



KEMIX A

KEMIX

Product information 1.8.2012

1. Product description and use

Kemix A is suited for all kinds of quarrying and land clearing. Because of its excellent water resistance and specific weight it is suitable for blasting jobs, in which the explosive is exposed to water. When using Kemix A, valid national regulations must be taken into account.

The explosive used in Kemix A is a water-in-oil -emulsion. Its form of existence is liparoid and its colour is metallic grey (Kemix - white or yellowish). The ammonium nitrate solution is mixed in oil as small drops and the nitrate droplets are surrounded by a thin oil layer in the final emulsion. Kemix A contains aluminum powder whereas the special product Kemix does not contain aluminum

2. Packaging and transportation categories

Kemix A and Kemix are packed into an enduring plastic cartridge. The ends of the cartridge are closed with metal clips.

Name	Diameter/ mm	Length/ mm	Weight/ g	kg (net weight)/ box
Kemix A 25x530	25	530	290	25
Kemix A 32x530	32	530	530	25
Kemix A 36x530	36	530	670	25
Kemix A 40x530	40	530	830	25
Kemix A 50x530	50	530	1250	25
Kemix A 55x530	55	530	1560	25
Kemix A 60x530	60	530	1800	25
Kemix A 65x530	65	530	2100	25
Kemix A 70x530	70	530	2500	25
Kemix A 90x530	90	530	4200	25

Transport classification	
RID/ADR	1.1D EXPLOSIVE, BLASTING, TYPE E
IMDG	1.1 D
UN nro	0241
Hazard class	1.1

3. Explosion technical features

Specifications	Unit	Kemix (special product)	Kemix A (4.5 %)
Density	kg/dm ³	1.2	1.2
Velocity of detonation	m/s	> 4800	25 Ø, 29 Ø > 4600 32 Ø, 40 Ø > 4800 Others > 5000
Transmission	cm	> 4	25 Ø, 29 Ø > 2 Others at least 4
Explosion heat*	MJ/kg	3.0	3.7
Gas volume (NTP)*	l/kg	1000	950
Power/unit weight ***	S	0.81	0.95
Initiation sensitivity			
Detonator sensitivity		detonator sensitive to -20°C	detonator sensitive to -25°C
Detonating cord		not recommended	not recommended
Max depth in water	m	Tested 20**	Tested 25

* Cheetah 2.0 (NTP), ** sensitized with microballs 50m, *** comparison to Anfo

4. Main raw materials and their hazard clauses

The main raw materials for Kemix A cartridges are aqueous solution of ammonium nitrate, oil and emulsifiers. The oil used in Kemix A explosives is always a highly refined mineral oil, which has a high flash point and low volatility. Emulsifiers are products also used in food and/or cosmetics industry.

Raw material	Kemix (special product)	Kemix A
Ammonium nitrate solution	O, oxidizing, R8	O, oxidizing, R8
Oil mixture	-	-
Sensitizer	-	-

The emulsion is sensitized to explosive by adding inert gas or microballs.

5. Storage and weather resistance

The oil layer surrounding the nitrate solution makes the explosive in the Kemix A -cartridges completely insoluble to water. That is why emulsion explosive has an excellent water resistance. Kemix A explodes reliably even after being in water for a longer period of time.

The initiation sensitivity of Kemix A-cartridges decreases when the temperature decreases. They can be initiated reliably with the detonator until the temperatures presented in section 3. The decrease of the temperature has a minor influence on the detonation velocity and -transmission of the Kemix A -cartridges.

The storage life for Kemix A is at least one year if the product is stored in a dry and cool place. National regulations must be followed with storage.

The initiation sensitivity of the Kemix-cartridges diminishes gradually when they get older. Further ageing of the explosive hardens it locally and crystallizations can be found in it or the explosive becomes completely hard. This kind of product may not be used. Normal explosive is soft and sticky.

