



Project Report

Jinghong Hydropower Station

A Roller Compacted Concrete (RCC) Dam Project

Yunnan Province, China

Including

Scanning Electron Microscope (SEM) Analysis

Of Xypex Modified Construction Concretes

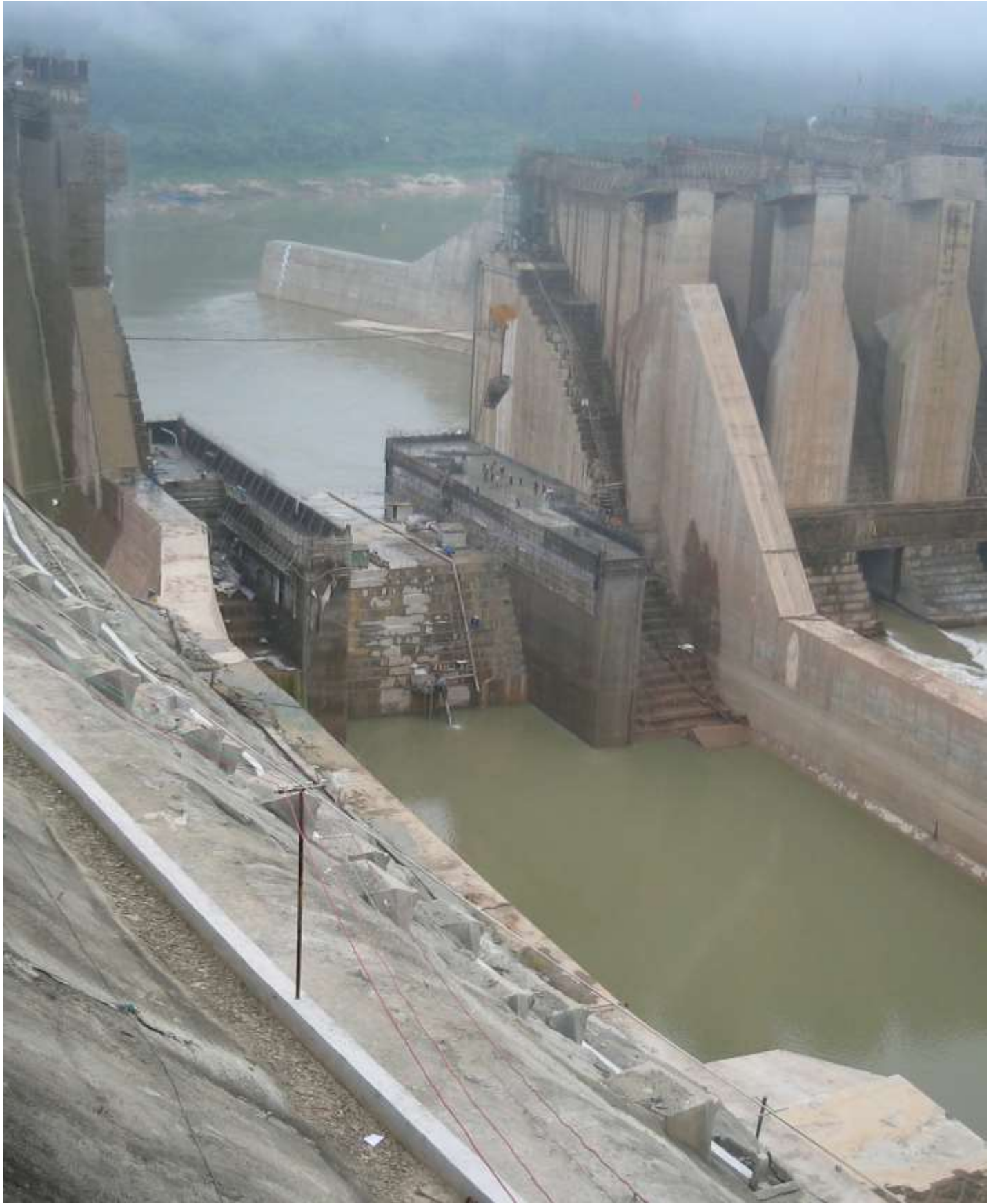
July 2010

Beijing Cheng Rong Waterproofing Material Co., Ltd.,

(Xypex Manufacturer and Distributor for China)

Yunnan Saibo Yonggu Waterproofing Material Co. Ltd.,

(Sub-distributor & Applicator, Yunnan Province)



Jinghong Hydropower Station, During Construction, 2003 - 2008

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Background

From the Tibetan Plateau, the Lancang River runs through the Tibet Autonomous Region and Yunnan Province before flowing on as the Mekong River through Myanmar, Laos, Thailand, Cambodia and Vietnam, thereafter emptying into the South China Sea. The river has a length of 2,100 kms inside China and through that length, is said to have the potential of 25.45 million kilowatts of hydropower.

The Jinghong Dam & Power Station is a gravity dam constructed of roller-compacted concrete on the Lancang River, at Jinghong, in the Yunnan Province of China. With construction commencing in 2003 and reaching completion in 2008, the dam rises to a height of 108 meters and spans an impressive 704.5 meter width, creating behind it the 510 km² Jinghong Reservoir, with a total capacity of 249,000,000 m³.

The power station, which has an installed capacity of 1,750 MW, was progressively commissioned as the reservoir achieved capacity, during the period 2008 to 2010. Construction cost was 12.3 billion Yuan (US\$1.76 billion).

China plans to build 15 power stations along the Lancang, with a total installed capacity of 25.2 million kilowatts. At present, just three dams, the Manwan, the Dachaoshan and the Jinghong power stations are operational.

Report.

**From the Project Designers - *Jinghong Hydropower Station Project Department,
Kunming Survey and Design Institute, Hydropower SinoChina***

Review of XYPEX Product Usage in Jinghong Hydropower Station Project

The contrast experiments, such as, anti-permeability, anti-fracture, anti-tensile, anti-bending, anti-pressure and workability process and other indicators were done for the cementitious capillary crystalline waterproofing materials together with mortar in mixing layer in upstream Level 2 metaphoric area by Huaneng Jinghong Hydropower Project Construction Management Bureau, Jinghong Hydropower Station Design Office, Kunming Survey and Design Research Institute, the project department, South China Supervision Corporation and Jinghong Hydropower Station Project Department, Gezhouba Corporation, in May 2004, according to the direction of the General Engineers Meeting, in order to strengthen the micro anti-seepage and robustness of upstream concrete in Jinghong Hydropower Station Dam.

Based on the on-site test results, construction cases and reviews by many parties, XYPEX cement-based penetrating and crystallization materials, manufactured in Canada, were directed to be applied to reinforce the micro-compactness of upstream concrete in Jinghong Hydropower Station Dam, in order to improve the long-term self-water-proofing performance for the concrete.

Related performance is described as below:

- (1) The raw material test results met the standard, specification and design requirement. XYPEX quality test results show that all indicators meet the related standard requirements and the products are qualified.
- (2) The mortar performance test results showed that, in C₉₀15 and C₉₀20 mortar, the compressive strength increased as a result of the Xypex content, the relative permeability coefficient decreases as a result of the Xypex content, the strength and anti-penetration, the strength and anti-permeability increased more than the benchmark concrete and all mortar performances improve notably when the XYPEX waterproof material is added.
- (3) The metamorphic concrete performance test results showed that, in C₉₀15 and C₉₀20 mortar, the relative permeability decreases, the anti-freezing capacity and ultimate tensile strength increases as XYPEX waterproof material is added. This demonstrated that the durability, the anti-fracture ability of metamorphic concrete improves significantly after the XYPEX Admix is added.
- (4) According to the test results, 1.5% content of Xypex Admix was used during construction for concrete compaction and quality control so that the durability of the metamorphic concrete in upstream side of RCC concrete is improved.

Throughout the 5 years of construction and test practices on left and right banks of Jinghong Hydropower Station, XYPEX products have reinforced the self-waterproofing

ability of upstream concretes and cold-seam mortar layers with its significant permeating crystallization, straightforward and intuitive workability. XYPEX cement-based and permeable crystallization materials have the beneficial effect of repairing and protecting the concrete blights, improving the concrete durability and comprehensively strengthening concrete.

