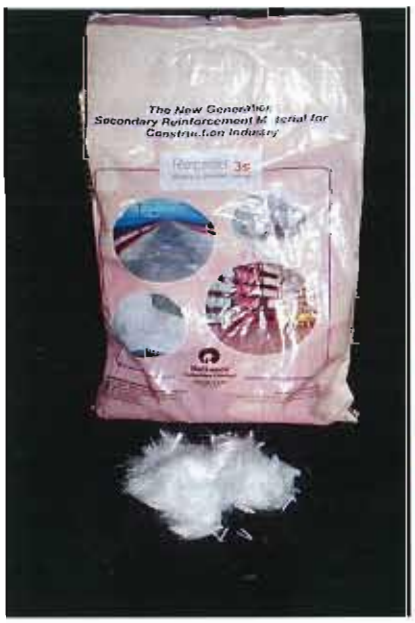
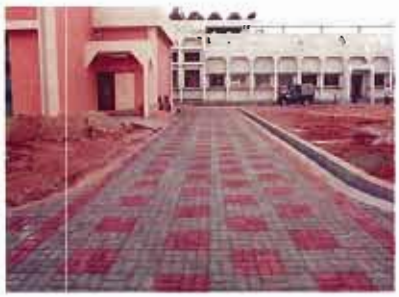
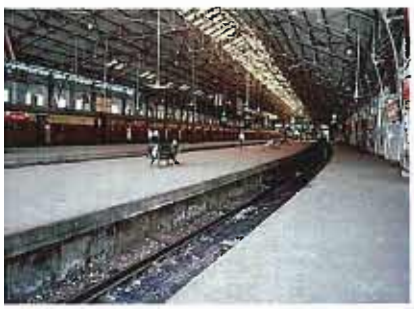
BMTPC
PACS
PERFORMANCE APPRAISAL CERTIFICATION

Recron 3s Fibres

Name and Address of Certificate Holder:	Performance Appraisal Certificate No.
Reliance Industries Limited **222, Maker Chamber IV,** **Nariman Point, Churchgate,** **Mumbai – 400 021**	PAC No **6 / 2004** Issue No. **1** Date of Issue: **27.06.05**







User should check the validity of the Certificate by contacting Member Secretary, BMBA at BMTPC or the Holder of this Certificate.

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Performance Appraisal Certificate
for
Recron 3s Fibres
issued to

Reliance Industries Limited

STATUS OF PAC 6 / 2004

S. No.	Issue No.	Date of Issue	Date of renewal	Amendment		Valid upto (Date)	Remarks	Signature of authorized signatory
				No.	Date			
1	2	3	4	5	6	7	8	9
1	1	27.06.05	-	-	-	26.06.06	Provisional	
2								
3								
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5								
6								
7								
8								
9								
10								

CONTENTS

PART-I CERTIFICATION

I-1 Certificate holder

Reliance Industries Limited
222, Maker Chamber IV, Nariman Point,
Churchgate, Mumbai – 400 021
Ph: 022-30327471/7952/7200
Fax: 022-30327699

I-2 Description of product

I-2.1 Name of the product- Recron 3s fibres

I-2.2 Brief Description - Recron 3s fibres Polyester staple fibres for mixing in concrete and mortar for improving certain properties of the concrete and mortar. Fibres have special triangular shape for better anchoring with other ingredients of the mix. The fibres are made from polyemerisation of pure teraphthalic acid and Mono Ethylene Glycol using catalyst. Recron 3s fibres are available in 6mm and 12mm length.

I-3 Assessment

I-3.1 Scope of assessment

Performance of Recron 3s polyester fibres for use in concrete and mortar to enhance certain properties. See (III-4) for the performance characteristics considered for assessment.

I-3.2 Assessment summary

Scope of assessment included verification of the performance characteristics as mentioned in item (III-4) based on the independent testing done at Central Road Research Institute (CRRI) New Delhi and testing done by PAC holder at various laboratories in the country and abroad. Assessment is based on verification and testing of the raw material during factory inspection. Factory visit also included verification of production process, quality control and testing facilities claimed by the applicant. Field visits were done in Gurgaon, Delhi, Jallandhar and Bangalore to take user feedback and check the performance of the product in actual use.

