at site.
- **Protection** - Protects concrete against contaminated water & corrosion.
- **Monolithic** – Forms monolithic layer with the concrete & becomes integral part of concrete.

Method of Application

SURFACE PREPARATION FOR OLD AND EXISTING SUBSTRATES

- Remove dirt, laitance, loose particles, paints, etc., by means of mechanical grinding, sand blasting, pressure water cleaning or suitable mechanical means.
- Remove all protrusions, chisel out honeycombed & damaged areas, repair the cracks and work back to sound concrete.
- It is extremely important to ensure that the surface should be sound, thoroughly prepared and vacuum cleaned to a finish of a sand paper to allow Engineer Plus KrystalProof to penetrate effectively. This can be achieved by mechanical surface scarification, shot blasting, etc.
- Thoroughly rinse the surface with water several times to reach a "saturated surface dry" (SSD) condition, where the surface should be damp without any standing water.

MIXING

- Mix Engineer Plus KrystalProof powder to water in ratio 5 parts powder : 2 parts water for waterproofing purpose and 5 parts powder : 1 part water as a putty for repair purpose.
- Always mix powder to water & stir it well to obtain a lump free mixture. Only mix quantities to be used within 30 minutes. Mix Engineer Plus KrystalProof mechanically with clean water to a thick consistency. Separate containers of same volume should be used to measure powder & water.

APPLICATION

- On existing or old substrates with dampness
- Ensure thorough surface preparation by mechanical means, to remove all laitance, etc., to expose the pores in concrete which will allow the penetration of the Engineer Plus KrystalProof.
- All crevices and holes in concrete shall be filled with Engineer Plus KrystalProof powder mixed with water in a ratio of 5 parts powder : 1 part water. Over a concrete substrate in a SSD condition, apply Engineer Plus KrystalProof mixed in a ratio 5 parts powder : 2 parts clean water, with a clean brush. Use an aggressive circular motion of the brush or wooden float with Engineer Plus KrystalProof slurry. Apply a second coat after 3 to 6 hours.
- Engineer Plus KrystalProof treated surface shall be left to cure for 2-3 days, as mentioned above and protect from direct sunlight for this initial period. For full cure, give 28 days along with concrete.

Precautions & Limitations

- Application can be done under normal temperature conditions.
- Heavy traffic should be avoided until the surface is hardened for at least 5 days.
- Finishes containing portland cement may be applied over Engineer Plus KrystalProof after 3 to 4 hours.
- Any paint or coating should be applied after 28 days only, over Engineer Plus KrystalProof application, after
- thorough wire brushing, washing & removing any Engineer Plus KrystalProof residual on surface.
- Not recommended over moving joints and structures subjected to movements.
- Do not apply on dry substrate.
- Water tanks, etc., can be carefully filled with water after 3 to 7 days. Do not fill large tanks faster than 6.5 feet
- per hour (2 m/24 hrs).
- After complete curing of Engineer Plus KrystalProof, potable water tanks should be thoroughly rinsed with potable water prior to being placed in service.



Description

Engineer Plus PU Sealant is a one-part polyurethane joint sealant suitable for horizontal and vertical use.

Typical Application

- Movement joints in precast concrete construction.
- Balcony parapets.
- Retaining walls.
- Bridge culverts.
- Floor joints.
- General caulking to windows, door frames & skirting etc.

Features & Benefits

- Ready to use single component product.
- Forms a permanent, tough, elastic rubber seal.
- Excellent adhesion to concrete, brickwork, painted wood, glass, glazed surfaces, aluminum, stainless steel, steel and plastics.
- Non-sag.
- No staining of cementitious substrates.
- Accommodates continuous and pronounced cyclic movement.

Packaging

600 ml sausage, 20 per box

Methods of Application

1. SURFACE PREPARATION

The joint surface should be sound, thoroughly clean, dry and free from grease, oil or any other contamination. All dust and debris must be removed by wire brushing, grinding and vacuuming. Damaged joints should be repaired using a suitable mortar from the Engineer Plus range.

Ensure that the filler material such as a closed cell polyethylene sheet or rod is tightly packed and no gaps or voids are evident at the base of the joint. Where backing rod is not fitted a bond breaker tape must be used.

Fix masking tape on both sides of joint surface to provide a neat appearance and ensure the tape is removed immediately after tooling.

2. APPLICATION

Insert the sealant sausage into a hand operated application gun and apply nominal pressure over the trigger of the gun so that sealant starts extruding out of the nozzle and apply the sealant into the joint. Apply a slight excess for tooling and finishing purpose.

