Newsletter : January 2019





Drythane Thrills Builders!!

Drythane has received several lac square-feet orders from builders in NOIDA extension. The companies were mostly using a highly elastic, soft Polyurethane waterproofing from a Swiss multinational corporation. The products could be easily peeled off from the surface showing poor adhesion. Being weak films, they could also be easily damaged during construction activities. Therefore, the customers were quite unhappy with the results.





Drythane presented a totally new concept – an extremely tough and durable – liquid applied membrane which strongly bonds to the surface. We demonstrated the product on a test patch and even carried out on-site testing. In one case, the customer even tried strongly hitting the coating with a wooden pole to damage it but gave up after considerable effort.

Drythane @ 1.50 mm Thickness over 0.20 mm PIV Primer was selected by the companies. The coating is being applied on roof s, gardens, podiums, swimming pools, water storage tanks etc. All coated areas have been tested by ponding with absolutely zero defects.

Drythane is revolutionizing the waterproofing industry.



Contact :

Sachit Mann Drythane – A Div. of Amchem Products Pvt. Ltd A-79. Sector 58, NOIDA 201 301, India Tel : +918826458060 E-Mail : <u>sachitmann@drythane.com</u> Website : <u>www.drythane.com</u>

Page 1 of 1

Newsletter : July 2019



Finally -The Rising Damp Problem Solved!!

Rising damp is caused by capillary suction of water through fine voids that occur in all masonry materials. Capillaries draw water from the soils beneath a building against the force of gravity leading to damp zones at the base of walls. In most cases, dampness contains some amount of salt. It must be noted that the main source of moisture rise is the availability of water in the soil, which in its natural form contains various types of soluble salts. In addition, sand used for plaster is often contaminated with Salt and there are reports of Saltwater being used for curing of bricks.

The slow process of absorption of water into block wall with subsequent evaporation leads to gradual deposit of salts in masonry walls. The masonry wall acts as a filter system for impure water as the various soluble salts are drawn into the wall and are left behind. These salts will cause:

- a) A white fluffy deposit (efflorescence) to be left on the surface which causes the paint to bubble and peel off.
- b) *Hidden salt crystallisation (cryptoflorescence) occurring within the pores below the masonry* surface. Fine pores cannot accommodate the increasing accumulations of salts and are eventually broken apart by the expansive forces of the crystal growth, causing the surface to decay and crumble.
- c) Fungal and mould attack. According to the WHO (2009), some occupants of damp rooms are at risk of experiencing health problems such as respiratory infections, allergic rhinitis, and asthma.

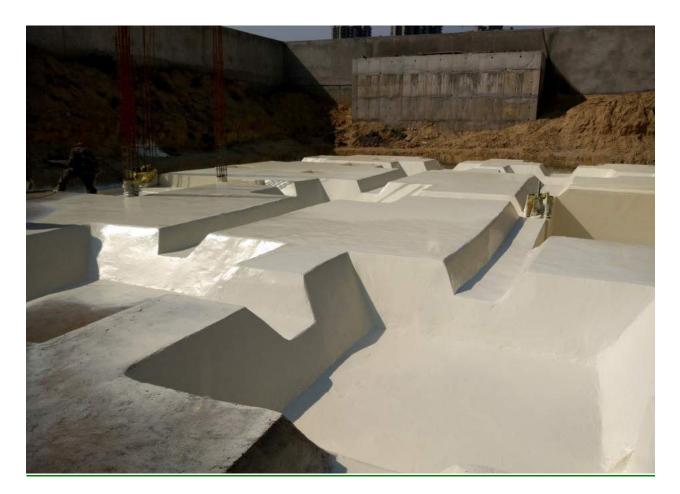
Rising Damp is easily solved by application of 2.00 mm Drythane[®] layer on the DPC (Damp Proof Course) or Plinth *Beam <u>at the time of construction</u>*. Drythane[®] keeps out the water and salt forever. It is a permanent solution – you will never have to repaint or re-plaster on account of rising damp!!

Contact for details :

DRYTHANE

Sachit Mann Drythane – A Div. of Amchem Products Pvt. Ltd A-79. Sector 58, NOIDA 201 301, India Tel : +918826458060, E-Mail : <u>sachitmann@drythane.com</u>, Website : <u>www.drythane.com</u>

DRYTHANE Newsletter : July 2019



Finally - A Solution To Waterproof Foundations!!

Sealing the foundation bottom of a building will prevent dampness from entering below ground levels such as basements. There are many technical difficulties in doing so:

- a) Sheet applied materials have problems with joints which are simply not able to provide a watertight seal. They are very difficult to apply to complex geometries of the foundation.
- b) Liquid membranes (High Elongation Polyurethane) are too weak and lack tensile strength (2 MPa) and hardness (10 Shore D). During the process of erecting the reinforcing steel for raft and columns, the membrane gets terribly damaged making the whole exercise futile.

Drythane[®] @ 1.50 – 2.00 mm provides the first real solution to foundation bottom waterproofing:

- c) Seamless, liquid applied membrane without any joints to the *mortar surfaced PCC*.
- d) Extremely tough with > 20 MPa tensile strength, 100% Elongation, 70 Shore D Hardness and extremely high abrasion resistance. Does not damage during installation of the reinforcing steel cage. Adhesion is > tensile strength of the concrete.
- e) Usually roller applied, it can also be spray applied at 1,000 sq.m / day or more on prepared surface for fast job completion.

Contact for details:

Sachit Mann Drythane – A Div. of Amchem Products Pvt. Ltd A-79. Sector 58, NOIDA 201 301, India Tel : +918826458060, E-Mail : <u>sachitmann@drythane.com</u>, Website : <u>www.drythane.com</u>

DRYTHANE SPRAY EQUIPMENT

COSMOSTAR SD70 provides maximum performance in a revolutionary, compact, self-contained design. The SD70 makes spraying 100% Solids Polyurethane Coatings easy and affordable. Integrated Resin (70 Litre – heated) and Activator (20 Litre) tanks make loading and handling of materials from 20 Litre drums simple and easy. Optional 1:1 transfer pump can be used to handle and use 200 Litre drums. Ratios 2.5:1, 3:1 and 3.5:1 are available with change of lower cylinders.

Cosmostar SD 70 is recommended sprayer for application of Drythane®, 100% Solids (Zero VOC) Polyurethane Coating from Amchem Products Pvt. Ltd. Formulated specifically as a high-performance waterproofing membrane, Drythane® provides lifelong protection to concrete and other masonry. Once coated, the surface is completely impervious to water. For larger waterproofing projects, SD 70 can be used to spray 100 sq.m/hour or more instead of applying by paint roller. This greatly reduces cost and speeds up the work.



COSMOSTAR SD70 FLASH 7"						
Air Motor Diameter	7" (FLASH)					
Mixing Ratio by Volume (Resin:Activator)	3.5:1 (for Drythane®)					
Pressure Ratio (Fluid to Air)	30:1					
Volume / Cycle	168cc					
Volume Flow Rates @40 Cycles / Min	6.72 LPM					
Volume Flow Rates @60 Cycles / Min (Max)	10.08 LPM					
Fluid Pressure @75 Psi Air Input	2250 Psi					
Fluid Pressure @120 Psi Air Input	3600 Psi					
Air Consumption @100 Psi CFM	34 scfm @ 3.8 LPM					

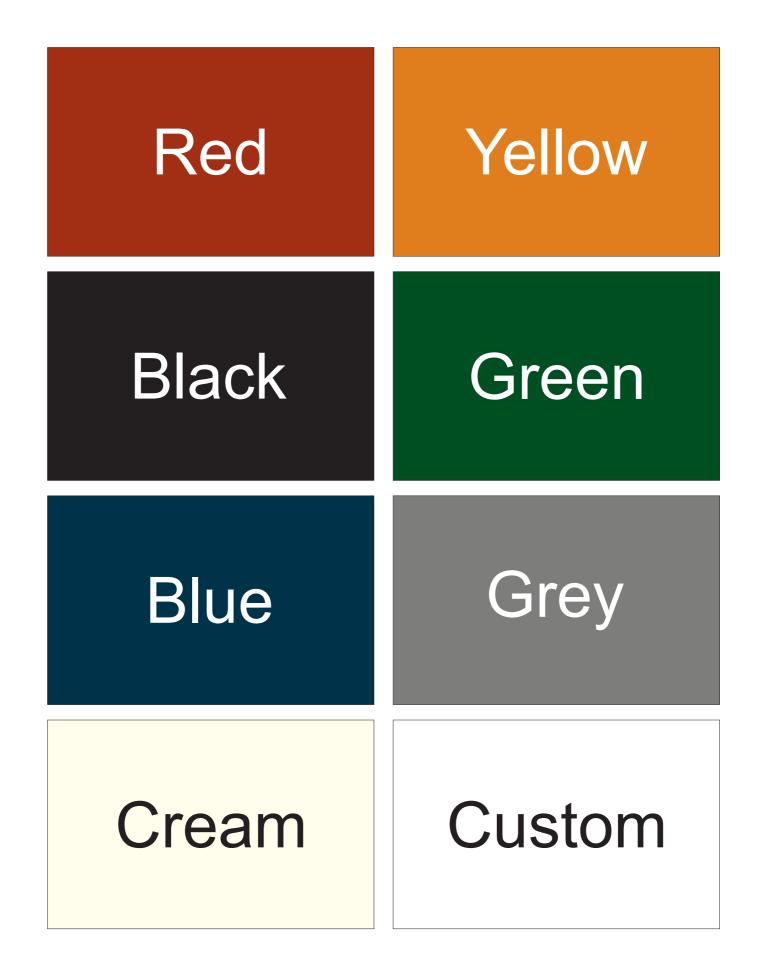
MATERIAL CHARACT	ERISTIC					
Solids Volume	100%					
Mix Ratio (Resin:Activator)	3.5:1 by Volume					
Recommended Dry Film Thickness	1500-2000 Microns					
Specify Gravity	1.23-1.23-1.23 Kgs/Litre					
	(Resin - Activator - Mixed) 10.26-10.26 Lbs/Gallor					
Cure Time (Varies by application techniqu	e, thickness & t	emperature)				
Designation	Regular Set	Fast Set				
Gel Time - Seconds	30-60	8-12				
Tack Free - Minutes	90-150	45-60				



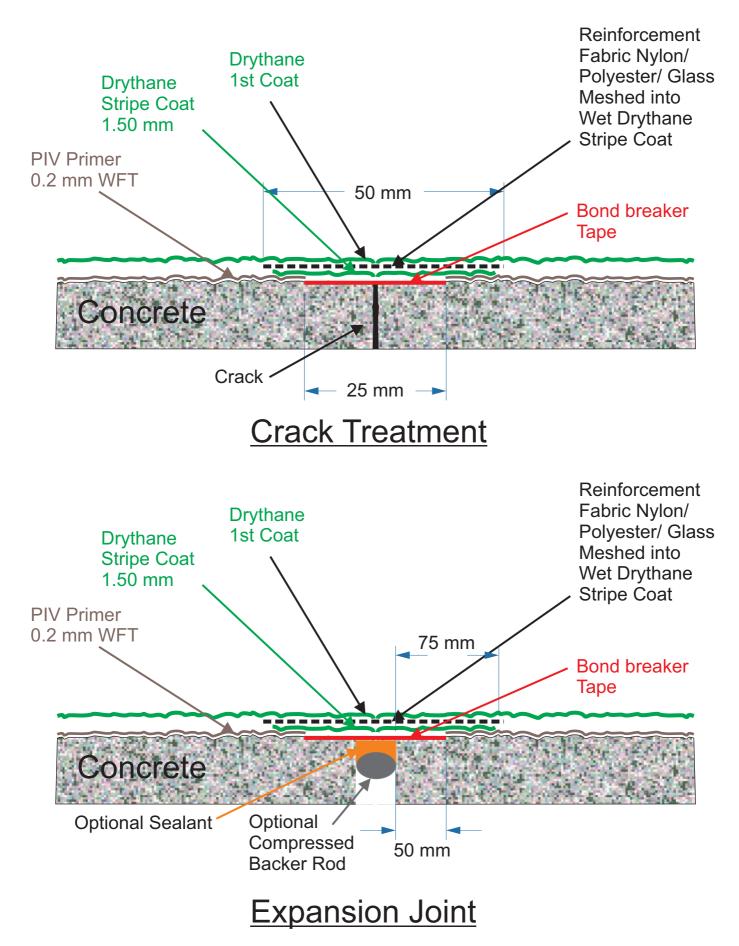




No.8, Alley 6 Lane 15, Sec.2, Jiayuan Rd., Shulin District, New Taipei City 238, Taiwan Tel: +886-2-28867799 | Fax: +886-2-28868991 sales@cosmostar.net | www.cosmostar.net Drythane – A Division Of Amchem Products. Pvt. Ltd A 79, Sector 58, NOIDA 201307, India Tel : +91–120–2580121, Fax : +91–120–2581351 salescrd@drythane.com, www.drythane.com









NACE SP0892-2007 (formerly RP0892-2001) Item No. 21060

Standard Practice

Coatings and Linings over Concrete for Chemical Immersion and Containment Service

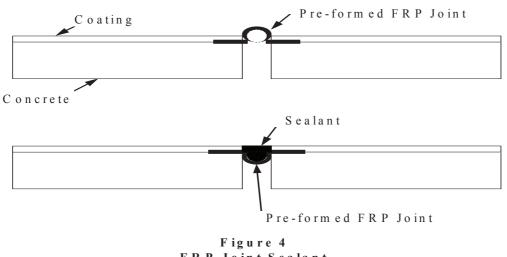
This NACE International standard represents a consensus of those individual members who have reviewed this document, its scope, and provisions. Its acceptance does not in any respect preclude anyone, whether he or she has adopted the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not in conformance with this standard. Nothing contained in this NACE International standard is to be construed as granting any right, by implication or otherwise, to manufacture, sell, or use in connection with any method, apparatus, or product covered by Letters Patent. This standard represents minimum requirements and should in no way be interpreted as a restriction on the use of better procedures or materials. Neither is this standard intended to apply in all cases relating to the subject. Unpredictable circumstances may negate the usefulness of this standard in specific instances. NACE International assumes no responsibility for the interpretation or use of this standard by other parties and accepts responsibility for only those official NACE International interpretations issued by NACE International in accordance with its governing procedures and policies which preclude the issuance of interpretations by individual volunteers.

Users of this NACE International standard are responsible for reviewing appropriate health, safety, environmental, and regulatory documents and for determining their applicability in relation to this standard prior to its use. This NACE International standard may not necessarily address all potential health and safety problems or environmental hazards associated with the use of materials, equipment, and/or operations detailed or referred to within this standard. Users of this NACE International standard are also responsible for establishing appropriate health, safety, and environmental protection practices, in consultation with appropriate regulatory authorities if necessary, to achieve compliance with any existing applicable regulatory requirements prior to the use of this standard.

CAUTIONARY NOTICE: NACE International standards are subject to periodic review, and may be revised or withdrawn at any time in accordance with NACE technical committee procedures. NACE International requires that action be taken to reaffirm, revise, or withdraw this standard no later than five years from the date of initial publication. The user is cautioned to obtain the latest edition. Purchasers of NACE International standards may receive current information on all standards and other NACE International publications by contacting the NACE International FirstService Department, 1440 South Creek Dr., Houston, Texas 77084-4906 (telephone +1[281]228-6200).

Reaffirmed 2007-08-14 Revised 2001-10-03 Approved December 1992 NACE International 1440 South Creek Drive Houston, Texas 77084-4906 +1 281/228-6200

ISBN 1-57590-136-6 ©2007, NACE International SSPC-TU 2/NACE 6G197 February, 1997



FRP Joint Sealant

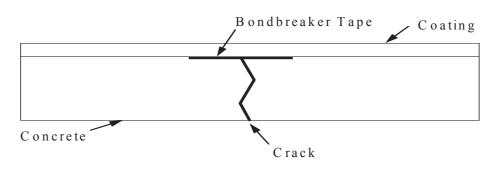


Figure 5 Bondbreaker over Crack

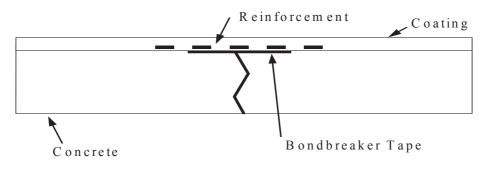


Figure 6 Reinforced Bondbreaker over Crack

AMCHEM

Concrete Coatings – How Much Elongation Is Required?

Many coatings list their high elongation capability as a high-performance feature. This bulletin addresses the actual elongation requirement for performing different functions.

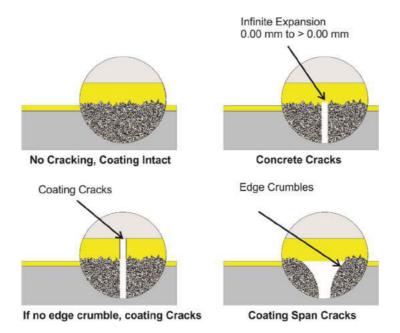
Thermal Expansion

Concrete has a coefficient of Thermal Expansion of 10×10^{-6} /C. Temperature change of 38C (45C summer - 7C winter) produces 1.7 cm expansion for every 30.5 m of concrete. **i.e. 0.05%**. Rigid coatings will put stress on the bonding surface during the process and eventually disbond. Flexible coatings will remain bonded – experience has shown that anything > 20% elongation does not apply stress on the bonding surface. It is also important that the coefficient of thermal expansion be like that of concrete so that the coating and surface contract and expand together.

Crack Spanning

The most important requirement for concrete coating is the ability to span microcracks < 0.40 mm caused by curing and loading of concrete. Water and corrosive ions permeation into the coating is primarily from within these cracks. If the coating cracks when these microcracks open under the coating, the whole purpose is negated.

How much elongation is required for producing this amount of crack spanning ability? 20%? 50%? 100%? 200%? Just elongation is not enough since at zero point there is infinite elongation (see below). Crack spanning is a complex process involving elongation and tensile strength which **causes the edge to crumble.** This is what prevents the coating from cracking.



It has been seen from testing that a coating with 35% elongation capability and 2,500 Psi Tensile Strength spans cracks up to 1.4 mm (Purethane 386/9000), i.e. much more than required. The very high elongation capability products 400%+ do not have any significant higher capability.



1K and 2K Very High Elongation Products (400%)

1 K products are linear because cross linked products cannot have long storage life. Hence, they have high elongation by <u>default</u>, not by design. Also, high elongation products are crystalline which means very high fall of elasticity in low temperatures. E.g. sub-zero temperatures. Hence, they need a high starting elongation level to retain a reasonable amount at low temperatures. High elongation products have very poor mechanical properties and are easily damaged. They need a protective masonry layer adding costs and weight. Chemical resistance (Concrete is Alkaline) is much lower so over the long term they tend to peel off.

Amorphous structured cross linked, thermoset products have low fall in elasticity in lower temperature. They are very tough, hard and difficult to damage.

Large Cracks and Expansion Joints

Large cracks and expansion joint present at the time of coating are treated using bond breaker techniques where the movement is spread over a very wide coating bridge. Ask for technical bulletin.

For additional data and clarifications, please call:

Shomendra Mann Director **Amchem Products Pvt. Ltd** A 79 Sector 58, NOIDA 201307, India Tel : +919818644865

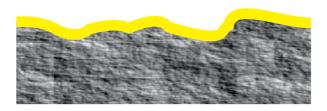


Amshield^{***}



Deck

CONCRETE DEFECTS AND EFFECT ON APPLIED COATING



Without Primer

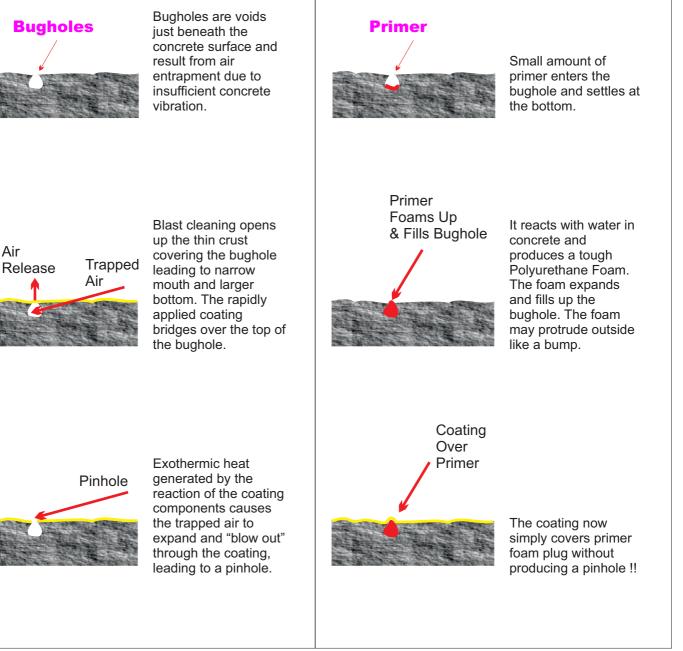
100% Solids Polyurethane Coatings have unlimited build capability which allows them to provide pinhole free coverage even over rough concrete with a sufficient film thickness. It covers peaks and valleys equally as depicted alongside.