I-3.3 Manufacturing and test facilities – Recron 3s fibres are manufactured by M/s. Appollo Fibres Limited, PO Chohal, Hoshiarpur, Punjab (India), an associate company of Reliance Industries Limited. Manufacturing and test facilities available in the factory were found to be suitable and adequate to produce Recron 3s fibres.

I-3.4 Quality Assurance Procedure – The manufacturer holds ISO 9001:2000 Certification valid upto 30th October, 2005 for manufacture and supply of polyester staple fibres, Recron 3s which was verified at the time of factory visit.

I-3.5 Experience in actual use – A few sites where Recron 3s fibres have been used were visited and user feedback was taken. No complaints have been reported from sites (see III-5).

I-4 Use of Recron 3s fibres

I-4.1 Design data: The data and information provided in Part II of this certificate should be used for selection of the size, dosage etc (see II-2).

I-4.2 Packaging a nd S torage – T he product is packed in pouch of 125 gm. 72 pouches are packaged in one carton weighing 9 kg. Cartons are stored in dry condition on pallets. Cartons are sent at site where they should be stored in dry condition.

I-4.3 Handling – There is no special care required for handling the product. Directions given by the manufacturer should be followed.

I-4.4 Mixing of the fibres: In case of machine mixing, fibres are put in the mixer alongwith some water (5-10 liters) and then other ingredients are added and mixing is continued till entire fibres are dispersed in few minutes. In case of manual mixing, half the fibres are mixed and stirred in a bucket of water and then mixed with other ingredients. Likewise balance fibres are added in the mix.

I-4.5 Limitations in use: Recron 3s fibres are not a replacement for structural/load bearing reinforcement and other normal practices for making good concrete/mortar. No increase in compressive and flexural strength to be taken in for structural design. Use of more than 0.25% of weight of cement not recommended.

Assessment in this certificate is based on the independent testing by Central Road Research Institute (CRRI), New Delhi on specific grade of concrete and other testing done by PAC holder in various laboratories. It is recommended to consider specific tests done for large scale application of Recron 3s fibres.

I-5 Conditions of Certification

I-5.1 Quality Assurance – The certificate holder shall continue to implement and maintain quality management measures used as per IS/ISO 9001:2000.

PART-II CERTIFICATE HOLDER'S TECHNICAL SPECIFICATIONS

II-1 General: Polyester staple 'Recron 3s' fibres are manufactured as per Company's Standard. **(see-II-2)**

II-2 Specifications for the product and design data

S. No.	Property	Unit	1st Grade
1.	Cut length	mm	5.0-7.0
			12-14
2.	Denier[1]	N A	11.4-12.6
3.	Tenacity	g / d	Min. 3.5
4.	Elongation	%	50-70
5.	Dispersion	Scale 1 to 4	3-4
6.	Openability	Scale 1 to 5	4-5

[1] Weight in grams of 9000 meters of a single fibre expressed in fineness

II-2.1 Types - Three types of fibres are marketed by the certificate holder as per the details given below. The type is based only on the length of fibre.

Type	Application	General specification
CT 2012	Plaster, Concrete	6 mm length, 125 gm packing
CT 2024	Concrete	12 mm length, 125 gm packing
CT 2424	Ready mix concrete	12 mm length, 450 gm dissolvable packing

II-2.3 Application of the product

As claimed by the certificate holder the product 'Recron 3s' can be used for following applications:

1. RCC and PCC for slabs, floorings, runways, roads, pavements, swimming pools, concrete blocks, pavers.
2. Internal and external plastering

II-2.4 Comments on claims made by certificate holder

The claims made by the certificate holder are listed below. The comments of the assessors are based on the test results of different laboratories (see Annex VI-1) and reports of the various agencies which have used this product. Based on the above data available assessors are of the view that the following claims made by the certificate holders may hold good subject to the limitations as mentioned in I-4.5.

i. Control Cracking: 'Recron 3s' fibres help in controlling micro shrinking cracks in plastic stage.
ii. Reduces water permeability: Tests results have confirmed that the use of 'Recron 3s' reduces water permeability of the concrete.
iii. Reduces Rebound Loss: Use of 'Recron 3s' reduces the rebound loss of mortar and concrete as confirmed by user feedback taken during field inspection.
iv. Increases flexibility: Due to its high modulus of elasticity, Recron 3s has found to be helping in increasing the flexural strength of the concrete.

v. Alkali Resistance: Results have shown that Recron 3s has acceptable range of alkali resistance.

vi. Dispersion in the mix: Due to its special shape and finish and specific gravity of 1.36 Recron 3s has shown good dispersion properties both in dry and wet mix.

