# A STUDY ON THE COMPATIBILITY OF CONTEMPORARY NEIGHBORING PLASTERS WITH AUTOCLAVED AERATED CONCRETE (AAC)

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**ABSTRACT**

Especially when in combination, building materials exposed to atmospheric conditions must be compatible in terms of their physical and mechanical properties for their long-term performance. As use of Autoclaved Aerated Concrete (AAC) often involves protective plasters and jointing adhesives, compatibility problems mostly develop at their interfaces. This study was conducted to determine the compatibility of two types of AAC (G2 and G4) with some cement-based plasters and jointing adhesive specially produced for AAC by a Turkish company, where emphasis was on their water vapor diffusion resistance *(μ)*, their dynamic modulus of elasticity *($E_{mod}$)* and their drying under the construction applications recommended by the company. In practice, the AAC plasters examined in this study are applied as successive layers, these being base coat, under-coat and plain or water repellent finish coat. The bulk density, total porosity, water vapor permeability, drying rate, ultrasonic velocity and $E_{mod}$ values of AAC, plaster samples and the jointing adhesive were subjected to laboratory analyses. The compositional properties of AAC were also investigated through analyses of thin sections by optical microscopy along with XRD and pozzolanic activity analyses. Results showed that the water repellent finish coat seemed to be the best among the other plasters in terms of its water vapor permeability, modulus of elasticity values and drying behavior. It was also concluded that further studies are necessary on the adherence of plasters to AAC surfaces and their dilatation properties for the understanding of their long-term performance.

**Keywords:** Autoclaved Aerated Concrete (AAC), Cement-Based Plasters, Compatibility, Material Properties, Water Vapor Permeability

## INTRODUCTION

Autoclaved Aerated Concrete (AAC) is one of the most commonly used construction materials in contemporary buildings, especially due to its low density and unique thermal and breathing properties (Taşdemir & Ertokat, 2002; Andolsun et.

al., 2005; Narayanan & Ramamurthy, 2000a). It is, however, often used together with incompatible plasters leading to problems at their interfaces, such as condensation resulting in some faults recently appearing on the finishing. In the presence of moisture and/or water AAC is known to lose its inherent thermal, water vapor permeability and mechanical properties (Narayanan et al., 2000a; RILEM, 1993; Tada, 1986; Jacobs & Mayer, 1992; Frey, 1992; Lippe, 1992; Andolsun et al., 2005). In order to prevent such failures, it is essential to use plasters and/or finish coats that are both waterproof and water vapor-permeable. The compatibility properties for AAC are therefore required to be well-defined and also well-known by users for the selection of proper finishing materials/systems in AAC masonry construction.

Materials exposed to atmospheric conditions are considered to be compatible with each other if they are similar in terms of their physical and mechanical properties (Sasse & Snethlage, 1997). Compatibility can therefore be defined in terms of these properties. The coefficient of water vapor diffusion resistance *(ì)* and the dynamic modulus of elasticity $(E_{mod})$ together with drying behavior are among the most important parameters of compatibility. Any compatible plaster/layer is expected to have $E_{mod}$ or $\mu$ no higher than the base material (Sasse et al., 2004).

This investigation was conducted to better understand certain material properties of AAC and some cement-based plasters specially produced for AAC by a Turkish company, and to define the properties expected from a compatible plaster to be used on AAC. Results were evaluated for assessing the compatibility of these cement-based plasters and jointing adhesives with AAC where emphasis was on their water vapor diffusion resistance $(\mu)$, dynamic modulus of elasticity $(E_{mod})$ and drying behavior under construction applications recommended by the company.

## MATERIAL AND METHOD

Some basic physical, mechanical and compositional properties of AAC and some plasters complementing the exterior finishing system of AAC masonry were determined by laboratory analyses and the data obtained were evaluated to assess their compatibility with each other. This research was conducted within the scope of master's thesis tentatively entitled *A Study On Compatibility Properties of Autoclaved Aerated Concrete In Buildings* by Simge Andolsun (Andolsun, ongoing).