3. FINISHING

Tool the sealant immediately with a tooling knife by pressing against the joint to remove air pockets and to ensure 100% contact and adhesion with the joint arris.

4. CLEANING

After sealing the joint, tools and equipment should be cleaned immediately with any Engineer Plus Resin Cleaner.

5. PAINTING

Engineer Plus Sealant can be over coated with most paints, however non flexible coatings may crack. We recommend a trial application. Best results are obtained if the sealant is allowed to cure fully prior to painting.



Joint Design

The joint width must be designed to suit the movement capacity of the sealant. All joints must be properly designed and dimensioned by the specifier and the main contractor in accordance with the relevant standards. The basis of the calculation for the necessary joint width are the technical values of the joint sealant and the adjacent building materials, the environmental exposure of the building, its method of construction and its dimensions. In general, when wider than 10mm the width to depth ratio of 2:1 must be maintained.

Standard design dimensions for concrete elements as per DIN 18 540

Joint distance	2 m	2-3.5 m	3.5-5m	5-6.5m	6.5-8m
Design joint width	15 mm	20 mm	25 mm	30 mm	35 mm
Min. joint width	10 mm	15 mm	20 mm	25 mm	30 mm
Joint depth	8 mm	10 mm	12	mm15 mm	15mm

Minimum joint width for perimeter joints around windows: 10 mm

Technical Data Sheet

PROPERTIES	RESULTS
Minimum/Maximum joint width	10mm/ 35mm
Colour	Grey/White/Beige
Density (g/cc)	1.25 +/-3
Skimming time, minutes	40-45 mins
Services temperature range	-40°C to +70°C
Tear strength	6N/mm (+23°C/50%RH)
Hardness, Shore A	30 (+23°C/50% RH)
Staining	No staining
E=modulus	0.4 N/mm ² @100% elongation (23°C/50% RH)
Movement accommodation factor	+/-25%
Elongation at break	500% (+23°C/50%RH)
Cure rate	2 mm per day



Some Photos of Reputed Projects Done by Engineer Plus



Churchgate Mumbai (Western Railway Head Office)



Gandhi Hall (Indore)



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People's Mall (Bhopal)



Yeshwant Club (Indore)



Cummins Technology Ltd. (Dewas)



Steel Authority of India Limited (Ranchi)



Bhramkumari (Mauntabu)

Photos of 7 Layer Procedure



Cleaning by Wire Brush



Cleaning by Grinder



Removing Loose Material



Wash with Clean Water



Cracks



Opening Cracks in V Groove Shape



Fill Chemical in Cracks



1st Coat Penetrative Waterproofing



Laying Fibremesh



2nd & 3rd Coat



4th & 5th Coat



6th & 7th Coat



Final Look After 7th Layer



Result After 7 Layer Waterproofing



Warranty Certificate Received By Engineer Plus Customer After 7 Layer Waterproofing.



“PRECAUTION IS BETTER THAN CURE”

COMMON CAUSES OF WATER LEAKAGE

Leakages are common in any structure, caused either by the age of structure or defects in construction and design. Some of the most common reasons for water leakage in structure are as follows:

CONSTRUCTION PRACTICES:

Untrained man power, improper preparation of mortar and concrete mixes. Use of excess water to make mixes easily workable, which in porous concrete, inviting leakage from the start itself. Bleeding and segregation in concrete resulting in honey combing / voids. Inappropriate compacting/ vibration of concrete. Inadequate curing in early and later stages.

Inappropriate material selection : enough care is not taken in selecting various construction materials like cement, Stone aggregates, sand. This result in poor concrete. The following should be taken care of while selecting material.

Right quality & grade of cement depending on service requirement. Good quality crushed aggregates of various sizes depending on mix proportion. Site is free from dust and other chemicals. Potable water, i.e. water should not contain any chlorides etc.

Importance of diagnosis: Diagnosing the root cause of the problem is vital. Only then a suitable solution can be arrived. The treatment will then be cost effective from the long term point of view. There are different methods available to diagnose the root cause. Visual inspection. Non destructive using ultrasonic pulse velocity, rebound hammer, half cell potentiometer, cover meter etc.

Once the diagnosis is done, a proper scheme can be made undertake repair and rehabitation work using suitable construction chemicals.

AGGRESSIVE CLIMATIC CONDITIONS:

Environment plays an important role in determining of any structure. More aggressive the climate, more stringent are the precautions to be taken. Structures which are exposed to marine regions or situated in pulling industrial belts, as more prone to chemical attack. It is therefore essential that concrete should withstand the conditions for which it has been designed without deteriorating. The damage to concrete largely contains sulphates which attack the concrete, decreasing its protective ability weathering and corrosion.