However surface roughness and Bugholes in the concrete surface produce discontinuities and must be treated prior to coating.

One of the ways to fix the problem is by use of PIV Primer which magically fills the holes !!.

Bugholes

With Primer



COMPARATIVE OF DRYTHANE BLACK 1.2 WITH 1 COMPONENT POLYURETHANE WATERPROOFING

PROPERTY	DRYTHANE	1 COMPONENT PU	REMARKS
PRODUCT TYPE	Two Component, Chemical Cure (Resin & Activator)	Single Component, Moisture Cured Polyurethane	Single component moisture cured Polyurethane coatings have many problems related to curing/ spoiling of coating in the can (see below).
STANDARD	ASTM D16, Type V	ASTM D16, Type II	Separate product type with very different properties!
THICKNESS	1,200 Microns in 2 coats.	1,200 Microns in 2 coats.	Comparative with same thickness.
SOLVENT & COVERAGE	Zero Solvent (100% Solids) DFT = WFT 1.00 Sq.M @ 1.20 mm = 1.20 Litre	~ 50% Solvent DFT = ½ X WFT 1.00 Sq.M @ 1.20 mm = 2.40 Litre	You need to buy twice the materials in 1 K PU to get the same thickness as 2K PU !!
ΤΟΧΙΟΙΤΥ	Very Low. Can be used to line water storage tanks!!	High. Contains Tar.	Tar is cancer causing material.
FIRE HAZARD	None. Flash Point > 200 C	High. Contains Solvent. Flash Point 60 C.	1K PU is a fire hazard.
STORAGE STABILITY	Very High.	Poor.	There is no reaction in the 2K system in individual cans. The 1K PU has already been pre-reacted about 90% so has poor shelf life with gelling in container.
HUMIDITY AND TEMPERATURE DEPENDENCE	None. Will react mutually at all levels of humidity and temperature without film defects.	High. Will skin (surface cure) and blister in high humidity and temperature.	Reproduced from 1 K PU Datasheet – "surface to be dry for application as the material is cured in presence of moisture. Moisture level shall not be essentially more than 0.5%. Avoid application on very hot substrate & during very hot and windy conditions. Film formation may not be uniform and gradual under such circumstances & skinning on top surface may lead to formation of blisters and bubbles due to entrapped vapour from within the material.
DRYING TIME	1.50 Hour	10-12 Hours	Drythane allows fast project completion – in summers or winters.
PRIMER	Recommended to seal surface. PIV Damp Tolerant Solvent Free Primer is used.	Recommended to seal surface.	For concrete, primer is always recommended to seal and strengthen the surface. It also prevents outgassing from concrete in hot weather.
PROPERTIES (Tested at res	<u>pective system thickness)</u>		
Adhesion ASTM D 4541	> Tensile of Concrete (>2 MPa)	~ 0.50 MPa (70 Psi)	Concrete substrate will break in Drythane pull off adhesion tests.
Tensile Strength ASTM D 638	~ 20 MPa (2,900 Psi)	~ 2 MPa (290 Psi)	Drythane is extremely tough film. 1K PU easily damaged.
Hardness ASTM D – 2240	~ 65 Shore D	~ 10 Shore D	Drythane is hard yet flexible. 1K PU easily damaged.
Elongation ASTM D 638	~ 100%	~ 500%	Both elastic and will span cracks but 1K PU overtly soft and rubbery.
Abrasion Resistance ASTM D 4060	Weight Loss Typical 100 mgs	Not Reported	1 K is damaged easily. Drythane extremely tough.
Water Vapor Transmission ASTM E – 96	~ 2 gms / sq.m / 24 hour	~ 20 gms / sq.m / 24 hour	1K PU will allow large amounts of water vapour to pass through.
Water Absorption ASTM D 570	\sim 0.50% (saturation Weight Gain)	Not Reported	Drythane can be used for permanent immersion in water (pools, tanks, fountains etc) but 1 K PU cannot be used.



<u>12 Year Limited Warranty For</u> <u>DRYTHANE[®] Black</u>

Amchem's Drythane coatings are manufactured to the highest standards to provide reliable protection. Drythane materials are guaranteed to be free from manufacturing defects and when applied by Amchem's crew from defects in workmanship, and the coated surface is warranted against cracking, peeling, chipping, blistering and degrading from the date of original installation and extending to a period not to exceed 12 years (Twelve years) under normal weather and atmospheric conditions.

Acts and/or omissions that will void the subject warranty include:

- Damage to the product by user. Damage caused by sharp tools, cutting, abrasion, solvents, heat > 70C, are all excluded from this warranty. Any alteration to the product itself by the property owner, or any third party with or without consent will cause the warranty to be void. This includes but is not limited to any on-site cutting or welding, damage due to improper use or design, abuse or misuse, vandalism and acts of God.
- Cracking (other than small shrinkage cracks) or other concrete failure.
- Ingress of water through the negative side (from below the Drythane Coated Concrete).
- Plumbing leakage causing ingress from the negative side (from below the Drythane Coated Concrete).

If you believe the installed Drythane has exhibited failure under the conditions of this warranty, provide written notification to Amchem specifying the nature of the defect within sixty days of any occurrence of damage. Notification of defect must be accompanied by proof of purchase, a copy of all maintenance records, and photographs of the damage and current site conditions. Amchem reserves the right to inspect and test the coating to determine the validity of the claim. Amchem reserves the right to deny any claim based on lack of evidence of claimed damage and/or cause of claimed damage.

If any portion of the Drythane is found to be defective due to reasons of product quality and improper application by Amchem, we will replace the defective portion free of cost. For roof lawns, this shall include the locational removal and replacement of grass, non-woven fabric, drain board etc.

The above constitutes the complete warranty by Amchem. Except as provided herein, Amchem makes no warranty or guarantee, express or implied, including without limitation, WARRANTIES OF FITNESS AND MERCHANTABILITY. Amchem neither assumes nor authorizes any other person or agent to assume any other liability in connection with the Drythane products. In no event shall Amchem be liable for consequential, special, or incidental damages arising out of or connected with the purchase or use of this product. This warranty shall be subject to and shall be enforced and construed according to the laws of India.

For Amchem Products Pvt. Ltd.

Shomendra Mann Director 8th September 2018







ಸಿಎಸ್ಐಆರ್-ಕೇಂದ್ರೀಯ ಆಹಾರ ತಾಂತ್ರಿಕ ಸಂಶೋಧನಾಲಯ, ಮೈಸೂರು – ೫೭೦ ೦೨೦, ಭಾರತ सीएसआईआर – केंद्रीय खाद्य प्रौद्योगिक अनुसंधान संस्थान, मैसूरु ५७० ०२०,भारत CSIR - Central Food Technological Research Institute, Mysuru 570 020, India

एफएसएक्युसीएल/एटीएसएफ05/सीएससी 007/2019

FSAQCL/ATSF 05/CSC 007/2019 03.05.2019

SPEED POST

डॉ। आलोक कुमार श्रीवास्तव मुख्य वैज्ञानिक और ग्राहक सेवा सेल के प्रभारी प्रधान, एफएस और एक्यूसीएल Dr. Alok Kumar Srivastava Chief Scientist & Incharge of Customer Service Cell Head, FS & AQCL

M/s. Amchem Products Pvt. Ltd., A-79, Sector 58, Noida 201301, India Phone: 91-11-84580121

महोदय/Sir,

विषय: टेस्ट रिपोर्ट - संबंधित/Sub: Test Report for PU Coating- Drythane- reg संदर्भ: आपका पत्र दिनांकित 17.01.2019/Ref: Your letter dated: 17.01.2019

हमने आपके पत्र में आपके द्वारा मांगी उपरोक्त नमूने का विश्लेषण किया है। विश्लेषण के परिणाम संलग्न परीक्षण रिपोर्ट में दिए गए हैं।

We have carried out the analysis of the above sample as sought by you in your letter. The results of the analysis are given in the enclosed Test Report.

आपका भुगतान का आधिकारिक रेसीट आपको शीघ्र ही भेजा जाएगा | Official Receipt of the payment will be send you soon.

हम आपको हमारी सेवाओं का लाभ उठाने के लिए धन्यवाद देते है और भविष्य में भी विश्लेषण सम्बन्धी आवश्यकताओं ध्यान देने का आश्वासन देते हैं।

We thank you for availing our services and assure you of our best attention in future as well.

आपका आभारी, / Yours faithfully,

apor-

(आलोक कुमार श्रीवास्तव /Alok Kumar Srivastava)

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ಸಿಎಸ್ಐಆರ್ – ಸಿಎಫ್ಟ್ಟ್ಆರ್ಐ – ಐಎಸ್ಓ ೯೦೦೧:೨೦೦೮, ೧೪೦೦೧:೨೦೦೪ ಮತ್ತು ೧೭೦೨೫:೨೦೦೫ (ಎನ್ಏಬಿಎಲ್) ಸಂಸ್ಥೆ सीएसआईआर – सीएफटीआरआई – आईएसओ ९००१:२००८,१४००१:२००४ और १७०२५:२००५ (एनएबीएल) संगठन CSIR - CFTRI - ISO 9001:2008, 14001:2004 and 17025:2005 (NABL) Organization ವೆಬ್ಸ್ಟೆಟ್ / वेव साइट/ Web site : http://www.ctfri.com

ई-मेल : E-mail : csc@cftri.res.in

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Phone: 0821-2514972



सी एस आई आर – केन्द्रीय खाद्य प्रौद्योगिक अनुसंधान संस्थान, मैसूर – 570 020 CSIR-Central Food Technological Research Institute Mysore - 570 020, INDIA

TEST REPORT

ULR T C 5 2 5 3 1 9 0 0 0 0 0 0 0 **0 7** F

Your letter dated on: 17.01.2019	- 11777
PU Coating - Drythane	Certificate No. TC 5253
01.04.2019	Page 1 of 1

Test Parameter	Simulant (Temp/ Time)	Amount of Extractives mg/in ²	Limits as per USFDA – 175.300 mg/in ²	Test Method
Global Migration Test	Distilled Water (49°C/24 hrs.)	0.01	1.8 mg/in ² for single use 18 mg/in ² for repeated use	USFDA – 175.300 1 st April 2018

SV : SA = 1 : 1

Conclusion: The values are within the limits specified as per USFDA 175.300, 1st April 2018, for intended use for contact with aqueous foods/water for repeated use at room temperature filling and storing.

[®]Information as given by the customer.

Please Note: The results contained in this Test Report relate only to the sample tested. This Report is intended only for your guidance and not valid for legal purposes or for advertisement.

HEAD Food Safety & Analytical

Food Safety & Analytical Quality Control Laboratory CFTRI, MYSORE

BRIEF COMPANY PROFILE AMCHEM PRODUCTS PVT. LTD





<u>Activity</u>

- Manufacturer of Purethane[®], 100% Solids Polyurethane Coatings.
- Application of Purethane[®] at project sites in Power, Oil & Gas, Water & Wastewater sectors.
- Date of Commencement of Business: 17-05-1993

Technology

- Initial technology for Purethane[®] 386/9000 acquired from Exportech Inc., USA in 1993 on outright sale basis. Purethane[®] 386/9000 is the original, proven, 100% Solids Polyurethane Coating with the longest and most extensive track record. Several million square meters of steel and concrete substrates have been coated for leading international companies including fortune 500 companies such as Exxon Corp., Mobil, Tektronix, as well as U.S Govt. agencies such as United States Navy, U.S Coast Guard, City of Los Angeles etc.
- Subsequently conducted extensive research and developed state of the art products such as Purethane[®] AR Primer, Purethane[®] PLX, Purethane[®] NXT, Purethane[®] FLX and Drythane[®].

Names of Directors	Designation	Age	Experience	Educational Qualifications
Harbhajan Singh Mann	Managing Director	83.9	53 Years	P.Sc. Staff College Wellington
Raj Mann	Director	55.1	34 Years	B.Com. (Hons.), Delhi Univ., Bhagat Singh College
Deepender Mann	Director	53.3	33 Years	B.Sc. (Hons.) Chemistry, Delhi Univ., Ramjas College
Shomendra Mann	Director	51.8	33 Years	B.Sc. (Hons.) Chemistry, Delhi Univ., St. Stephens College

Promoters

<u>Locations</u>

Office & Plant(s) with Capacities	Address
Head Office &	A 79 Sector 58, NOIDA 201307
Plant 1	2.0 Million Litres / Annum
Plant 2	98, Ecotech XII, Greater NOIDA 201306
(Under Construction)	6.4 Million Litres / Annum
Application Services	All over India using mobile crews

<u>Manufacture</u>

- Manufacturer of Purethane[®] 100% Solids Polyurethane, Polyurea & Hybrid Coatings with the longest and most extensive track record in North America, Japan, Korea & the Middle East.
- ISO 9001 certified manufacturing plant in NOIDA, India. Over 50,00,000 (Up to May 2019) Litres of Purethane[®] materials supplied for projects in India and overseas to customers like NTPC, BPCL, IOCL, HPCL, Singapore PUB etc.
- Internationally reputed manufacturer. Major accomplishments include material supply for lining approx. 84 Kms Large Dia (Mostly 2.2 m) Dia Potable Water Pipe in Singapore. More than 7,47,060 Litres Purethane[®] have been supplied till date. Vendor selection made after due scrutiny of credentials by CH2M Hill, USA, the leading international engineering company.

Services

- ISO 9001 certified turnkey application of Purethane[®] products for select projects **single point responsibility** source for high performance coating.
- Network of **skilled licensed applicators** trained and equipped by Amchem.
- Comprehensive surface preparation and coating **application know how** exceeding NACE / SSPC standards. Large inventory of specialized application equipment. (Annexure 1). Over 150 highly skilled personnel for specialized surface preparation and coating application.
- Extensive use of high output **automated** blast cleaning and coating application equipment for pipeline external and internal coating. Developed in house.
- Provided skilled applicators and technicians for application of Purethane[®] coating on 84 Kms Large Dia (Mostly 2.2 m) Potable Water Pipes. Work carried out in Singapore, Malaysia and Indonesia.
- Total completed and ongoing projects by Amchem and Licensed Applicators total 3.08 Crore (30.80 Million) Sq. Feet of coating.

Pioneer & Market Leader

The entire market for 100% Solids Polyurethane Coatings in India has been developed single handedly by Amchem. We have technically educated customers, done trials, first off projects and won the trust by performing on the ground, year after year. Projects inspected after 15 years of service have shown the quality of our goods and services.

- First Seawater Cooling Tower in India coated for NTPC at Simadhri. Today Purethane® Coatings are the industry standard with over 51,70,000 Sq. Ft application in Cooling Towers.
- First Power Plant Cooling Pipeline in India. Today Purethane® Coatings are the industry standard with over 20,00,000 Sq. Ft application in, Cooling Water Pipes, Make Up Water Pipes.
- First Oil & Gas Mounded Bullet in India. Today Purethane® Coatings are the industry standard with over 65 projects done.
- First Cross Country Pipeline Rehabilitation in India. Today Purethane® Coatings are the industry standard with over 132 Kms projects done and 124 Kms ongoing.
- First New Cross Country Pipeline coated at site for M/s Bharat Petroleum Corp. Ltd., Haldia in 2001. This has an impeccable 15 year track record.
- First Sewage Treatment Plant coated for M/s UP Jal Nigam at Pilkhuwa, Meerut Road
- First Cross Country Irrigation Water Pipeline done for Jindal Saw/ MEIL/ Karnataka Minor Irrigation Department where 120 Kms of upto 2.4m Dia Pipeline have been coated. This path breaking project is setting up an example for other water/ irrigation departments across the country.
- First Ductile Iron Pipe Lining as per EN 15655 with Electrosteel Casting Ltd Amchem running full facility for internal Polyurethane lining of Ductile Iron Pipes.

Amchem has to its credit, the <u>world's largest</u> Polyurethane Coating projects i.e. Singapore NEWater Pipeline (2.2m Dia X 86 Kms) and Karnataka KOLAR project (2.4m Dia X 120 kms).



Equipment For Application and Testing

<u>S.No.</u>	Particulars	Quantity	<u>Units</u>
	Surface Preparation Equipment		
	Portable Diesel Driven Air Compressor Screw Type ;		
	450 cfm @ 150 Psi (Ingersoll Rand)	7	No's
	Blast Cleaning Pots - 500 Kgs. (MEC)	6	No's
	Bulk Blasting Pot – 10 MT , Multiple Nozzle	1	No's
	(Amchem, with Schmidt USA Valves & Controls).	•	1100
4	Bulk Blasting Pot – 5 MT , Multiple Nozzle	7	No's
	(Amchem, with Schmidt USA Valves & Controls).	/	140 3
5	Pipe Rotator (Set) With AC Drive Controls	1	Set
	Linear Travel Cart With AC Drive Controls	1	
		10	Set
7	Internal Automated Blast Cleaning Rig With AC	12	Set
	Coating Equipment		
1	Plural Component Airless Spray Equipment	11	Sets
	Complete With Accessories : Make Graco Inc.,		
	USA. System to comprise 5:1 Feed Pumps (2 Nos),		
	56:1 Proportioner (1No's), 23:1 Purge Pump (1Nos)		
	Mixer Manifold, Static Mixer, Spray Guns, Hoses etc.		
	Full set of spares are carried.		
	Single Component Airless Spray Equipment	1	Set
		12	Sets
		12	
	Pipe Rotator (Set) With AC Drive Controls		Set
	Linear Travel Cart With AC Drive Controls	1	Set
	Internal Automated Coating Rig With AC Controls	12	Set
	Air Compressor 125 cfm (ELGI)		No's R
8	Air Compressor 300 cfm (Atlas Copco)		No's
	Test Equipment		
1	Raytek Infra Red Non Contact Surface Thermometer	7	No's
	Surface Profile Gauge - 2 Microns (Elcometer / Baker)	, 7	No's
	Digital Psychrometer Testo	7	No's
	Wet Film Gauge : 0 - 80 mils (Nordson)	7	No's
	Magnetic Mil Gauge : 0 - 80 mils (Positest)	5	No's
,	Digital Magnetic MI Gauge : 0 – 200 Mils (Electrophysik)	2 7	No's
	Durometer : 0 - 100 D (Shore Instruments)	/	No's
7	Tinker Rasor High Voltage Holiday Detector :6-16 KV		No's
	SUB High Voltage Holiday Detector : 2-10 KV	7	No's
8	Positest AT-CM Hydraulic Portable Adhesion Tester	6	No's
	Elcometer F 106 Portable Adhesion Tester		No's
9	Press O Film Profile Gauge	1	No's
	<u>High Reach / Access Equipment</u>		
	JLG (USA) 40 RTS Rough Terrain Scissor Lift	2	No's
	JLG (USA) AM 24 Manlift	1	No's
1	. ,		
	JLG (USA) 600 AJ Articulating Boom	2	No's