*Jinghong Hydropower Station Project Department, Kunming Survey and Design
Institute, Hydropower SinoChina*

October 3, 2010

XYPEX(赛柏斯)产品在景洪水电站工程中的使用评议

为加强景水电站拦河大坝迎水面混凝土的微观抗渗能力和耐久性，华能景水电工程建设管理局、昆明院景水电站设计代表处、中南监理公司景洪项目部和葛洲坝集团景水电站工程项目部，于2004年5月总工程师会议定，景水电站迎水面二级配变态区混凝土采用掺入水泥基渗透结晶材料，并掺入层间结合砂浆进行抗渗、抗裂、抗拉、抗折（极限拉伸）、抗压和施工工艺性等指标的对比试验，基于现场试验结果和综合施工实例，经多方评议，决定采用加拿大生产的XYPEX（赛柏斯）水泥基渗透结晶材料对景水电站大坝迎水面混凝土的微观密实性进行加强，从而提高混凝土的长期自防水性能。

相关性能如下：

(1) 原材料检测成果符合相关标准规范及设计要求，XYPEX（赛柏斯）品质检验成果表明，各项指标均满足相关标准要求，质量合格。

(2) 根据砂浆性能试验结果可以看出：C₀₀15砂浆和C₀₀20砂浆，在掺入不同掺量的XYPEX（赛柏斯）防水材料情况下，抗压强度随着掺量的增加而增加，相对渗透系数随着XYPEX（赛柏斯）防水材料掺量的增加而减小，强度及抗渗性较基准混凝土有较大幅度的增长，砂浆各项性能均有较明显的改善。

(3) 根据变态混凝土性能试验结果可以看出：C₀₀15砂浆和C₀₀20变态混凝土，在掺入不同掺量的XYPEX（赛柏斯）掺合剂后，相对渗透系数随着掺量的增加而减小，抗冻性、极限拉伸值随着掺量的增加而提高。说明混凝土在掺入XYPEX（赛柏斯）掺合剂后，对变态混凝土的耐久性能、抗裂性能均有较大幅度的提高。

(4) 根据试验成果，在碾压混凝土施工中选用1.5%的掺量进行施工和质量控制，以提高碾压混凝土上游迎水面变态混凝土的耐久性。

经过在景水电站左右岸的施工、试验实践，时值五年，XYPEX（赛柏斯）产品以其显著的渗透结晶性能、简易、直观的施工工艺等特性，对迎水面混凝土和冷缝砂浆层的自防水能力起到了积极的增强作用。XYPEX（赛柏斯）水泥基渗透结晶材料对防止和修复混凝土病害、提高混凝土耐久性、加强混凝土综合性能能起到较好作用。

中国水电顾问集团昆明勘测设计研究院景水电站工程项目部



Report.

From the Construction Contractor – Sinohydro Bureau 3 Co. Ltd.

A Review of XYPEX Technology

After comprehensive appraisals by Huaneng Jinghong Hydropower Project Construction Management Bureau, Jinghong Hydropower Station Office, Kunming Survey and Design Research Institute, HydroChina Corporation and the project department, South China Supervision Corporation, **XYPEX Admix** was specified to be added into the concrete mortar to improve the long-term anti-seepage performance of Jinghong Hydropower Station Dam concretes, throughout the 1~1.5m of upstream metamorphic area. **XYPEX Concentrate** was applied to improve the anti-seepage capacity in workshop dam section, while **XYPEX Patch 'n Plug** was used to stop water seepages in various corridor locations.

XYPEX Admix is homogeneously mixed, transported, placed and compacted with the concrete mortar produced at the on-site mortar-making station. It can be easily controlled on-site through effective weighing, mixing and recording procedures. Xypex Admix is used to ensure the construction concrete quality in the reinforced anti-seepage areas at the upstream 1~1.5m metamorphic dam face.

XYPEX Concentrate is easily prepared into mortar slurry for application, lowly requires the substrate surface and is easily applied. It is used to reinforce those important anti-seepage locations. It is durable, low cost and features shortened construction periods, fast curing, rapid condensation, high binding strength, etc.

XYPEX Patch'n Plug exhibits a good sealing effect in areas of persistent leakage and high hydrostatic pressure. It merges to become integral with the concrete matrix and notably improves the anti-fracture and anti-leakage performance in the flawed locations.

With on-site sampling tests, XYPEX products have an obvious penetration and crystallization performance capability and can activate and strengthen the hydration process, improve the concrete compactness, concrete robustness and long-term anti-seepage performance significantly. In addition to workability and forwarding control on site, etc., XYPEX products will no doubt be widely applied for their anti-seepage and durability enhancement qualities in concrete water conservancy projects.

Sinohydro Bureau 3 Co., Ltd

July 25, 2010

XYPEX(赛柏斯)产品使用评议

经华能景洪水电工程建设管理局、中水顾问集团昆明勘测设计研究院景洪电站代表处、中南监理公司景洪项目部综合评定,选择在水泥净浆内加入 XYPEX (赛柏斯) 掺合剂以提高景洪电站大坝迎水面一米变态区范围的长期抗渗性能、选择 XYPEX (赛柏斯) 浓缩剂涂刷施工以提高厂房坝段抗渗加强部位的抗渗能力、选择 XYPEX (赛柏斯) 堵漏剂对部分廊道渗水/射水部位进行强堵施工。

XYPEX (赛柏斯) 掺合剂是在现场制浆站和水泥净浆同时搅拌、输送、振捣、施工,由于掺合剂为单一组分,其在施工现场的称量、搅拌等工序较容易控制(后附监理的掺量记录表),从而迎水面变态区一米范围内防渗加强区的施工质量得到保证。XYPEX (赛柏斯) 浓缩剂为单一组分灰状物质,其浆液配制简单、对基面要求低、涂刷施工容易,能够以较低成本和较短工期对重要防渗部位的表面抗渗能力和耐久性进行补强施工。由于具有快硬、速凝、粘结强度高、容易施工等特点,XYPEX (赛柏斯) 堵漏剂对强漏水点进行堵漏施工效果良好,并且堵漏剂会和母体混凝土结为一体,大大提高了缺陷部位的抗裂、抗渗性能。

经过现场取样试验,XYPEX (赛柏斯) 产品具有明显的渗透、结晶性能,激活、加强了水泥的水化过程,从而提高了混凝土的密实性,混凝土的耐久性和长期抗渗性能得到了显著加强。再加上施工容易、现场控制简单等特性,XYPEX (赛柏斯) 产品将会在水工混凝土防渗补强施工中得到进一步广泛应用。

中国水利水电第三工程局有限公司





Report

From the Construction Contractor's Laboratory and Testing Organization, Jinghong Construction Bureau Laboratory, Sinohydro Bureau 3 Co., Ltd Center Laboratory..

Description and Conclusions of Testing Carried Out on the XYPEX Materials Used in the Jinghong Hydropower Station Project

Jinghong Hydropower Station Project has performed an extensive range of on-site test of XYPEX materials' effects on concrete anti-permeability and durability, etc., and all indicators of XYPEX Admix and Xypex Concentrate in order to strengthen the anti-permeability at the dam upstream face, improve the compactness and water-resistance in dam metamorphic concrete. The test results showed:

1. The tensile strength of concrete modified with XYPEX Admix is (improved by) close to 30%, the cleavage strength is (improved by) close to 20% (at 90 days, 1.5% content).

2. The relative permeability coefficient of concrete modified with XYPER Admix is reduced by 10.13 times (at 90 days, 2.0MPa, 24 hour constant water pressure and 1.5% content).
3. The anti-freezing indicator of concrete modified with XYPER Admix: relative kinetic elasticity modulus growth rate is 17.9 % (at 90days, 100 circles and 1.5% content).
4. The anti-fracture indicator of concrete modified with XYPER Admix: ultimate tensile strength and axial tensile strength improvement rate is 12% (at 90 days and 1.5% content).
5. The anti-impact and wear-resistance of concrete modified with XYPER Admix is close to those of concretes modified with silicon powder. In anti-impact and wear-resistance concrete, XYPEX Admix can replace the silicon powder to improve the possibility of concrete's anti-impact and wear-resistance(at 28 days, 1.5% content and 8% silicon powder).
6. The relative permeability coefficient of concrete coated with XYPEX Concentrate is reduced by 2.25 times (at 90 days, 3.0MPa, 48h constant water pressure and 1.8kg/m² coating amount).

