

## ***BIRCHSET CR***

### **NOVEL AND UNIQUE ADDITIVE TO STABILIZE EPDM COMPOUND & REDUCE COMPRESSION SET**

**Birchset CR is food contact approved cure stabilizer 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 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 environment.

Calcium Oxide(CaO) combines with moisture to form Calcium Hydroxide. 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 invisibility into the compound, but will also perform as an Acid Scavenger.

In higher humidity environments, or where High Moisture fillers are used, Higher level 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 (Zn<sup>2+</sup> Soluble in Rubber)**  
**Zn<sup>2+</sup> + Accelerator** → **Zinc Complex (Active Cross Linking)**

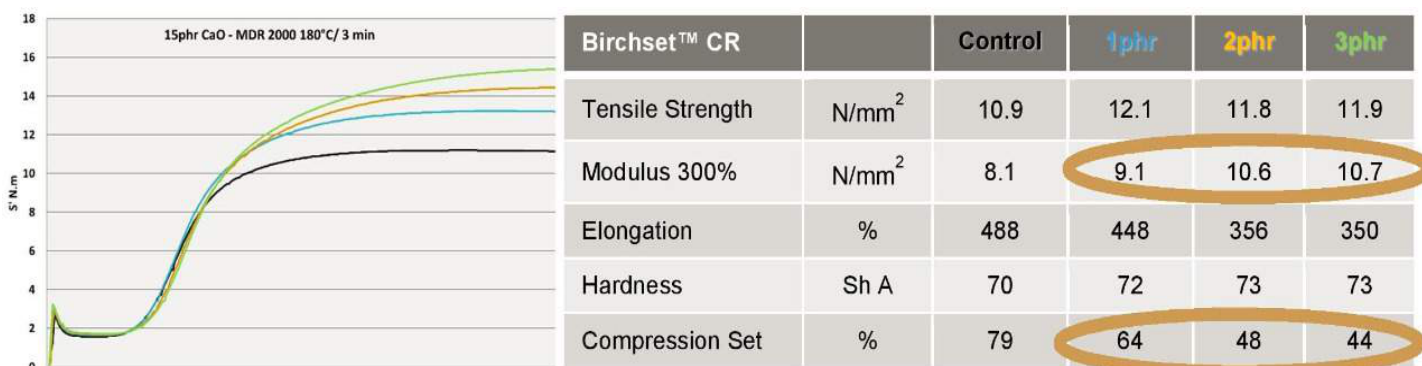
#### **With Excess Calcium Oxide- Competition**

**CaO + H<sub>2</sub>O** → **Ca(OH)<sub>2</sub> (Formation of Ca<sup>2+</sup>)**  
**Ca<sup>2+</sup> + Accelerator** → **Calcium complex (Inactive / Reduced Cross Linking)**  
**Zn<sup>2+</sup> + Accelerator** → **Zinc Complex (Active Cross Linking)**

#### **With Birchset CR – No Competition**

**CaO + H<sub>2</sub>O** → **Ca(OH)<sub>2</sub> (Formation of Ca<sup>2+</sup>)**  
**Ca<sup>2+</sup> + 2Cl** → **Calcium Chloride (Dose non affect Cross Linking)**

**Black general purpose EPDM profile with high (15Phr.) Calcium Oxide loading- results using Birchset CR.**



**Applications:** Birchset CR is typically used combination with Innovox (Calcium Oxide) in EPDM usually in applications such as Extrusions and continuous Pressureless vulcanization methods (e.q. UHF, LCM or Hot-Air Vulcanization).

These applications may have high moisture level 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 finished product properties.

**Addition:** Dose is usually between 0.5 and 1 phr, or 10-20% of Calcium Oxide edition level. Birchset CR should be added at the same point as Innovox. Addition point can be varied to combat the effect 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 Mixing.

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 Technical 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.

**Packaging:** Birchset CR is available in 15 Kg sacks.

**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.

### **Other Products of Birch Chemicals**

- 1. INNOVOX ( Calcium Oxide Powder )** Market-leader in Moisture and Porosity control solutions for the rubber industry, Rebar Fusion Bonded Epoxy Based Coating to improve the anti-corrosive properties.
- 2. INNOVOH ( Ultra Fine Calcium Hydroxide )** A Premium cure activator for FKM compounds for critical Specifications.
- 3. BIRCHSORB Hyper Desiccant** Combat Container Rain with Moisture Control for Shipping Containers.
- 4. MASTEROX R** :Desiccant Masterbatch Granules for Plastic and Nylon.