COMPLETED AND ONGOING PROJECTS

27-06-2019

Date BY AMCHEM CREWS

<u>S.No</u>	<u>Client</u>	<u>Year</u>	Works	<u>Area – Sq.Ft</u>
	<u>Completed</u>			
	Pipeline - External & Internal			
1	Jindal SAW Ltd / BHEL / Maitree Power Bangladesh	2019	Internal Lining Of 1.2 – 3.3m Dia Seawater Transmission	2,12,10
2	Electrosteel Casting Ltd	2019	Ductile Iron Pipe For Export (Internal)	11,63,42
3	IOCL / Shri Maruti Infratech Pvt. Ltd	2019	IOCL district hoogly	16,527.3
4	IOCL / Narain & Co.	2019	BKPL Allahabad site	6,240.8
5	IOCL / Narain & Co.	2019	IOCL HMRBM Project site	50,399.8
6	PHED Rajasthan/ L&T/ Jindal SAW Ltd PHED Rajasthan/ L&T	2019	Water Pipeline 0.70m Dia, External, Snap set Water Pipeline 0.70m Dia, Weld Joints	13,65,00
8	IOCL / Shakti Engineers PWRJT16012 C&E	2019	Rehab. of Cross Country Pipeline Gauridad/Abu Road	3,37,68
9	IOCL / Jay Gauri PWRJT 16044	2018	Rehab. of Cross Country Pipeline BKPL Barauni	20,61
10	IOCL / Ram Baran Singh ERPL/CONT/2016-17/04 F	2018	Rehab. of Cross Country Pipeline BKPL Barauni	51,53
11	IOCL / Narain & Co. PWRJT16012 I	2018	Rehab. of Cross Country Pipeline Chaksu	1,85,50
12	IOCL / Shri Maruti Infratech Pvt. Ltd PWRJT16065 Gr.I / 24"	2018	Rehab. of Cross Country Pipeline	1,75,43
13	IOCL / Sen Brothers	2018	Rehab. of Cross Country Pipeline ERPL	86,20
14 15	IOCL / Jay Gauri Projects Pvt. Ltd PWRJT16012 J IOCL / Shri Maruti Infratech Pvt. Ltd PWRJT16012 Gr.D/ 28"	2017	Rehab. of Cross Country Pipeline Dausa Rehab. of Cross Country Pipeline Surendranagr	1,01,5: 85,0
16	IOCL / Shri Maruti Infratech Pvt. Ltd / MJPL 16"	2017	Rehab. of Cross Country Pipeline Surenaranagr Rehab. of Cross Country Pipeline Sohna	1,37,4
17	IOCL / Jay Gauri Projects Pvt. Ltd	2016	Rehab. of Cross Country Pipeline Devli Ula	72,1
18	IOCL / Narain & Co.	2016	Rehab. of Cross Country Pipeline Abu Road	1,92,7
19	IOCL / Shakti Engineers	2016	Rehab. of Cross Country Pipeline Gauridad	1,44,2
20	IOCL / Jay Gauri Projects Pvt. Ltd	2016	Rehab. of Cross Country Pipeline Surendra Ngr	2,13,7
21	IOCL / Advance Infrastructure Ltd	2016	Rehab. of Cross Country Pipeline Ramsar	1,06,1
22	IOCL / Ideal Enterprises	2014	28" X 9.80 Km Cross Country Pipeline	2,35,6
23	APGENCO Krishnapatnam / Megha Engineering (MEIL)	2014	Joints-12.71 Km of Of 1.8-2.2m Dia Seawater Pipe	25,0
24	APGENCO Krishnapatnam / Tata Projects Ltd	2014	3.7 m Dia to 0.9 m Dia Seawater Pipelines (2mm)	3,00,0
25	APGENCO Krishnapatnam / Megha Engineering (MEIL)	2013	12.71 Km of Of 1.8 and 2.2m Dia Seawater Pipeline (Mill Coating at MEIL) (2mm)	7,35,0
26	NTECL / IVRCL Infrastructures & Projects Ltd	2014	2.2 to 3.2 m Dia Seawater Pipelines (2mm thickness)	4,85,0
27	NTCEL / Gammon India Ltd	2012	2.2 m Dia Seawater Pipelines (2mm thickness)	54,0
28	NTPC Simadhri / Kirloskar Brothers Ltd	2012	3.2 m Dia Seawater Pipelines (2mm thickness)	2,90,4
29	NTPC Simadhri / ERA Infra Engg.	2012	2.2 m Dia Pipe Lining (2mm thickness)	60,0
30	Singapore PUB / Kwong Lee	2008	2.2 m Dia NEWater Pipeline & Other Projects. Materials	53,20,0
31	BPCL / Durgapur Equipments	2006	8" & 10" Dia API 5 L Grade Buried Pipe	20,4
32	BPCL / Expo Gas Containers	2003	16" Dia API 5 L Grade Buried Pipe	29,2
33 34	BPCL / Expo Gas Containers Indian Oil Corporation NOIDA	2001	5 Km of 24" & 16" Buried Petroleum Pipeline (Haldia Jetty Re-habilitation of Buried Crude Pipeline At Vadinar &	87,3 4,8
35	Cherrington Asia (India) Pvt. Ltd New Delhi	2001	Internal Lining Of Steel Pipes For Sewage Line , 48" Dia	4,0
36	Gas Authority of India NOIDA	1999	Steel Pipeline Cathodic Protection Simulator	1,0
37	FAB GmbH Germany	1997	40" Dia HDD Gas Steel Pipeline For Gazprom, Russia	28,7
	Mounded Bullets			
1	BPCL / G.R Engg., Kochi Refinery	2010	Mounded LPG Bullets	72,0
2	HPCL – MITTAL ENERGY / GGSR / Fabtech Projects	2010	Mounded LPG Bullets	2,43,0
3	IOCL Illyangudi / Fabtech Works	2009	Mounded LPG Bullets	12,8
4	BHARAT OMAN / G.R Engg., Bina Refinery	2009	Mounded LPG Bullets	1,30,0
5	HPCL / Fabtech Engineers, Vizag Refinery	2009	Mounded LPG Bullets	1,25,3
6	BPCL / Fabtech Engineers, Fatuha	2008	Mounded LPG Bullets	20,3
7	HPCL / Fabtech Engineers, Rajamundhry	2007	Mounded LPG Bullets	17,3
8	IOCL / G.R Engg., Mathura Refinery	2007	Mounded LPG Bullets	63,3
9 10	MRPL / Fabtech Engineers, Mangalore HPCL / Fabtech Engineers, Kondapalli	2007	Mounded LPG Bullets Mounded LPG Bullets	59,7 18,2
11	HPCL / Fablech Engineers, Kondapalli HPCL / Fablech Engineers, Hoshiarpur	2007	Mounded LPG Bullets	18,2
12	IOCL / Fabtech Engineers, Gujarat Refinery	2007	Mounded LPG Bullets	83,7
13	IOCL / Fabtech Works, Pondicherry	2006	Mounded LPG Bullets	10,5
14	HPCL / Fabtech Engineers, Unnao	2006	Mounded LPG Bullets	16,2
15	IOCL / G.R Engg., Kondapalli	2006	Mounded LPG Bullets	18,1
16	HPCL / Fabtech Engineers / Patna	2005	Mounded LPG Bullets	16,8
	BPCL / Fabtech Engineers / Cherlapalli	2005	Mounded LPG Bullets	25,9
			Mounded LPG Bullets	39,9
18	Deepak Fert. / Taloja	2005		
18 19	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul	2005 2005	Mounded LPG Bullets	
18 19 20	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul BPCL / Fabtech Engineers, Rajkot	2005 2005 2005	Mounded LPG Bullets Mounded LPG Bullets	8,0
18 19 20 21	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul BPCL / Fabtech Engineers, Rajkot BPCL / G.R Engg. , Vijaywada	2005 2005 2005 2004	Mounded LPG Bullets Mounded LPG Bullets Mounded LPG Bullets	8,0 13,3
18 19 20 21 22	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul BPCL / Fabtech Engineers, Rajkot BPCL / G.R Engg. , Vijaywada BPCL / G.R Engg. , Solur	2005 2005 2005	Mounded LPG Bullets Mounded LPG Bullets	8,0 13,3 20,1
18 19 20 21 22 23	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul BPCL / Fabtech Engineers, Rajkot BPCL / G.R Engg. , Vijaywada BPCL / G.R Engg. , Solur BPCL / Fabtech Engineers, Pune IOCL / N.R Patel & Co, Shimoga	2005 2005 2005 2004 2004 2004	Mounded LPG Bullets	8,0 13,3 20,1 20,1
18 19 20 21 22 23 24 25	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul BPCL / Fabtech Engineers, Rajkot BPCL / G.R Engg. , Vijaywada BPCL / G.R Engg. , Solur BPCL / Fabtech Engineers, Pune IOCL / N.R Patel & Co, Shimoga HPCL / Fabtech Engg., Pampore	2005 2005 2005 2004 2004 2004 2004 2003 2003	Mounded LPG Bullets	8,0 13,3 20,1 20,1 30,4 39,5
18 19 20 21 22 23 24 25 26	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul BPCL / Fabtech Engineers, Rajkot BPCL / G.R Engg. , Vijaywada BPCL / G.R Engg. , Solur BPCL / Fabtech Engineers, Pune IOCL / N.R Patel & Co, Shimoga HPCL / Fabtech Engg., Pampore IOCL / Fabtech Engg., Quilon	2005 2005 2005 2004 2004 2004 2004 2003 2003 2003	Mounded LPG Bullets	8,0 13,3 20,1 20,1 30,4 39,5 18,2
18 19 20 21 22 23 24 25 26 27	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul BPCL / Fabtech Engineers, Rajkot BPCL / G.R Engg., Vijaywada BPCL / G.R Engg., Solur BPCL / Fabtech Engineers, Pune IOCL / Fabtech Engg., Pune IOCL / Fabtech Engg., Pampore IOCL / Fabtech Engg., Quilon IOCL / Sharp Tanks, Coimbatore	2005 2005 2005 2004 2004 2004 2003 2003 2003 2003	Mounded LPG Bullets	8,0 13,3 20,1 20,1 30,4 39,5 18,2 18,2 18,0
18 19 20 21 22 23 24 25 26 27 28	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul BPCL / Fabtech Engineers, Rajkot BPCL / G.R. Engg. , Vijaywada BPCL / G.R. Engg. , Solur BPCL / Fabtech Engineers, Pune IOCL / Fabtech Engg., Pune IOCL / N.R. Patel & Co, Shimoga HPCL / Fabtech Engg., Pampore IOCL / Fabtech Engg., Quilon IOCL / Sharp Tanks, Coimbatore IOCL / Sharp Tanks, Una	2005 2005 2005 2004 2004 2004 2003 2003 2003 2003 2003	Mounded LPG Bullets	8,C 13,3 20,1 20,1 30,4 39,5 18,2 18,2 18,2 18,0 17,8
18 19 20 21 22 23 24 25 26 27 28	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul BPCL / Fabtech Engineers, Rajkot BPCL / G.R Engg. , Vijaywada BPCL / G.R Engg. , Solur BPCL / Fabtech Engineers, Pune IOCL / Fabtech Engg., Pune IOCL / Fabtech Engg., Pampore IOCL / Fabtech Engg., Quilon IOCL / Sharp Tanks, Coimbatore	2005 2005 2005 2004 2004 2004 2003 2003 2003 2003	Mounded LPG Bullets	8,0 13,3 20,1 20,1 30,4 39,5 18,2 18,0 17,8
17 18 19 20 21 22 23 24 25 26 27 28 29	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul BPCL / Fabtech Engineers, Rajkot BPCL / G.R Engg. , Vijaywada BPCL / G.R Engg. , Solur BPCL / Fabtech Engineers, Pune IOCL / Fabtech Engg., Pune IOCL / Fabtech Engg., Pampore IOCL / Fabtech Engg., Quilon IOCL / Sharp Tanks, Coimbatore IOCL / Sharp Tanks, Una IOCL / G.R Engg., Chengelpet	2005 2005 2005 2004 2004 2004 2003 2003 2003 2003 2003	Mounded LPG Bullets	8,0 13,3 20,1 20,1 30,4 39,5 18,2 18,0 17,8
18 19 20 21 22 23 24 25 26 27 28	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul BPCL / Fabtech Engineers, Rajkot BPCL / G.R. Engg. , Vijaywada BPCL / G.R. Engg. , Solur BPCL / Fabtech Engineers, Pune IOCL / Fabtech Engg., Pune IOCL / N.R. Patel & Co, Shimoga HPCL / Fabtech Engg., Pampore IOCL / Fabtech Engg., Quilon IOCL / Sharp Tanks, Coimbatore IOCL / Sharp Tanks, Una	2005 2005 2005 2004 2004 2004 2003 2003 2003 2003 2003	Mounded LPG Bullets	13,5 8,0 13,3 20,1 20,1 30,4 39,5 18,2 18,0 17,8 30,2 15,45,2
18 19 20 21 22 23 24 25 26 27 28 29	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul BPCL / Fabtech Engineers, Rajkot BPCL / G.R Engg. , Vijaywada BPCL / G.R Engg. , Solur BPCL / Fabtech Engineers, Pune IOCL / N.R Patel & Co, Shimoga HPCL / Fabtech Engg., Pampore IOCL / Fabtech Engg., Quilon IOCL / Sharp Tanks, Coimbatore IOCL / G.R Engg., Chengelpet Concrete Cooling Towers	2005 2005 2005 2004 2004 2004 2003 2003 2003 2003 2003	Mounded LPG Bullets Mounded LPG Bulle	8,0 13,3 20,1 20,1 30,4 39,5 18,2 18,0 17,8 30,2
18 19 20 21 22 23 24 25 26 27 28 29 1	Deepak Fert. / Taloja HPCL / Fabtech Engineers, Mahul BPCL / Fabtech Engineers, Rajkot BPCL / G.R Engg. , Vijaywada BPCL / G.R Engg. , Solur BPCL / Fabtech Engineers, Pune IOCL / N.R Patel & Co, Shimoga HPCL / Fabtech Engg., Pampore IOCL / Fabtech Engg., Quilon IOCL / Sharp Tanks, Coimbatore IOCL / Sharp Tanks, Una IOCL / G.R Engg., Chengelpet Concrete Cooling Towers DVC/ Reliance Industries	2005 2005 2005 2004 2004 2004 2003 2003 2003 2003 2003	Mounded LPG Bullets	8,0 13,3 20,1 20,1 30,4 39,5 18,2 18,0 17,8 30,2 15,45,2

				m Dia Steel Pipe.	
	Othors				
1	Others Larsen & Toubro Ltd / UP Jal Nigam	ltd	2017	Lining Sewage Treatment Plant - Rampur	37,116
2	UP Jal Nigam Ltd		2017	Lining Sewage Treatment Plant - Pilkhua	33,27
3	M. W New Delhi		1998	Concrete Waterproofing For Roof Garden	1,300
4	T&A Erectors Pvt. Ltd NOIDA		1998	Concrete Raft Under Building SAB Shopping Mall (NOIDA)	11,000
5	Oriole Design New Delhi		1997	MDF Board Wooden Flooring For Godrej Centenary	12,45
6	Vivid Developers Pvt. Ltd New Delhi		1996	Concrete Rooftop	2,700
0	Vivid Developers Pvt. Ltd New Deini		1996		2,700
				TOTAL COMPLETED	1,88,48,784
	Ongoing				
			0010		1.05.00
1	Narain & Co		2019	BKPL 12.75" Dia X 16.89 Km Pipeline Rehabilitation	1,85,00
2	Narain & Co		2019	HMRMB 12.00" Dia X 16.98 Km Pipeline Rehabilitation	98,40
3	Shri Maruti Infratech (P) Ltd		2019	HMRMB 12.00" Dia X 3.25 Km Pipeline Rehabilitation	33,50
					0.1/.00
				TOTAL Ongoing	3,16,90
				GRAND TOTAL	1,91,65,68
	BY LICENSED APPLICATORS				
	Completed				1
	Pipeline - External & Internal	Applicator / User	_		
	<u>Site</u>	Applicator / User			
1	Tuticorin Power Project	Megha Engineering Ltd	2018	Seawater Pipeline For Thermal Power Project	7,07,400
2	Karnataka Minor Irrigation	Jindal SAW Ltd	2018	Upto 2.4 m dia X 120 Km KOLAR Wastewater Pipeline	31,16,634
3	Karnataka Minor Irrigation	Megha Engineering Ltd	2018	Upto 2.4 m dia X 120 Km KOLAR Wastewater Pipeline	20,05,120
4	IOCL ERPL	Sen Brothers	2018	Rehab. of Cross Country Pipeline ERPL	1,56,400
5	IOCL PWRJT 15056	Jay Gauri Projects Pvt. Ltd	2018	Pipeline Rehabilitation	93,78
	IOCL PWRJT16012 Grp. G	Jay Gauri Projects Pvt. Ltd	2018	Pipeline Rehabilitation	1,38,719
	IOCL ERPL/16-17/04 Grp. G IOCL PWRJT 16044	Jay Gauri Projects Pvt. Ltd	2018	Pipeline Rehabilitation	2,59,719
8	IOCL PWRJT 16065 Grp. A	Jay Gauri Projects Pvt. Ltd Jay Gauri Projects Pvt. Ltd	2018	Pipeline Rehabilitation Pipeline Rehabilitation	1,23,668
10	IOCL PWRJT 16065 Grp. B	Jay Gauri Projects Pvt. Ltd	2018	Pipeline Rehabilitation	1,68,320
11	IOCL PWRJT 16065 Grp. D	Jay Gauri Projects Pvt. Ltd	2018	Pipeline Rehabilitation	1,92,382
	IOCL PWRJT 16065 Grp. J	Jay Gauri Projects Pvt. Ltd	2018	Pipeline Rehabilitation	1,67,573
13	IOCL Group A	Jay Gauri Projects Pvt. Ltd	2015	Pipeline Rehabilitation	2,58,700
14	IOCL Beawer	Jay Gauri Projects Pvt. Ltd	2015	Pipeline Rehabilitation	10,000
15	IOCL Ahmedabad	Jay Gauri Projects Pvt. Ltd	2015	Pipeline Rehabilitation	10,000
16	IOCL Rajkot	Ideal Enterprises	2014	Pipeline Rehabilitation	1,04,500
17 18	IOCL Chaksu Hamon Sriram Cottrel	Jay Gauri Projects Pvt. Ltd Pro Shield Engineers	2014	Pipeline Rehabilitation Seawater Pipe Lining	39,800
19	Simapuri Energy	Pro Shield Engineers	2014	Seawater Pipe Lining	1,23,720
20	IOCL Vadinar	Maa Bhawani	2013	Pipeline Rehabilitation	24,900
21	IOCL SMPL	Jay Gauri Projects	2012	18″ X 10 Km Cross Country Pipeline	1,54,500
22	IOCL Vadodara	Shree Ambha Associates	2012	8.6" X 12 Km Cross Country Pipeline	88,900
23	NTECL Vallur - Technofab	Pro Shield Engineers	2012	Seawater Pipe Lining	45,185
24	NTECL Vallur-Gammon	Pro Shield Engineers	2012	Seawater Pipe Lining	1,12,960
	JSW Ratnagiri	Pro Shield Engineers	2011	Seawater Concrete Duct	1,18,342
	IOCL SMPL IOCL SMPL	Jay Gauri Projects Shree Ambha Associates	2009	24"X 7.5 Km Cross Country Pipeline 24"X 7.5 Km Cross Country Pipeline	1,54,500
27			2007		1,54,500
	Mounded Bullets	ł			
					Updated till 27-june-2019
1	HPCL Champaran (Bihar) IOCL Trisundi	Maximum Coating Solutions	2019	Mounded LPG Bullets Mounded LPG Bullets	5,553.54
	HPCL Yediyur	Fab-Tech Works & Constr. Pvt. Ltd Fab-Tech Works & Constr. Pvt. Ltd	2019	Mounded LPG Bullets	27,767.74
4	IOCL Maneri	Spar Engineering and Infrastructure	2019	Mounded LPG Bullets	2,776.7
	IOCL Korba	Sharp Tanks & Structurals (P) Ltd	2019	Mounded LPG Bullets	52,758.7
6	BPCL Hazira	Fabtech Works & Constructions	2019	Mounded LPG Bullets	14,578.0
7	IOCL Raninagar	Fabtech Projects & Engineers Ltd	2019	Mounded LPG Bullets	8,330.3
8	IOCL Bongaigaon	Fabtech Projects & Engineers Ltd	2019	Mounded LPG Bullets	38,874.8
9	IOCL Erode	Fabtech Projects & Engineers Ltd	2019	Mounded LPG Bullets	16,660.6
10	IOCL Trisundi IOCL Gauridad	Fabtech Works & Constructions	2019	Mounded LPG Bullets Mounded LPG Bullets	1,041.2
12	HPCL Champaran	Jay Gauri Projects Pvt. Ltd Maximum Coating Solution	2019	Mounded LPG Bullets Mounded LPG Bullets	11,107.0
13	Bathinda	Fabtech Projects & Engineers Ltd	2019	Mounded LPG Bullets	24,990.9
	IOCL Maneri	Spar Engineering	2019	Mounded LPG Bullets	8,330.32
14		Fabtech Projects & Engineers Ltd.	2019	Mounded LPG Bullets	8,330.32
14	BPCL Khurda	Z	2019	Mounded LPG Bullets	74,972.9
15 16	IOCL Paradeep	Fabtech Works & Constructions			
15 16 17	IOCL Paradeep BPCL Baitalpur	Fabtech Projects & Engineers Ltd.	2019	Mounded LPG Bullets	
15 16 17 18	IOCL Paradeep BPCL Baitalpur IOCL Gauridad	Fabtech Projects & Engineers Ltd. Jay Gauri Projects Pvt. Ltd	2019 2019	Mounded LPG Bullets	5,553.5
15 16 17 18 19	IOCL Paradeep BPCL Baitalpur IOCL Gauridad IOCL Bhitargarh	Fabtech Projects & Engineers Ltd. Jay Gauri Projects Pvt. Ltd Sharp Tanks & Structurals Ltd	2019 2019 2019	Mounded LPG Bullets Mounded LPG Bullets	5,553.5 52,758.7
15 16 17 18 19 20	IOCL Paradeep BPCL Baitalpur IOCL Gauridad IOCL Bhitargarh IOCL Nagpur	Fabtech Projects & Engineers Ltd. Jay Gauri Projects Pvt. Ltd Sharp Tanks & Structurals Ltd Anwesha	2019 2019 2019 2019 2019	Mounded LPG Bullets Mounded LPG Bullets Mounded LPG Bullets	2,776.7 5,553.5 52,758.7 30,544.5
15 16 17 18 19 20 21`	IOCL Paradeep BPCL Baitalpur IOCL Gauridad IOCL Bhitargarh IOCL Nagpur IOCL Gwalior	Fabtech Projects & Engineers Ltd. Jay Gauri Projects Pvt. Ltd Sharp Tanks & Structurals Ltd Anwesha Sharp Tanks & Structurals Ltd	2019 2019 2019 2019 2019 2019	Mounded LPG Bullets Mounded LPG Bullets Mounded LPG Bullets Mounded LPG Bullets	5,553.5 52,758.7 30,544.5 16,660.6
15 16 17 18 19 20 21`	IOCL Paradeep BPCL Baitalpur IOCL Gauridad IOCL Bhitargarh IOCL Nagpur	Fabtech Projects & Engineers Ltd. Jay Gauri Projects Pvt. Ltd Sharp Tanks & Structurals Ltd Anwesha	2019 2019 2019 2019 2019	Mounded LPG Bullets Mounded LPG Bullets Mounded LPG Bullets	5,553.5 52,758.7 30,544.5