MECHANICAL DAMAGES:

Concrete structures are not obtain used only for the purpose they have been designed, but subjected to other forces such as excessive loading , impact, abrasion and other mechanical damages. As a result cracks develops in slabs, columns, beams, walls, basements etc. allowing water and liquid ingress. This becomes the starting point for all kinds of water leakage problems.

INADEQUATE MAINTENANCE :

Problems like cracks, dampness etc. are neglected in the initial stages and timely corrective measures are not undertaken, ultimately leading to deterioration of concrete structures.

It is advisable to undertake preventive maintenance any carry out timely repairs through a competent contractor, using proper materials and methods depending upon the problem.

Our Credentials



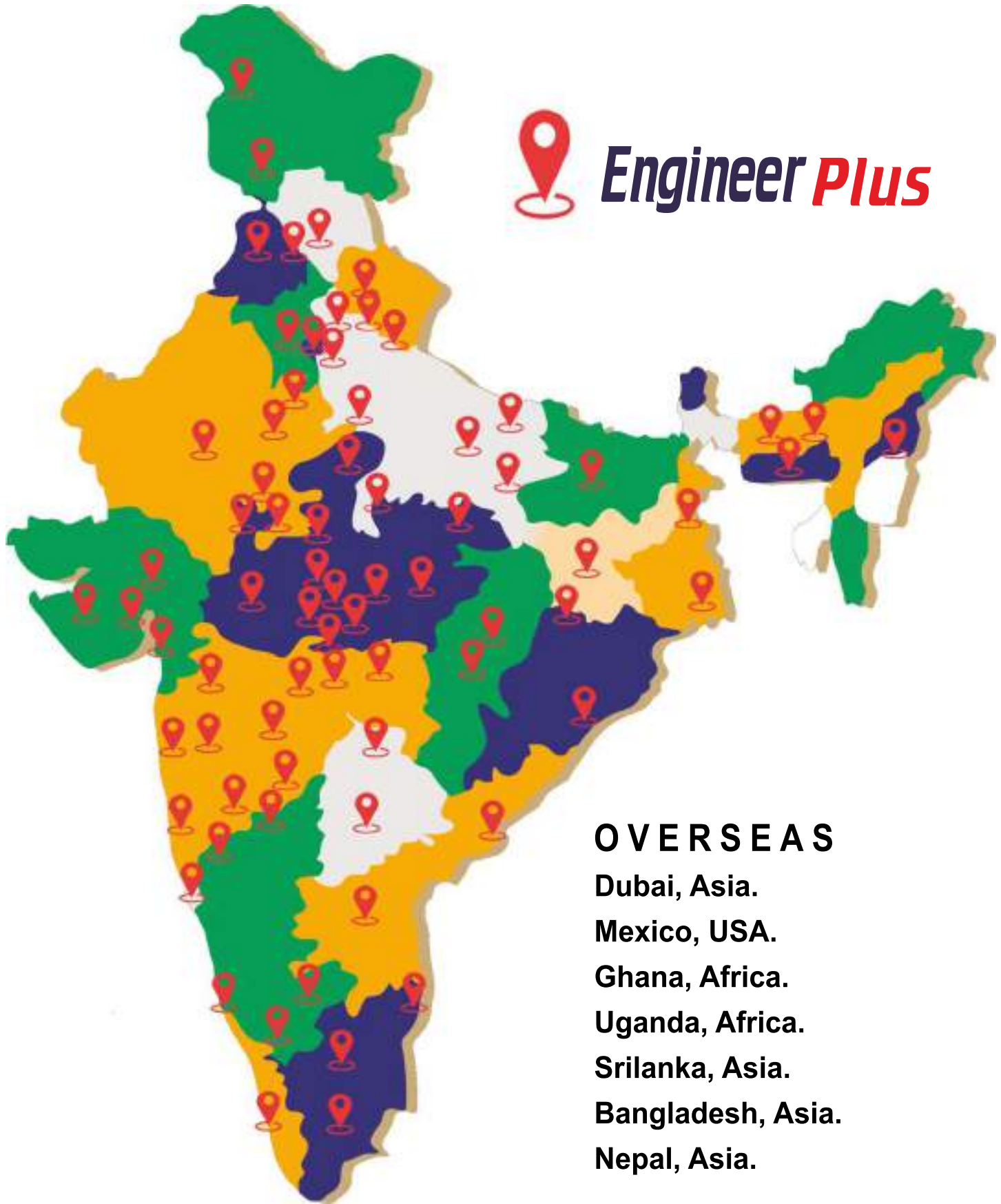
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