The specimens added with XYPEX Admix were microscopically photographed. Through contrast with benchmark concrete and using the SEM, it is readily observed that the concrete modified by the addition of XYPEX Admix is hydrated adequately, well structured and compact.

After tests in multiple groups and over various age periods, XYPEX Admix can improve the anti-permeability, anti-fracture, anti-tensile, wear-resistance, anti-bending and anti-freezing indicators significantly and have notable effects at the key, anti-permeability locations of the concrete project.

Jinghong Construction Bureau Laboratory, Sinohydro Bureau 3 Co., Ltd Center Laboratory

关于XYPEX(赛柏斯)系列产品在景洪电站

工程运用的试验说明

为增强大坝迎水面的抗渗性能、提高大坝变态区混凝土的密实性和耐水性,景洪电站工程针对赛柏斯对混凝土抗渗、耐久性等的影响,对赛柏斯掺合剂和浓缩剂各项指标进行了现场试验,试验成果表明:

1、掺入Xypex(赛柏斯)掺合剂的混凝土的抗压强度增幅近30%,抗劈拉强度增幅近20%(90d龄期,1.5%掺量)。

2、掺入Xypex(赛柏斯)掺合剂的混凝土的相对渗透系数降低10.13倍(90d龄期,2.0MPa,24h恒水压,1.5%掺量)。

3、掺入Xypex(赛柏斯)掺合剂的混凝土的抗冻指标——相对动弹性模量增长率为17.9%(90d龄期,循环100次,1.5%掺量)。

4、掺入Xypex(赛柏斯)掺合剂的混凝土的抗裂性能——极限拉伸值增幅为12%,轴拉强度增幅为21%(90d龄期,1.5%掺量)。

5、掺入Xypex(赛柏斯)掺合剂的混凝土的抗冲耐磨性能与掺入硅粉的混凝土的抗冲耐磨性能接近,在抗冲耐磨混凝土的运用中,Xypex(赛柏斯)掺合剂具有替代硅粉以提高混凝土的抗冲耐磨性能的可能性(28d龄期,掺合剂1.5%掺量,硅粉8%掺量)。

6、外涂Xypex(赛柏斯)浓缩剂的混凝土的相对渗透系数降低2.25倍(90d龄期,3.0MPa,48h恒水压,1.8kg/m²涂刷量)。

对掺入赛柏斯掺合剂的有关试件进行了显微拍照,经与基准混凝土的显微照片对比,可明显看出掺入赛柏斯掺合剂的混凝土微观下水化更加充分、结构更加密实。

经多组、多龄期的试验证实,赛柏斯系列产品的应用对混凝土的抗渗、抗裂、抗压、抗磨、抗折、抗冻指标都有较大的提高,对混凝土工程关键防渗部位有明显而有效的作用。

中国水利水电第三工程局中心实验室





Jinghong Construction Bureau Laboratory,
Sinohydro Bureau 3 Co. Ltd., Center
Laboratory, Jinghong Hydropower Station
project.



Report

XYPEX Crystallization Scanning Electron Microscope Investigation of the Yunnan Jinghong Hydropower Station Project Concretes

In November, 2004, **Gezhouba Project Department, Yunnan Jinghong Hydropower Station Project**, prepared the specimens for crystallization examination in ratios according to the specification for the interlayer mortar of actual C₉₀20 and C₉₀15 RCC concretes, for both control samples and for XYPEX Admix modified concrete samples. The Xypex Admix was added to the C₉₀20 RCC concrete at the rate of 1.5% of total cementing materials. For the C₉₀15 RCC concrete interlayer mortar the XYPEX Admix was added at the rate of 1.8% of total cementing materials.

On December 2, after 28 days, the control specimens and XYPEX modified specimens were crushed into SEM-manageable size pieces and forwarded to **Analysis and Test Center of Yunnan Normal University** for plating. Using the small SBC-12 ion sputtering meter and single asynchronous motor (Model 2XZ-1 rotary-vane vacuum pump), the specimens were energized applying a 10 MA (MA) current and plated three times for 6min. The specimens were sent to **Yunan Key Laboratory for New Material Preparation and Test** for scanning electronic microscope investigation on December 7, 2004.

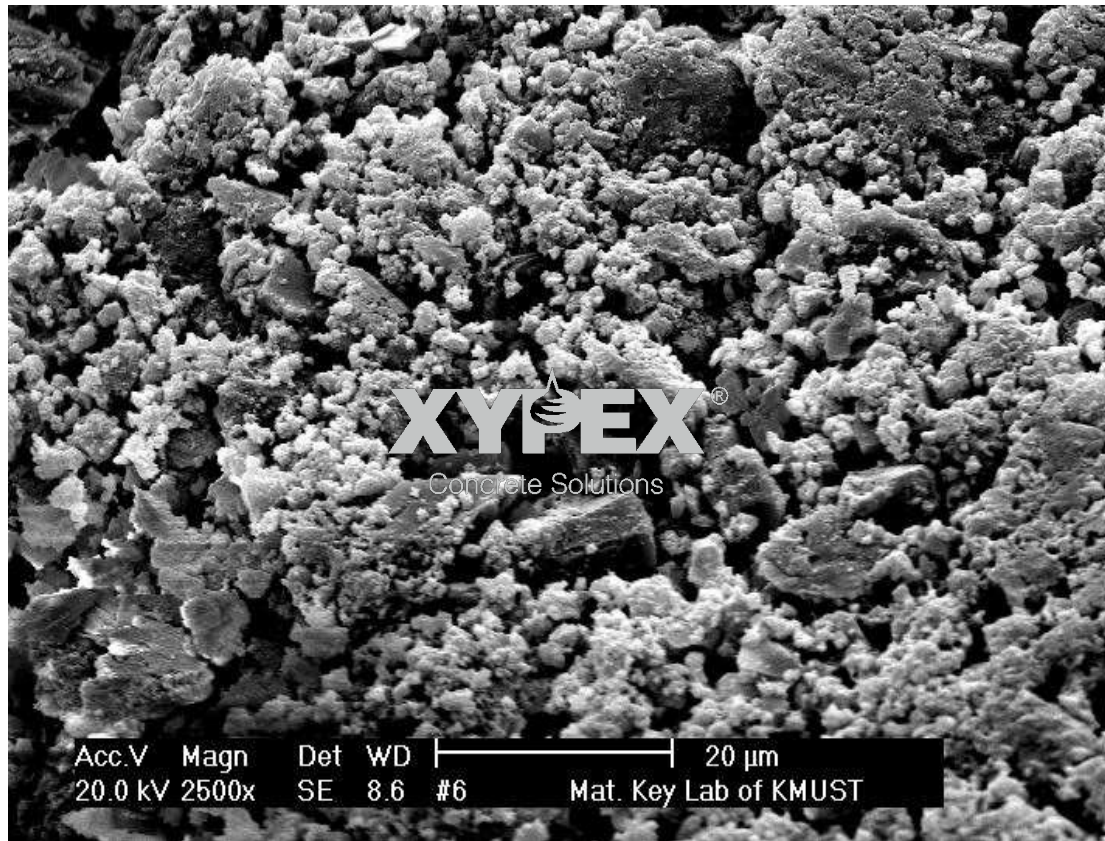
The specimens modified with the addition of XYPEX Admix were obviously found full of the dendritic crystal, in stark contrast to those without the XYPEX Admix.

Note, in the following SEM images, for the C₉₀20 RCC concrete, sample No. 4 is the control specimen, sample No. 1 is the concrete specimen modified with Xypex Admix.