Two types of AAC block, one produced as infill (G2) and the other as load-bearing material (G4) together with four types of cement-based plaster containing various additives and jointing adhesive (JA) were examined. These plasters constitute the most common exterior finishing system consisting of a base coat (BC), an undercoat (UC) and rendering (FC), applied successively as shown in Figure 1a. Another plaster, which is a water-repellent finish coat (WRFC) used instead of rendering, as shown in Figure 1a and Figure 1b, was also examined. The recommended thicknesses of BC, UC, FC, WRFC are as shown in Figure 1, while JA is applied with the thicknesses ranging from 0.1 to 0.3 cm. The BC is not applied uniformly on AAC surfaces and the recommended maximum application thickness is 0.4 cm. For the analyses, AAC samples were produced from AAC blocks of 25 x 30 x 60 cm according to TS EN 678 (1995) and TS EN 453 (1988). Plasters of 3.5 x 3.5 x 3.5 cm were cast in the laboratory and examined after a curing period of 28 days. Some AAC samples with finishing layers already applied were also produced by cutting from an AAC masonry wall prepared by the manufacturer with G2 AAC blocks (Figure 2).

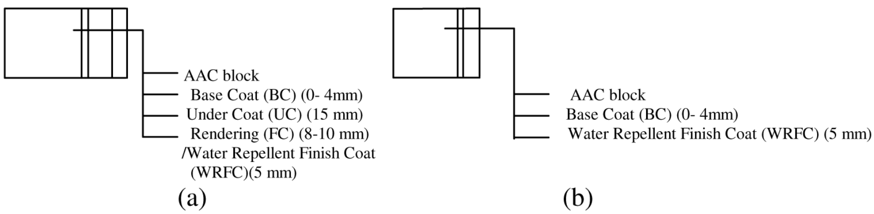



**Figure 1**. Typical Application Details of Exterior Finishing Systems for AAC Masonry, Showing the Order of Layers and their Recommended Thicknesses: (a) Successive Application of Cement-Based Plasters with Various Additives; (b) Water Repellent Finish Coat Applied Directly on Base Coat (Andolsun, 2006).

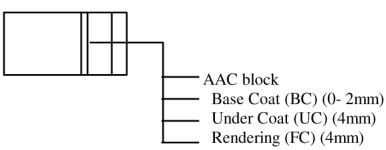



**Figure 2.** The Section of AAC Masonry Wall Samples With Exterior Finishes Already Applied, as Prepared by the Manufacturer (Andolsun, 2006).

The physical properties of bulk density ($\rho$), porosity ($\phi$), water absorption capacity ($\theta_{max}$), saturation coefficient ($S$), water vapor permeability ($D_p$), coefficient of water diffusion resistance ($\mu$), drying curve and evaporation rates ($R_E$) of the samples were determined according to ASTM (1993), RILEM (1980) and Turkish Standards (TSE, 1995; TSE, 1990; TSE, 1988). Drying of saturated AAC and plaster samples with the same thickness of 1 cm were examined during water desorption at 20$^o$C and 40% RH. Drying curves as a function of moisture content by volume versus time were produced to compare their drying behavior, drying speed and critical moisture content (*CMC*). Above the CMC level, the $R_E$, which depends on the environmental conditions, is the highest and more damaging, while below the CMC level, $R_E$ decreases sharply as it in this case depends on the capillary properties of the material (Massari & Massari, 1993). In addition, the properties of water vapor permeability for AAC samples with 1.25 cm and 2.5 cm thickness taken at varying depths from the wire-cut surfaces were examined in order to determine the effect of the wire-cut process on the porosity of the material together with the depth of this effect. The $\mu$ values and *SD* values for a 20 cm thick AAC masonry wall together with the finishing layers as per their recommended thickness of application were calculated and evaluated according to the classification in Turkish Standards (TSE, 1999). The continuity in water vapor transmission through the layers of AAC masonry, as shown in Figure 1, was also examined.

The dynamic modulus of elasticity value ($E_{mod}$), which expresses the deformation ability of a material under external forces, is one of the most important parameters of compatibility. $E_{mod}$ values of AAC samples and plasters were determined indirectly by ultrasonic pulse velocity measurements (*UVM*) (RILEM, 1980; ASTM 1990; ASTM, 2003a; 2003b). A portable PUNDIT Plus CNS Farnell Instrument with 54 kHz and 220 kHz transducers were used in the direct transmission mode (cross direction) to produce ultrasonic velocity data. $E_{mod}$ values were then calculated by means of certain equations, including both their $\rho$ and *UVM* (RILEM, 1980; ASTM 1990; ASTM, 2003a; 2003b). The results were also compared with each other and with the data in literature (Felekoğlu, 2004). The coefficient of water vapor diffusion resistance *($\mu$)* and the equivalent air thickness of water vapor permeability *(SD)* were also determined for the samples cut from the AAC masonry wall (Figure 2). The results obtained from the individual AAC and plaster samples and the samples consisting of both AAC and plaster layers were compared with each other in order to initiate a discussion on the interfaces between the layers in terms of adherence and water vapor permeability.

