Geotechnical applications

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argex

WATERWAYS, ROADS, RAILWAYS…

ARGEX , THE LIGHTWEIGHT MATERIAL FOR CIVIL ENGINEERING

When constructing roads, waterways, railways or buildings, filling materials can cause severe overload. Horizontal and vertical pressures are created which necessitate costly structures. Thanks to their light weight, Argex pellets, used as fillings, dramatically reduce that overload. **Every m³ Argex added equals a weight saving of 1 ton!**

Thanks to Argex light filling, structures can be simplified. Behind sheet pilings and quay walls, for example, horizontal load is reduced by 60 %. That means a reduced construction cost. On poor subsoil, an Argex filling will reduce settlements.

Unlike crushed material, Argex is highly stable thanks to the round shape of its pellets. Auto-settlement is almost nil after compacting and consolidation is rapid,…if not immediate! Moreover, Argex fillings have significant drainage power. Easy to handle – dry or under water! Indeed, after immersion, Argex's density is only slightly superior to 1: there is neither overload nor flotation effect.

Thanks to its bearing capacity, high internal friction angle and unlimited lifespan, Argex is the most efficient foundation material available. It improves stability, reduces settlement, allows load compensation, supplies durable drainage, is easy to use and respects the environment.

1 m³ Argex

=

1 ton less

Advantages

- Increases stability
- Prevents setting
- Durable
- Compensates loads
- Guarantees a permanent drainage
- Easy processing
- Eco-friendly

Fillings behind quay walls

Argex grains cannot only be used as lightweight filling material in the Construction of quay walls, but can also be used for the renovation of old quay walls.

When used behind quay walls Argex grains decrease the pressure on the back of the structure with at least 60% compared to conventional filling material. This reduction of weight prevents and reduces the hydrostatic pressure importantly by the high draining capacity of Argex grains.

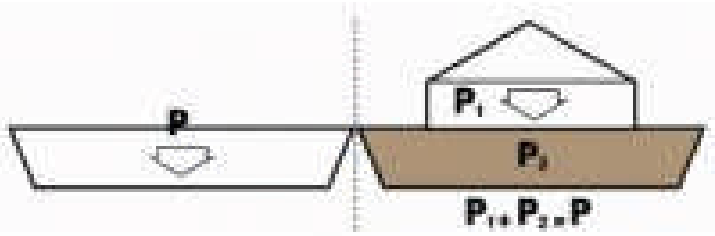
Argex fillings enable savings by simply making the construction lighter! Argex is also the perfect solution for the well-known reinforced earth constructions, especially applied on soft soil or when crossing underground structures.

Soil improvement when constructing buildings

Considering the low volume weight and the proper mechanical characteristics, Argex grains are perfect to realise balanced constructions in soft, low-weight bearing soils.

Theoretically, with the use of the compensation method with Argex grains, the natural substrate (P) is substituted by an equal load that consists of the sum of the mass of the construction (P1) plus the mass of Argex backfill (P2).

Practically however, the construction is often only partly compensated until the soil tension before and after the works is equal.



Light backfill in soil, road and waterway constructions

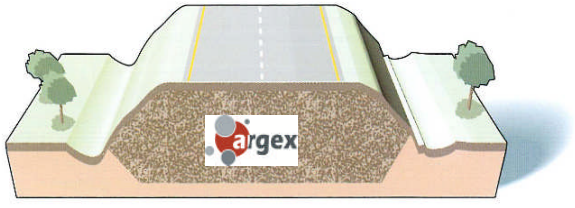
For road constructions on a bad subsoil, the fast consolidation AND the light weight of Argex backfill offers many advantages. Embankments are often to be built on weak and very easily compressible soil. If the embankment crashes, the subsoil consolidates and collapses.

Depending on the embankment's height, the depth of the weak subsoil and the consolidation characteristics of the subsoil, the full collapse can be very deep and problematic for what matters evenness of the road, functionality and durability of the road construction. Various combinations of soil strengthening techniques can be used in the most difficult situations.

Fillings in road embankments

Argex' ability to reduce settlement can offer massive benefits, reducing timescales from years to a few months for new or extended carriageways or for embankments and even, in some instances, eliminate settlement periods altogether. Construction of embankments over weak and compressible soil deposits, where the loading of the embankment causes soil consolidation and settlement, is common. Depending on the height of the embankment, the depth of the weak soil deposit and the consolidation properties of the soil strata, total settlements can be very deep and problematic in terms of road evenness, function and durability of the road construction.
In the most difficult cases, various combinations of soil strengthening techniques are available, for example, pre-loading, vertical drainage and deep stabilization with piles – all of which are time consuming and costly to install. By lightening the embankment with Argex lightweight aggregate, subsoil strengthening and lengthy settlement can be reduced or even avoided altogether.

Argex will also reduce the risk of bearing capacity failure and increase the stability of the side slopes. Efficient drainage of the structural layers of the road build-up can prevent loss of load bearing properties caused by water and ensure a good load bearing capacity throughout the road life. Using free draining Argex within the road build-up will break the capillary rise of ground water into the upper construction layers whilst performing as a structural material and improving the load bearing capacity. In sloping terrain and in cuts stretching below the surface of the ground water, streams of groundwater can cause localized damage to the road surface and reduce the load bearing capacity of the road. Argex used as a drainage layer within the road construction will intercept the percolating water and water rising by capillary action from the sub-formations and direct the rising water within carriageways in cuts that extend below the natural level of the groundwater, frost damage and loss of load and bearing capacity can also be reduced by forming drain trenches filled with Argex at both sides of the road, along which the water is led away. Used within the carriageway drainage, Argex helps filter and increase microbiological breakdown of pollutant runoff from fields and highways.



Furthermore, the use of Argex is also recommended as a lightweight filling

- Filling of natural or artificial voids
- Backfill round pipes and sewerage
- Tunnels and structural elements
- Construction of sports fields
- Drainage and backfill of underground structures
- Backfill under access ramps to a pile bridge
- Slow-down areas and roundabouts
- Water buffer and infiltration basins
- Prepare areas for construction