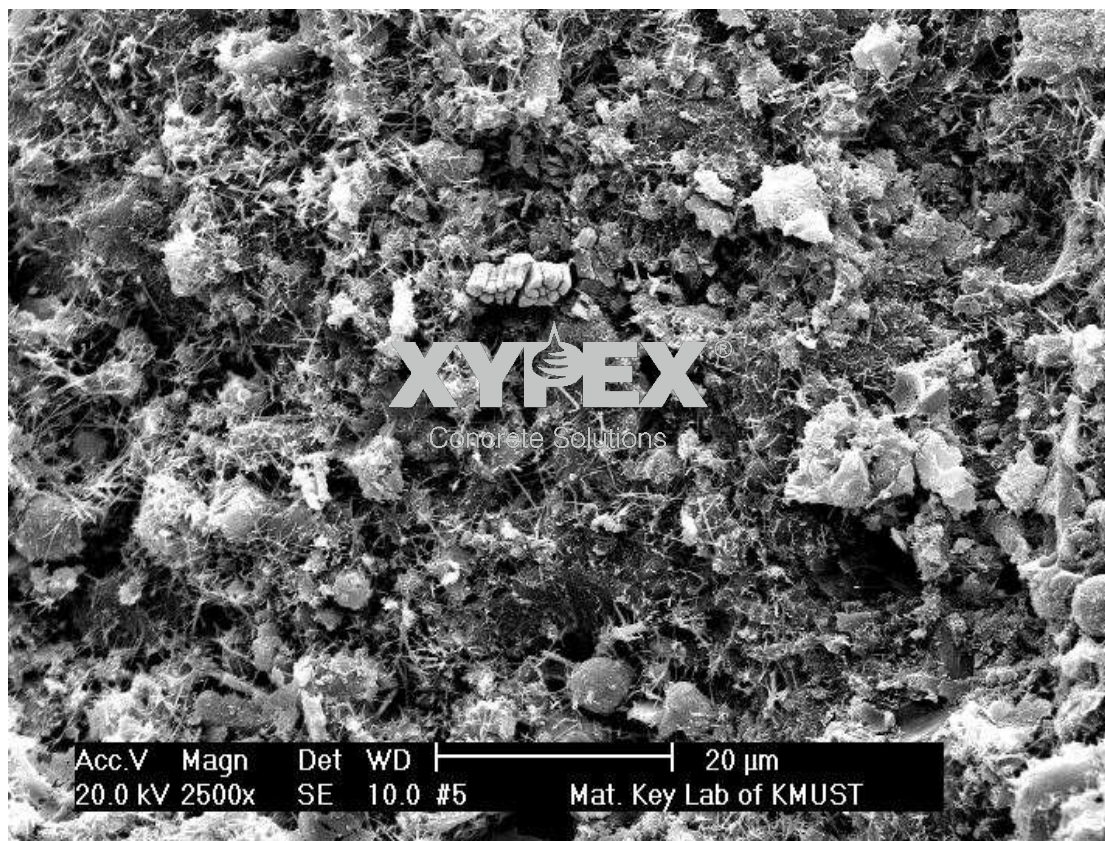
For the C₉₀15 RCC interlayer concrete mortar, sample No. 6 is the control sample; sample No's 5 and 7 are the concrete specimens modified with Xypex Admix.

The following images were scanned from various electronic microscopes with varying magnification factors.

C₉₀15 RCC interlayer mortar

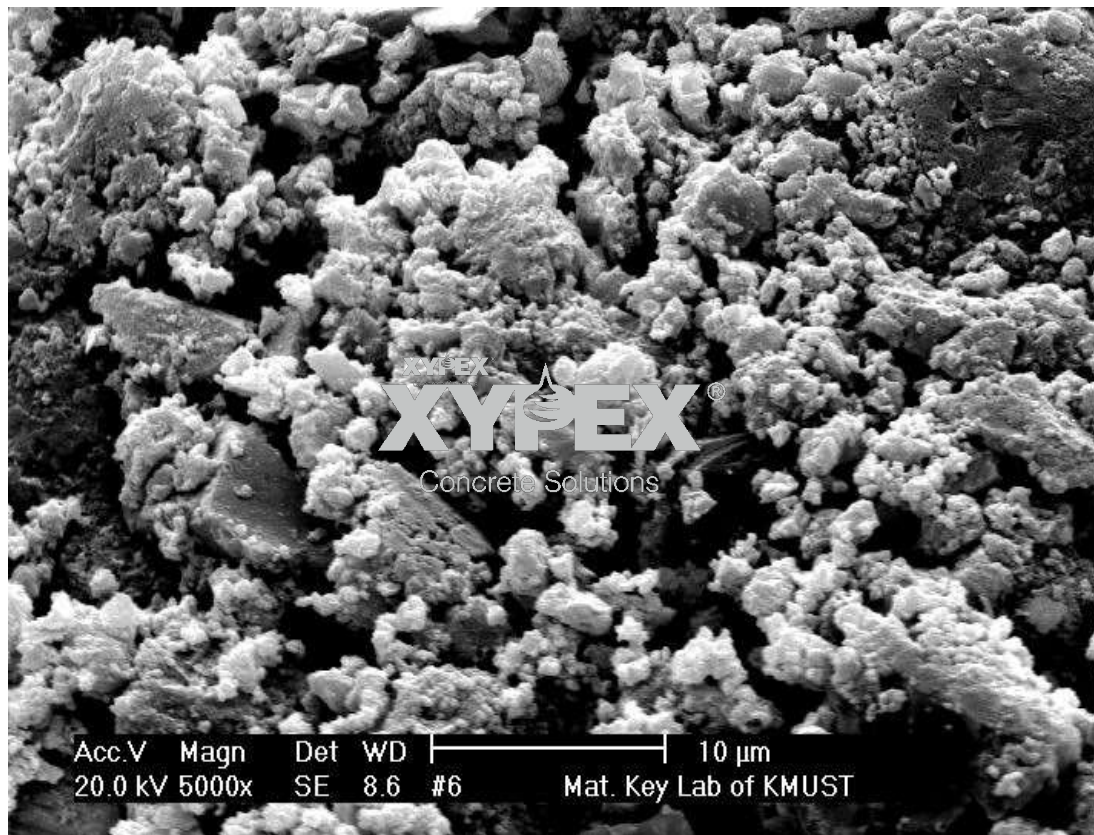


No. 6 control specimen, with a 2500x amplification factor

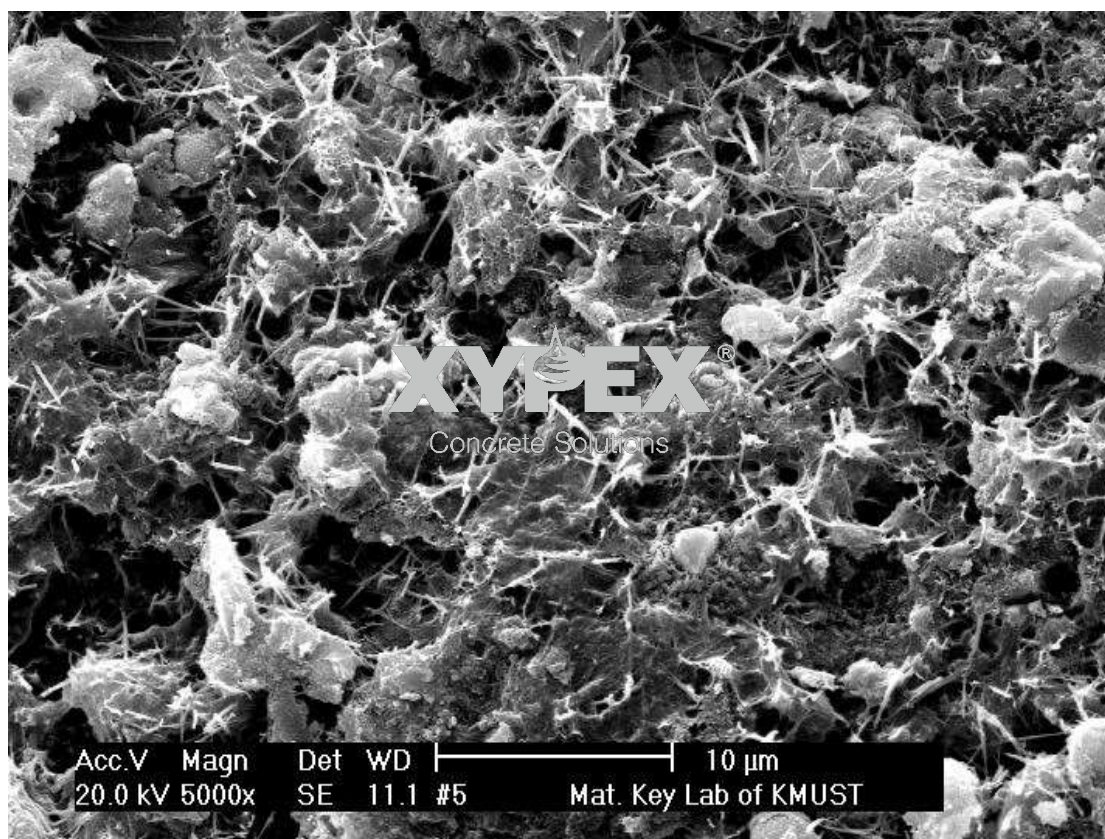


No. 5 specimen with a 2500x amplification factor (with XYPEX Admix)