6. Handling safety

Kemix A and Kemix are CE-marked products, which have been found to fill the EU:s safety requirements. The testing has been done by the Notified Body for civil explosives, Finnish Defence Forces Research Center (0812). The products have to fill, for instance, the following minimum requirements describing handling safety:

Test	Requirement
Sensitivity to impact (BAM)	≥ 2 J
Sensitivity to friction (Julius Peters)	≥ 80 N
Thermal stability	75 °C, 48 h (no reaction)

Although the most harmless chemicals are used as raw material, it is recommended to avoid continuous skin contact by using protective gloves. If some explosive gets on the skin, first remove it mechanically and then wash skin with water and soap.

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

Overalls and other work clothes, which have been exposed to explosives, can catch fire. The clothes are wet washed normally.

7. Environmental impact

In an emulsion explosive oxygen-giving (nitrates) and burning (oils) substances share a very large contacting surface and the manufacturing technique is very precise. That is why the explosion gases are relatively clean. However, small amounts of carbon monoxide and nitrogen oxides are always released.

All the unexploded or otherwise remaining explosives on the ground dissolve gradually into water with the result that nitrates and oil end up in nature. Nitrate has a eutrophication effect on the water system and it soils ground water. Oil can cause long-term ill-effects in the water environment and create a pollution risk for the ground and ground water. With careful and tidy charging work and by following directions the environmental effects can be minimized

8. Instructions for the use

Kemix A-cartridges can be used to all kinds of quarrying as a base- and column charge. Kemix A-cartridges are also suitable for underground blasting. The high detonation velocity of Kemix A makes it a good booster for insensitive explosives (Anfo, Kemiitti) along with Dynamite and Redex. Kemix A-cartridges are initiated reliably with a detonator (the amount of explosive about 1 g) until the temperature mentioned in section 3. When placing the detonator in the cartridge, attention must be paid to having the end of the detonator on the middle axis in the lengthwise direction of the cartridge, and that there is no tension on the detonator from the detonator lead. If the detonator end is too far aside when exploding, the cartridge might not be ignited due to insufficient impulse.

The use of detonating cord to initiate Kemix A or to ensure the continuous detonation is not recommended because the result of it can be dead pressing of the explosive.

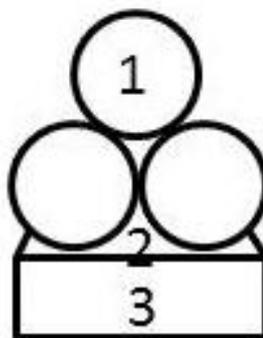
If Kemix A -cartridges are intended to be used in a so called shared charge, contact Forcitr technical services for instructions. In a shared charge the first exploding charge can cause a pressure shock, which weakens the explosion quality of the emulsion that explodes secondly. It is called the dead-pressing phenomenon.

The cartridges can be loaded directly to water-filled blastholes. In deep downward blastholes where there is a small amount of water on the bottom, the cartridges might spread on the water surface and prevent the explosive to sink to the bottom of the blasthole. A vertical free fall of over 10 meters increases the risk described above. When loading such a borehole it is recommended that the

cartridges are lowered to the hole with a string or something comparable, until the cartridges reach the water surface. Kemix A can be used in underwater quarrying. Because the explosion transmission of Kemix is at least 2 cm, the cartridges must be pushed closely together especially when used in water-filled blastholes.

9. Disposal

Kemix A-cartridges that may not be fit for use are destroyed. 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. For igniting the fire, use a one-meter-long stick with a wood cotton tip doused in fuel oil.

Forcitr accepts aged explosives for destruction. Returned explosives are not compensated and the costs for the destruction are agreed case sensitively.

The explosive that is returned to Forcitr for destruction must be marked with adequate denotations. Contact the account manager or technical services before the delivery.

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 Forcitr customer care or technical services:

- The name, dimensions of the product and the manufacturing date from 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 the account manager or technical services before returning the product.