The compositional properties of AAC samples were examined through the analysis of pozzolanic activity and on polished thin sections by optical microscopy and X-Ray Diffraction (XRD) analyses. Pozzolanic activity indicates the reaction ability of the material with calcium hydroxide by producing the calcium–silicate-hydrate (C-S-H) network. The higher pozzolanic activity of AAC, the higher its bonding capacity with lime plasters (Tuncoku, 2001; Davey, 1961; Lea, 1970; Ashurst & Dimes, 1990). The pozzolanic activity of AAC samples were measured by using its powder lower than 125$\mu$ diameter. For the analysis, a 1.25 gr sample of powder was mixed with 50 ml saturated $Ca(OH)_2$ solution and the change in electrical conductivity of the mixture was measured by using Metrohm AG Herisau, Konduktometer E382 (Luxan et al., 1989). The decrease in electrical conductivity within 2 minutes was recorded for the evaluation of pozzolanic activity. Results were interpreted to find out whether AAC surfaces have sufficient bonding ability with lime mortars or not. The pozzolanic activity of the aggregates used in the production of AAC was also determined with the Luxan method (Luxan et al., 1989) in order to initiate another discussion on the contribution of using pozzolan aggregates to the strength of AAC. Thin sections were prepared in order to investigate the mineral and pore structure of AAC in order to explain its very high water-absorption capacity which was in contrast to the claim by many researchers of it being a closed-cell material (Kadashevich et al., 2004; Narayanan et al., 2000a; Jacobs et al, 1992). A further aim was to gather data for discussions on the interfaces between AAC and its plasters at smaller scales under the microscope. During the analysis, the term *artificial air pores* was used for the definition of the pores formed by the release of the hydrogen gas during the production process and the rest of the structure was defined as the matrix. The results of thin section analyses were supported by XRD analysis where powder samples were examined by using a Phillips Model PV 3710 X-Ray Diffractometer with Cu K $\alpha$ X-Rays.

## RESULTS AND DISCUSSION

The combined interpretation of the results were done to define the material characteristics of AAC and its finishing plasters and to assess the compatibility of these plasters for AAC masonry.

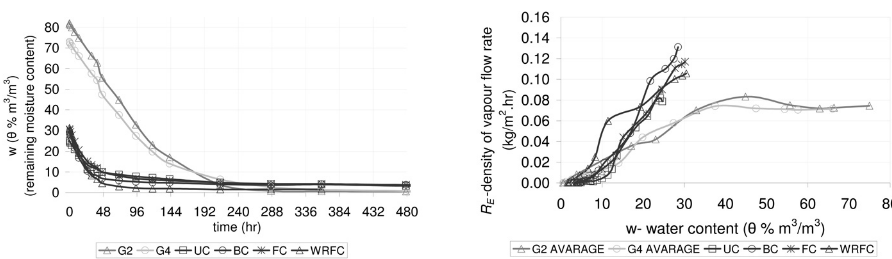
The basic physical properties for AAC and the plasters are given in Table 1. The $\rho$ and $\phi$ of G2 and G4 samples were found to be 0.40 g/cm$^3$, 78%, and 0.60 gr/cm$^3$, 68%, respectively. The $\theta_{max}$ by weight for both G2 and G4 was found to be extremely high with values of 193% and 114%, respectively. While both the G2 and the G4 types of AAC were found to be very porous and lightweight materials, G4 was, expectedly, denser and less porous than G2. The saturation coefficient of G2 was found to be lower than that of G4, with values of 0.46 and 0.62, respectively (Table 1). The plasters and jointing adhesive were found to be considerably denser and less porous, having $\rho$, $\phi$ and $\theta_{max}$ values of 1.88 g/cm$^3$, 23% and 12% for the BC, 1.80 g/cm$^3$, 25% and 14% for the UC, 1.73 g/cm$^3$, 29 % and 17 % for the FC, 1.72 g/cm$^3$, 32 % and 18 % for WRFC and 1.46 g/cm$^3$, 34% and 24% for the JA, respectively. The *S* value of all plasters and jointing adhesive were also higher than those of both G2 and G4. Among the plasters, WRFC was found to have the lowest *S* value with the value of 0.71 (Table 1) while the *S* for the rest were found to be in the range of 0.86 – 0.98.