C₉₀15 RCC Interlayer Mortar

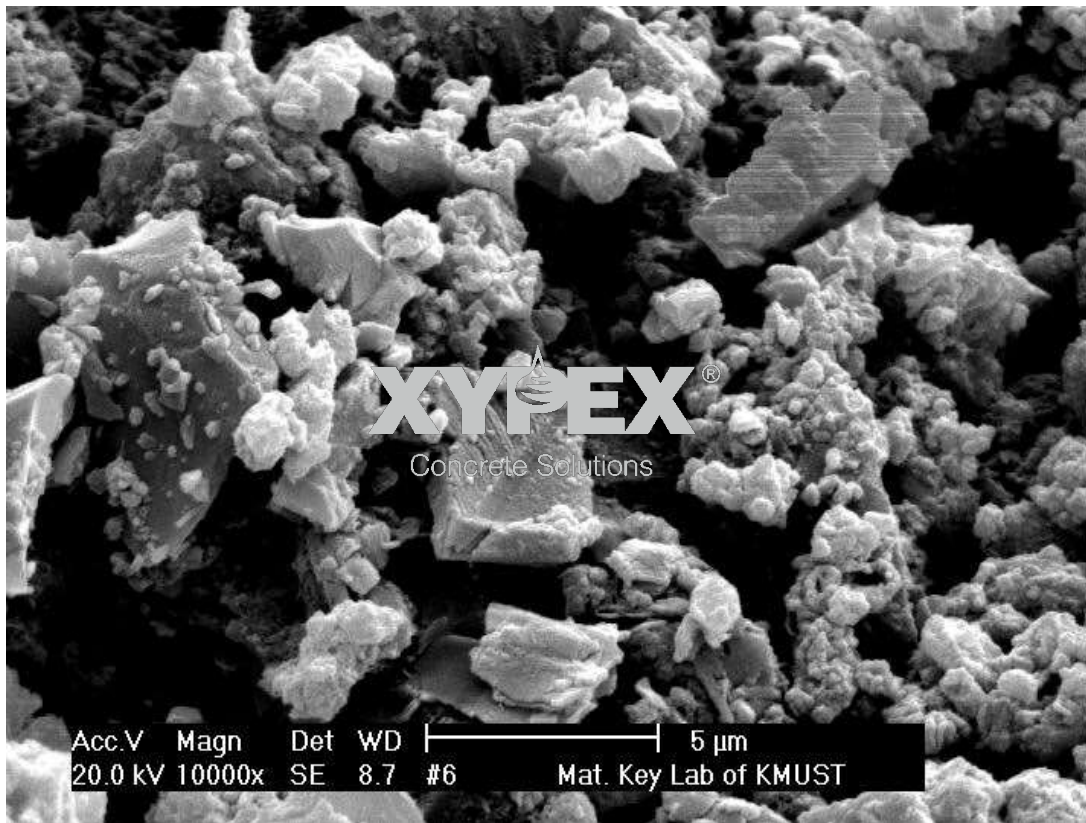


No. 6 control specimen with a 5000x amplification factor

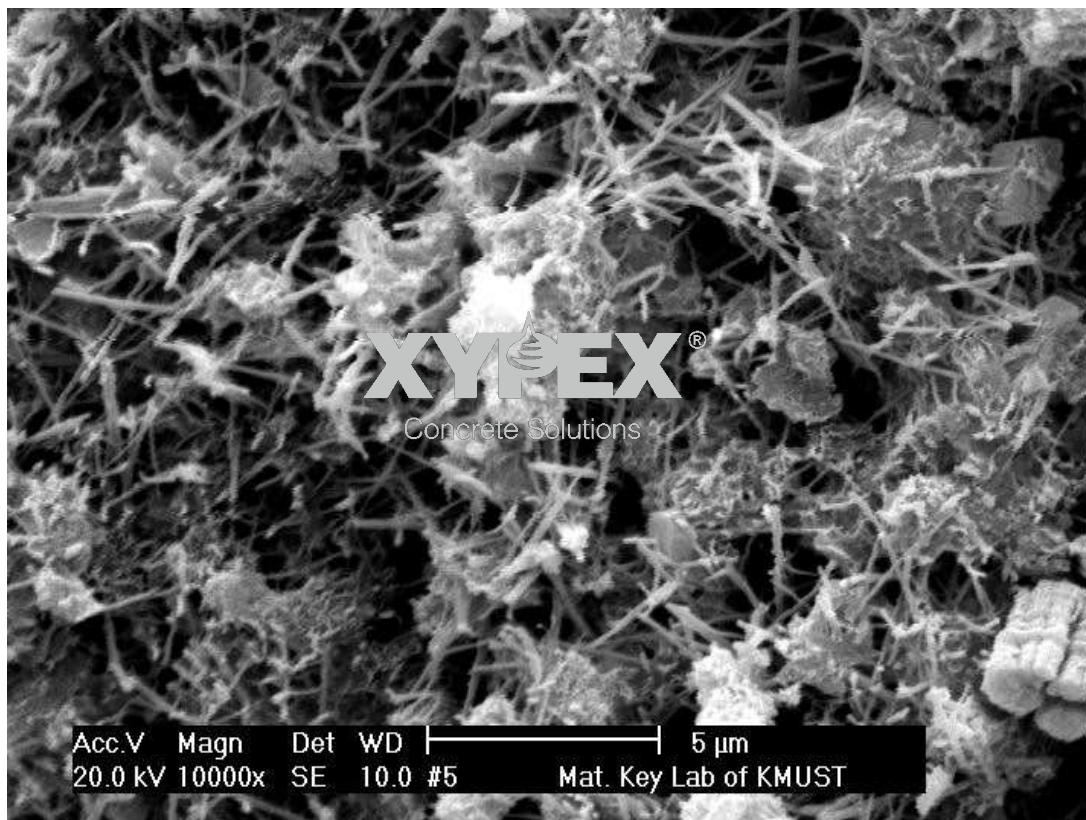


No. 5 - specimen with a 5000x amplification factor (with XYPEX Admix)

