

Two-component additive system for cemented backfill.

Uses

The Fillset system can be used to produce a stiff cemented backfill, the characteristics of which can be designed to suit specific backfilling requirements.

Advantages

- Classification of the tailings is not necessary.
- Slimes and water run-off are reduced. Reduction in slimes and water run off results in improved conditions in gullies drains and ore-passes.
- Little or no shrinkage of the backfill occurs so that no topping up is required, and contact with the hanging wall is more easily maintained.
- Retention of volume reduces filling time.
- Additives are non-flammable, non-toxic.

Description

The Fillset system consists of two components, a powder, FILLCEM and a liquid, FILLGEL. When added to tailings slurry, the components react in time to form a homogeneous hardened backfill.

FILLCEM is a blend of specially selected powders proportioned to give a long pipe life and optimum strength development in the backfill.

FILLGEL is an inorganic liquid additive, which when added to the slurry reacts rapidly with the components of FILLCEM to accelerate solidification with minimal water loss.

Properties

Setting time

FILLCEM is formulated to have a long life in the backfill pipeline (typically 6-8 hours depending on ambient temperatures). However, once mixed with the FILLGEL the reaction is very rapid giving gelation within minutes.

Strength development

Typical strength development using 5% FILLCEM and 1% FILLGEL with quartzitic tailings slurry with 34% water content (R.D. = 1.7) is detailed below.

Age (days)	U.C.S. (MPa)
1	0.15
7	0.50
14	0.62
28	1.00

Water retention

The following table illustrates the reduction in water run-off which is obtained using quartzitic tailings slurry at R.D = 1.7 at various additions.

Addition level (%)		Water run-off
FILLCEM	FILLGEL	(% of total water)
5	1	6.5
7	1	4.6
9	1	3.5

Estimating

Pack size

FILLCEM	25 kg bags or bulk
FILLGEL	200 litre drums or bulk

Addition rates are selected on the basis of the following criteria: -

- The type and particle size distribution of the tailings, classified or unclassified.
- Water content of the slurry (i.e. the R.D.).
- Degree of water retention desired.
- Backfill strength required.
- The pH of the tailings slurry to be used.

In order to obtain the correct addition level, a detailed investigation must be carried out by Minova RSA on the actual mine tailings to be used.

Storage/Shelf life

When stored in dry, cool conditions, unopened FILLCEM and FILLGEL have shelf lives of 6 months each.

Precautions

Health and Safety

Both FILLCEM and FILLGEL are alkaline, consequently the use of gloves and goggles is recommended. Splashes should be removed from the skin and eyes by washing with plenty of water. In the case of splashes in the eyes, medical attention should be sought immediately, refer to Material Safety Data Sheet.

When FILLCEM is being slurried with water before being added to the backfill, waterproof clothing should be worn to protect against splashing.

Both FILLCEM and FILLGEL are non-flammable and non-toxic.

Technical Support

Minova RSA provides a technical advisory service supported by a team of specialists in the field. The service includes on site assistance and advice on evaluation trials and laboratory work.

Additional information

Minova RSA is a market leader specialising in the supply of high performance chemical products for the mining and tunneling industries.

Minova RSA range of mining products includes anchoring and backfill systems, bagged cement products, high yield grouts, mine sealants, equipment and accessories, for which a product brochure is available on request.

Important note

Minova RSA products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale, copies of which may be obtained on request. Whilst Minova RSA endeavours to ensure that any advice, recommendation, specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products, whether or not in accordance with any advice, specification, recommendation or information given by it.

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