



K-pipecharge

Product information 03.10.2017

1. Product description and use

K- pipecharge is powder explosive which contain nitroglycol and kieselguhr (diatomaceous earth). The brown powder explosive is packed in green polypropylene pipes. K-pipecharges are used for dimensional stone quarrying.

2. Packages

Name	Ø /mm	Length / mm	Explosive g/cartridge	Explosive in box /kg
K-pipecharge	17	500	100	15

Transport classification	
RID/ADR /IMDG Hazard Class	1.1 D
UN Number	0081
Proper Shipping Name	Blasting Explosive, type A

3. Explosive properties

	Unit	K-pipecharge
Specifications		
Form		Powder
Density	Kg/dm ³	0,95 - 1,05
Velocity of detonation	m/s	>1800
Transmission	cm	>2
Typical and theoretical values		
Velocity of detonation*	m/s	1900 - 2100
Transmission*	cm	2 - 5
Oxyge balance	%	- 6,4
Gas volyme**	dm ³ /kg	223
Explosions heat**	MJ/kg	0,7
Power / unit weight**	S	0,17 (ANFO 1,00)
Initiation sensitivity		
Detonator		Detonator sensitive
Detonating cord		Usable
Reliability		Tested - 25 °C

* free space, 20 °C, ** Expl05 (STP), theoretical

4. Main raw materials and their hazard clauses

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Nitroglycol (ethylenglycoldinitrate)	E; R3 T+; R26/27/28 R33 Unst. expl.; H200 Acute tox. 1; H310 Acute tox. 2; H330 Acute tox. 2; H300 STOT RE2; H373
Diatomecoues earth	-

5. Storage and shelf life

In dry conditions K- pipecharges have a storage life of two years. The products are stored in a dry and cool place, according to valid legislation.

The frost resistance of K- pipecharges is good. Transmission and initiation sensitivity properties are slightly lower at sub-zero temperatures.

6. Safety in handling

K- pipecharges are CE-accepted products, which fulfil the substantive safety requirements according to the EU directive. The assessment of the conformity is done by Bundesanstalt für Materialforschung und -prüfung (BAM/CE 0589). The products have to fulfil e.g. the following handling safety requirements:

Test	Requirement	Results
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Impact sensitivity (BAM)	≥ 2 J	10 J
Friction sensitivity (BAM)	≥ 80 N	> 360 N
Thermal stability (UN 3(c))	No ignition or explosion @ 75°C, 48 h	No ignition or explosion
Sensitivity to flames (UN 3(d))	No explosion	No explosion

Nitroglycol might cause headache and reduced blood pressure due to skin contact or respiration. Skin contact should be avoided by using protective gloves. Any substance on skin must be removed and washed with water and soap. If the substance gets into the eyes, the eyes must be rinsed thoroughly with water. If irritation continues, a doctor is to be conducted. Substance caught on clothes should be removed mechanically, after which the clothes are washed with normal wet cleaning.

7. Environmental impacts

The water resistance of K- pipecharges is reasonable. However, the unexploded agent dissolves gradually into water, with a result of nitrate and nitroglycol ending up in nature. Nitroglycol does not dissolve into water and it degrades very slowly in nature. Nitrate has a eutrophication effect on the water system and it soils the ground water. Pipecharges contain Kieselguhr which is a stable, non-poisonous natural raw material and doesn't cause damage to the environment or danger to organisms. As such, Kieselguhr is suitable as earth-fill material. Sodium chloride dissolves gradually into water and it has a corroding effect on metal.

Careful and clean charging helps to minimize harmful environmental effects. In addition, the amount of harmful fire gases (CO, NO_x) produced by the explosion can be reduced by correct use of the product. In general, the amount of gases produced in the explosion depends on the oxygen balance and how complete the explosion is. At ideal conditions, where the oxygen balance is zero and the explosion is complete, the main explosion products produced are carbon dioxide, water vapor and nitrogen gas. In practice, this ideal is never achieved and the oxygen balance is usually slightly negative or slightly positive. The pipes are made of polypropylene, which mainly burns in the detonation and do not form

particularly toxic gases. Some plastic parts can spread in the surroundings of the site. In an incomplete detonation sooty residue will be formed from the plastics.

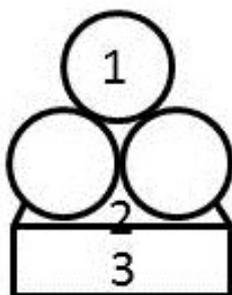
The oxygen balance of K- and KK-pipecharges is approximately -6 %, which means that during explosion carbon monoxide is being formed more in proportion to NO_x gases.

8. Operating instructions

K-pipecharge is detonator sensitive, but absolutely ensuring the explosion, detonating cord (10g PETN/m) shall be used. The detonating cord is swirled around the pipecharge line so that the cord will make a circle at each pipecharge. The ends of the cord will be attached with tape in the first and the last pipecharge. K-pipecharges will usually be ignited with detonating cord so that adjacent holes detonate simultaneously. This method gives a better result than without detonating cord. K-pipecharges are not completely water-resistant so they cannot be used in specially wet quarrying sites.

9. Disposal

All F-pipecharges that are in doubt to not function must be disposed of. A qualified person can dispose small amount of explosives. Disposal is done by burning with accessory fuels. The maximum quantity to be burnt is 5 kg in one batch and as a layer of maximum 5 cm. The burning shall be done a minimum of 100 metres from a public road or inhabited building.



1. Maximum 5 kg and as a maximum 5 cm thick layer.
2. Wood cotton or other equivalent burnable product
3. Wooden base (for example 50 x 100 plank)

Fuel oil is applied to the explosives and burnable accessory fuels and they are lit on the side from which the wind is blowing. Igniting the fire can be done using a one-meter-long stick with a wood cotton tip doused in fuel oil.

Forcitt accepts aged explosives for disposal. No compensation is paid for returned explosives and the cost of disposal is agreed separately case by case.

Explosives to be shipped to Forcitt for disposal must have the appropriate denotations. Contact customer care or technical services before shipping the product.

10. Reclamation instructions

If the product has detectable defects or it does not function in the expected manner, the following data shall immediately be given to Forcitt customer care or technical services:

- Product name, size and manufacturing date marked on the package
- Product or package appearance
- Description of the product's abnormality
- Operating circumstances in the blast site

Defective products are delivered to the nearest Forcitt service station from which they are delivered to the manufacturing plant for further examination. Returned products must be accompanied with a filled out Forcitt product return form which you can print out on our website (<http://www.forcitt.fi/forcitt-explosives>, menu products). Contact customer care or technical services before returning the product.