35 10000000000000000000000000	10 700 0
17 201 Mondel UTC Fulse 101 Mondel UTC Fulse 17 SRI UTC, Boy, J. South Partstein 201 Mondel UTC Fulse 101 17 SRI UTC, Boy, J. South Part String, Sout	12,700.0
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46 BPCL Pune Fablech Projects & Engineers Lid 2019 Moundel LPG Builds 61 ICOCL Lah Fablech Projects & Engineers Lid 2019 Moundel LPG Builds 63 HPCL Prolegadh Fablech Projects & Engineers Lid 2019 Moundel LPG Builds 63 HPCL Program Fablech Projects & Engineers Lid 2019 Moundel LPG Builds 64 ICOCL Grappon Fablech Projects & Engineers Lid 2019 Moundel LPG Builds 65 ICOCL Carbin ICOT Anweaha 2019 Moundel LPG Builds 67 ICOCL Carbin ICOT Anweaha 2019 Moundel LPG Builds 68 CPCL Cheloni Fablech Projects & Engineers Lid 2019 Moundel LPG Builds 71 Monabass Mahahi Engrineers Lid 2019 Moundel LPG Builds 73 ICOCL Cheloni Fablech Projects & Engineers Lid 2019 Moundel LPG Builds 74 BPCL Right Fablech Projects & Engineers Lid 2019 Moundel LPG Builds 74 ICOLC Cheloni Fablech Projects & Engineers Lid 2019 Moundel LPG	34,50
161 DCL Lph Fablech Projects & Engineers Ltd 2017 Mounded LPG Sullers 28 IPCL Fanlgouch Fablech Projects & Engineers Ltd 2017 Mounded LPG Sullers 24 IPCL Congroon Fablech Projects & Engineers Ltd 2017 Mounded LPG Sullers 25 IPCL Locknow Fablech Projects & Engineers Ltd 2019 Mounded LPG Sullers 26 BPCL Locknow Fablech Projects & Engineers Ltd 2019 Mounded LPG Sullers 26 IPCL Locknow Fablech Projects & Engineers Ltd 2019 Mounded LPG Sullers 27 IPCL Cochin Fablech Projects & Engineers Ltd 2019 Mounded LPG Sullers 27 IPCL Rocknik Fablech Projects & Engineers Ltd 2019 Mounded LPG Sullers 28 IPCL Rocknik Fablech Projects & Engineers Ltd 2019 Mounded LPG Sullers 27 IPCL Rocknik Fablech Projects & Engineers Ltd 2019 Mounded LPG Sullers 28 IPCL Rocknik Fablech Projects & Engineers Ltd 2019 Mounded LPG Sullers 28 IPCL Rocknik Fablech Projects & Engineers Ltd 2019 Mounded LPG Sullers 2	17,30
42 PRCL Policked Fabtech Projects & Engineen LM 2019 Mounded LPG Bullets 43 IPCC Prosph Fabtech Projects & Engineen LM 2019 Mounded LPG Bullets 44 IOCL Gurgeon Fabtech Projects & Engineen LM 2019 Mounded LPG Bullets 45 IOCL Lahn Fabtech Projects & Engineen LM 2019 Mounded LPG Bullets 46 IOCL Cachin IOT Anwesho 2011 Mounded LPG Bullets 47 IOCL Cachin IOT Anwesho 2019 Mounded LPG Bullets 48 CRCL Chemoi IOT Anwesho 2019 Mounded LPG Bullets 49 UPL Fabtech Projects & Engineen LM 2019 Mounded LPG Bullets 49 UPL Fabtech Projects & Engineen LM 2019 Mounded LPG Bullets 40 ROLE Ragkot Fabtech Projects & Engineen LM 2019 Mounded LPG Bullets 71 Mondes LPG Bullets Engineen LM 2019 Mounded LPG Bullets 73 IOCL Expande Fabtech Projects & Engineen LM 2019 Mounded LPG Bullets 74 ROLE Ragkot Fabtech Projects & Engineen LM 2019 Mounded	
63 HPCL Parageth Fabech Works & Construction 2019 Mounded LPG Bullets 64 LOCL Gurgeton Fabech Projects & Engineers Lid 2019 Mounded LPG Bullets 65 LOCL Leh Fabech Projects & Engineers Lid 2019 Mounded LPG Bullets 66 BPCL Locknow Fabech Projects & Engineers Lid 2019 Mounded LPG Bullets 67 LOCL Cochin IOT Anwesho 2019 Mounded LPG Bullets 68 CPCL Chennal IOT Anwesho 2019 Mounded LPG Bullets 70 BPCL Kochi Fabech Projects & Engineers Lid 2019 Mounded LPG Bullets 710 Montssa Engineers Lid 2019 Mounded LPG Bullets 711 Montssa Engineers Lid 2019 Mounded LPG Bullets 721 OCL Cholori Fabech Projects & Engineers Lid 2019 Mounded LPG Bullets 73 IOCL Transhell Fabech Projects & Engineers Lid 2019 Mounded LPG Bullets 74 BOCL Growhoth Fabech Projects & Engineers Lid 2019 Mounded LPG Bullets 75 IOCL Transhell Fabech Projects & Engineers Lid 2019 </td <td>23,00</td>	23,00
64 IOCL Gurgoon Fabrech Projects & Engineen Lid 2017 Mounded LPG Bulles 65 IOCL Lich Fabrech Projects & Engineen Lid 2017 Mounded LPG Bulles 66 IPCL Licknow Fabrech Projects & Engineen Lid 2017 Mounded LPG Bulles 67 IOCL Conthin IOT Anwelha 2019 Mounded LPG Bulles IDCL 68 CPEL Chennol IOT Anwelha 2011 Mounded LPG Bulles IDCL 69 UPL Fabrech Projects & Engineen Lid 2011 Mounded LPG Bulles IDCL 71 Mondes LPG Bulles 2019 Mounded LPG Bulles IDCL IDEL IDEL 72 IOCL Chelori Fabrech Projects & Engineen Lid 2019 Mounded LPG Bulles IDEL 73 IOCL Sworbort Fabrech Projects & Engineen Lid 2019 Mounded LPG Bulles IDEL 74 BPCL Bulot Fabrech Projects & Engineen Lid 2019 Mounded LPG Bulles IDEL 75 IOCL Formatevell Fabrech Projects & Engineen Lid 2019 Mounded LPG Bulles IDEL 76 IOCL Balot Fabrech Projects & Engineen Lid	54,54
65 OCL Lin Fabrech Reigents & Engineens Lid 2019 Mounded UPC Bullets 67 IOCL Linknow Fabrech Reigents & Engineens Lid 2019 Mounded UPC Bullets 68 IOCL Cochin IOT Anwesha 2019 Mounded UPC Bullets 69 UPL Fabrech Projects & Engineens Lid 2019 Mounded UPC Bullets 70 BPCL Kochi Fabrech Projects & Engineens Lid 2019 Mounded UPC Bullets 71 Mombosia Maber Projects & Engineens Lid 2019 Mounded UPC Bullets 71 Mombosia Maber Projects & Engineens Lid 2019 Mounded UPC Bullets 72 IOCL Consort Fabrech Projects & Engineens Lid 2019 Mounded UPC Bullets 73 IOCL Tarunelveli Fabrech Projects & Engineens Lid 2019 Mounded UPC Bullets 74 IOCL Brandeep Fabrech Projects & Engineens Lid 2019 Mounded UPC Bullets 76 IOCL Brandeep Fabrech Projects & Engineens Lid 2019 Mounded UPC Bullets 77 IOCL Brandeep Fabrech Projects & Engineens Lid 2019 Mounded UPC Bullets 78 IOCL Brandeep Fabrech Projects & Engineens Lid 2019 Mounded UPC Bullets 79 IOCL Brandeparh Fabrech Projects & Engin	26,57
66 PPCL Locknow Foblech Projects & Engineen Ltd 2019 Mounded LPG Bullets 67 LOCL Cockin LOT Anvesho 2019 Mounded LPG Bullets 68 CPCL Cohnnol LOT Anvesho 2019 Mounded LPG Bullets 69 UPR Fabrech Projects & Engineen Ltd 2019 Mounded LPG Bullets 70 BPCL Kochi Fabrech Projects & Engineen Ltd 2019 Mounded LPG Bullets 71 Membossa Mahabil: Enterprises 2019 Mounded LPG Bullets 72 COCL Chalori Fabrech Projects & Engineen Ltd 2019 Mounded LPG Bullets 73 COCL Growbhali Fabrech Projects & Engineen Ltd 2019 Mounded LPG Bullets 74 BPCL Rajkot Fabrech Projects & Engineen Ltd 2019 Mounded LPG Bullets 76 COCL Grandeep Fabrech Projects & Engineen Ltd 2019 Mounded LPG Bullets 76 COCL Grandeep Fabrech Projects & Engineen Ltd 2019 Mounded LPG Bullets 77 COCL Bangolore Pro Shield Engineens 2019 Mounded LPG Bullets 78 COCL Combotore Pro Shield Engineens 2019 Mounded LPG Bullets 79 COLL Selamid Fabrech Projects & Engineens Ltd 2019 Mounded LPG Bull	21,51
67 IOCL Cochin IOT Anvesho 2019 Mounded IPG Bullets 68 CPCL Chennol IOT Anvesho 2019 Mounded IPG Bullets 69 UPL Foblech Projects & Engineers Ltd 2019 Mounded IPG Bullets 70 BPCL Kochi Foblech Projects & Engineers Ltd 2019 Mounded IPG Bullets 71 Monbosao Mohdhult Enterprises 2019 Mounded IPG Bullets 73 IOCL Cowahati Foblech Projects & Engineers Ltd 2019 Mounded IPG Bullets 73 IOCL Forandepp Foblech Projects & Engineers Ltd 2019 Mounded IPG Bullets 74 IOCL Standapp Foblech Projects & Engineers Ltd 2019 Mounded IPG Bullets 74 IOCL Standapp Foblech Projects & Engineers Ltd 2019 Mounded IPG Bullets 77 IOCL Standapp Foblech Projects & Engineers Ltd 2019 Mounded IPG Bullets 78 IOCL Comboror Pro Shield Engineern 2019 Mounded IPG Bullets 79 IOCL Standaporh Foblech Projects & Engineers Ltd 2019 Mounded IPG Bullets 79 IOCL Standaporh Foblech Projects & Eng	39,80
68 CPCL Chennol 107 Anvesha 2019 Mounded LPG Bullets 69 UPL Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 70 Morthage Structures 2019 Mounded LPG Bullets 2017 71 Morthage LPG Bullets 2019 Mounded LPG Bullets 2019 72 IOCL Chelari Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 2019 73 IOCL Gravehati Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 2019 74 BPCL Relat Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 2019 75 IOCL Gravehati Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 2019 76 IOCL Semajore Pro Shield Engineers 2019 Mounded LPG Bullets 2019 78 IOCL Combotore Pro Shield Engineers 2019 Mounded LPG Bullets 2019 78 IOCL Chaipur Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 2019 80 IOCL Chaipur Fobtech Projects & Engineers Ltd 2019 Mou	10,75
69 UPL Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 70 BPCL Kochi Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 71 Mombassa Mohnhi Enterprises 2019 Mounded LPG Bullets 72 IOCL Chelori Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 73 IOCL Chelori Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 74 IBPCL Rajcot Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 75 IOCL Gradeep Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 76 IOCL Rondep Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 76 IOCL Gimbatore Pro Shield Engineers 2019 Mounded LPG Bullets 77 IOCL Gimbatore Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 78 IOCL Gimbatore Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 81 IOCL Inneyr, Bishalbagnin Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 82 IOCL	50,13
70 BPCL Kachi Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 71 Mombasso Mohnfil Interprises 2019 Mounded LPG Bullets 73 IOCL Cleakari Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 73 IOCL Guwohoti Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 74 IOCL Reglot Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 75 IOCL Inneulveli Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 75 IOCL Gimbatore Pro Shield Engineers 2019 Mounded LPG Bullets 76 IOCL Semoitor Pro Shield Engineers 2019 Mounded LPG Bullets 78 IOCL Kenjour Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 80 IOCL Naroe Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 81 IOCL Keijour Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 83 HPCL Phonepur Fobtech Projects & Engineers Lid 2019 Mounded LP	1,43,50
70 BPCL Kachi Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 71 Mombasso Mohnfil Interprises 2019 Mounded LPG Bullets 73 IOCL Cleakari Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 73 IOCL Guwohoti Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 74 IOCL Reglot Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 75 IOCL Inneulveli Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 75 IOCL Gimbatore Pro Shield Engineers 2019 Mounded LPG Bullets 76 IOCL Semoitor Pro Shield Engineers 2019 Mounded LPG Bullets 78 IOCL Kenjour Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 80 IOCL Naroe Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 81 IOCL Keijour Fobtech Projects & Engineers Lid 2019 Mounded LPG Bullets 83 HPCL Phonepur Fobtech Projects & Engineers Lid 2019 Mounded LP	5,80
71 Mombassa Mohalhi Enterprises 2019 Moundel UPG Bullets 72 IOCL Chelori Fablech Works & Constructions 2019 Moundel UPG Bullets 73 IOCL Guwahati Fablech Projects & Engineers Itd 2019 Moundel UPG Bullets 74 IBPCL Rajkot Fablech Projects & Engineers Itd 2019 Moundel UPG Bullets 74 IOCL Trunshell Fablech Projects & Engineers Itd 2019 Moundel UPG Bullets 75 IOCL Combatore Pro Shield Engineers 2019 Moundel UPG Bullets 77 IOCL Sakmai Fabrech Projects & Engineers Itd 2019 Moundel UPG Bullets 76 IOCL Combatore Pro Shield Engineers 2019 Moundel UPG Bullets 78 IOCL Combatore Pro Shield Engineers Itd 2019 Moundel UPG Bullets 80 IOCL Reipur Fabrech Projects & Engineers Itd 2019 Moundel UPG Bullets 81 IOCL Reipur Fabrech Projects & Engineers Itd 2019 Moundel UPG Bullets 83 HPCL Paharpur Fabrech Projects & Engineers Itd 2019 Moundel UPG Bullets 84 IOCL Reipur <td< td=""><td>1,50,00</td></td<>	1,50,00
72 IOCL Chelori Fobtech Works & Constructions 2019 Mounded IPG Bullets 73 IOCL Guwhoti Fobtech Projects & Engineers Itd 2019 Mounded IPG Bullets 74 BPCL Rejket Fobtech Projects & Engineers Itd 2019 Mounded IPG Bullets 75 IOCL Trunevell Fobtech Projects & Engineers Itd 2019 Mounded IPG Bullets 76 IOCL Growberg Fobtech Projects & Engineers 2019 Mounded IPG Bullets 77 IOCL Seknai Fobtech Projects & Engineers 2019 Mounded IPG Bullets 77 IOCL Seknai Fobtech Projects & Engineers 2019 Mounded IPG Bullets 78 IOCL Seknai Fobtech Projects & Engineers Itd 2019 Mounded IPG Bullets 80 IOCL Mysore Fobtech Projects & Engineers Itd 2019 Mounded IPG Bullets 81 IOCL Rejour Fobtech Projects & Engineers Itd 2019 Mounded IPG Bullets 82 IOCL Rejour Fobtech Projects & Engineers Itd 2019 Mounded IPG Bullets 83 HPCL Poharpour Fobtech Projects & Engineers Itd 2019 Mounded IPG Bullets 84 <t< td=""><td>35,40</td></t<>	35,40
73 IOCL Guvahni Fabtech Projects & Engineers Idd 2019 Mounded IPG Bullets 74 BPCL Rajkot Fabtech Projects & Engineers Idd 2019 Mounded IPG Bullets 75 IOCL Trunebelli Fabtech Projects & Engineers Idd 2019 Mounded IPG Bullets 76 IOCL Bongalone Pro Shield Engineers 2019 Mounded IPG Bullets 78 IOCL Combatore Pro Shield Engineers 2019 Mounded IPG Bullets 78 IOCL Sekmai Fabtech Projects & Engineers Idd 2019 Mounded IPG Bullets 79 IOCL Sekmai Fabtech Projects & Engineers Idd 2019 Mounded IPG Bullets 81 IOCL Mispare, Bishalganh Fabtech Projects & Engineers Idd 2019 Mounded IPG Bullets 82 IOCL Raipur Fabtech Projects & Engineers Idd 2019 Mounded IPG Bullets 83 HPCL Pahapur Fabtech Projects & Engineers Idd 2019 Mounded IPG Bullets 84 IOCL Pahapur Fabtech Projects & Engineers Idd 2019 Mounded IPG Bullets 85 BPCL Japiur Jay Gauri Projects Pri, Idd 2019 Mounded IPG Bullets 86	5,80
74 BCL Rajkot Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 75 IOCL Trunelveli Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 76 IOCL Brondeep Fobtech Projects & Engineers 2019 Mounded LPG Bullets 77 IOCL Sombatore Pro Shield Engineers 2019 Mounded LPG Bullets 78 IOCL Combatore Pro Shield Engineers 2019 Mounded LPG Bullets 80 IOCL Sekmal Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 80 IOCL Nayore Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 81 IOCL Kaipur Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 83 HPCL Paharpur Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 84 IOCL Chefori Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 84 IOCL Chefori Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 85 BPCL Solempur Jay Gauri Projects & Engineers Ltd 2019 Mounded LPG Bullets 86 IO	
75 IOCL Trunelveli Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 76 IOCL Bargalore Pro Shield Engineers 2019 Mounded LPG Bullets 77 IOCL Bargalore Pro Shield Engineers 2019 Mounded LPG Bullets 79 IOCL Combatore Pro Shield Engineers 2019 Mounded LPG Bullets 79 IOCL Dimopur,Bishalganh Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 81 IOCL Onipur, Bishalganh Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 82 IOCL Chaipur Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 83 IDCL Chaipur Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 84 IOCL Chaipur Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 85 BPCL Jaipur Jay Gauri Projects Pri. Ltd 2019 Mounded LPG Bullets 86 Iopic Laipur Jay Gauri Projects & Engineers Ltd 2019 Mounded LPG Bullets 87 IOCL Panpore Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 88	20,10
76 IOCL Paradeep Fablech Projects & Engineers Ud 2019 Mounded LPG Bullets 77 IOCC. Combotore Pro Shield Engineers 2019 Mounded LPG Bullets 78 IOCC. Combotore Pro Shield Engineers 2019 Mounded LPG Bullets 78 IOCC. Science Fablech Projects & Engineers Ud 2019 Mounded LPG Bullets 80 IOCL Naysore Fablech Projects & Engineers Ud 2019 Mounded LPG Bullets 81 IOCL Naysore Fablech Projects & Engineers Ud 2019 Mounded LPG Bullets 83 HPCL Paharpur Fablech Projects & Engineers Ud 2019 Mounded LPG Bullets 84 IOCL Najpur Fablech Projects & Engineers Ud 2019 Mounded LPG Bullets 84 IOCL Chelari Fablech Projects & Engineers Ud 2019 Mounded LPG Bullets 85 BPCL Jajpur Jay Gouri Projects PM. Ltd 2019 Mounded LPG Bullets 86 BPCL Salempur Jay Gouri Projects & Engineers Ud 2019 Mounded LPG Bullets 87 IOCL Parne Fablech Projects & Engineers Ud 2019 Mounded LPG Bullets 88 IOCL Parne </td <td>5,80</td>	5,80
77 IOCL Bangalore Pro Shield Engineers 2019 Mounded UPG Bullets 78 IOCL Coimbotroe Pro Shield Engineers 2019 Mounded UPG Bullets 79 IOCL Sekmai Fabtech Projects & Engineers Ltd 2019 Mounded UPG Bullets 80 IOCL Dimopur/Bishalgarh Fabtech Projects & Engineers Ltd 2019 Mounded UPG Bullets 81 IOCL Mysore Fabtech Projects & Engineers Ltd 2019 Mounded UPG Bullets 82 IOCL Raipur Fabtech Projects & Engineers Ltd 2019 Mounded UPG Bullets 83 HPCL Poharpur Fabtech Projects & Engineers Ltd 2019 Mounded UPG Bullets 84 IOCL Chelari Fabtech Projects & Engineers Ltd 2019 Mounded UPG Bullets 85 BPCL Jaipur Jay Gauri Projects Ptv. Ltd 2019 Mounded UPG Bullets 86 IOCL Pune Fabtech Projects & Engineers Ltd 2019 Mounded UPG Bullets 87 IOCL Pune Fabtech Projects & Engineers Ltd 2019 Mounded UPG Bullets 88 IOCL Pune Fabtech Projects & Engineers Ltd 2019 Mounded UPG Bullets 89 IDCL C	28,70
78 OCL Colmbatore Pro Shield Engineers 2019 Mounded LPG Bullets 79 IOCL Sekmai Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 80 IOCL Dimapur,Bishalgarh Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 81 IOCL Mysore Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 82 IOCL Chaipur Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 84 HCL Pahorpur Fabtech Vrojects & Engineers Ltd 2019 Mounded LPG Bullets 84 IOCL Chalpur Fabtech Vrojects & Engineers Ltd 2019 Mounded LPG Bullets 84 IOCL Chalpur Jay Gauri Projects PA: Ltd 2019 Mounded LPG Bullets 85 BPCL Solempur Jay Gauri Projects & Engineers Ltd 2019 Mounded LPG Bullets 86 IOCL Prone Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 87 IOCL Parnpore Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 88 IOCL Nesik Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 98 <td>1,26,30</td>	1,26,30
79 IOCL Sekmai Fabtech Projects & Engineers Ltd 2019 Mounded IPG Bullets 80 IOCL Dimopur,Bisholgorh Fabtech Projects & Engineers Ltd 2019 Mounded IPG Bullets 81 IOCL Nysore Fabtech Projects & Engineers Ltd 2019 Mounded IPG Bullets 82 IOCL Raipur Fabtech Projects & Engineers Ltd 2019 Mounded IPG Bullets 83 HPCL Paharpur Fabtech Vorks & Constructions 2019 Mounded IPG Bullets 84 IOCL Chelari Fabtech Vorks & Constructions 2019 Mounded IPG Bullets 86 BPCL Jaipur Jay Gauri Projects Pr. Ltd 2019 Mounded IPG Bullets 86 BPCL Selempur Jay Gauri Projects & Engineers Ltd 2019 Mounded IPG Bullets 87 IOCL Pampore Fabtech Projects & Engineers Ltd 2019 Mounded IPG Bullets 88 IOCL Pampore Fabtech Projects & Engineers Ltd 2019 Mounded IPG Bullets 89 HPCL Nasik Fabtech Projects & Engineers Ltd 2019 Mounded IPG Bullets 80 IDCL Pampor Fabtech Projects & Engineers Ltd 2019 Mounded IPG Bullets 90<	43,10
80 IOCL Dimapur, Bishalgarh Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 81 IOCL Mysore Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 82 IOCL Reipur Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 83 HPCL Paharpur Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 84 IOCL Chelori Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 85 BPCL Jaipur Jay Gauri Projects Pr. Ltd 2019 Mounded LPG Bullets 86 BPCL Panpore Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 88 IOCL Panpore Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 88 IOCL Panpore Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 89 HPCL Nasik Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 90 BPCL Goo Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 91 HPCL Nasik Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 92<	13,00
81 IOCL Mysore Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 82 IOCL Raipur Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 83 HPCL Paharpur Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 84 IOCL Chelari Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 85 BPCL Jaipur Jay Gauri Projects Pr. Ltd 2019 Mounded LPG Bullets 86 BPCL Salempur Jay Gauri Projects Pr. Ltd 2019 Mounded LPG Bullets 87 IOCL Pone Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 88 IOCL Pone Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 89 HPCL Rosik Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 90 BPCL Goa Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 91 HPCL Botinda Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 92 IDCL Muzzárdrzur Fobtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 92 ID	20,10
82 IOCL Raipur Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 83 HPCL Paharpur Fabtech Works & Constructions 2019 Mounded LPG Bullets 84 IOCL Chelari Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 85 BPCL Jajour Jay Gauri Projects PV. Ltd 2019 Mounded LPG Bullets 86 BPCL Solempur Jay Gauri Projects R. Engineers Ltd 2019 Mounded LPG Bullets 87 IOCL Pune Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 88 IOCL Panpore Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 89 HPCL Nasik Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 90 BPCL Goa Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 91 HPCL Nasik Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 92 IOCL Muzzaforpur Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 92 IOCL Muzzaforpur Shree Ambha Associates 2019 Mounded LPG Bullets 93	20,10
83 HPCL Pahorpur Fabtech Works & Constructions 2019 Mounded LPG Bullets 84 IOCL Chelari Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 85 BPCL Jaipur Jay Gauri Projects Pri. Ltd 2019 Mounded LPG Bullets 86 BPCL Solempur Jay Gauri Projects Pri. Ltd 2019 Mounded LPG Bullets 87 IOCL Pune Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 88 IOCL Navik Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 89 HPCL Navik Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 90 BPCL Goa Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 91 HPCL Boolinda Fabtech Works 2019 Mounded LPG Bullets 2019 91 HPCL Boulinda Fabtech Works 2019 Mounded LPG Bullets 2019 92 LOCL Muzzofarpur Fabtech Works 2019 Mounded LPG Bullets 2019 92 USTL Hyderabad Shree Ambha Associates 2019 Mounded LPG Bullets 2019 9	34,50
84 IOCL Chelari Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 85 BPCL Jaipur Jay Gauri Projects PV. Ltd 2019 Mounded LPG Bullets 86 BPCL Salempur Jay Gauri Projects PV. Ltd 2019 Mounded LPG Bullets 87 IOCL Pune Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 88 IOCL Pampore Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 90 BPCL Goa Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 91 HPCL Nasik Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 91 HPCL Bhotinda Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 92 IOCL Muzzafarpur Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 92 IOCL Muzzafarpur Fabtech Works 2019 Mounded LPG Bullets 9 93 USTPL Hyderabad Shree Ambha Associates 2019 Mounded LPG Bullets 9 94 HPCL Raijur Jay Gauri Projects PV. Ltd 2019 Mounded LPG Bullets 9	23,00
84 IOCL Chelori Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 85 BPCL Jaipur Jay Gauri Projects PV. Ltd 2019 Mounded LPG Bullets 86 BPCL Salempur Jay Gauri Projects PV. Ltd 2019 Mounded LPG Bullets 87 IOCL Pune Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 88 IOCL Pampore Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 89 HPCL Nosik Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 90 BPCL Goa Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 91 HPCL Bubritha Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 92 IOCL Muzzafarpur Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 93 USTPL Hyderobad Shree Ambha Associates 2019 Mounded LPG Bullets 94 HPCL Raipur Shree Ambha Associates 2019 Mounded LPG Bullets 95 HPCL Raipur Jay Gauri Projects PV. Ltd 2019 Mounded LPG Bullets	24,90
85 BPCL Jajpur Jay Gauri Projects Pvi. Ltd 2019 Mounded LPG Bullets 86 BPCL Solempur Jay Gauri Projects Pvi. Ltd 2019 Mounded LPG Bullets 87 IOCL Pune Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 88 IOCL Pune Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 90 BPCL Goa Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 91 HPCL Bhotinda Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 92 IOCL Muzzafarpur Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 93 USTPL Hyderabad Shree Ambha Associates 2019 Mounded LPG Bullets 94 HPCL Raipur Shree Ambha Associates 2019 Mounded LPG Bullets 95 HPCL Raipur Shree Ambha Associates 2019 Mounded LPG Bullets 95 HPCL Raipur Shree Ambha Associates 2019 Mounded LPG Bullets 96 BPCL Proliects VI. Ltd 2019 Mounded LPG Bullets 2019 97 BPCL Nasik Jay Gauri Projects PvI. Ltd<	28,70
86 BPCL Salempur Jay Gauri Projects PM. Ltd 2019 Mounded LPG Bullets 87 IOCL Pune Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 88 IOCL Pompore Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 89 HPCL Nosik Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 90 BPCL Goa Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 91 HPCL Bhotinda Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 92 IOCL Muzzafarpur Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 92 IOCL Muzzafarpur Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 93 USTPL Hyderabad Shree Ambha Associates 2019 Mounded LPG Bullets 2019 94 HPCL Runia Shree Ambha Associates 2019 Mounded LPG Bullets 2019 95 HPCL Raipur Jay Gauri Projects PM. Ltd 2019 Mounded LPG Bullets 2019 96 BPCL Phrinia Jay Gauri Projects PM. Ltd 2019 Mounded LPG Bullets	20,20
87 IOCL Pune Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 88 IOCL Pompore Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 89 HPCL Nasik Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 90 BPCL Goa Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 91 HPCL Bhatinda Fabtech Projects & Engineers Ltd 2019 Mounded LPG Bullets 92 IOCL Muzzafarpur Fabtech Works 2019 Mounded LPG Bullets 93 USTPL Hyderabad Shree Ambha Associates 2019 Mounded LPG Bullets 94 HPCL Purnia Shree Ambha Associates 2019 Mounded LPG Bullets 95 HPCL Raipur Shree Ambha Associates 2019 Mounded LPG Bullets 96 BPCL Nasik Jay Gauri Projects Vt. Ltd 2019 Mounded LPG Bullets 97 BPCL Nasik Jay Gauri Projects Pvt. Ltd 2019 Mounded LPG Bullets 98 BPCL Lahru Jay Gauri Projects & Engineers Ltd 2019 Mounded LPG Bullets	10,10
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2	IOCL / PWRJT16065 J	Jay Gauri Projects Pvt. Ltd	Ongoing	Pipeline Rehabilitation	1,44,300
3	IOCL / NRPL PNP 17132 A	Jay Gauri Projects Pvt. Ltd	Ongoing	Pipeline Rehabilitation	84,400
4	IOCL / NRPL PNP 17132 B	Jay Gauri Projects Pvt. Ltd	Ongoing	Pipeline Rehabilitation	1,00,000
				Total Ongoing	3,28,700
				GRAND TOTAL APPLICATORS	1,17,02,195
	COMBINED				
1				Completed	3,02,22,279
2				Ongoing	6,45,600
3				GRAND TOTAL	3,08,67,879