II-3 Selection and Usage

II-3.1 The user is responsible for the proper use of the product at site. Certificate holder shall provide required guidance for usage/mixing of product at site. He shall also provide details of method of use. The pouch/carton also carries instructions.

II-3.2 Choosing type: Appropriate type (see II-2.1) of fibres are required to be chosen depending upon the requirements of the user.

II-3.3 Good practice for usage at site: 'Recron 3s' fibres should be used at site in conjunction with standard procedures followed for concreting and curing. Normally the quantity of fibres does not change with change in concrete mix design. Certificate holder shall provide proper guidance for optimum use of fibres in a mix.

II-3.4 Placing: Concrete containing Recron 3s may be transported and placed using conventional methods.

II-3.5 Curing: With the use of Recron 3s fibres, standard procedures shall be required to be followed for curing.

II-3.6 Finishing: Concrete and mortar containing Recron 3s fibres may be finished using normal methods. Fibres are not visible after finishing.

II-3.7 Training Requirements: There is no need of special training for use of Recron 3s firbes. However, the certificate holder provides on request necessary guidance and training to the users at site.

II-3.8 Maintenance: There is no special maintenance requirements with the use of 'Recron 3s' fibres.

II-3.9 Guarantees: The certificate holder gives the guarantee against any manufacturing defects and gives replacement of the product free of charge in case it does not conform to Company's specifications.

PART-III BASIS OF ASSESSMENT AND BRIEF DESCRIPTION OF ASSESSMENT PROCEDURE

III-1 Basis of Assessment

III-1.1 The assessment is based on the results and reports of:

i. Inspection of the factory.
ii. Assessment of the quality assurance procedures implemented in the factory.
iii. Inspection of the test equipments used and the test procedures followed in the laboratory at the factory.
iv. Results of the test done in Central Road Research Institute (CRRI), New Delhi. Samples were handed over to CRRI in presence of BMTPC's official.
v. Results of the tests done in various laboratories for different properties by the certificate holder. These were got done by the certificate holder. Samples for these tests were taken by the certificate holder and not by AU of BMTPC.
vi. Inspection of sites where the Recron 3s fibres have been used at Delhi, Gurgaon, Jallandhar and Bangalore.

III-2 Manufacturing process and Quality Assurance

Recron 3s is manufactured by polymerization of raw materials i.e. Pure Terephthalic Acid (PTA) and Mono Ethylene Glycol (MEG) using catalysts, which by a continuous extrusion process yields finished polyester yarn. Finished yarn is then automatically cut to required length and packed in pouches. Quality assurance on raw material and manufacturing process is exercised as per the requirements of ISO 9001:2000.

III-3 Factory inspection

The factory was inspected by inspection officer from BMTPC. During inspection the entire manufacturing process alongwith the equipment and machinery was inspected. The manufacturing process was found to conform to the process description given in III-2. Quality control related records for in-process and finished fibres were checked during the inspection. These were found suitable for manufacturing of fibres satisfying the criteria and requirements of company's specification is specified in II-2.

Following quality control checks are done on finished fibres:
i. Denier
ii. Finish on fibre
iii. Tenacity
iv. Elongation
v. Dispersion and openability
vi. Fibre length

III-4 Performance characteristics considered for assessment

Results of test done at Central Road Research Institute (CRRI) New Delhi form the primary basis for assessment, however, test reports of various laboratories have also been considered for assessment which were got done by the PAC holder. Test results of the various laboratories are summarized in Annex VI-1. Detailed test reports may be obtained from the certificate holder.

III-4.1 Compressive strength of concrete

Compressive strength of concrete tested as per IS 516:1959 and BS 1881:Part 16 by different laboratories has shown varied results indicating increase in compressive strength when Recron 3s fibres are used. The percentage increase varies depending upon the mix design.

III-4.2 Flexural strength of concrete– When tested as per IS 516:1979 and BS 1881:1983 Part 118, Recron 3s fibres have shown increase in the flexural strength of concrete.