**Table 1. Basic Physical and Mechanical Properties of AAC, Exterior Finishing Plasters and Jointing Adhesive** (Andolsun, 2006)

| Properties | G2 | G4 | BC | UC | FC | WRFC | JA |
|---|---|---|---|---|---|---|---|
| **$\rho$ (gr/cm$^3$)** | 0.40 | 0.60 | 1.88 | 1.80 | 1.73 | 1.72 | 1.46 |
| **$S$ (0-1)** | 0.46 | 0.62 | 0.92 | 0.95 | 0.86 | 0.71 | 0.98 |
| **$\theta_{max}$ (%) by** | 193 | 114 | 12 | 14 | 17 | 18 | 24 |
| **$\phi$ (%)** | 78 | 69 | 23 | 25 | 29 | 32 | 34 |
| **$\mu$** | 3.4–7.0 | 2.9–7.0 | 11.56 | 13.99 | 11.5 | 5.86 | 13.37 |
| **$SD$** | 0.89$^{(1)}$ | 0.87$^{(1)}$ | 0-0.046$^{(2)}$ | 0.021$^{(3)}$ | 0.115$^{(4)}$ | 0.029$^{(5)}$ | 0.013 – 0.040$^{(6)}$ |
| **$E_{mod}$(GPa)** | 1.4 | 2.1 | 4$^{(7)}$ | 3.6$^{(7)}$ | 4.3$^{(7)}$ | 1.8$^{(7)}$ | 3.5$^{(7)}$ |

(1) for 20 cm thick AAC wall; (2) for varying thickness between 0-4 mm; (3) for 15 mm thickness; (4) for 10 mm thickness; (5) for 5 mm thickness; (6) for varying thickness between 1-3 mm; (7) for 35 mm thickness

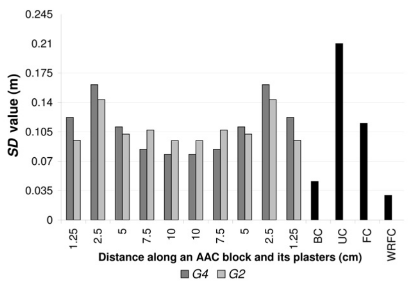
Drying curves given in Figure 3, showed that at the same environmental conditions of 20°C ±2 and 40%RH ±5, both G2 and G4 were found to have similar $R_E$ with an average value of 0.072 kg/m$^2$h above the *CMC* level and G4 exhibited slightly slower drying than G2 samples below the *CMC* level. The *CMC* of G2, around 34% by volume, was found to be slightly lower than that of G4, which was around 38% by volume (Figure 3b). The *CMC* level for the plasters seemed to be roughly around 25% by volume, which is lower than that of the AAC blocks. In comparison to the plasters, AAC samples took a to dry out longer period of time due to their extremely high water absorption capacity. Among the plasters, WRFC exhibited the fastest drying while UC and FC exhibited the slowest, with similar drying rates.



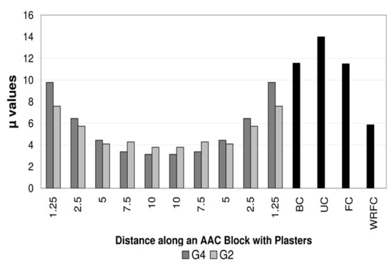

**(a)** **(b)**

**Figure 3.** Drying of AAC Samples, G2 and G4 and its Plasters, BC, UC, FC, WRFC at 20°C and 40%RH: (a) Drying Curve as a Function of Moisture Content by Volume Remained in The Material Versus Time and (b) Evaporation Curve Showing the Density Vapor Flow Rate in kg/m$^2$h versus Moisture Content by Volume Remained in the Material (Andolsun, 2006).

