

Issues Briefing

Innovation

Borax recently surveyed its customers and communities to find out what they know about our company – and what they want to know more about. This issue briefing has been developed in direct response to your request for more information about Borax’s role as an innovation leader in the borate business.

Institutional Innovation

Our company was literally set in motion to meet a challenge. In 1881, company founders filed claims on the richest fields of crude ore yet discovered. Mining these surface deposits in California’s Death Valley was easy – refining the minerals in temperatures that soared to 130° F in the summer was not; nor was transporting them across 165 miles of badlands to reach the nearest railroad junction.

Borax engineered seasonal refineries to meet production challenges, and developed sturdy wagons powered by twenty mule teams to meet distribution challenges. With these innovations, a tradition was born. To this day, the company pioneers the majority of borate production, distribution and application advances around the world – and continues to prospect for opportunities that benefit the company, its customers, and consumers at large.

Borax recently reconfigured its infrastructure and processes for greater speed and efficiency in moving ideas for new borate applications from the laboratory to the market. We rely on a stage-gate process to concentrate resources on the most promising applications. This sequential system features checkpoints to screen, evaluate and validate ideas based on their technical feasibility and market viability. Staffing the process are cross-functional teams of commercial and technical experts.

Targeted Collaboration

Our workforce is diverse – we are chemists and biologists, geologists and mining engineers, finance and marketing experts – but our common traits include an incomparable understanding of the borate business and an inexorable drive to improve it. We also tap into a braintrust that extends far beyond the walls of our laboratories, plants and offices. Collaborating with private and public sector experts is vital to our ability to build and apply knowledge of boron’s properties and potential. Partnerships that foster innovation include:

> Partnering with sister companies throughout Rio Tinto to share best practices, ranging from employee safety to customer service. For example, we work with talc producer Luzenac North America to create process and product benefits for the papermaking industry, which consumes both borates and talc.

> **Partnering with other industries to improve the buildings and the planet we call home.** Working with Osmose, a wood preservation technology leader, and LP Corporation, the world's largest producer of oriented strand board, Borax has developed safe, durable borate-treated building materials to protect people's most important investment from wood-destroying organisms.

Borax is also partnering with hydrogen storage technology leader Millennium Cell to create an efficient process to manufacture and recycle sodium borohydride – a clean, safe energy source for zero emission vehicles like the Chrysler Natrium.

> **Partnering with industry pioneers to invent new ways to make old products better.** The world still washes a majority of its clothes with bar soap, so Borax seized an opportunity to improve one of its oldest applications. Working with independent soap research specialist Geoff Duncalf, Borax scientists developed bar soap with borates. Duncalf invented an instrument that closely mimics the hand-washing process to test different bar soap formulations against tough laundry stains – and helped us prove that borates improve stain removal and reduce dirt redeposition.

> **Partnering with students to advance the art and science of the borate business.** In Spain, Borax partners with the University of Castellón, sponsoring study halls and supporting student's need for practical experience. Student interns have been instrumental in research programs that prove adding borates to ceramic tile bodies lowers energy usage and increases tile body strength.

In California, Borax partners with Victor Valley College to develop methods to restore the land disturbed by its mining operation. Borax collects the seeds, prepares the soil, and provides the funding. Students from Victor Valley will spend the next three years testing their skills to recreate wildlife habitat.

> **Partnering with customers to transform castoffs into valuable products.** New ideas always look good on paper, but the true test of any idea is in its practical application. Borax collaborates with customers on everything from making better bricks by adding borates to the mix, to rehabilitating steel slags to recycle this dusty waste into durable construction material.

For more information on Borax's tradition of innovation – or to let us know about your idea for a new borate application – please contact your local Borax office.

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