III-4.3 Abrasion Resistance – Tests conducted as per BS 812, ASTM C241-90, IS 9284:1979 and IS 1237:1980 have shown that concrete with Recron 3s fibres has better abrasion resistance than plain concrete (without fibres).

III-4.4 Water Absorption – Tests have shown that concrete with Recron 3s fibres does not have significant effect on water absorption property as compared to plain concrete without fibres.

III-4.5 Drying shrinkage – Test data has shown that Recron 3s fibres are able to cause substantial reduction in the drying shrinkage of M20 & M40 grade concrete which helps in reducing shrinkage related micro-cracks.

III-4.6 Split Tensile strength – Test data has shown that Recron 3s fibres improves split tensile strength of the concrete.

III-4.7 Workability test – Use of Recron 3s fibres increase the cohesiveness of the concrete which tends to reduce the segregation during placing and transportation. Use of Recron 3s fibre has shown increased workability in terms of ease of placing, compaction and finishing, although test data does not show any significant effect on vee-bee test results. Slump cone tests in different laboratories have shown varied results. It is recommended to interpret the results of workability related test carefully before using them as design data.

III-4.8 Chloride Permeability – Test data has shown that Recron 3s fibres has no significant effect on chloride permeability of the concrete.

III-4.9 Rebound loss in-plaster – Field tests and test data have shown that with use of Recron 3s fibres, there is significant reduction in rebound loss during plastering.

III-4.10 Distribution of fibres in Mix – Feedback from users in the field has confirmed that Recron 3s fibres mix with other ingredients easily and uniformly.

III-4.11 Alkali Resistance – Test result has shown that Recron 3s fibres are alkali resistant and stable in concrete. Test done in this regard has been done as per ICBO Publication AC32 in a National level laboratory which confirms suitability of Recron 3s with respect to alkaline behavior of concrete.

III-4.12 Length Change – When tested as per ASTM C157-93, the result has shown that presence of Recron 3s fibre reduces the length change on wetting and drying thereby reducing the expansion.

III-4.13 Surface Permeability under Stressed conditions – Test result has shown that surface permeability co-efficient has decreased under stressed conditions with the use of Recron 3s fibres indicating the restriction of cracks and preventing water from easily entering the concrete.

III-4.14 Water Permeability – When tested as per BSEN 12390 (Part 8:2000), the result has shown significant reduction in water penetration thereby increasing the service life of the concrete structure.

III-5 Feedback from the users during field inspection

Sites where Recron 3s fibres have been used in Gurgaon (Near Delhi), Delhi, Jallandhar and Banglaore were visited and feedback from the users including owner, contractor and masons were taken. Users have indicated satisfaction and there was no specific complaint about the product.

S. No.	Location	Application	Date of field visit	Feedback from user	Other remarks
1.	Gurgaon Sushant Estate	1. External plastering 2. Concrete flooring in parking area	8 April 2004	1. Product helps in preventing cracks and also helps in reducing water seepage. 2. Maintenance cost reduces	1. Initially supervision is required at the time of mixing. 2. There were no visible cracks at site. 3. Fibres were easily mixed at site by labour.
2.	Hotel Shangri-La, Delhi	External plastering	8 April 2004	1. Fibres help in giving good adhesion to wall thereby reducing rebound loss. 2. Fibres give good strength to plaster.	1. There were no visible cracks at site. 2. Fibres were easily mixed at site by labour.
3.	Software Complex at Electronic City, Bangalore	1. External plastering 2. Flooring	30 April 2004	**Contractor:** • Reduces shrinkage cracks. • Increases compressive strength of concrete and mortar.	1. Slum test done at site by contractor does not show any change because of the use of Recron 3s fibres.

S. No.	Location	Application	Date of field visit	Feedback from user	Other remarks
				• Rebound loss is reduced in plastering **Labour:** • No problem in mixing. • Quantity of work remains same. • No change in water to be added in mix.	
4.	Biocon Park, Hosur Road, Bangalore	Concrete in top floor, ground floor and water tank	30 April 2004	**Contractor:** • Reduction in cracks. • No leakage in water tank was seen. • Compressive strength of concrete increased. **Labour:** • No problem in mixing. • Quantity of work remains same. • No change in water to be added in mix.	1. Slump test done at site by contractor does not show any change because of the use of Recron 3s fibres. 2. No change in water cement ratio.
5.	APCO Concrete Block Factory, Bangalore	In hollow and solid concrete blocks	30 April 2004	**Production Manager:** • Damage to blocks reduced by 15-20%. • Increase in compressive strength of block by 20%. • Reduction in water absorption. • Improvement in edges of blocks. **Labour:** • No problem in mixing. • Same production rate using fibres. • Water requirement remains same.	
6.	Residence at Guru Teg Bahadur Enclave, Jallandhar	In first floor roof slab concrete	15 May 2004	**Mason:** • No cracks with use of Recron 3s. • No problem in mixing and using.	Slab was cast two days before the site visit. There were no visible cracks.

