



KEMIX A- AND KEMIX- PIPECHARGES

Product information 16.9.2014

1. Product description and use

Kemix-pipecharges are intended for all types of quarrying that require a precise quantity of explosive in the borehole. They are excellently suited to smooth wall blasting. Charging with Kemix-pipecharges is quick.

The explosive used in Kemix-pipecharges is a water-in-oil emulsion. Its physical state is grease-like and it is white-yellowish in colour. Kemix A-pipecharges contain aluminium additive that is metallic grey in colour.

2. Packaging and transportation categories

The explosive mass of pipecharges is packaged in a plugged plastic tube.

Name	Ø mm	Length mm	Weight g	per box pieces	per box / kg net
Kemix-pipecharge 17 x 1000	17	1000	220	85	19
Kemix A-pipecharge 22 x 1000	22	1000	420	55	23
Kemix A-pipecharge 25 x 1000	25	1000	550	40	22
Kemix A-pipecharge 29 x 1000	29	1000	740	30	22
Kemix A-pipecharge 32 x 1000	32	1000	900	25	23
Kemix A-pipecharge 39 x 1000	39	1000	1290	19	25
Kemix A-pipecharge 51 x 1000	51	1000	2380	10	24

Transportation classification	
RID/ADR	1.1D Blasting explosives, type E
IMDG	1.1 D
UN number	0241
Hazard class	1.1

3. Explosion technical features

Specification	Unit	Kemix-pp 17 mm	Kemix A-pp (Ø 22 and >)
Density of explosive	kg/dm ³	1.0 - 1.1	1.2
Velocity of detonation		4500	Ø17mm > 4200 m/s Ø22mm > 4400 m/s Ø25mm > 4600 m/s Ø29mm > 4800 m/s Ø32mm > 5000 m/s Ø39mm > 5000 m/s
Transmission	cm	min 1 cm	Ø17mm min 1 cm Ø22/25/29 min 2 cm Ø32/39 mm min 4 cm
Explosion heat*	MJ/kg	2.9	3.7
Gas volume*	l/kg	1000	930
Initiation sensitivity			
Detonator sensitivity		Detonator sensitive down to -25°C	Detonator sensitive down to -25°C
Detonating cord		Down to -25°C	Down to -25°C

* Cheetah 2.0 (NTP)

4. Main raw materials and their hazard clauses

The main ingredients of Kemix-pipecharges are ammonium nitrate water solution, oil and emulsifiers. As the basic oil of the oil mixture in Kemix-pipecharges, highly refined denotation-free mineral oil is always used with a high flash point and low evaporability. Emulsifiers are substances commonly used in the food and/or cosmetics industry.

Raw material	Risk clauses
Ammonium nitrate	O, oxidative, R8
Oil mixture	-
Sensitizer	-

The emulsion is sensitised to become explosive by mixing micro balls into the emulsion.

5. Storage and weather resistance

The explosive in Kemix-pipecharges is completely waterproof. The oil film surrounding the nitrate solution makes the explosive used in Kemix-pipecharges completely insoluble into water.

The Kemix-pipecharge boxes must be stored in horizontal position.

The initiation sensitivity of pipecharges lowers as the temperature drops. The products ignite reliably down to the temperatures presented in chapter 3. When using a detonating cord, absolutely observe the instructions given below in chapter 8. The drop in temperature has little effect on the velocity of detonation and transmission of pipecharges.

Kemix-pipecharges must be used within one year from the manufacturing date.

As the pipecharges age, their initiation sensitivity lowers gradually. This cannot be detected in the product visually. As the explosive further ages, hard lumps and crystallization will occur, or the explosive becomes completely hard. Do not use the product when it is hard, otherwise differing from normal (for example like modelling clay) or aged. Normal explosive is soft and gummy.

