EuLA European Lime Association

European Lime Association

Lime recarbonation. Completing the carbon cycle.

How lime reabsorbs CO_2 during its life cycle.

Extraction & Preparation 1

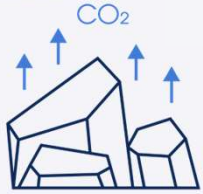
Limestone ($CaCO_3$) is extracted and prepared for lime production

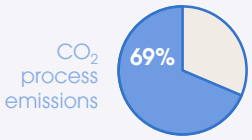


$CaCO_3$ = raw limestone

Calcination 2

Limestone ($CaCO_3$) is heated above 900°C, producing lime (CaO) and releasing unavoidable CO_2 process emissions.

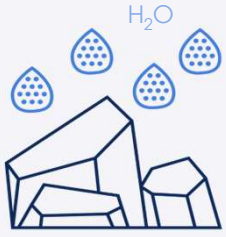




$CaCO_3$ + Heat → CaO + CO_2

Hydration 3

Quicklime reacts with water to form hydrated lime ($Ca(OH)_2$).



CaO + H_2O → $Ca(OH)_2$

Recarbonation 4

Lime reacts with CO_2 to form stable calcium carbonate ($CaCO_3$).



$Ca(OH)_2$ + CO_2 → $CaCO_3$

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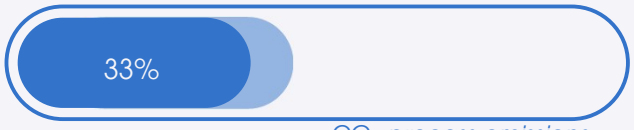
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Lime recarbonation. What the science tells us.

A measurable and permanent part of lime's carbon cycle.

33%

of CO_2 process emissions can be reabsorbed through spontaneous recarbonation across major lime applications, rising to around 40% with enhanced carbonation.



CO_2 process emissions

MOSTLY WITHIN THE FIRST YEAR

Most of the carbonation reactions occur within the first year.

190+ SCIENTIFIC PUBLICATIONS

A substantial peer-reviewed evidence base documents lime carbonation across different applications.

PERMANENT MINERAL STORAGE

The process of recarbonation has been recognized by the IPCC, the stored CO_2 by recarbonation is permanent.



>5 Mt CO_2/y

Estimated CO_2 uptake through lime recarbonation in Europe.

Explore the science behind lime recarbonation on eula.eu;
Read a literature review on lime recarbonation by Campo et al, 2021.