SALT EFFLORESCENCE

Muestra

Adjacent wall to the staircase entrance to the Castle of Castellet i la Gornal. Alt Penedès. Barcelona

---

Causas de la patología

Repeated cycles of salts crystallization.

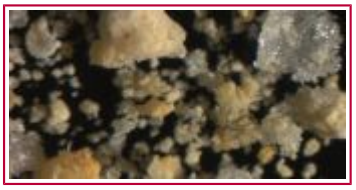
The rounded shape of chlorides and the amoeboid appearance of the redissolution indicate repeated cycles of wet conditions, in this case due to the proximity of a cavity, an internal leaking and the southerly orientation of the wall. The habits and crystalline forms of salt efflorescences indicate a process of rapid crystallization in a substrate highly saturated with water (very wet conditions). These results are consistent with the model of a wall that suffers internal leaks.

Imagen de visu

Autor: CETEC-patrimoni

Descripción: Salt efflorescences inside the alveole of the ashlar.<?xml:namespace prefix = o /><o:p></o:p>

Imagen detalle / macro

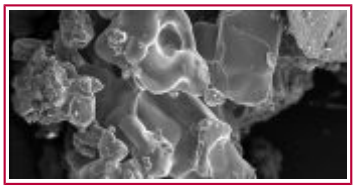


Autor: CETEC-patrimoni

Aumentos: X20

Descripción: The salts present microcrystalline aggregates of different types and sizes (mainly sand size) by stereoscopic microscope. The colours of the crystals are varied, ranging from transparent (chlorides), white, amber, through to yellow (other types of chlorides and sulphates).

Imagen Microscopía



Autor: CETEC-patrimoni

Aumentos: Figure 1: x1300. SEM-EDS. Backscattered electron image. Figure 2: x800. SEM-EDS. Backscattered elect

Descripción: Figure 1. Crystalline aggregates of lenticular gypsum -$CaSO_4.2H_2O$-.

Figure 2. Aggregates of crystalline chloride (halite -NaCl-) pseudo-cubic shapes, rectangular, amoeboid or rounded sides.

Patologías Asociadas

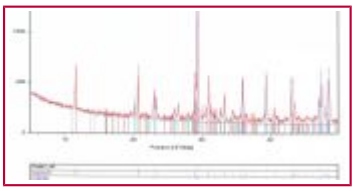
Alveolization.

Differential erosion.

Flaking.

Sanding.<?xml:namespace prefix = o /><o:p></o:p>

Otros Análsis



XRD indicates a complex salts composition (chlorides, phosphates and sulfates).

Observaciones

These salts are a result of products of the reaction between the mixture of bird waste with sulphates or carbonates from the hydraulic mortars, specifically the two amorphous and colloidal phosphate minerals, similar to apatite -Ca5Cl(PO)3-.

Bibiliografía

ARNOLD, A. & KUENG, A. (1985). Cristallization and Habits of Salt Efflorescences on Walls. Part I, Methods of Investigation and Habits. Vth hitemational Congress on Deterioration and Conservation of Stone. Lausanne. pp. 255-268.

ARNOLD, A. & ZEHNDER, K., (1985), Cristallization and Habits of Salt Efflorescences on Walls. Part.II, Conditions of Cristallization. Vth International Congress on Deterioration and Conservation of Stone, Lausanne. pp. 269-277.

CHAROLA, A. E. (2000). Salts in deterioration of porous material: an overwiew. JAIC, 39. pp. 327-343.

ICOMOS-ICS (2008). Illustrated glossary on stone deterioration pattern.

http://international.icomos.org/publications/monuments_and_sites/15/pdf/Monuments_and_Sites_15_ISCS_Glossary_Stone.pdf

Autor

Núria Guasch Ferré. nuriaguaschferre@gmail.com

Llicenciada en Ciències Geològiques. Màster Oficial en Conservació i Restauració de Béns Culturals, especialització en Conservació i Restauració d'Escultura i de Materials Arqueològics

Institución o Empresa