C₉₀15 RCC Interlayer Mortar



No. 6 control specimen with a 10000x magnification factor

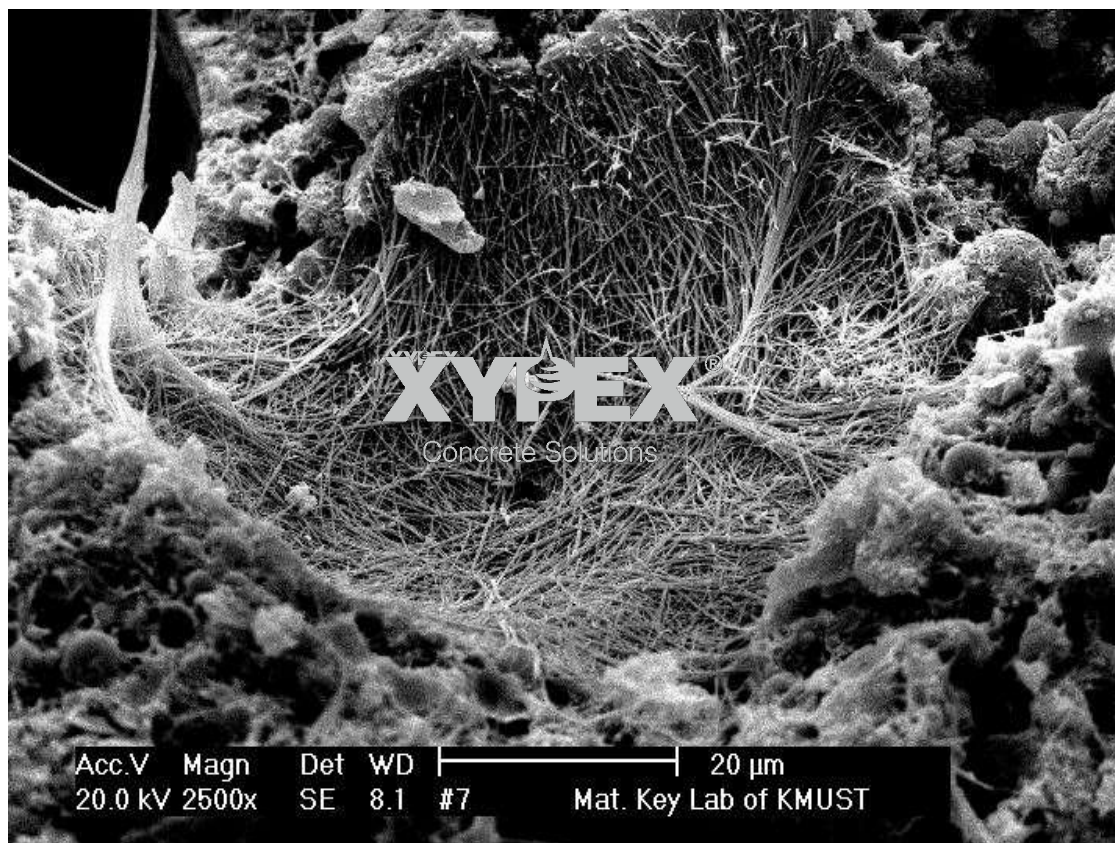


No. 5 specimen with a 10000x magnification factor (with XYPEX Admix)

C₉₀15 RCC Interlayer Mortar



No. 6 control specimen with a 10000x magnification factor



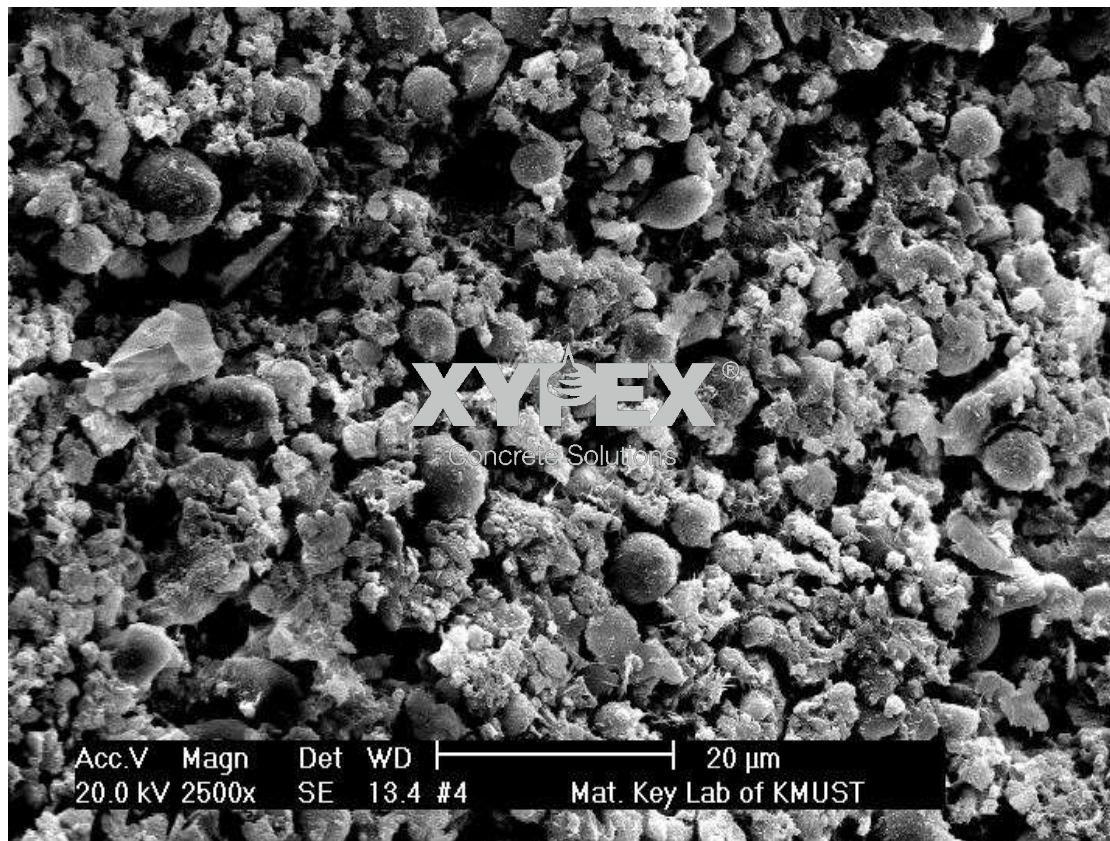
No. 7 specimen with a 2500x magnification factor (with XYPEX Admix)



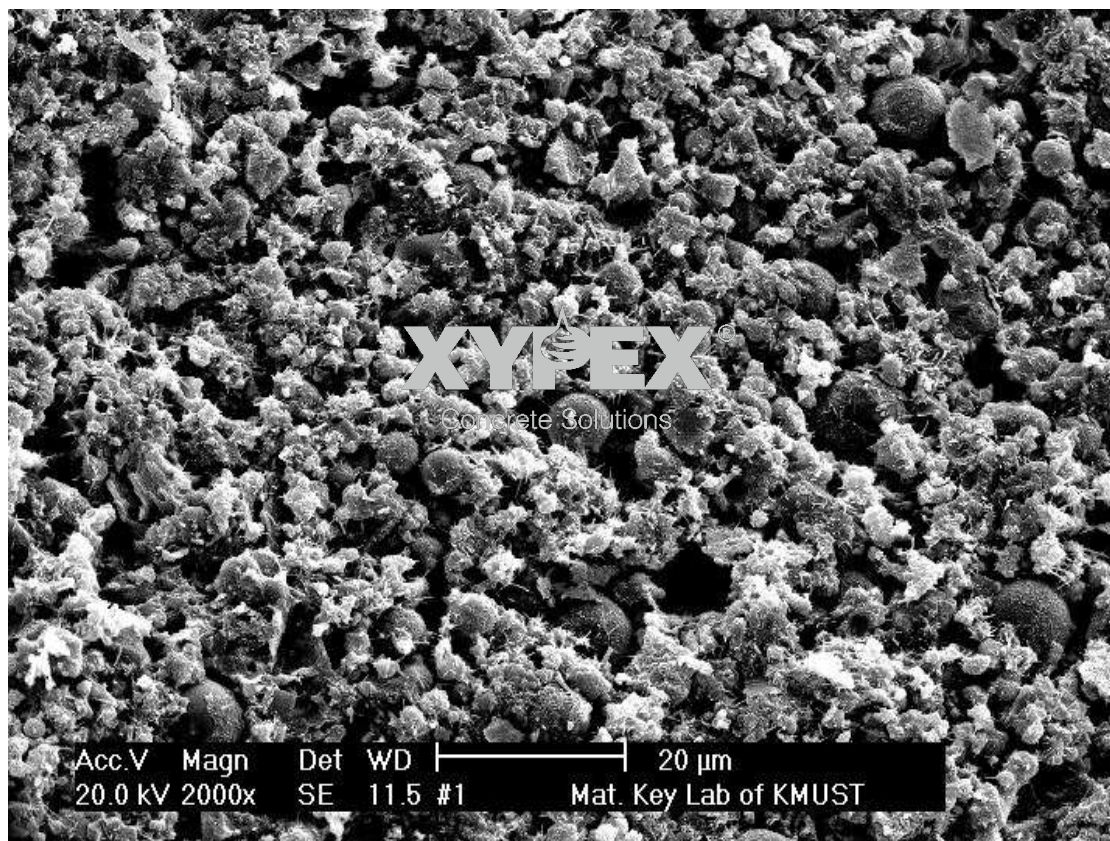
No. 7 specimen with a 10000x magnification factor (with XYPEX Admix)