Leaders In 100% Solids Polyurethane Coating Technology



- Manufacturer Of 100% Solids
 Polyurethane Coating
- Turnkey Application Service in India



Coating Manufacture

- Manufacturing since 1995
- Manufactured and sold > 5,000,000 Litres
- Two ISO 9001 Certified plants in India.
- 6.0 Million Litres/ Annum single shift basis.
- Meeting AWWA C222, EN 10290, EN 16189, EN15655, Singapore SS 375 etc.





Application



- Turnkey application services in India since 1995
- Applied > 35,000,000 Sq. Ft in India & SEA.
- 150 Application crew on company rolls.
- Large inventory of application equipment.
- Customised equipment for automation developed "in house" for pipeline coating & lining.
- Application expertise available to customers.





World's Largest Projects For PU

- 2.2 X 84 Kms, Singapore NEWater Project.
- 2.4 X 120 Kms, Karnataka Minor Irrigation Department Water Project.
- Worlds first Seawater Cooling Tower. Coating of 5,200,000 Sq. Ft Concrete Cooling Towers
- Coating of > 300 Kms Cross Country Oil & Gas Pipeline (Rehabilitation)
- Coating of > 80 LPG Mounded Bullet Projects







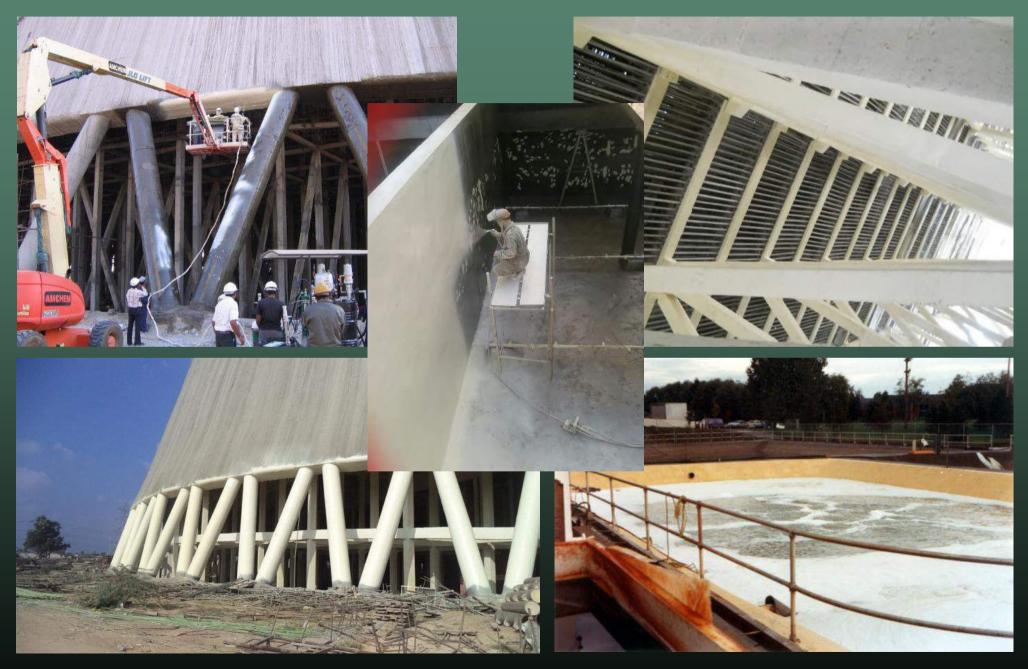
Original Technology from USA











Product Portfolio – Steel Surfaces

Designation	End Use	Certifications
NXT	100% Solids, Rigid, Polyurethane Internal Lining & External Coating for Mild Steel Pipes & Tanks and Ductile Iron Pipes. For Water, Wastewater, Seawater, Petroleum & Chemical Storage Service. Direct to Metal.	AWWA C 222 Carbon Steel Pipe EN 15189 – Ductile Iron External EN 15655 – Ductile Iron Internal
PLX	100% Solids, Rigid, Polyurethane Buried and Offshore Pipeline External Coating for Oil & Gas Industry. Direct to Metal.	EN 10290 – Oil & Gas Pipe External
386/ 9000	MULTIPURPOSE COATING WITH 35+ YEAR WORLDWIDE TRACK RECORD. For Steel & Concrete Primed, Elastomeric.	AWWA C 222 Carbon Steel Pipe
AR Primer	Tough, durable Primer for 386/9000	_

Product Portfolio – Concrete

Designation	End Use
FLX	Chemical Resistant, 100% Solids Polyurethane, Impermeable Barrier for Concrete In Immersion, Splash & Buried Service
PIV Primer	Penetrating, Sealing, Damp Tolerant Primer for FLX





DRYTHANE DIVISION Solvent Free, Thick Film, Liquid Roller Applied, Polyurethane Waterproofing Membrane













DRYTHANE

Amchem is the leader in design, manufacture & application of 100% Solids Polyurethane Coating



Join hands for success in your market !

Contact :

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To Whom It May Concern

This is to certify that the product tested by KTA-TATOR INC., USA vide KTA Project No.330380-1 is DRYTHANE[®]. The provisional trademark at the time of testing was PURETHANE[®] DECK.

For Amchem Products Pvt. Ltd.

Director

Shomendra Mann 15/05/2017

> An Indo-U.S Joint Venture Visit us at http://www.amchemproducts.com



Results of Physical Testing of Purethane[®] DECK

KTA Project No. 330380-1

Presented to:

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Prepared by:

KTA-TATOR, INC. 115 Technology Drive Pittsburgh, PA 15275 412.788.1300 ext. 239 – phone 412.788.0976 – fax *cstewart@kta.com* – email www.kta.com

Chrissy M. Stewart Chemist September 12, 2013

CMS/CR:kdw JN330380-1 CIN: 306156 (330380-1 Amchem.doc)

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Tensile Strength and Elongation	3
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Appendices

- 1..... Water Absorption Data
- 2..... Water Vapor Permeability Data
- 3..... Chemical Resistance Data
- 4..... Infrared Spectra

Attachment

KTA-Tator, Inc. Sample Disposal Letter

NOTICE: This report represents the opinion of KTA-TATOR, INC. This report is issued in conformance with generally acceptable industry practices. While customary precautions were taken to insure that the information gathered and presented is accurate, complete and technically correct, it is based on the information, data, time, materials, and/or samples afforded. This report should not be reproduced except in full.

INTRODUCTION

In accordance with KTA-Tator, Inc. (KTA) Proposal No. PN120637, subsequent signed Authorization to Proceed (ATP) dated April 12, 2013, and prepayment received on May 9, 2013, KTA has performed various physical tests on coated samples provided by Amchem Products Pvt. Ltd (Amchem) designated as Purethane[®] DECK coating. The results of the testing are contained in this report.

SAMPLES

The samples listed in Table 1, "Samples" were received from Amchem on May 1, 2013. It should be noted that at no time did KTA personnel witness the coating application or preparation of the samples.

KTA Sample ID	Sample Description
330380-T1D	Two steel panels measuring 4" x 4" with center hole coated with Purethane [®] DECK
330380-T2D	Two steer panels measuring 4 x 4 with center noie coated with Furethane DECK
330380-F1D	Two 22 gage panels coated one side with Purethane [®] DECK
330380-F2D	1 wo 22 gage panels coaled one side with Purethane DECK
330380-FF1D	Two free films measuring 8" x 24" coated with Purethane [®] DECK
330380-FF2D	Two free finns measuring 8 x 24 coaled with Purethane DECK
330380-IR2	One canister containing Purethane [®] DECK
330380-IR3	One canister containing Activator 9000

 Table 1 – Samples

LABORATORY INVESTIGATION

The laboratory investigation consisted of performing various physical tests on a coating membrane, reportedly Purethane[®] DECK. The following tests were performed: water absorption, water vapor permeability, abrasion resistance, tensile strength and elongation, flexibility, hardness and chemical resistance. In addition to the physical tests, infrared spectra of the liquid materials labeled Purethane[®] DECK and Activator 9000 were obtained. The test descriptions and the results of the testing are provided below.

