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# ROYEX GENERATION II



# The Generation II system

Etken Teknoloji is proud to introduce the Royex Generation II rock breaking system. The system comes with the new and unique MaxFire initiation system - A revolutionary completely pyrotechnical initiation system with accurate timing and initiation characteristics specifically designed for the Royex Gen II cartridge, all classified as 1.4S.

The Gen II propellant mixture is also new and fully oxygen balanced, no noxious or dangerous gases after usage. Royex Generation II also introduces a modular concept allowing for tailor made solutions for every requirement.

The system is developed for blasters, contractors, quarry and mining managers. With the new timing systems, new propellant mixture and modular design the product range is currently the most complete and efficient pyrotechnical propellant based rock breaking system on the global market.





## Features and benefits

### 1 **Timing**

The MaxFire igniter is sold separately or pre-assembled\*. The igniter is specially developed for optimal initiation function of the Royex Generation II propellant mixture. The igniter system offers very accurate electrical delays, all fully pyrotechnical, all 1.4S classified.

### 2 **New propellant mix**

The cartridge contains a propellant mixture with a high energy content comparable or higher than common high explosives. The mixture is environmentally friendly and very safe to handle in an open, non-confined space. Upon initiation, the mixture creates minimal dangerous gases which makes the system ideal for underground or confined environments.

### 3 **New modular design**

The new modular design enables the operator to freely choose load weight and igniter delay enabling a very high flexibility. If more load weight is required, the booster charge can easily be used. The MaxFire igniter is easily mounted into the cartridge on site\*.



# The MaxFire initiation system

The new MaxFire initiation system is offered pre-assembled or as a separate igniters depending on the operators requirements\*. The initiation system is a completely new and unique pyrotechnical solution and is specially designed for optimal initiation of the Royex Generation II propellant mixture. The system is the first in the world to introduce pyrotechnical timing functions for propellant cartridges which enables timed and delayed blasts with Royex.



## Technical specification - MaxFire

### General Specifications

Product name:	Maxel Maxfire
UN number:	0454
EU class:	P1
Transport class:	1.4 S
Initiation heat	900° C
Available delays	Varies depending on region
Delay accuracy (200ms)	1,2 (CoV)
Delay accuracy (750ms)	1,8 (CoV)

### Electrical specifications

All fire current	1,2 A
No fire current	0,2 A
Igniter resistance	1.5 Ohm
Tensile strenght of cable	3 Kg
Available cable lenghts	2,5 / 4,5 meter

# The Generation II cartridge

The Royex Generation II cartridge is in combination with the MaxFire initiation system a safe and efficient tool to break rock. The cartridge generates minimal rock vibrations upon initiation and is a competitive alternative to conventional blasting where rock vibrations must be kept to a minimum or where noise or gas must be controlled.

Classified as a P2 product by the European Union, usage requires very simplified approvals for operators and becoming a certified Royex user is considerably simpler than acquiring a blasters license. As a P2 product the Royex Gen II system does not require track and trace.

Generation II cartridges are offered in diameters 32 and 38 mm designed to fit drill bit sizes of 34-38 mm (for the 32 mm cartridge) and 41-54 mm (for the 38 mm cartridge). Explosive weights are available from 25 grams up to 200 grams. Cartridges are offered with pre-assembled igniters or as booster cartridges\*.

Booster cartridges may either later be mounted with a MaxFire igniter or used as an extra addition to load weight in a hole\*.

Cartridges in 16 and 25 mm are also available, these cartridges comes with a pre-mounted hot Maxfire igniter.





## Technical specification - Cartridge

### General specifications

Product name:	Royex Generation II
UN number:	0432 / 0323
EU class	P2
Transport class:	1.4 S
Type of initiation	Hot MaxFire
CE approval ID	0589-P2-0074
Track and trace required	No

### Technical specifications

Energy	911 kcal/Kg (3,81 MJ/Kg)
Gas volume generated	923 liter / Kg
Speed of deflagration (confined)	330 – 850 m / sec
Speed of deflagration (non confined)	0 - 1 m / sec
Safety distance	30 meters
Shelf life	18 months
Water proof	Yes (down to 10 meters)



# Available products

## Cartridges

Cartridge diameter(mm)	Explosive weight(gram)	Cartridges per case
16	5	50
16	10	50
16	15	50
25	15	50
25	25	50
25	50	50
32	25	40
32	50	40
32	75	24
32	100	24
38	50	24
38	100	15
38	150	15
38	200	15

## MaxFire igniters

Cable length (m)	Number per case	
2,5	10	One case per delay, available for all delays
4,5	10	One case per delay, available for all delays

\* In the EU region, cartridges are sold with pre-assembled igniters

## Contact

The Royex Generation Rock breaking system and MaxFire initiation system is manufactured and developed by Etken Teknologi, Sweden.

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