PART –IV STANDARD CONDITIONS

This certificate is issued subject to the following conditions:

IV-1 The certificate holder shall continue to have the product reviewed by BMBA.

IV-2 The product shall be continued to be manufactured according to and in compliance with the manufacturing specifications and quality assurance measures which applied at the time of issue or revalidation of this certificate.

IV-3 The quality of the product shall be maintained by the certificate holder.

IV-4 The product user should install, use and maintain the product in accordance with the provisions in this Certificate.

IV-5 This certificate does not cover uses of the product outside the scope of this appraisal and other limitations specified in the certificate.

IV-6 The product is appraised against performance provisions contained in the standards listed in Part-V. Provisions of any subsequent revisions or provisions introduced after the date of the certificate do not apply.

IV-7 Where reference is made in this Certificate to any Act of Parliament of India, Rules and Regulations made there under, statutes, specifications, codes of practice, standards etc. of the Bureau of Indian Standards or any other national standards body and the International Organization for Standardisation (ISO), manufacturer's company standards, instruction/manual etc., it shall be construed as reference to such publications in the form in which they were in force on the date of grant of this Certificate (and indicated in Part V to this Certificate).

IV-8 The certificate holder agrees to inform BMBA of their ~~distributors~~ / licensees whenever appointed by him and agrees to provide to BMBA a six monthly updated list there of.

IV-9 The certificate holder agrees to provide to BMBA feed back on the complaints received, the redressal provided, and the time taken to provide redressal on complaint to complaint basis as soon as redressal is provided. BMBA agrees to provide the certificate holder the user feed back received by it, if any.

IV-10 If at any time during the validity period, PACH is unable to fulfill the conditions in his PAC, he should on his own initiative suspend using the PAC and notify Chairman, TAC the date from which he has suspended its use, the reason for suspension and the period by which he will be able to resume. He shall not resume without the prior permission of BMBA. He shall also inform, simultaneously, his agents, licensees, distributors, institutional, government, public sector buyers, other buyers and all those whom he has informed about his holding the PAC. He shall also so inform all those who buy his product(s) during the period of suspension. He shall provide to BMBA at the earliest the list of who have been so informed by him.

IV-11 In granting this Certificate, BMBA takes no position as to:

(a) The presence or absence of patent or similar rights relating to the product;
(b) The legal right of the Certificate holder to market, install or maintain the product;
(c) The nature of individual installations of the product, including methods of workmanship.

IV-12 BMTPC and BMBA take no position relating to the holder of the Performance Appraisal Certificate (PACH) and the users of the Performance Appraisal Certificate (PAC) respecting the patent rights / copy rights asserted relating to the product / system / design / method of installation etc covered by this PAC. Considerations relating to patent / copy rights are beyond the scope of the Performance Appraisal Certification Scheme (PACS) under which this PAC has been issued. PACH and users of this PAC are expressly advised that determination of the claim / validity of any such patent rights / copy rights and the risk of infringement of such rights are entirely the responsibility of PACH on the one hand and that of the users on the other.

IV-13 It should be noted that any recommendations relating to the safe use of the product which are contained or referred to in this Certificate are the minimum standards required to be met with when the product is installed, used and maintained. They do not purport in any way to restate or cover all the requirements of related Acts such as the Factory Act, or of any other statutory or Common Law duties of care, or of any duty of care which exist at the date of this Certificate or in the future, nor is conformity with the provisions of this Certificate to be taken as satisfying the requirements of related Acts.

IV-14 In granting this Certificate, BMTPC and BMBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the use of this product.

IV-15 The certificate holder indemnifies BMBA, its officers and officials involved in this assessment against any consequences of actions taken in good faith including contents of this certificate. The responsibility fully rests with the certificate holder and user of the product.