The results of water vapor permeability tests are summarized in Figure 4, where the abcissa represents an AAC wall of 20 cm thickness having wire-cut surfaces on both sides and plastered typically as shown in Figure 1a. Wire-cut surfaces were found to have higher $\mu$ values within the first 5 cm depth for G4 and within the first 2.5cm depth for G2 and to be constant beyond these depths. The highest $\mu$ values for both types of AAC blocks were obtained up to a depth of 1.25 cm depth from the wire-cut surfaces, with a value of 9.8 for G4 and 7.6 for G2 (Andolsun et al., 2005). G4 apparently had higher $\mu$ values at the wire-cut surfaces when compared to G2. For G4 blocks, $\mu$ values sharply fell from 9.8 to 4.44 within depth of 5 cm and the core beyond a depth of 5 cm showed similar $\mu$ values with an average of 3.3. For G2 blocks, $\mu$ value decreased from 7.6 to 5.7 within the depth of 2.5 cm and $\mu$ values were similar and beyond this depth with an average of 4.1. Except WFRC, all plasters and the jointing adhesive were found to have higher $\mu$ values when compared with both types of AAC (G2 and G4) with values of 11.56, 13.99, 13.37 and 11.50 for BC, UC, JA and FC, respectively. Among all plasters, only WRFC was found to have the lowest $\mu$, with a value of 5.86 and also the closest to the $\mu$ values of AAC blocks.




(a)




(b)

**Figure 4**. Charts Showing the Changes in (a) *SD* and (b) $\mu$ values through an AAC Wall of 20 cm Thickness Having Wire-Cut Surfaces at Both Sides which were Plastered Typically as Shown in Figure 1a. Two Segments Taken From the Wire-Cut Surfaces Up to a Depth of 1.25 cm were Located in the Chart at Both Sides of the AAC Block in order to show the Effect of the Wire-Cut Process. The Rest are the 2.5 cm Thick Segments Taken along the 20 cm Thick Block From one Wire-Cut Surface to the other (Andolsun, 2006).

The *SD* values of BC, UC, FC, WRFC for their recommended thickness of application were calculated to be less than 0.05, 0.21, 0.12 and 0.029 m, respectively. The *SD* value of JA was found to be in the range of 0.01 to 0.04. According to the classification in Turkish Standards (1999), *SD* values lower than 0.14 m indicate high water vapor permeability; *SD* values between 0.14 m and 1.4 m indicate medium water vapor permeability and values higher than 1.4 m correspond to low water vapor permeability. In this regard, BC, FC, WRFC and JA were defined as high permeable layers, while UC seemed to be of medium permeability. The typical exterior finishing system shown in Figure 1a was found to be a medium water vapor permeable with a total *SD* value of 0.37 m in the case where FC is the last layer, and with a total *SD* value of 0.29 m in the case where WRFC is the last layer. The other application shown in Figure 1b, where in which WRFC is directly applied on the BC, was found to be a high vapor permeable exterior finishing system with a total *SD* value of 0.08 m. In terms of water vapor permeability, WRFC seemed to be a proper selection as a finish coat, and the typical application shown in Figure 1b seemed to be the proper exterior finishing system for AAC masonry (Sasse et al., 2004). On the other hand, WRFC was described by the manufacturer to be a water repellent layer for AAC surfaces. This contradictory outcome brought up the necessity of water diffusivity tests in order to check its success in fulfilling its function.

The real *SD* values for the AAC samples in combination with the plasters, cut from the AAC masonry wall as shown in Figure 2, were determined by laboratory analyses and are presented in Table as *empirical SD* (ASTM E 96-93, 1993). The *SD* values for the same wall section with the same thickness were also calculated by using $\mu$ values of each layer and are presented in Table 2 as *calculated SD* (Akkuzugil, 1997). The *empirical SD* values for the samples and *calculated SD* values for the same cross section were found to be very similar to each other, signaling good adherence among these layers.

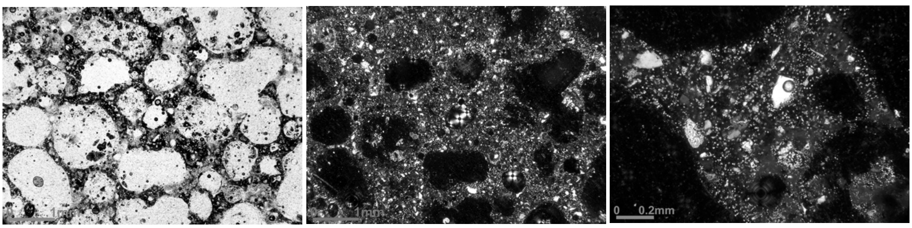
**Table 2. The *SD* Values of 1.25 Cm AAC Samples With and Without Plasters, Which were Measured by Laboratory Experiments as Well as Calculated Mathematically** (Andolsun, 2006).

