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STEALTH DEMOLITION

Chemical demolition has been off PDi's radar for some time. This silent low-key technique got lost somehow in the roar of excavators and the screeching of wall saws. However, when sophisticated demolition equipment is out of reach or there are environmental issues to be considered, chemical demolition agents or expansive compounds come very handy. PDi presents a survey of powdered concrete crackers and rock splitters available.

Unlike explosive chemicals, expansive compounds are completely quiet and safe in application. Although their exact chemical composition is a trade secret closely guarded by suppliers, expansive agents usually contain oxides of calcium, silicon and aluminium. As non-toxic powders, they generate a powerful expansive force when mixed with water in the prescribed proportion. This chemical reaction has been taken as the basis of a simple, but nonetheless efficient demolition technique.

Drill-and-fill method

This technique may vary in detail depending on the job specification, but its key principles always remain the same. First, a set of holes is drilled in the material being demolished. The hole size, depth and pattern are defined by the material properties and job requirements. A demolition compound is then mixed with water, and the resulting slurry mixture is immediately poured or pumped into the holes. The reaction between the powder particles and the water causes the slurry to harden and expand, which results in cracking of the material. The first cracks appear in about 45 minutes after the filling, and it takes up to 20 hours, depending on the ambient temperature, for the compound to complete its job. The general principle is that the higher the temperature, the quicker the reaction. At 30° C, for instance, crack formation can be fully completed within six to eight hours. The pieces of the cracked concrete or rock can then be removed by a hammer or breaker. If reinforced concrete is being demolished, the reinforcement remains intact and can be salvaged for further use.

The application of expansive grouts has a number of advantages over other techniques. First, this method generates no vibration, noise, dust or flying debris. Second, expansive grouts, being non-explosive and non-toxic, do not require any operating and safety training or certification. Last they are a very economical proposition compared to costly demolition equipment. Over the 15 years that the technology has been around, there are now many products available and anyone considering this option should be armed with some prior knowledge of suppliers and brand names.

Ecobust: more than just good product

Vancouver-based Ecobust Distribution International Inc offers its concrete and rock splitting agent under the brand name Ecobust. Established in 2009, Ecobust is committed to innovation and environment protection. This commitment is echoed in the company's motto "naturally innovative". The supplier offers a demolition compound, which is safe for personnel and does not impact the environment. Full technical support, from suggested hole patterns and

consumption rates to free one-on-one consultations, is another strong point of the Canadians. Ecobust is one of the fastest and most powerful expansive demolition compounds currently available. It is a powdered mixture of natural minerals that expands at 138MPa pressure (four times its size), breaking all forms of rock or concrete. The agent breaks rock and concrete in as little as four to six hours, depending on the ambient temperature. If needed, this period can be extended up to 24 hours. The product comes in four types for best performances under different temperature conditions.
Ecobust, which is quickly gaining acceptance as a fast-acting and powerful demolition compound, can now be found at major retailers across North America and other parts of the world. Currently, Ecobust is being used in both small and large-scale commercial projects, such as trenching, pier removal, and road expansion, as well as by general contractors and households for rock breaking, concrete pad removal and other similar tasks. For further product information, contact Jason Cohen at jason@ecobust.ca

Crack it with Crackamite
Crackamite is a demolition compound distributed by the Indian company Hydraulics & Pneumatics. Since the time of its inception in 1993, Hydraulics & Pneumatics has grown into the biggest supplier of machinery and parts in the province of Rajasthan. A few years ago the company added Crackamit to its extensive inventory. The compound proved a great success in India and the company soon began to export it.
Crackamite has the expansive force of 11,200 t/m2, which is more than enough to crack any material, given that the tensile strength of rock ranges between 500 and 2,500 t/m2, while reinforced concrete breaks at 300 to 500 t/m2. The agent reaches its maximum force after about 24 hours it has been mixed with water. Crackamite is available in six grades covering the temperature range of -5 to +45°C. On request, a special Inhibitor can be supplied to control the reaction time.
For further product information, contact Harish Soni at harish.soni@hydraulicpneumatics.com

Ter-Mite: agent of European origin
The Finnish version of demolition grout is called Ter-Mite. It is supplied in a few types by Espoo-based company Dextec. The basic type of Ter-Mite is said to be the most versatile and is recommended for demolition applications in most of Europe. The other types geared towards hotter climates are available on special request. Ter-Mite generates an expansive force of 100 MPa when mixed with water. The supplier suggests customers experiment with the hole spacing to find a most economical way of application. Depending on the tensile strength of the material being cracked, it ranges between 200 and 500 mm. Ter-Mite can be injected into pre-drilled holes using shotcreting equipment.
For further product information, contact Toni Hilakari at toni@dextec.fi

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