



Technical Data Sheet **Birchset™ CR**

Birchset CR is a food contact approved cure stabiliser and compression set reduction additive consisting of an activated polymer which gives excellent mixing and dispersion characteristics.

Birchset CR will overcome any adverse effects of using high doses of calcium oxide for moisture removal in rubber compounds. Innovox ultra-fine calcium oxide is used as a desiccant and acid scavenger in rubber and elastomer compounds, which can contain moisture either from fillers incorporated in the formulation or by moisture absorption from high humidity environments.

Calcium oxide CaO combines with moisture to form calcium hydroxide Ca(OH)₂. This reaction chemically binds moisture and is non-reversible up to 512°C. The reaction product, calcium hydroxide is a powder which incorporates easily and invisibly into the compound, but will also perform as an acid scavenger.

In higher humidity environments, or where high moisture fillers are used, higher levels of Innovox addition may be required to overcome porosity. This can sometimes lead to reduced vulcanization or increased compression set values because of competition between zinc and calcium for reaction with accelerators.

Normal reaction

ZnO + stearic acid > zinc stearate (Zn²⁺ soluble in rubber)
Zn²⁺ + accelerator > zinc complex (active cross-linking)

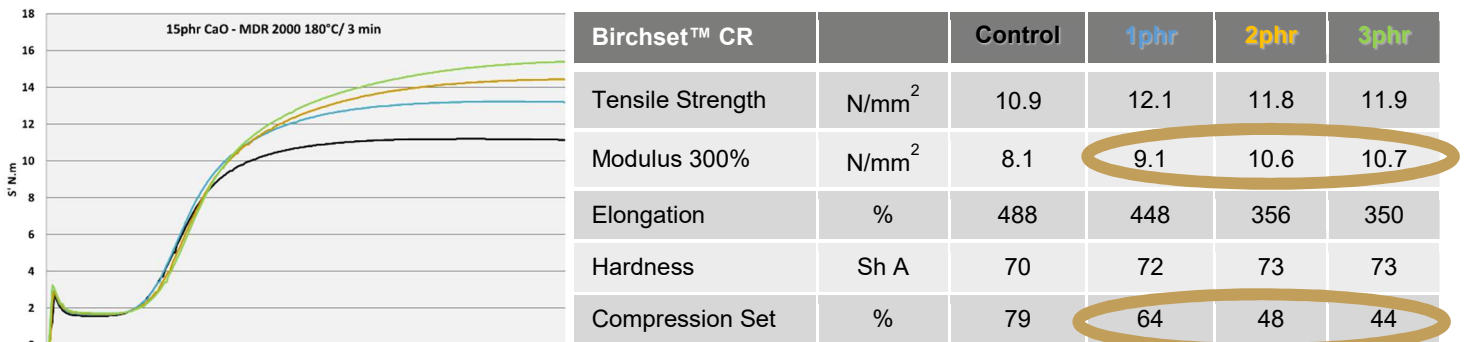
With excess calcium oxide - competition

CaO + H₂O > Ca(OH)₂ (formation of Ca²⁺)
Ca²⁺ + accelerator > calcium complex (inactive / reduced cross-linking)

With Birchset CR – no competition

CaO + H₂O > Ca(OH)₂ (formation of Ca²⁺)
Ca²⁺ + 2Cl > calcium chloride (does not affect cross-linking)

Black general purpose EPDM profile with high (15phr) calcium oxide loading – results using Birchset CR





TDS Birchset CR

Birch Chemicals

Applications

Birchset CR is typically used in combination with Innovox calcium oxides in EPDM, usually in applications such as extrusions and in continuous pressureless vulcanization methods (e.g. UHF, LCM or Hot-Air-Vulcanization).

These applications may have high moisture levels in the compound, often from high moisture fillers (often lower quality) or high atmospheric humidity during production or storage.

Birchset CR plus Innovox can be used to combat the effect of high moisture by enabling increased Innovox addition without affecting the finished product properties.

Addition

Dose is usually between 0.5 and 1 phr, or 10-20% of calcium oxide addition level. Birchset CR should be added at the same point as Innovox. Addition point can be varied to combat the effects of moisture in fillers or atmospheric moisture in high humidity environments.

For high moisture fillers, Innovox and Birchset CR should be added at the start of the mix.

In high humidity, moisture may often be absorbed if compound is stored and so Innovox and Birchset CR can be added near the final mix to overcome this. Our Innovations Team can help with advice on dose and addition point.

Properties

For product specification see the relevant sales specification and for safety information, see the Material Safety Data Sheet. Both are available on request from your sales contact.

Packaging

Birchset CR is available in 20kg PE lined boxes for easy scoop addition.

Storage

Birchset CR must be stored inside, in clean dry conditions and unopened packaging. If stored correctly, Birchset CR has a minimum shelf life of 12 months from date of production.

Advice and Consultancy

Our Innovations Team can help with advice on the use of Birchset CR and for a more comprehensive service, we offer Innovation consultancy which can provide mix design, safety and handling solutions. For more information, please contact us on:

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