| Sample | Empirical *SD* (m) | Calculated *SD* (m) | Overall thickness of the samples (cm) |
|---|---|---|---|
| **AAC/ G2** | 0.096 | | 1.25 |
| **AAC/ G2 + BC** | 0,132 | 0.119 | 1.46 |
| **AAC/ G2 + BC+ UC** | 0,185 | 0,188 | 1.84 |
| **AAC/ G2 + BC+ UC+ FC** | 0,227 | 0,231 | 2.24 |

$E_{mod}$ values of G2 and G4 were found to be 1.4 GPa and 2.1 GPa, respectively, while those for the BC, UC, FC, WRFC and JA were found to be 4 GPa, 3.6 GPa, 4.3 GPa, 1.8 Gpa and 3.5 GPa for thickness of 3.5 cm. Among these plasters, WRFC seemed to have $E_{mod}$ values close to those of G2 and G4 while BC, UC and FC had higher $E_{mod}$ values. On the other hand, $E_{mod}$ values determined by Felekoğlu (2005) on the same materials of 10 x 10 x 10 cm were considerably higher, reaching the three times the $E_{mod}$ values of AAC masonry (Table 3). In order to prevent misleading interpretations, it was concluded that some further studies were necessary to determine the true $E_{mod}$ values for these plaster layers as the ultrasonic velocity method of measurement used in this investigation for determination of $E_{mod}$ values was an indirect one, while that used by Felekoğlu was direct. Be this as it may the differences in the results of these two studies may be considered negligible. WRFC seems to be a better choice of finishing for AAC masonry in terms of both its $E_{mod}$ and $\mu$ values. However, the dilatation properties should also be determined for both plasters and AAC samples and their compatibility should be checked in terms of these properties so as to better interpret their long-term performance as an integral structure.

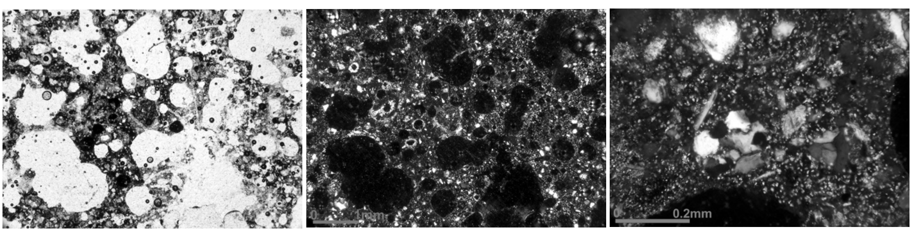
**Table 3. Modulus of Elasticity Values, $E_{mod}$, of Cement-Based Plasters (1) that were Measured and (2) Obtained From the Literature** (Andolsun, 2006).

| $E_{mod}$ (GPa) for different sample thicknesses | BC | UC | FC | WRFC | JA |
|---|---|---|---|---|---|
| [1]3.5 cm thick samples | 4.0 | 3.6 | 4.3 | 1.8 | 3.5 |
| [2]Felekoglu, 2005: Cubic samples of 10 x 10 x 10 cm: | 7.6 | 7.5 | 3.0 | 4.7 | n/a |




(a) x2.5 objective....single nicol (b) x2.5 objective.....cross nicol (c) x10 objective......cross nicol

**Figure 5**. Thin Sections of G2 Showing (a) The Porous Structure, (b) Mineral Composition and (c) The Matrix in Detail (Zimitoğlu, 2005).

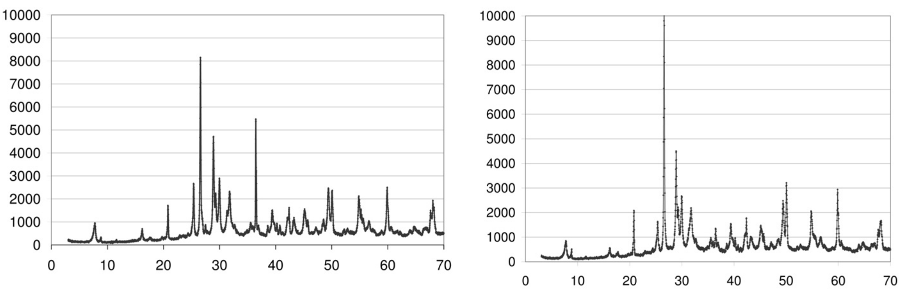



(a) x2.5 objective.....single nicol (b) x2.5 objective.....cross nicol (c) x20 objective.....cross nicol

**Figure 6.** Thin Section of G4 Showing the Porous Structure (a), Mineral Composition (b) and The Matrix in Detail(c) All Samples were Placed on the Lamel so that the Codes of the Samples were Situated at the Top (Zimitoğlu, 2005).