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C₉₀20 RCC



No. 4 control specimen with a 2500x magnification factor

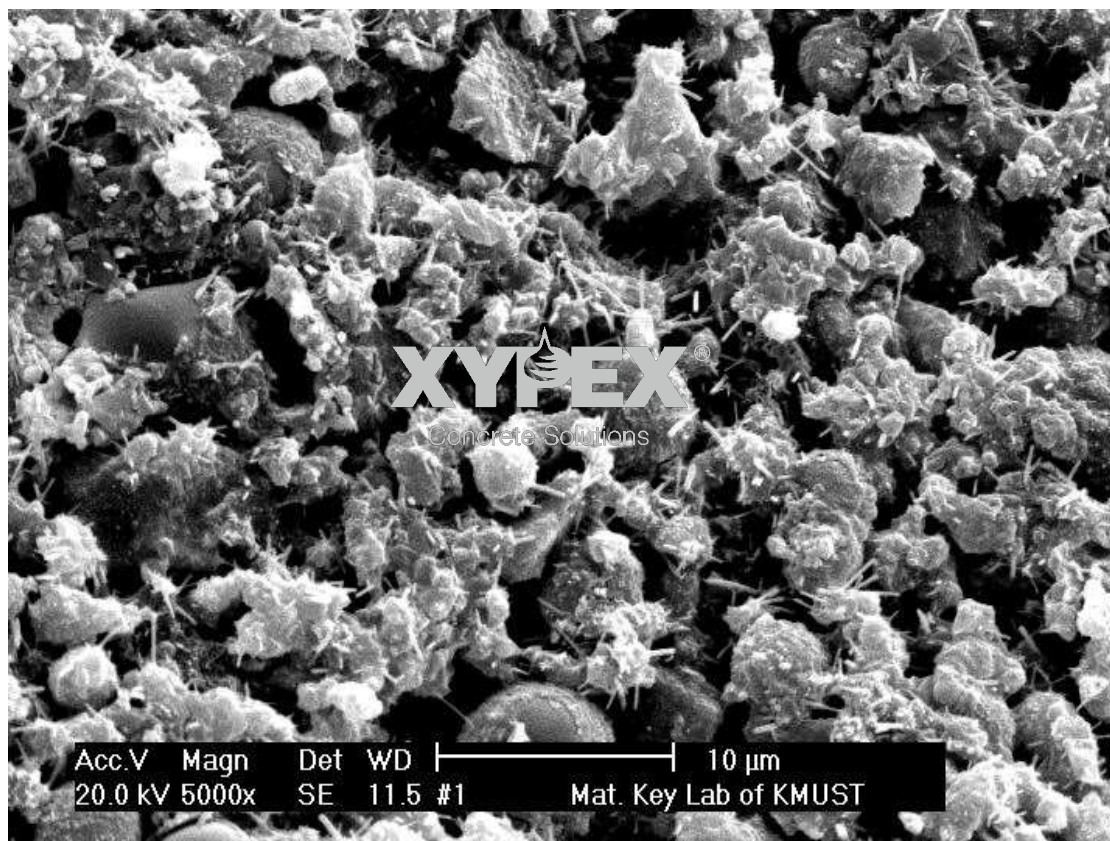


No. 1 specimen with a 2000x magnification factor (with XYPEX Admix)