Water Absorption

The water absorption of the free film sample was measured in accordance with Procedure 7.4 (Long Term Immersion) of ASTM D 570-98, "Standard Test Method for Water Absorption of Plastics." Three bars measuring $3'' \ge 1''$ were cut from the free film and the thickness of each bar was measured using Mitutoyo Digimatic Calipers. The samples were conditioned in an oven maintained at 50°F for 24 hours. After conditioning, the samples were returned to room temperature and weighed. The samples were then submerged in deionized water maintained at

laboratory conditions (approximately 70°F). The samples were removed from the water following 24 hours, one week and every two weeks thereafter. The samples were wiped dry of any excess water, weighed and immediately replaced in the water. A table containing detailed results as well as graphical interpretation of the data can be found in Appendix 1. The percent increase in weight is reported in Table 2, "Water Absorption Data." The percent increase in weight was determined using the following equation:

*Increase in weight (%) = (wet weight – conditioned weight)/conditioned weight*100*

Replicate	Average Thickness			Increase i	in Weight %)		
-	(inches)	24 hours	Week 1	Week 3	Week 5	Week 7	Week 9
WA1D	96.5	0.2150	0.4437	0.5641	0.5882	0.5813	0.5968
WA2D	101.2	0.2020	0.4332	0.5616	0.5924	0.5804	0.5890
WA3D	102.1	0.1997	0.4319	0.5536	0.5926	0.5715	0.5861

 Table 2 – Water Absorption Data

Water Vapor Permeability

Seven discs of the coating (one designated as the blank) were cut from the free film sample and tested for water vapor permeability using the inverted water method (Method BW) of ASTM E96-10, "Standard Test Methods for Water Vapor Transmission of Materials." The thickness of each disk was measured in four spots using Mitutoyo Digimatic Calipers. Each disc was sealed with wax to a 4" diameter glass dish filled ³/₄ of the way with deionized water. The dishes were then weighed, inverted and maintained at approximately 70°F and 50% relative humidity for a period of 30 days. The length of testing was dictated by the test method. The results of the testing are reported in Table 3, "Water Vapor Permeability Results." A table containing daily weights of the samples and other pertinent data can be found in Appendix 2.

Method ASTM E96-10 specifies that the calculation of permeability can be done only when the test specimen is not less than $\frac{1}{2}$ " thick. The test specimens were less than $\frac{1}{2}$ " thick. The results for permeability were supplied as a courtesy.

	Table 5 – Water Vapor Fermeability Results									
Sample ID	Average Thickness (mils)	WVT (g/day-m ²)	Average WVT (g/day-m ²)	Combined Average WVT (g/day-m ²)	WVP (metric perms)	Average WVP (metric perms)	Combined Average WVP (metric perms)	Permeability (perm inch)	Average Permeability (perm-inch)	Combined Average Permeability (perm-inch)
P2D	87.4	1.27			0.142			1.9 x 10 ⁻²		
P3D	100.9	4.11	2.84		0.457	0.316		7.0 x 10 ⁻²	4.5 x 10 ⁻²	
P4D	86.9	3.12		1.85	0.347		0.208	4.6 x 10 ⁻²		2.94 x 10 ⁻²
P5D	88.3	1.31	0.85		0.154 0.045	0.100		$\begin{array}{r} 2.1 \text{ x } 10^{-2} \\ 6.6 \text{ x } 10^{-3} \end{array}$	1.38 x 10 ⁻²	1
P7D	95.5	0.39	0.85		0.045	0.100		6.6 x 10 ⁻³	1.30 X 10	

 Table 3 – Water Vapor Permeability Results

Amchem Products Pvt. Ltd Physical Testing

Abrasion Resistance

Taber abrasion resistance was determined in accordance with ASTM D4060-10, "Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser." Duplicate 4" x 4" panels coated on one side were weighed then subjected to 1000 cycles using a 1000g load and CS-17 abrasion wheels. Post weights were acquired for the samples, and the weight loss (in mg) reported. The results of the testing are contained in Table 4, "Taber Abrasion Resistance Results."

Sample ID	Weight Loss (mg)	Average Weight Loss (mg)
330380-T1D	93	- 100
330380-T2D	106	100

 Table 4 – Taber Abrasion Resistance Results

Tensile Strength and Elongation

Tensile strength and elongation were determined in accordance with ASTM D412-06, "Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension." The samples were maintained at ambient laboratory conditions $(70 \pm 2^{\circ} \text{ F and } 50 \pm 5\% \text{ RH})$ for a minimum of 24 hours before testing. Ten specimens were cut into a dumbbell shape from the free film using Die C. The specimens were pulled with a Tinius Olsen Universal Testing Machine at a rate of 2.0 inches per minute. The tensile strength was calculated using the force required to break the specimens along with the width and thickness of each. The percent elongation was calculated using the original gage length and the extension of the grips at sample rupture. The dimensions of the sample were measured using Mitutoyo Digimatic Calipers. The individual results of five replicates are reported along with the average in Table 5, "Results of Tensile Strength Testing

Replicate	Cross- Sectional Area (in ²)	Force to Rupture (lbf)	Extension (in)	Tensile Strength (psi)	Average Tensile Strength (psi)	Percent Elongation (%)	Average Percent Elongation (%)
TS3D	0.0196	57	1.238	2908		123.8	
TS4D	0.0219	51	0.856	2329		85.6	
TS6D	0.0216	53	1.034	2454	2487	103.4	100.0
TS7D	0.0216	50	0.882	2315		88.2	
TS8D	0.0218	53	0.990	2431		99.0	

 Table 5 – Results of Tensile Strength and Elongation Testing

Flexibility

Flexibility testing was performed on Panels F1 and F2 in accordance with ASTM D522-93(08), "Standard Test Method for Mandrel Bend Test of Attached Organic Coatings," Method B. Coating thickness measurements were obtained on five spots on each sample using a DeFelsko PosiTector[®] 6000 non-destructive electronic coating thickness gage. The coating thickness averages ranged from 61.0 - 69.4 mils thick. The panels were bent 180° over a $\frac{1}{2}''$ mandrel and a 1'' mandrel then examined visually for cracking. No cracking was evident on any of the replicates at either mandrel size.

Hardness

The hardness of the coating was evaluated in accordance with ASTM D2240-05(10), "Standard Test Method for Rubber Property – Durometer Hardness." Using a Shore D durometer, five readings were obtained from the free film sample. The sample had an average hardness of 64.2.

Chemical Resistance

Chemical resistance was assessed in accordance with AWWA C222-08, "Polyurethane Coatings for the Interior and Exterior of Steel Water and Pipe Fittings," which references ASTM D 543-06, "Standard Test Method for Resistance of Plastics to Chemical Reagents." The chemical solutions used for the testing included 10% sulfuric acid, 30% sodium chloride, 30% sodium hydroxide, and No. 2 diesel fuel. The average changes in mass and dimensions of three replicates were calculated after 30 days immersion at ambient temperature. The C222-08 standard specifies a requirement of "5% change in mass, length or width after 30 days immersion, maximum." The results of the testing are provided in Table 6, "Chemical Resistance Data." Detailed results of the testing are provided in Appendix 3.

Chemical Reagent	Replicate	% Δ Width	% Δ Length	% Δ Weight
30% Sodium	CR1D	0.204	- 0.046	0.191
Chloride	CR2D	0.859	- 0.044	0.201
Chionde	CR3D	- 0.723	0.006	0.193
1007 Sulfaria	CR4D	0.429	- 0.034	0.349
10% Sulfuric Acid	CR5D	0.033	- 0.117	0.350
Acid	CR6D	0.339	- 0.006	0.092
2007 Cadima	CR7D	0.049	- 0.775	0.648
30% Sodium	CR8D	- 0.235	- 0.755	-0.005
Hydroxide	CR9D	- 0.596	- 0.867	1.219
No. 2 Discol	CR10D	2.143	3.361	10.800
No. 2 Diesel	CR11D	3.246	3.449	10.045
Fuel	CR12D	3.253	3.881	11.636

 Table 6 – Chemical Resistance Data

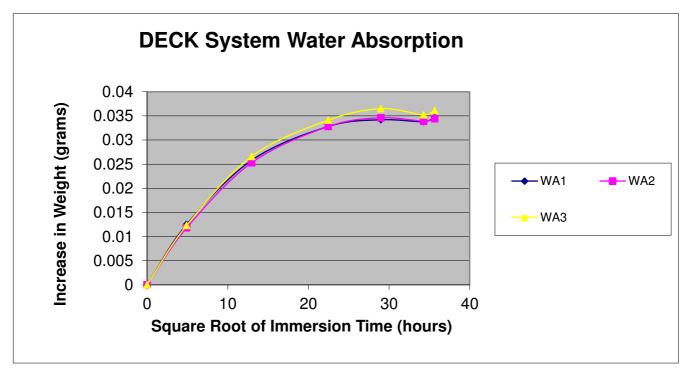
Infrared Spectroscopy

Infrared spectroscopic analysis was performed using a Mattson Galaxy Model 3020 Fourier transform infrared spectrometer. This technique involved placing a small amount of material between two potassium bromide (KBr) salt plates. The salt plates were then placed in the optical path of the spectrometer and spectra were obtained over the range of 4000 to 400 cm⁻¹. The spectra obtained are provided in Appendix 4.

APPENDIX 1



	330380 Amchem DECK System								
Water Absorption (Long Term)									
	Conditioned Weights: 5.8141 5.8406 6.159								
	$\sqrt{[Immersion Time]}$	Increase in Weight	Increase in Weight	Increase in Weight					
Days	(Hours ^{1/2})	WA1D (g)	WA2D (g)	WA3D (g)					
0	0	0	0	0					
1	4.898979486	0.0125	0.0118	0.0123					
7	12.9614814	0.0258	0.0253	0.0266					
21	22.44994432	0.0328	0.0328	0.0341					
35	28.98275349	0.0342	0.0346	0.0365					
49	34.2928564	0.0338	0.0339	0.0352					
53	35.665109	0.0347	0.0344	0.0361					



APPENDIX 2



	Amchem 330380 DECK-1										
	ASTM E96/96M, Procedure BW-Inverted Water Method at 73.4°F and 50% Relative Humidity										
	Purethane [®] DECK										
Date	Hours	Cup P2D (g)	Cup P2D (grain)	Cup P3D (g)	Cup P3D (grain)	Cup P4D (g)	Cup P4D (grain)	LANK (P8D)	(LANK (P8D) (grair	Temperature (°F)	%Relative Humidity
7/2/13 2:55 PM	0.00	312.559	4822.79	323.055	4984.74	306.480	4728.99	135.480	2090.46	70.0	50.0
7/3/13 2:37 PM	23.70	312.494	4821.78	322.930	4982.81	306.434	4728.28	135.480	2090.46	70.2	54.7
7/5/13 3:12 PM	72.28	312.419	4820.63	322.719	4979.55	306.362	4727.17	135.480	2090.46	70.0	50.0
7/8/13 2:52 PM	143.95	312.341	4819.42	322.658	4978.61	306.292	4726.09	135.479	2090.44	70.2	56.4
7/9/13 3:21 PM	168.43	312.331	4819.27	322.647	4978.44	306.270	4725.75	135.479	2090.44	70.2	56.2
7/10/13 2:55 PM	192.00	312.320	4819.10	322.633	4978.23	306.246	4725.38	135.476	2090.39	70.2	51.8
7/11/13 3:26 PM	216.52	312.292	4818.67	322.620	4978.03	306.217	4724.93	135.476	2090.39	70.1	56.5
7/12/13 2:36 PM	239.68	312.274	4818.39	322.605	4977.80	306.187	4724.47	135.473	2090.35	70.3	53.8
7/15/13 2:46 PM	311.85	312.234	4817.77	322.451	4975.42	306.107	4723.23	135.471	2090.32	71.3	56.4
7/16/13 4:00 PM	337.08	312.229	4817.69	322.415	4974.86	306.090	4722.97	135.473	2090.35	69.5	55.2
7/17/13 2:42 PM	359.78	312.223	4817.60	322.344	4973.77	306.075	4722.74	135.474	2090.36	69.1	59.5
7/18/13 2:59 PM	384.07	312.217	4817.51	322.300	4973.09	306.063	4722.55	135.475	2090.38	68.1	55.9
7/19/13 3:31 PM	408.60	312.208	4817.37	322.165	4971.01	306.042	4722.23	135.477	2090.41	70.4	54.7
7/22/13 4:37 PM	481.70	312.178	4816.91	321.574	4961.89	305.930	4720.50	135.476	2090.39	71.7	55.8
7/23/13 3:23 PM	504.47	312.163	4816.68	321.418	4959.48			135.477	2090.41	71.8	55.2
7/24/13 2:50 PM	527.92	312.144	4816.38	321.301	4957.67			135.471	2090.32	72.0	49.0
7/25/13 3:52 PM	552.95	312.111	4815.87	321.231	4956.59			135.471	2090.32	71.9	44.8
7/26/13 2:57 PM	576.03	312.085	4815.47	321.178	4955.78			135.469	2090.29	69.2	46.6
7/29/13 3:19 PM	648.40	312.027	4814.58	321.117	4954.84			135.469	2090.29	72.1	45.4
7/30/13 2:46 PM	671.85	312.010	4814.31	321.091	4954.43			135.468	2090.27	69.2	48.6
7/31/13 3:27 PM	696.53	312.010	4814.31	321.069	4954.09			135.470	2090.30	71.4	51.5
8/1/13 4:24 PM	721.48	311.987	4813.96	320.978	4952.69			135.470	2090.30	69.8	49.3

Method of coating application and curing procedure used	Prepared by client
Type of film support used	N/A
Design of cup	glass dish
Type or composition of sealant	wax blend (40% paraffin/60% microcrystalline wax)

Dish	P2D	P3D	P4D	BLANK (P8D)
Material Thickness (in)	0.0874	0.1009	0.0869	0.0925
Radius (in)	2.00	2.00	2.00	2.00

70.4

52.6 %

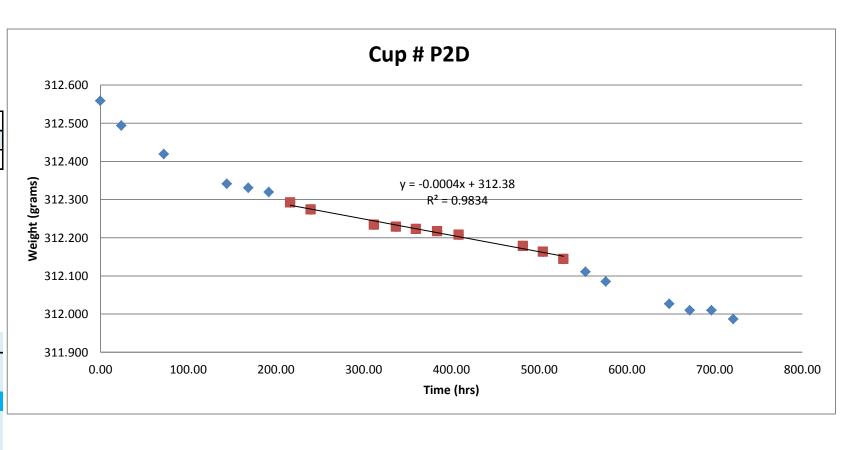
100 %

0.47

CALCULATIONS

Temperature (°F) Relative humidity in test chamber Relative humidity in dish Humidity change (as a decimal) Vapor Pressure

Vapor Pressure	18.971 mm Hg 0.747 in Hg			
	P2D	P3D	P4D	BLANK (P8D)
Radius (m)	0.0508	0.0508	0.0508	0.0508
Area (m²)	0.00811	0.00811	0.00811	0.00811
Slope (grams/hr)	4.31E-04	1.39E-03	1.06E-03	1.51E-05
Area (ft ²)	0.0873	0.0873	0.0873	0.0873
Slope (grains/hr)	0.00664	0.02144	0.01628	0.00023



September 12, 2013 JN330380-1



WVT(g/h-m ²)	0.053	0.171	0.130	0.002				_	
WVT(g/day-m ²)	1.27	4.11	3.12	0.04				Cup #	‡P3D
WVP (g/hr-m ² -mm Hg)	5.9E-03	1.9E-02	1.4E-02	2.1E-04	323.500				
WVP (metric perm)	0.142	0.457	0.347	0.005	323.000				
WVP (g/Pa-s-m ²)	1.2E-08	4.0E-08	3.0E-08	4.3E-10	323.000	•			
Permeability (g-cm/hr-m ² -mm Hg)	1.3E-03	4.9E-03	3.2E-03	4.9E-05	ີ 22.500 -	-			-
Permeability (g-cm/day-m ² -mm Hg)	3.1E-02	1.2E-01	7.7E-02	1.2E-03	grat		■ •		
Permeability (g/Pa-s-m)	2.7E-11	1.0E-10	6.7E-11	1.0E-12	<u>322.000</u> モ		2.88		
					بون هن 321.500 –			R ² = 0.9342	
WVT(grains/h-ft ²)	0.076	0.246	0.187	0.003	\$ 521.500				
WVP (perm)	0.215	0.694	0.527	0.008	321.000				
Permeability (perm inch)	1.9E-02	7.0E-02	4.6E-02	7.0E-04					
Permeability (perm mil)	18.79	70.01	45.78	0.70	320.500		202.02		
					0.0	0 100.00	200.00	300.00	400.00

RESULTS

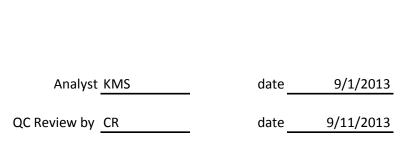
METRIC AVERAGES:

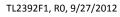
WVT(g/h-m ²)	0.118
WVT(g/day-m ²)	2.84
WVP (g/hr-m ² -mm Hg)	1.3E-02
WVP (metric perm)	0.316
WVP (g/Pa-s-m ²)	2.7E-08
Permeability (g-cm/hr-m ² -mm Hg)	3.1E-03
Permeability (g-cm/day-m ² -mm Hg)	7.5E-02
Permeability (g/Pa-s-m)	6.5E-11

ENGLISH AVERAGES:

WVT(grains/h-ft ²)	0.169
WVP (perm)	0.479
Permeability (perm inch)	4.5E-02
Permeability (perm mil)	44.86

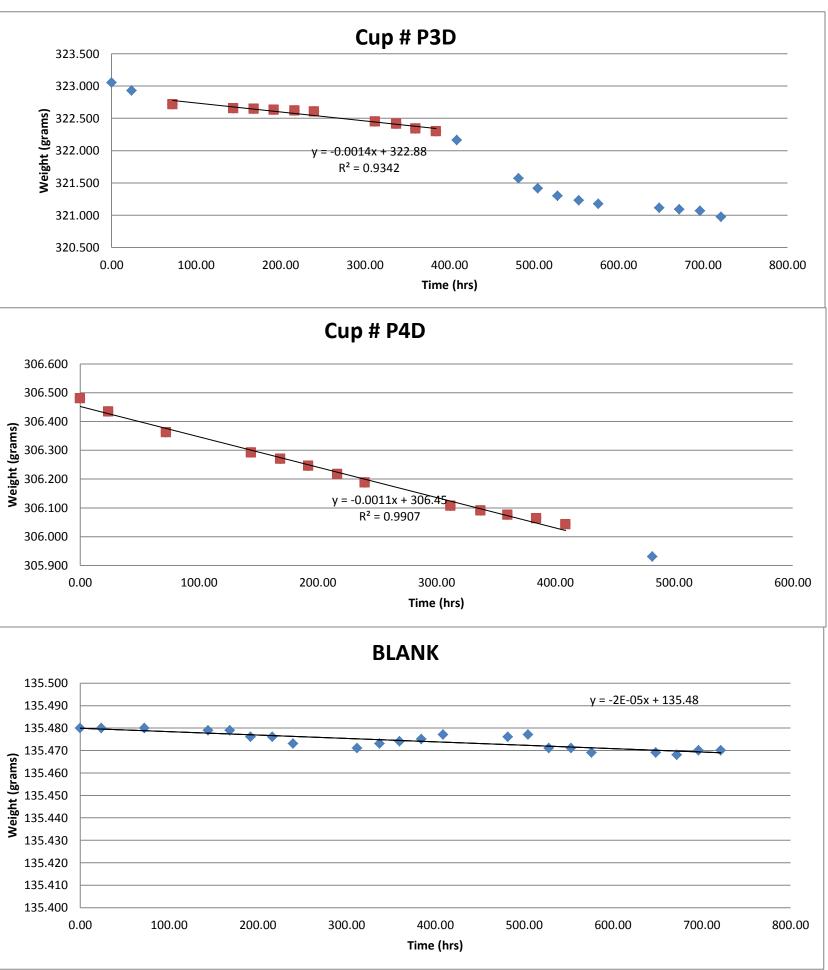
Method E96 specifies that the calculation of permeability can be done only when the test specimen is not less than 1/2 in. thick. The test specimens were less than 1/2 in. thick. The results for permeability were supplied as a courtesy.