The pozzolanic activity values of G2 and G4 samples were found to be 0.85 and 0.95 mS/cm, respectively, and that of the aggregate used in the production of AAC as raw material was found to be 0.27 mS/cm. According to the classification defined by Luxan et al., (1989), the powdered AAC samples were determined as variable pozzolanic, while its aggregate was of non-pozzolanic material. This indicated that the adhesion of AAC with lime mortars appeared to have a weak bonding.

Thin sections of G2 and G4 AAC samples were analyzed by optical microscope in x2.5 and x10 magnification single and cross nicols of which are given in Figures 5 and 6. G2 type AAC was found to contain angled aggregates with varied sizes of around 0.1 mm, 0.25 mm and 0.5 mm, while the aggregates of G4 type AAC were only 0.1 mm and 0.25 mm in size. The minerals observed in thin section analysis of both types of AAC were identical. They were quartz, orthoclase, muscovite, biotite and opaque mineral. Mycritic limestone, quartzite and cystic particles were also identified. These grains were within a matrix of finer grains, which were between 5-10μ in size. This matrix was identified as the mineral Tobermorite. The results of thin section analysis were also supported by the *XRD* traces of G2 and G4 showing that the main minerals detected were 11 A$^{o}$ Tobermorite and quartz, and the rest were muscovite and biotite (Figure 7).




**(a)** **(b)**

**Figure 7**. The XRD Traces of (a) G2 and (b) G4 Powder Samples

Observations under microscope showed that pore structure of AAC contained a high proportion of pores. The structure had two components: the artificially induced air pores and a micro porous matrix. In addition, some of the artificial pores were observed to overlap with each other while the others seemed to be totally impermeable on the 2D plane. It is also known from the literature that the artificial pores are partly penetrable by water (Kadashevich, et al. 2004; Jacobs et al, 1992). These indicated that water might travel through the micro pores within the cementitious matrix of AAC, rather than through the artificial air pores. This conclusion was in agreement with F. Jacobs and G. Mayer (1992), Jacobs et al. (1992), Narayanan et al. (2000a), Kadashevich et al. (2004) who all state that the artificial air pores have little influence on the water permeability.

## CONCLUSION

The cement-based plasters and jointing adhesive with various additives specifically produced for AAC were found to be denser and less porous than AAC. It appeared that these properties played an important part in protecting the AAC against rain penetration. In addition, the higher *CMC* level of AAC and the faster drying rates were seen as advantages in decelerating the transfer of rainwater through plasters into AAC masonry. However, when water was present in AAC masonry, this water remained entrapped behind the base coat or undercoat layer due to the high density, low porosity and lower water vapor permeability properties of the plaster layers. It was therefore considered essential to ensure the application of plaster layers on AAC masonry in a dry state. The use of AAC for basement walls also should be avoided for the same reason even if all possible care is taken against water leakage.

Owing to the fact that WFRC was found to be high vapor permeable like AAC, it had the highest drying speed, the lowest modulus of elasticity value and the lowest saturation coefficient among the other plaster layers. It, thus, seemed to be the best choice as a finish coat for AAC masonry. The application detail shown in Figure 1b seemed to be the proper exterior finishing system for AAC masonry in terms of maintaining the continuity of water vapor transmission between the layers. Further analyses are suggested to determine its resistivity against water penetration as well as its thermal and moisture dilatation properties, which are both essential to define its compatibility with AAC.

The Modulus of Elasticity of plasters and jointing adhesives were found to be higher in comparison to those for AAC. The coherence between the empirical *SD* values for the samples of the exterior finishing system and calculated *SD* values for the same cross section signaled good adherence among these layers. However, further studies are necessary on the adherence of plasters to AAC surfaces and on their dilatation properties in order to comment on their compatibility characteristics.

AAC was foreseen to have week adherence with lime mortars due to the low pozzolanicity of its aggregates. The thin section analyses showed both free water and the water and water vapor travels along the micro porous matrix of AAC rather than along the partially impermeable artificial air-pores, leading to very high water absorption capacity. It was concluded that thin sections of interfaces between AAC and its plasters should also be studied to comment on adherence.

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