



**CEMENT**

## **QUICK FACTS**

**PROCUREMENT  
MODEL:  
COLLABORATIVE**

**LAFARGE'S ROLE:  
CEMENT SUPPLIER**

**TOTAL VOLUME  
11,000 TONNES**

**COMPLETION  
DATE:  
NOVEMBER 2018**

# **RED DOG: CEMENT BLEND FOR ALASKAN MINE**

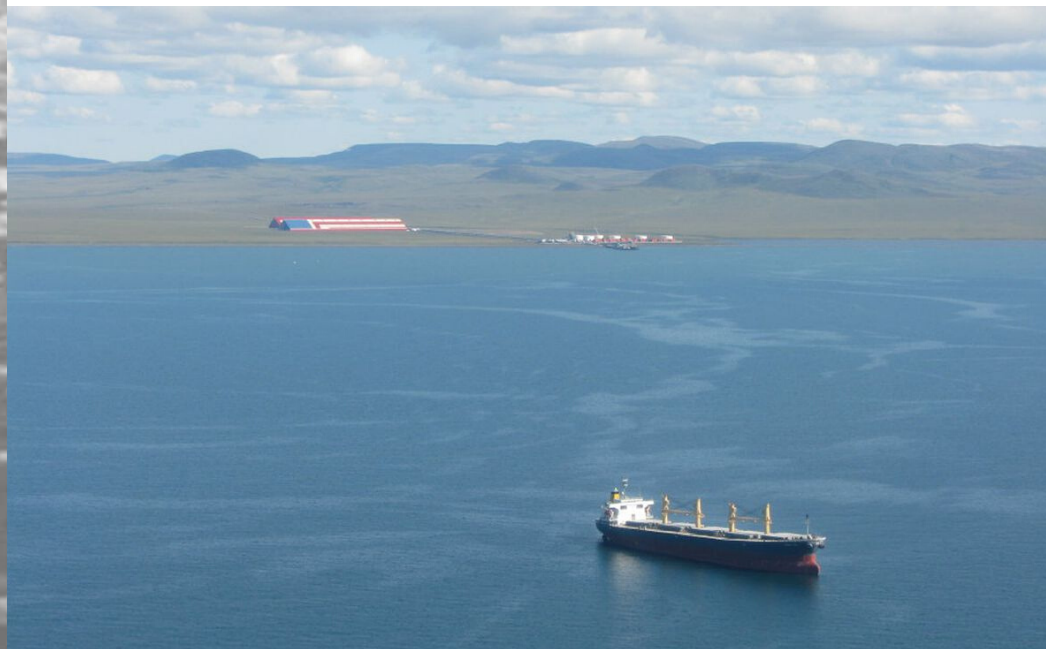
ALASKA, USA

## **PROJECT OVERVIEW**

The Red Dog mine is one of the world's largest zinc and lead mines, located about 170 kilometres north of Kotzebue in one of the world's most remote locations. The mine is owned and operated by the Canadian mining giant Teck Resources in NW Alaska.

In 1989, Red Dog Operations was developed through an innovative operating agreement between the operator Teck and the land-owner NANA, a Regional Alaska Native corporation owned by the Iñupiat people of northwest Alaska. The mine and concentrator properties are leased from, and were developed under the agreement with NANA.

Due to the demanding region, goods can only be shipped to Red Dog during summertime months. Lafarge Canada was asked to design and provide a high performing cement blend, suitable for mining with conventional drill and blast mining methods and massive equipment.



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### EXACTING PERFORMANCE REQUIREMENTS WITH INNOVATIVE SOLUTIONS

The industry experts at the Lafarge Seattle Cement Laboratory, part of the Lafarge Canada R&D team, are known for their expertise. When Teck needed unique mix design and chemical ideas to keep the mine operating safely for another 10 years, Lafarge engineers created a custom blend.

Permafrost, like that found in and around the mine, keeps ground water frozen, and the subsequent ice in the soil pushes its minerals out - thereby aging concrete much faster, with higher repair and replacement costs in its lifetime. The blend that Lafarge provided is a mixture of General Use Limestone (GUL) cement and slag cement, ideal for the client's plans to expand and improve the tailings lagoon dam. By incorporating GUL cement - which brings high performing compressive strength - with slag cement, which in turn has low heat of hydration, durability and sulfate resistance - the product ensured long term performance in permafrost environments like Red Dog's.





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### MOVING BAGGED CEMENT ACROSS THE TUNDRA

with a short season of access to the mine - via the 84 kilometre Red Dog Mine Haul Road from the state-owned, Teck-operated DeLong Mountain Port Facility on the Chukchi Sea - Lafarge logistics had to run efficiently and creatively.

Bagged in 2-ton bulk bags, the cement was loaded in 10s in sea-going containers loaded onto barges at our Seattle port. From Seattle, the barges travelled up the Pacific coast to the Bering Sea, then headed east towards the DLMP - a journey of nearly 5000 kilometres.

Upon arrival at the port, the cans were unloaded and transported inland.

Upon completion, Lafarge provided laboratory testing and certification to review installation and performance quality, ensuring consistency for the entire project.

Lafarge's resource network also ensured steady access to ground gypsum, a PH neutral option suitable for water treatment. By providing this one stop shop - custom cement blends plus gypsum needed for water treatment in exacting conditions - Lafarge's service met the needs of our client, with proven and tangible results.