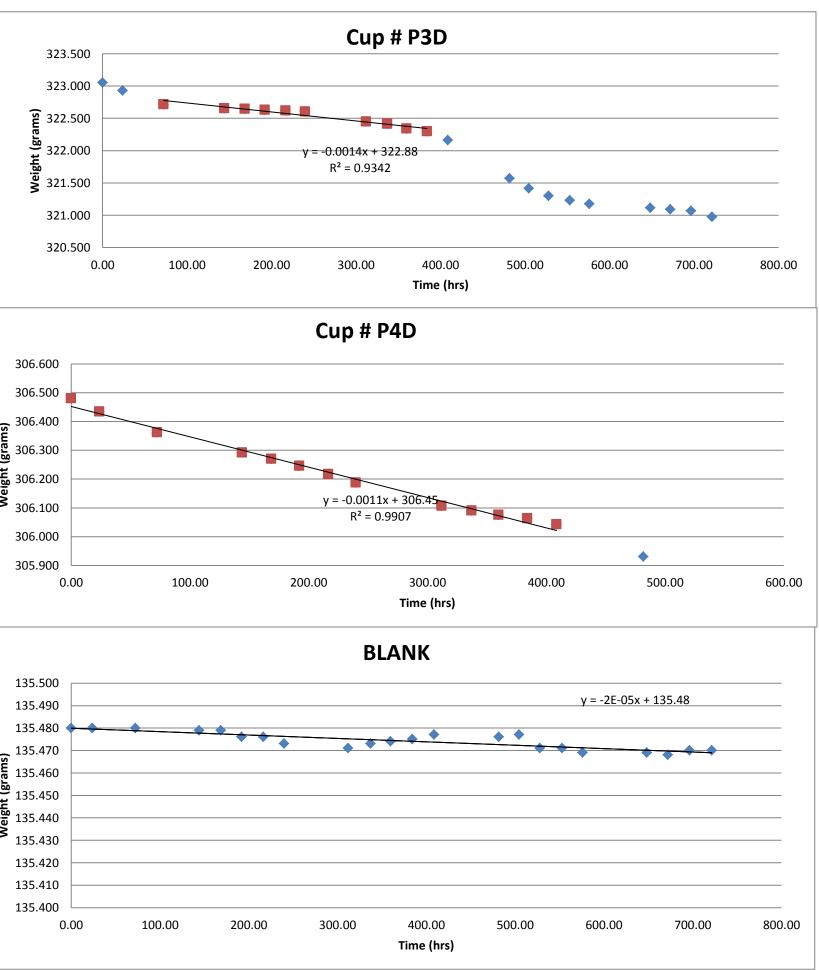




Amchem Products Pvt. Ltd Permeability Spreadsheet

Appendix 2 2 of 4





September 12, 2013 JN330380-1



Amchem 330380 DECK-2														
	ASTM E96/96M, Procedure BW-Inverted Water Method at 73.4°F and 50% Relative Humidity													
	Purethane [®] DECK													
Date	Hours	Cup P5D (g)	Cup P5D (grain)	Cup P6D (g)	Cup P6D (grain)	Cup P7D (g)	Cup P7D (grain)	LANK (P8D) (LANK (P8D) (grair	Temperature (°F)	%Relative Humidity			
7/2/13 2:55 PM	0.00	354.455	5469.24	315.545	4868.86	342.197	5280.10	135.480	2090.46	70.0	50.0			
7/3/13 2:37 PM	23.70	354.413	5468.59	315.323	4865.43	342.164	5279.59	135.480	2090.46	70.2	54.7			
7/5/13 3:12 PM	72.28	354.377	5468.04	314.791	4857.23	342.111	5278.77	135.480	2090.46	70.0	50.0			
7/8/13 2:52 PM	143.95	354.329	5467.30	313.773	4841.52	342.102	5278.63	135.479	2090.44	70.2	56.4			
7/9/13 3:21 PM	168.43	354.324	5467.22	313.448	4836.50	342.101	5278.62	135.479	2090.44	70.2	56.2			
7/10/13 2:55 PM	192.00	354.321	5467.17	313.034	4830.11	342.099	5278.59	135.476	2090.39	70.2	51.8			
7/11/13 3:26 PM	216.52	354.316	5467.10	312.701	4824.98	342.096	5278.54	135.476	2090.39	70.1	56.5			
7/12/13 2:36 PM	239.68	354.306	5466.94	312.379	4820.01	342.091	5278.46	135.473	2090.35	70.3	53.8			
7/15/13 2:46 PM	311.85	354.281	5466.56	311.306	4803.45	342.080	5278.29	135.471	2090.32	71.3	56.4			
7/16/13 4:00 PM	337.08	354.288	5466.66	310.910	4797.34	342.078	5278.26	135.473	2090.35	69.5	55.2			
7/17/13 2:42 PM	359.78	354.286	5466.63	310.523	4791.37	342.077	5278.25	135.474	2090.36	69.1	59.5			
7/18/13 2:59 PM	384.07	354.273	5466.43	310.128	4785.28	342.078	5278.26	135.475	2090.38	68.1	55.9			
7/19/13 3:21 PM	408.43	354.278	5466.51	309.699	4778.66	342.077	5278.25	135.477	2090.41	70.4	54.7			
7/22/13 4:37 PM	481.70	354.268	5466.36	308.274	4756.67	342.075	5278.22	135.476	2090.39	71.7	55.8			

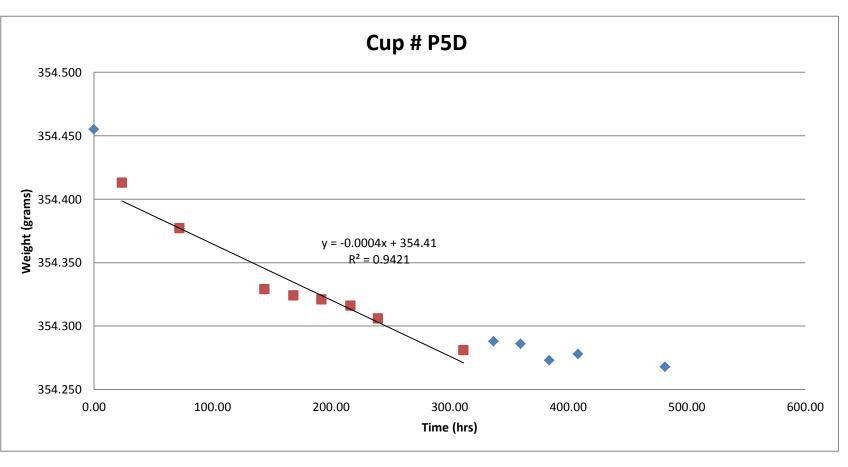
Method of coating application and curing procedure used	Prepared by client
Type of film support used	N/A
Design of cup	glass dish
Type or composition of sealant	wax blend (40% paraffin/60% microcrystalline wax)

Dish	P5D	P6D	P7D	BLANK (P8D)
Material Thickness (in)	0.0883	0.0853	0.0955	0.0925
Radius (in)	2.00	2.00	2.00	2.00

CALCULATIONS

Temperature (°F)	70.1	
Relative humidity in test chamber	54.8	%
Relative humidity in dish	100	%
Humidity change (as a decimal)	0.45	
Vapor Pressure	18.778	mm Hg
	0.739	in Hg

	U		
P5D	P6D	P7D	BLANK (P8D)
0.0508	0.0508	0.0508	0.0508
0.00811	0.00811	0.00811	0.00811
4.42E-04	1.41E-02	1.30E-04	1.35E-05
0.0873	0.0873	0.0873	0.0873
0.00682	0.21775	0.00201	0.00021
0.055	1.741	0.016	0.002
1.31	41.78	0.39	0.04
6.4E-03	2.0E-01	1.9E-03	2.0E-04
0.154	4.920	0.045	0.005
1.3E-08	4.3E-07	3.9E-09	4.1E-10
1.4E-03	4.4E-02	4.6E-04	4.6E-05
3.5E-02	1.1E+00	1.1E-02	1.1E-03
3.0E-11	9.2E-10	9.6E-12	9.6E-13
	0.0508 0.00811 4.42E-04 0.0873 0.00682 0.055 1.31 6.4E-03 0.154 1.3E-08 1.4E-03 3.5E-02	0.05080.05080.008110.008114.42E-041.41E-020.08730.08730.006820.217750.0551.7411.3141.786.4E-032.0E-010.1544.9201.3E-084.3E-071.4E-034.4E-023.5E-021.1E+00	0.05080.05080.05080.008110.008110.008114.42E-041.41E-021.30E-040.08730.08730.08730.006820.217750.002010.0551.7410.0161.3141.780.396.4E-032.0E-011.9E-030.1544.9200.0451.3E-084.3E-073.9E-091.4E-034.4E-024.6E-043.5E-021.1E+001.1E-02





WVT(grains/h-ft ²)	0.078	2.495	0.023	0.002
WVP (perm)	0.234	7.464	0.069	0.007
Permeability (perm inch)	2.1E-02	6.4E-01	6.6E-03	6.6E-04
Permeability (perm mil)	20.64	636.27	6.59	0.66

Method E96 specifies that the calculation of permeability can be done only when the test

specimen is not less than 1/2 in. thick. The test specimens were less than 1/2 in. thick. The

RESULTS

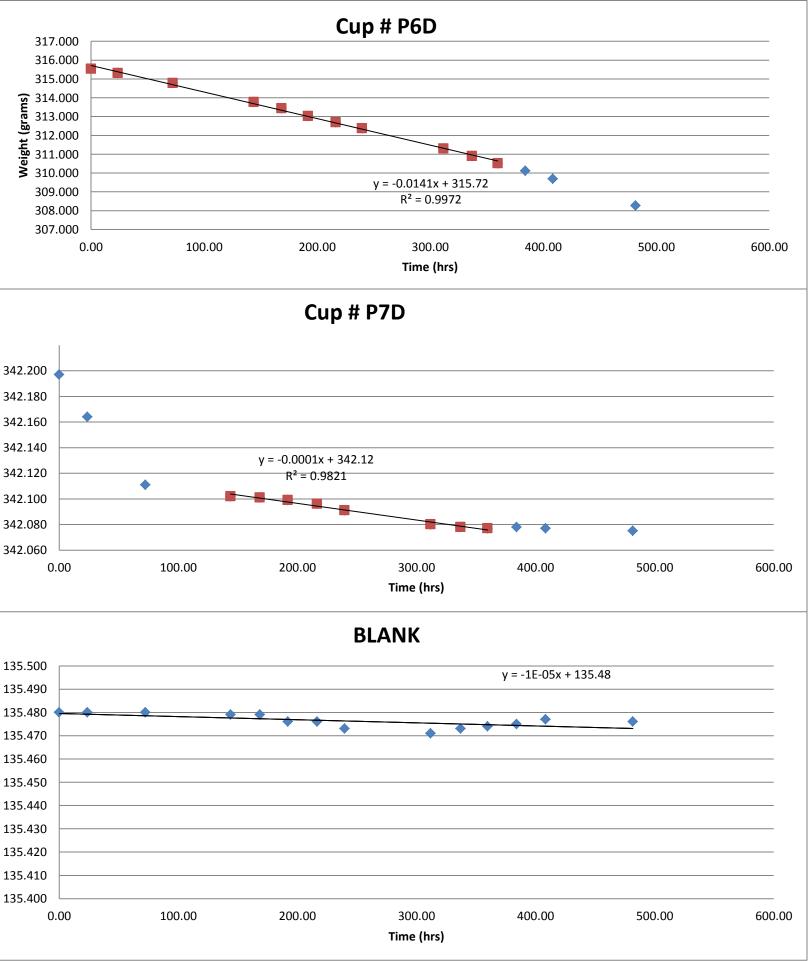
METRIC AVERAGES:

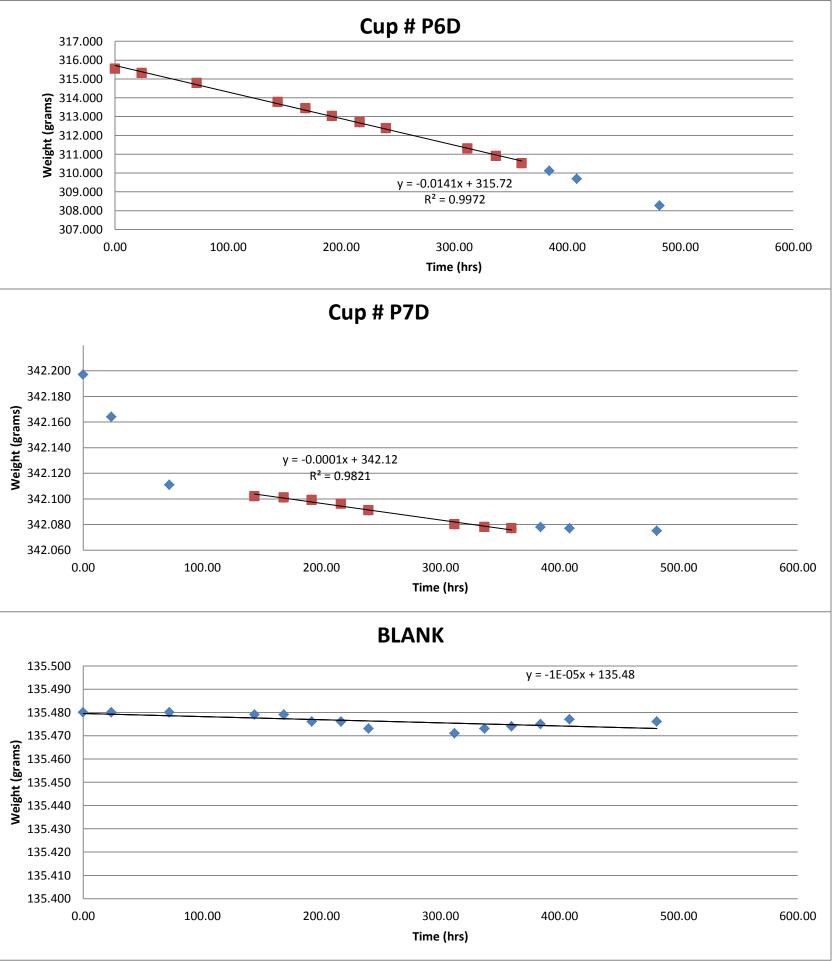
WVT(g/h-m ²)	0.604
WVT(g/day-m ²)	14.49
WVP (g/hr-m ² -mm Hg)	7.1E-02
WVP (metric perm)	1.706
WVP (g/Pa-s-m ²)	1.5E-07
Permeability (g-cm/hr-m ² -mm Hg)	1.5E-02
Permeability (g-cm/day-m ² -mm Hg)	3.7E-01
Permeability (g/Pa-s-m)	3.2E-10

ENGLISH AVERAGES:

WVT(grains/h-ft ²)	0.865
WVP (perm)	2.589
Permeability (perm inch)	2.2E-01
Permeability (perm mil)	221.17

317.000 316.000 315.000 (su 314.000 313.000 312.000 311.000 310.000 309.000 $R^2 = 0.9972$ 308.000 307.000 200.00 300.00 0.00 100.00 Time (hrs)





Analyst KMS

date 9/1/2013

QC Review by CR

results for permeability were supplied as a courtesy.