C₉₀20 RCC

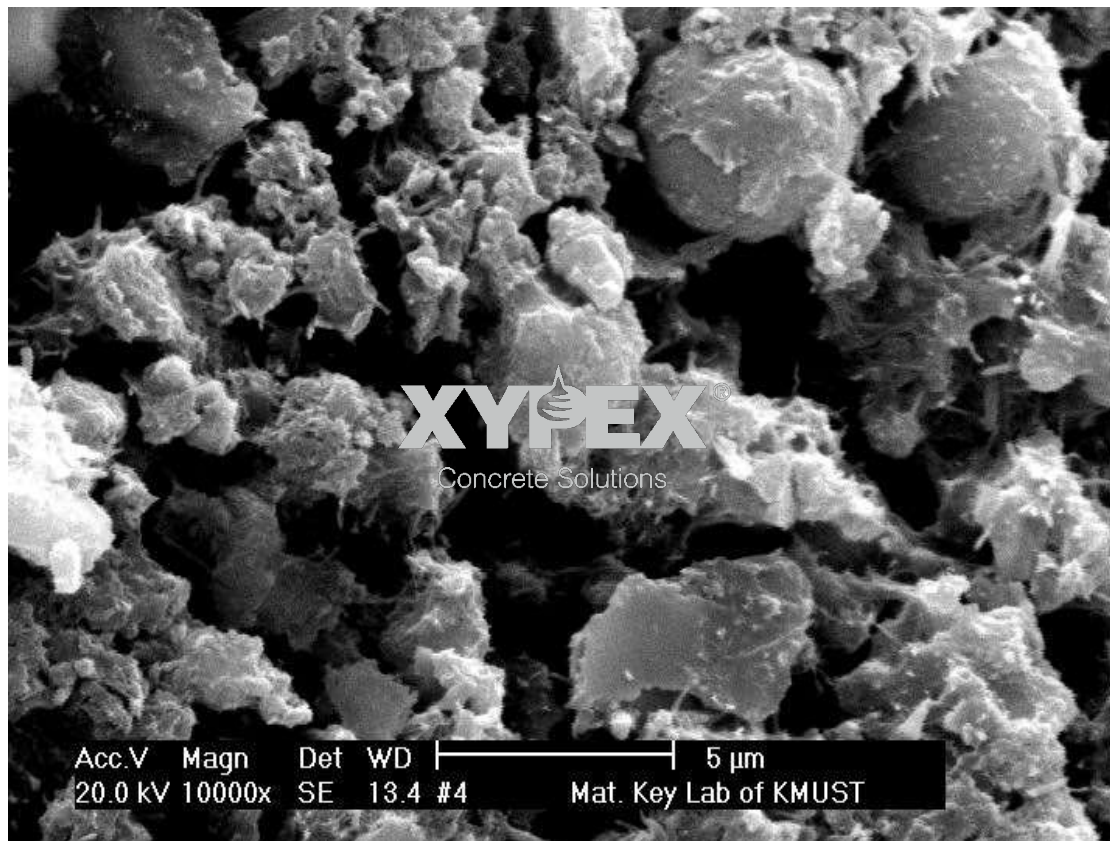


No.4 control specimen with a 5000x magnification factor

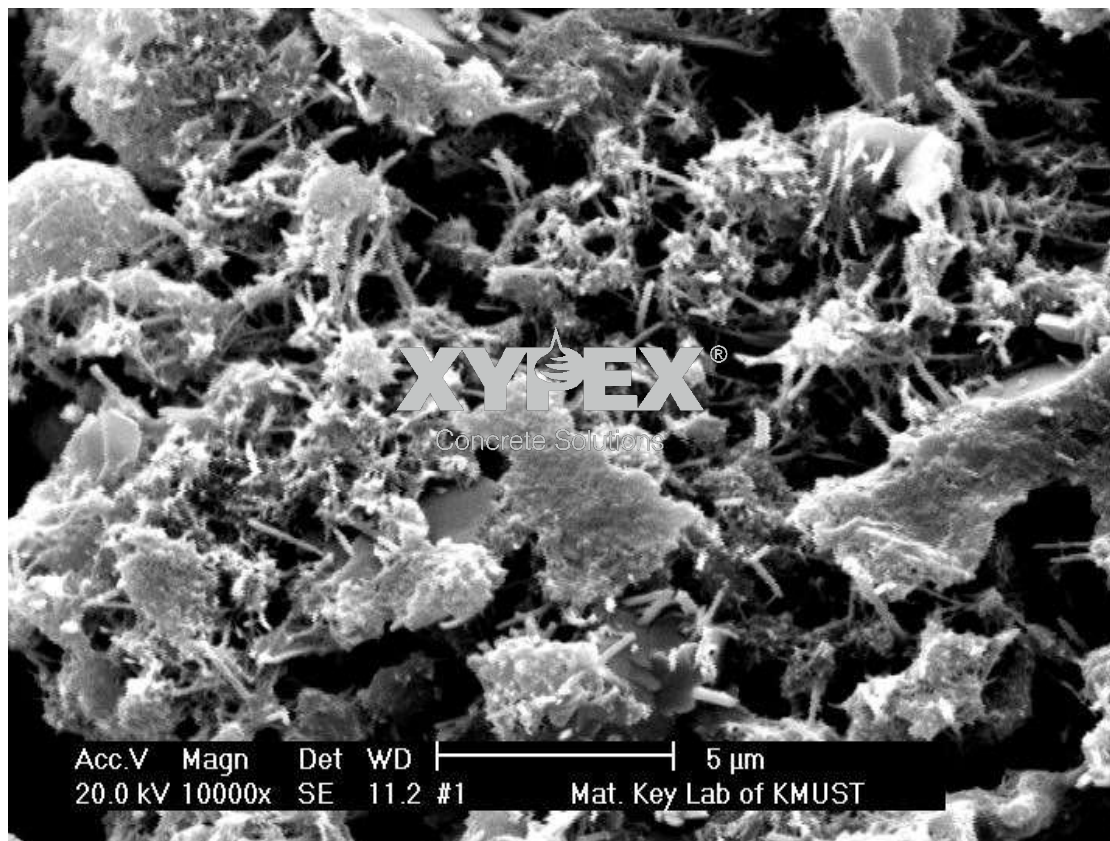


No. 1 specimen with a 5000x magnification factor (with XYPEX Admix)

C₉₀20 RCC



No. 4 control specimen with a 10000x magnification factor



No. 1 specimen with a 10000x magnification factor (with XYPEX Admix)

Statement

By the Owner of the Jinghong Hydropower Station, Huaneng Jinghong Hydropower Project Construction Management Bureau

Regarding the performance of XYPEX technology

Sinohydro Bureau 3 Co. Ltd., laboratory and **Gezhouba Group Jinghong Hydropower Station Project** laboratory have conducted a range of experiments to test various performance aspects of XYPEX products measured against 'control' samples of the benchmark concrete. The experimental results have demonstrated that XYPEX products significantly improve all those desirable indicators, including anti-permeability, anti-fracture, anti-tensile, anti-freezing and anti-wearing, within the benchmark construction concretes.

The special active ingredients of XYPEX result in the more complete concrete hydration process and strengthen the compactness (density) of concretes at a microscopic level. Because the XYPEX cement-based, permeability reducing crystallization material is inorganic and catalytic in nature, its effect is to reinforce the self-healing, self-sealing waterproofing function of concrete. Its capacity to reactivate, to catalyze the cement hydration process, will persist for a very long time. It gives concrete the ability to self-repair and self-seal the micro-fracture and micro-pores formations in later ages of the concrete, for a very long time.

Following reviews by and with the approval of:

Huanleng Jinghong Center Laboratory,

Huaneng Jinghong Hydropower Project Construction Management Bureau,

Hydropower SinoChina Kunming Survey and Design Institute,

Jinghong Hydropower Station Design Office, and

South China Supervision Corporation, Jinghong Project Department,

1.5% by-weight-of-cementitious of XYPEX Admix was specified to be added to the concrete mortar throughout the 1-1.5m thick, upstream face of the RCC dam of the Jinghong Hydropower Station. 1.2kg/m² of Xypex Concentrate is applied in critical areas to control permeability of upstream face concretes, while XYPEX Patch 'n Plug was used to control leakages within internal corridors and chambers.

A total of 107,000kgs of XYPEX materials were applied within the Jinghong Hydropower Station.

XYPEX products applied in Jinghong Hydropower Station proved that they feature an ease of application and workability; significant permeability reducing crystallization and are of stable quality. As a result, the Jinghong Hydropower Station dam body has a good anti-permeability effect, without any water leakages through the drain holes within the dam

corridors. XYPEX technology provides excellent products to protect against and self-repair the many concrete 'blights', improving the concrete's durability and comprehensively reinforcing concrete performance.

Huaneng Jinghong Hydropower Project Construction Management Bureau

October 12, 2010

XYPEX(赛柏斯)使用证明

经中国水利水电第三工程局景洪施工局试验室和葛洲坝集团景洪电站工程项目部试验室对 XYPEX (赛柏斯) 产品各项指标进行对比试验, 试验结果表明: XYPEX (赛柏斯) 产品对基准混凝土的抗渗、抗裂、抗折、抗冻、抗磨等指标有显著提高, XYPEX (赛柏斯) 产品特有的活性物质使得混凝土的水化过程更加完整、充分, 在微观层面上, 混凝土试件的密实性明显加强。由于 XYPEX (赛柏斯) 水泥基渗透结晶材料为无机材料, 其作用机理是增强混凝土的自防水机能, 所以其催化水泥水化的性能长期存在, 对混凝土的后期微细裂缝、微观毛细孔等危害具有长期修复、补强效能。

经华能景洪中心试验室复核, 华能景洪水电工程建设管理局, 中水顾问集团昆明勘测设计研究院景洪电站设计代表处、中南监理公司景洪项目部综合审定, 在景洪电站碾压混凝土大坝迎水面变态混凝土 (1-1.5m 厚) 区域内水泥净浆中加入 1.5% 掺量的 XYPEX (赛柏斯) 掺合剂, 并在大坝迎水面局部抗渗加强区域进行 XYPEX (赛柏斯) 浓缩剂涂刷 (1.2kg/平米), 同时使用 XYPEX (赛柏斯) 堵漏剂对相应少量漏水部位进行强堵施工。景洪水电站共使用上述材料总量约 107 吨。

赛柏斯在景洪电站使用实践证明, 该系列产品 (XYPEX (赛柏斯)) 具有施工容易、渗透结晶性能显著、质量稳定等特点, 景洪水电站大坝坝体防渗效果极好, 坝体廊道中坝体排水孔几乎无渗漏水。该系列产品是一种防止和修复混凝土病害、提高混凝土耐久性、加强混凝土综合性能的新技术、新材料。

华能景洪水电工程建设管理局
二〇一〇年十月十二日



Statement

**By the owner's project management department, Mechanical-Electrical Materials
Department, Gezhouba Co. Ltd.,**

**Regarding the supply and application of XYPEX Admix on the Right, Upstream Dam
Bank, Jinghong Hydropower Station**

We selected the XYPEX cement-based permeability reducing crystallization materials because of the excellent and comprehensive performance, performance which was confirmed by extensive testing in our on-site laboratory on the right bank, fulfilling all anti-leakage needs at the right, upstream dam bank.

The results were unanimously accepted and approved by the owner, all supervisors and designers.

From November 2004 through until completion, we confirm that the Xypex supplier, Yunnan Saibo Yonggu Waterproofing Co., Ltd., has met all technical, commercial and supply requirements in a timely and efficient manner. It continuously meet the project's needs, providing the stable-quality, reliably performing XYPEX Admix; meeting all obligations described under the contract while at all times coordinating in a timely manner with our department.

We hereby acknowledge that the products provided by Yunnan Saibo Yonggu Waterproofing Co., Ltd are credible and stable, contributing considerably to the project.

*Mechanical-Electrical Materials Department, Gezhouba Co. Ltd., Jinghong Hydropower
Station Project Department.*

August 17, 2005



景洪电站右岸工程使用
XYPEX(赛柏斯)掺合剂的情况说明

经右岸工程现场试验室试验对比验证,我们选择了综合性能较优的 XYPEX(赛柏斯)水泥基渗透结晶材料用于右岸大坝迎水面的变态防渗区中,这一结果得到了业主、监理、设计的一致认可。

从 2004 年 11 月使用至今,我们认为供货单位云南赛柏永固防水公司技术、商务、供货服务非常到位、及时,其一直向我部提供品质稳定的 XYPEX(赛柏斯)掺合剂,很好地履行了合同条款规定的责任和义务,并及时配合了我部的相关工作。

鉴于此,我们认为,云南赛柏永固防水公司及该单位提供的产品是可以信赖的,其稳定、周到的服务品质是可以信赖的。

特此说明

葛洲坝股份有限公司景洪电站项目部



二〇〇五年八月十七日

.....End.....