IV-16 The responsibility for conformity to conditions specified in this PAC lies with the manufacturer who is granted this PAC. The Board (BMBA) will only consider requests for modification or withdrawal of the PAC.

IV-17 The PAC holder shall not use this certificate for legal defense in cases against him or for legal claims he may make from others.

for and on behalf of
BMTPC

for and on behalf of
Reliance Industries Limited

PART-V LIST OF DOCUMENTS USED IN ASSESSMENT

V-1 Indian Standards

V-1.1 IS 516: 1959	Method of test for strength of concrete
V-1.2 IS 5816: 1976	Splitting tensile strength of concrete method of test

V-2 Other Standards/Documents

V-2.1 BS 1881 Part 118:1993	Testing concrete – Method for determination of flexural strength
V-2.2 BS 812	Method for determination of Aggregate Abrasion Value (AAV)
V-2.3 BS 1881 Part 122:1983	Testing concrete – Method for determination of water absorption
V-2.4 BSEN 12390 Part 8:2000	Testing hardened concrete – Depth of penetration of water under pressure
V-2.5 ASTM C642	Standard test method for density, absorption and voids in hardened concrete
V-2.6 ASTM C157:93	Standard test method for length change of hardened hydraulic – cement, mortar and concrete
V-2.7 AASHTO T277:93	Chloride permeability test
V-2.8 ICBO Publication AC 32	Acceptance criteria for concrete with synthetic fibres

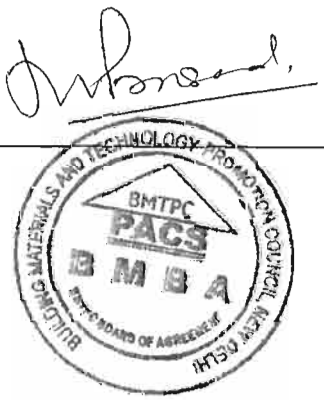
CERTIFICATION

In the opinion of BMTPC , Recron 3s Polyester Fibres bearing the mark Recron 3s' are satisfactory if used as set out above in the text of the Certificate. This Certificate PAC No. 6 / 2004 is awarded to Reliance Industries Limited, 222, Maker Chamber IV, Nariman Point, Churchgate, Mumbai – 400 021

The period of validity of this Certificate is as shown on Page 1 of this PAC.
This Certificate consists of a cover page (not numbered) and pages 1 to 20.

On behalf of BMTPC

New Delhi, India
Place
Date 27-6-05



PART – VI ANNEXES

Annex VI-1
(Clause II-2.4)

Test results on concrete using Recron 3s

(Note: The following is a summary of results and tests conducted by various organizations. These are given only as information. Values shall not be used in design)

S. No.	Test	Method	Results	
			Without Recron 3S	With Recron 3S
1.	Compressive Strength of concrete [1] [2]	IS 516:1959		
	7 days (MPa)		42.9 [1] 27.3 [2]	49.9 [1] 30.4 [2]
	28 days (MPa)		49.6 [1] 33.9 [2]	60.0 [1] 38.0 [2]
2.	Flexural Strength of concrete [1] [3]	IS 516:1959 [1] BS 1881 Part 118:1993 [3]		
	28 days (N/mm^2)		4.7 [1] 6.5 [3]	5.0 [1] 8.3 [3]
3.	Abrasion Resistance of concrete [1] [2]	IS 9284 : 1979 [1]		
	Percentage increase in abrasion resistance	BS 812 [2]		
	M20 Grade Concrete [2]		-	18.8
	M40 Grade Concrete [1] [2]		-	25.0 [1] 23.7 [2]
4.	Water absorption [1] [2] [3]			
	Percentage	ASTM C 642 [2]	-	No significant change [2] [3]
		BS 1881 Part 122:1983 [3]		
		CRRI method	1.19%	2.14 %
5.	Drying shrinkage [1] [2]			
	Percentage reduction in shrinkage [1] [2]	IS 1199 : [1]	0.062%	0.030%
	Dry condition	IIT, Chennai		
	Wet condition		-	20-25%
			-	Marginal