6. Handling safety

Kemix-pipecharges are CE-approved products that have been found to meet the relevant safety requirements of the EU directive. The testing has been performed by the notified inspection plant for civilian explosives, PVT (0812). The products must fulfil for example the following minimum requirements describing handling safety:

Test	Requirement
Shock sensitivity (BAM)	≥ 2 J
Abrasion sensitivity (Julius Peters)	≥ 80 N
Thermal stability	75°C, 48 h (no reaction)

Although the raw materials used are as harmless as possible, it is recommended to avoid continuous skin contact by using protective gloves. Any explosive getting on the skin is first removed mechanically with a rag or towel. Then wash the skin with water and soap.

In case the substance gets into the eyes, rinse with lots of water. Contact the doctor if irritation persists.

Overalls and other work clothes with dried explosive material on them may ignite and burn. Protective clothing is washed normally in water.

7. Environmental impact

Emulsion explosives burn very cleanly because in an emulsion explosive the oxygen-giving (nitrates) and burning (oils) substances share a very large contacting surface and their manufacturing technique is very precise. However, small amounts of carbon monoxide and nitrogen oxides are always released.

The water-resistance of emulsion explosives is excellent. In pipecharges, the explosive has been packaged into durable tubes so water has no access to the explosive. All unexploded explosives or explosives otherwise remaining on the ground dissolve gradually so that nitrates and oil end up in nature. Nitrate causes eutrophication of water systems and pollutes the groundwater. Oil may have long-term harmful effects on water environments and risks polluting the soil and groundwater. With careful and tidy charging work and by following instructions, the environmental impact can be minimized.



8. Operating instructions

Kemix-pipecharges can be detonated with a detonator or detonating cord. When using detonating cord (about 10 g/m), please note that Kemix-pipecharges are more insensitive to ignite than traditional pipecharges. A loop of the detonating cord must be made in the pipe to ensure ignition. Do not wind the detonating cord into a spiral around the pipe because it is not adequate for reliable ignition but may even interrupt the explosion.

In underground blasting, the 17 mm pipecharges are suitable for charging boreholes in the walls and curved boreholes. In easy-to-break rock, also for auxiliary curved boreholes. The 25 and 32 mm pipecharges are used in auxiliary curved boreholes and ledge boreholes. If more powerful explosive impact is required, the 39 mm pipecharges are used.

In open-cut quarrying requiring precise quantities of explosive (break lines etc.) 25...32 mm pipes are used. If more powerful explosive impact is required, the 39...51 mm pipecharges are used. In high embankments, the use of a detonating cord is recommended to ensure the progress of the explosion. In such a case, a loop of the detonating cord must be made into each pipe.

The pipecharges are suitable for channel quarrying due to their precise quantity of explosive substance and their water resistance.

The transmission of pipecharges is relatively low. This must be noted especially when detonating 17 mm pipes; the pipes must be pressed carefully together and the borehole must be plugged in order to stop the pipes from moving.

Joining pipecharges:

Pipes with plug in the lower end and widening in the upper end

- Slightly squeeze the lower pipe (emulsion rises slightly out of the pipe)
- Push the upper pipe close while all the time squeezing the lower pipe
- Twist the pipe tight
- Let go of the lower pipe

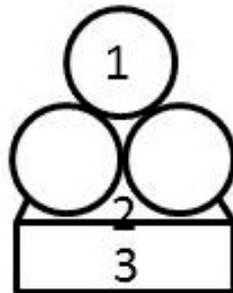
Underpressure is created between the pipes keeping them firmly together. The bottom of the upper pipe and the top of the lower pipe must be tightly pressed together for sure transmission of the explosion. Especially in boreholes containing water, make sure that no water gets between the pipes.

Pipes with a plug at both ends

- Push the bottom of the upper pipe tightly into the widening of the lower pipe.
- Make sure that the plugs are tightly against each other.
- In boreholes containing water, it's recommended to seal the joint by applying tape to it.

9. Disposal

All Kemix-pipecharges that you doubt will not function must be disposed of. The charger or senior charger is allowed to dispose of small quantities of explosive material. 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.

Forcit 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 Forcit 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 Forcit customer care or technical services:

- Product name, size and manufacturing date marked on the package
- Product appearance and description of the product's manageability / feel to the touch
- Operating circumstances in the blast site

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