date 9/11/2013

TL2392F1, R0, 9/27/2012

Amchem Products Pvt. Ltd Permeability Spreadsheet

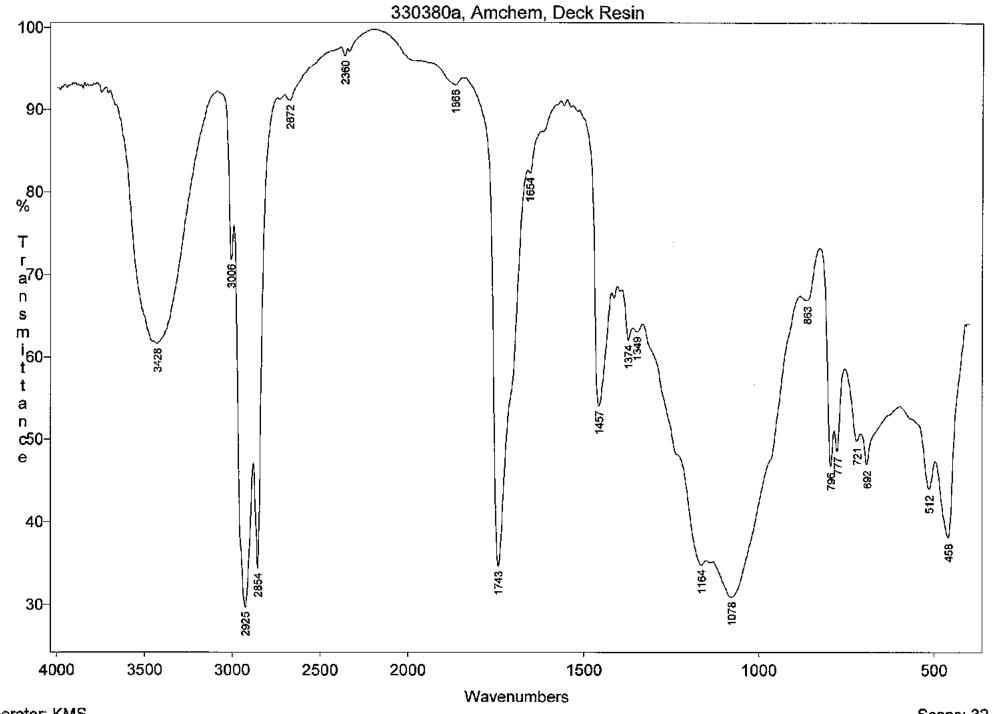
Appendix 2 4 of 4

APPENDIX 3



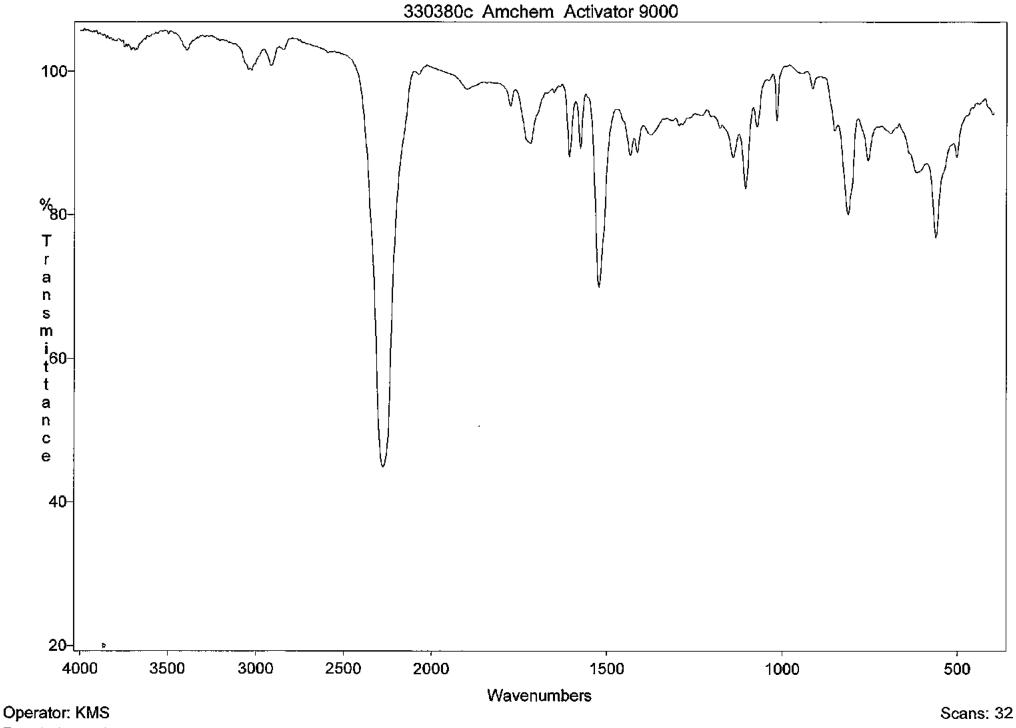
Sample	Test Solution	Initial Weight	Final Weight	Δ Weight	Initial Thickness	Final Thickness	Δ Thickness	Initial Width	Final Width	Δ Width	Initial Length	Final Length	Δ Length	% Δ Weight	%∆ Thickness	%Δ Width	% Δ Length
CR1D	30%	14.967	14.995	0.029	0.103	0.101	-0.002	1.423	1.426	0.003	4.996	4.994	-0.002	0.191	-1.846	0.204	-0.046
CR2D	NaCl	14.744	14.774	0.030	0.099	0.101	0.002	1.468	1.480	0.013	5.036	5.034	-0.002	0.201	1.715	0.859	-0.044
CR3D	INACI	14.600	14.628	0.028	0.101	0.101	0.000	1.438	1.428	-0.010	4.964	4.965	0.000	0.193	0.000	-0.723	0.006
CR4D	10%	13.684	13.732	0.048	0.093	0.094	0.001	1.493	1.499	0.006	4.970	4.968	-0.002	0.349	0.971	0.429	-0.034
CR5D	H_2SO_4	15.137	15.190	0.053	0.100	0.101	0.000	1.495	1.496	0.000	4.966	4.960	-0.006	0.350	0.199	0.033	-0.117
CR6D	$11_{2}50_{4}$	15.402	15.416	0.014	0.102	0.101	-0.001	1.476	1.481	0.005	4.995	4.995	0.000	0.092	-0.686	0.339	-0.006
CR7D	30%	15.572	15.673	0.101	0.106	0.105	-0.001	1.436	1.436	0.001	5.018	4.980	-0.039	0.648	-1.130	0.049	-0.775
CR8D	NaOH	15.622	15.621	-0.001	0.106	0.106	0.000	1.444	1.441	-0.003	4.995	4.957	-0.038	-0.005	0.379	-0.235	-0.755
CR9D	INdOIT	15.353	15.541	0.187	0.102	0.100	-0.002	1.494	1.485	-0.009	4.988	4.945	-0.043	1.219	-2.344	-0.596	-0.867
CR10D	No. 2	14.689	16.275	1.586	0.100	0.100	0.000	1.456	1.487	0.031	4.969	5.136	0.167	10.800	-0.300	2.143	3.361
CR11D	Diesel	15.444	16.996	1.551	0.102	0.106	0.004	1.485	1.533	0.048	4.964	5.136	0.171	10.045	3.718	3.246	3.449
CR12D	Fuel	14.367	16.038	1.672	0.096	0.101	0.005	1.491	1.540	0.049	4.963	5.156	0.193	11.636	5.208	3.253	3.881

APPENDIX 4



Operator: KMS Resolution: 4.0

Scans: 32 Date: Fri Jun 21 14:01:14:31 2013



Resolution: 4.0

Date: Thu Aug 29 09:10:45:81 2013

ATTACHMENT



September 12, 2013

Mr. Shomendra Mann Amchem Products Pvt. Ltd A-79, Sector 58 NOIDA 201 307 India

SUBJECT: Sample Disposal

Dear Mr. Mann:

Your final report has been issued with this letter. Since this project is completed, samples will be discarded due to space limitation. Please respond to 412-788-1300, extension 239 within 30 days if you wish to have your samples returned. If we do not hear from you at this time, the samples will be discarded. Handling cost for the sample return is the cost of shipping plus 15% of shipping.

Thank you for doing business with KTA-Tator, Inc.

Sincerely,

KTA-Tator, Inc.

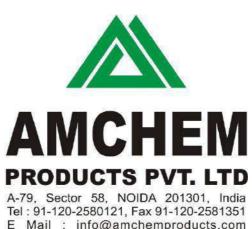
Chrissy M. Stewart Chemist

CMS/kdw JN330380-1





INSTALLATION GUIDE

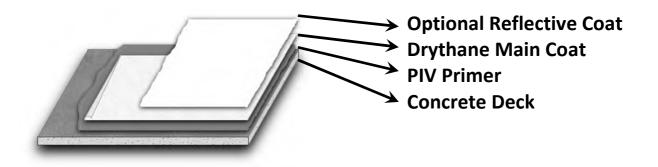


E Mail : info@amchemproducts.com Website :www.amchemproducts.com

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A General overview



The Drythane system comprises of three coats of liquid applied 100% Solids (Solvent Free) Polyurethane Coating system:

- 1. **Primer**: Applied @ approx. 150 Micron (0.15 mm) Thickness. This primer penetrates the concrete surface, reacts with moisture, seals & strengthens the top concrete layer.
- 2. Main Coat: Applied @ approx. 1,000 2,000 Micron (1.00 to 2.00 mm) Thickness, depending upon surface roughness etc. For a very smooth surface one coat of 1.00 mm may suffice. However, for most applications, a second coat of 1.00 mm will be required. If the surface is extremely rough, an intermediary layer of Fibreglass tissue may be imbedded into the first coat while it is still wet and then the second coat is applied after 2-24 hours.
- 3. **Reflective Coat**: This is optional and applied at typically 500 750 Micron (0.500 to 0.750 mm) thickness. Reasons why the customer may want to use this:
 - If the customer wants a colour fast surface for aesthetics reasons.
 - This coat reflects heat/ solar rays to keep the building cool underneath.

B Storage & Handling

- 1. Store in a cool dry location indoors at ambient temperatures (5 40C). Do not allow to freeze.
- 2. Keep away from rain and wet weather.
- 3. Do not store partially used drums use completely.
- 4. The Primer *Activator* and Main Coat *Activator* will react with atmospheric moisture. Hence do not keep open materials for long periods without using the same.

C Weather Restrictions

- 1. Drythane must not be applied under rainy conditions or when rain is imminent.
- 2. Drythane must not be applied when ambient temperature is below 4°C.
- 3. Surface temperature must be at least 3°C more than the dew point.
- 4. Hot weather will reduce the pot life of materials due to increase in reactivity. Hence use mixed materials in a timely manner in extremely hot weather.
- 5. Apply Main coat during times of falling temperature (such as late afternoon) to avoid outgassing of air from the surface.

D Personal Protective Equipment

- 1. Mixed materials are tough polymers which very strongly bond to surfaces. Hence avoid contact with skin by wearing personal protective equipment such as disposable gloves, clear goggles etc.
- 2. Although Drythane materials have been made using very safe ingredients, the following remedial measures may be used for accidental contact:

Eye contact	Flush with water for 15 minutes. If irritation persists, get medical attention.			
Skin contact	Wash area of contact thoroughly with hand cleaner followed by soap and water. If irritation, rash or other disorders develop, get medical attention.			
Ingestion	Get medical attention. Do not induce vomiting.			
Inhalation (Activator Only)	May cause sensitisation by inhalation. The activator is a respiratory irritant and potential respiratory sensitizer: repeated inhalation of vapour or aerosol at levels above the occupational exposure limit could cause respiratory sensitisation. However, the very high vapour pressure of the liquids ensures very little availability of the vapour making it very safe for normal usage.			
	In <i>sensitised</i> persons, a hyper-reactive response to even minimal concentrations of activator may develop. Such people should be kept away from these materials.			
	If inhaled, remove to fresh air. Treatment is symptomatic for primary irritation or bronchospasm. If breathing is laboured, oxygen should be administered by qualified personnel.			

E Tools and Equipment

SNo.	РНОТО	DESCRIPTION	USAGE
1		Power Washer 3,000 Psi with Accessories	To clean the surface from dirt, loose material, organic matter etc. by high pressure water.
2	S.	Electric Paint Mixer 1600W	To mix liquid Resin and Activator.
3		Paint Mixer 60 *400 mm	Replaceable mixing tool for the paint mixer.
4		Synthetic Foam Paint Roller, 9 inch	Roller for smooth surfaces. For rough surfaces you can use a nap roller with longer length nep.
5		Cage Roller Frame 9 Inch	The roller cage can be used with several roller foams and need not be disposed after a single use.
6		Aluminum Extension Pole 1.2 m	For reaching longer lengths, add the extension pole to the roller frame.
7		Plastic Paint Tray 9 inch	For putting the mixed materials for use with the paint roller. The tray is sized for the roller and provides an even amount on coating to the roller.

8		Rubber Squeegee V Notched 45 cm	For roughly spreading the poured mixed materials onto the surface (prior to using the roller).
9		Notched Trowel 300 X 95 mm	For roughly spreading the poured mixed materials onto the surface (prior to using the roller) – for tight corners / hand held work.
10		Spiked Shoes 147 X 296 mm, Ht 26 mm	For walking on wet coated areas without slipping or disturbing the coating.
11		Paint Brush 4"	For applying in tight corners of limited access areas.
12	A CONTRACTOR OF	Nylon Washing Broom 16" With Wood Handle	For washing the surface with soap water.

F Coverage & Estimation of Materials

Item		Area (Sq.Metre)	Thickness (mm)	Consumption (Litres)
Primer		1	0.20	0.20
Main Coat	First Coat	1	0.60	0.60
1.20 mm	Second Coat	1	0.60	0.60
Main Coat	First Coat	1	0.75	0.75
1.50 mm	Second Coat	1	0.75	0.75
Main Coat	First Coat	1	1.00	1.00
2.00 mm	Second Coat	1	1.00	1.00
Optional		1	0.45	0.45
Reflective				
Coat				

Coverage of the various layers is as under:

The packaging has been designed as such to provide exact thickness to grids of **8.00 Sq.Metres** as explained under :

ltem	Resin (Litres) In One Can	Activator (Litres) In One Can	Combined (Litres)	Area (Sq.Metre)	Resultant Thickness Per Coat
Primer	0.80	0.80	1.60	8.00	0.20
Main Coat 1.20 mm	3.73	1.07	4.80	8.00	0.60
Main Coat 1.50 mm	4.67	1.33	6.00	8.00	0.75
Main Coat 2.00 mm	6.22	1.78	8.00	8.00	1.00
Optional Reflective Coat	2.50	1.00	3.50	8.00	0.45

G Surface Preparation

Concrete

DRYTHANE can be used directly over concrete with PIV primer. Allow new concrete to fully cure for a minimum of 28 days (a concrete dryness test should be performed before application). Remove defective concrete, honeycombs, cavities, joint cracks, voids and other defects by routing to sound material.

Surface Preparation

1. **Applied Over Existing Coatings/ Water-proofing** - Broom clean existing coated substrate with industrial soap and water to remote dirt and grime. Let dry fully.





2. **Applied Over Concrete** : Clean substrate of contaminants such as dirt, debris, oil, grease, fungus etc that can affect adhesion of fluid-applied membrane by power washing at minimum 3,000 psi. Allow to dry thoroughly.





3. Cracks – Make a V groove using a grinding tool along the crack. This groove will be filled by the Drythane material during application.

H Mixing

Primer

- 1. Pour full contents of the Activator into the Resin bucket. Stir with a flat metals strip stirrer for around 2 minutes until the colour of the mixture is clear.
- 2. Make sure to mix areas around side walls and bottom of pail. Improper mixing will result in non-curing material. Do not break down kits into smaller quantities –MIX ENTIRE KIT. Do not mix part quantities with approximation.
- 3. After mixing, pour the full contents into the roller tray.



Main Coat & Reflective Coat

- 1. Use the supplied mixer or a heavy-duty power drill with supplied mixer attachment. Cordless drills are not recommended and may not properly mix the materials.
- 2. Mix Resin for 2 minute before adding Activator. Insert the head fully into the liquid and avoid creating a vortex / air entrainment.
- 3. Add entire contents of the Activator into the Resin bucket. After adding activator power mix the combined materials for a minimum of two minutes moving the mix blade from top to bottom. Make sure to mix areas around side walls and bottom of pail. Improper mixing will result in non-curing material. Never fully invert empty pails in attempt to drain material will result in use of non-curing material.
- 4. Do not break down kits into smaller quantities –MIX ENTIRE KIT AS SUPPLIED. Do not mix part quantities with approximation as this will create improper curing material.
- 5. After mixing, pour and spread the full contents onto the surface. Do not keep mixed materials in the bucket as the pot life will be greatly reduced and material will set.





I Priming

- 1. Substrate must be free of laitance and dust. Surface may be damp but with no visible water.
- 2. Blow air using an industrial blower to remove dust.
- 3. Allow the mixed primer to rest for 3 minutes and apply by roller. Apply one kit per 8 Sq.M area.
- 4. Protect primed area from rain and moisture. Do not over-apply primer.





J Coating (Main Coat & Reflective Coat)

- 1. Divide the surface to be coated into grids of 8 Sq.M (preferable 1m wide X 8 metres length).
- 2. Pour mixed materials evenly throughout the length as shown below. Using the *notched trowel* spread evenly along the width.
- 3. Use masking tapes to prevent coating of unintended surface and resulting in a neat finish.





4. Thereafter spread the material evenly on the demarcated surface using the *roller*. For smooth surfaces use the foam roller for a fine finish. For very rough surfaces, use a long nap hair roller.



- 5. Apply a second coat of 1 mm after overnight cure of the first coat of 1 mm. Blow away any dust which has settled on the surface overnight using industrial blower.
- 6. The reflective topcoat is to be applied after overnight cure of the second main coat. Blow away any dust which has settle on the surface overnight using industrial blower.
- If > 2 days have elapsed between coats, first roughen the surface using 3M Scotch Brite or similar abrasive before blowing with air to remove dirt and abrasive residue. Thereafter apply the second coat.

K Rough Surface / Fibreglass Use

- 1. Drythane is a very tough film and does not require reinforcement. However, if the surface is very rough *material consumption* can be excessive and this can be reduced by way of intermediate reinforcement using Fibreglass fabric.
- 2. Apply the first coat of 1 mm and while the coat is still wet, embed the fibreglass fabric onto the wet surface. Press with a roller to evenly wet the fabric. After overnight cure, apply a second coat of 1 mm. Blow away any dust which has settle on the surface overnight before applying the second coat.
- 3. The use of fibreglass is also useful in areas with weak substrates and over cracks/ joints as it forms a bridge over the defect. In case of crack movement underneath the coating, the coating does not get affected.

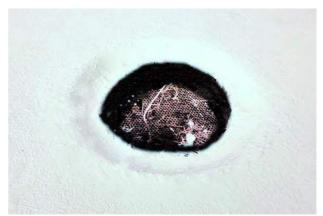




L Verticals & Drains

- 1. Prior to priming/ coating the main areas, the verticals, drains, cracks and protrusions must be attended. Intersection between the roof and vertical walls must be formed into a curve (gola) and Drythane applied, preferably using fibreglass between two layers.
- 2. Drains : Roughen and clean the edge of the drain and at least 4 inches inside. Apply primer and main coat along the edges and inside the drain to at least 3 inches. Apply fibreglass onto wet main coat and embed fully using paint brush. Apply a second coat to completely seal the drain edge.





M Testing & Repair

Testing

1. After visual inspection, pond the area with water to see signs of leakage/ dampness, if any, from the ceiling below. In the event of a leak, rectify the coating surface from that location.



Repair of Coating

- 1. Clean the damaged area with cloth and if necessary soap and water. Allow to dry.
- 2. Roughen and area of 50 mm for overlap around the damaged area using **3M Scotch Brite or** sandpaper and wipe with clean cloth.
- 3. Apply primer using a brush/ roller (including overlap area) and allow to dry.
- 4. Apply main coat using brush/ roller (including overlap area) and allow to dry.

For further technical assistance e -mail techsupport@drythane.com



October 24, 2019 Email: info@amchemmail.com

Mr. Shomendra Mann Director Amchem Products, Pvt. Ltd. A-79, Sector 58 Noida, India 201 307

SUBJECT: Results of Crack Bridging Testing in Accordance with BS EN 1062-7:2004; KTA-Tator, Inc. Project No. 390631

Dear Mr. Mann:

In accordance with KTA-Tator, Inc. (KTA) Proposal No. PN1910480 and payment in full received on August 23, 2019, crack bridging testing was performed in accordance with BS EN 1062-7:2004 on the submitted coating material. This coating was designated as "Drythane" by Amchem Products, Pvt. Ltd. The samples were submitted directly to Testing, Engineering, and Consulting Services, Inc. (TEC Services) located in Lawrenceville, GA who was subcontracted to perform this testing. TEC Services reports that the coating had a total displacement at failure average of 2.13 mm. The detailed test results are appended.

If you have any questions concerning the testing or this report, please contact me by telephone at 412.788.1300 extension 182, or by email at kstanczyk@kta.com.

Sincerely,

KTA-TATOR, INC.

Kaley Stancypk

Kalev M. Stanczvk Project Manager/Chemical Technician

Appendix – TEC Services Report

KMS/MAS:edg

KTA-Tator, Inc. 115 Technology Drive Pittsburgh, PA 15275

NOTICE: This report represents the opinion of KTA-TATOR, INC. This report is issued in conformance with generally accepted industry practices. While customary precautions were taken to verify the information gathered and presented is accurate, complete and technically correct, this report is based on the information, data, time, materials, and/or samples afforded. This report should not be reproduced except in full.

Appendix



October 17, 2019

Ms. Kaley Stanczyk KTA-Tator, Inc. 115 Technology Drive Pittsburgh, PA 15275 Phone: (412) 788-1300 Fax: (412) 722-0976 Email: KStanczyk@KTA.com

Subject: Report of BS EN 1062-7 Sample ID: Drythane Primer & Coating TEC Services Project No. TEC 16-1267 TEC Lab No. 19-1174

Dear Ms. Stanczyk:

Testing, Engineering and Consulting Services, Inc. (TEC Services) is an AASTHO R18, ANS/ISO/IEC 17025:2005 and Army Corp of Engineers accredited laboratory. TEC Services is pleased to submit this report on the testing of the subject submitted product at our Lawrenceville, GA facility. The product was received in September of 2019. Our services were performed in accordance with the terms and conditions of our Service Agreement (TEC 16-1267). Testing was performed in accordance with below references standards. The test results presented only pertain to the sample tested.

BS EN 1062-7

Three crack bridge samples were prepared in accordance with the manufacture's instructions with 1 hour between application of primer and main coat. It is our understanding that the product is intended to be tested as a Class A1 material. The samples were cured for 10 days at ambient room temperatures prior to testing. Samples was tested at speed of 0.05 mm/min until failure.





Product Name	Drythane Primer	Drythane Main Coat	
Conditioning Temperature	75F	75F	
Curing Temperature	75F	75F	
Mix Proportions by Weight	1.00 1.28	3.50 1.00	
Mixer Type	Hand	Hand	
Mixing Time	3 minutes	3 minutes	
Number of Coatings	1 Coat	1 Coat	
Application Rate (kg/m ²)	0.22	1.84	

Table 1 – Product Information

Sample ID	Sample 1	Sample 2	Sample 3	Average
Total Displacement at Failure (mm)	2.27	1.55	2.57	2.13

We appreciate the opportunity to provide our services to you on this project. Please do not hesitate to contact us at your convenience if you have any questions about this report or if we may be of further assistance.

TESTING, ENGINEERING & CONSULTING SERVICES, INC.

tout

Tom Dang Project Manager

Attachments: Photos 1-3

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James. G. McCants III Laboratory Manager, Chemist

Picture 1 – Sample 1 Failure



Picture 2 – Sample 2 Failure



Picture 3 – Sample 3 Failure