S. No.	Test	Method	Results	
			Without Recron 3S	With Recron 3S
6.	Split tensile strength [1] [4] 7 days (MPa) 28 days (MPa)	IS 5816:1976	 2.64 [1] 2.30[4] 3.39 [1] 2.95[4]	 2.56 [1] 3.15[4] 3.23 [1] 3.36[4]
7.	Chloride Permeability [1] [3] 28 days (Coulombs) [1] [3]	ASTM C 1202-97[1] AASHTO T277-93 [3]	3370 1281.3	3394 1394.7
8.	Dispersion and openability of fibres[4]	Company procedure	-	3 to 4 on scale of 4
9.	Alkali resistance [1] Residual strength of the fibre at different pH (11.13, 11.98 & 12.19) at various days (3d, 7d, 11d,20d, 28d & 35d.)	ICBO Publication AC 32	Original strength of fibre 52.25 gms.	Residual strength More than 90.0% of the original fibre strength.
10.	Length Change [3] 3 days 7 days 14 days	ASTM C 157:93	 + 0.1035 + 0.00649 + 0.0633	 - 0.00491 - 0.00912 - 0.01544
11.	Surface permeability[2] under stressed conditions (60% of ultimate load) Increase in permeability co-efficient as compared to unstressed condition	IIT, Chennai	 155%	 95%
12.	Water permeability [3] 28 days (mm)	BSEN 12390 Part 8:2000	 26.3	 10.7
13.	Coefficient of permeability (K) cm/sec.	IS 3085 :	3.03×10^{-10}	4.38×10^{-10}

(1) Tests done by CRRI, New Delhi
(2) Tests done at IIT, Chennai, India
(3) Tests done at Bodycote Materials Testing Services, Dubai, UAE
(4) Tests done at Kumaraguru College of Technology, Coimbatore, India
(5) Company procedure can be taken from PAC holder

Annex VI-2

Abbreviations

AASHTO	-	American Association of State Highway and Transportation Officials
ASTM	-	American Society for Testing and Materials
AU	-	Appraisal Unit
BMBA	-	BMTPC Board of Agreement
BMTPC	-	Building Materials and Technology Promotion Council
BS	-	British Standard
BSEN	-	European Standard
CPWD	-	Central Public Works Department
ED	-	Executive Director of BMTPC
ICBO	-	International Conference of Building Officials
IIT	-	Indian Institute of Technology
IO	-	Inspecting Officer
IS	-	Indian Standard
MS	-	Member Secretary of BMBA
PAC	-	Performance Appraisal Certificate
PACH	-	PAC Holder
PACS	-	Performance Appraisal Certification Scheme
TAC	-	Technical Assessment Committee (of BMBA)

Performance Appraisal Certification Scheme – A Brief

Building Materials & Technology Promotion Council (BMTPC) was set up by the Government of India as a body under the Ministry of Urban Development and Poverty Alleviation to serve as an apex body to provide inter-disciplinary platform to promote development and use of innovative building materials and technologies laying special emphasis on sustainable growth, environmental friendliness and protection, use of industrial, agricultural, mining and mineral wastes, cost saving, energy saving etc. without diminishing needs of safety, durability and comfort to the occupants of buildings using newly developed materials and technologies.

During the years government, public and private sector organisations independently or under the aegis of BMTPC have developed several new materials and technologies. With liberalization of the economy several such materials and technologies are being imported.

However, benefits of such developments have not been realised in full measure as understandably the ultimate users are reluctant to put them to full use for want of information and data to enable them to make informed choice.

In order to help the user in this regard and derive the envisaged social and economic benefits the Ministry of Urban Development and Poverty Alleviation has instituted a scheme called Performance Appraisal Certification Scheme (PACS) under which a Performance Appraisal Certificate (PAC) is issued covering new materials and technologies. PAC provides after due investigation, tests and assessments, amongst other things information to the user to make informed choice.

The Government of India has vested the authority for the operation of the Scheme with BMTPC through Gazette Notification No. 1-16011/5/99 H-II in the Gazette of India No. 49 dated 4th December, 1999.

Builders and construction agencies in the Government, public and private sectors can help serve the economic, development and environmental causes for which the people and Government stand committed by giving preference to materials and technologies which have earned Performance Appraisal Certificates.

Further information on PACS can be obtained from the website: www.bmtpc.org

In case you have any suggestions/complaints write to;

Executive Director, BMTPC
and Member Secretary, BMTPC Board of Agreement,
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