



# **FORDYN REDEX**

**Product information 28.08.2015**

## 1. Product description and use

Fordyn and Redex are plastic explosives which contain, among others, nitro glycol and ammonium nitrate. Fordyn is reddish and Redex is orange in colour. Fordyn is used due to its high density in underwater blasting, as a bottom charge in bench blasting and trench blasting. Due to the easiness of portioning the explosive the product is also suitable to use when only very small portions of explosives is needed.

Redex is a special dynamite, which contains RDX and therefore has a higher detonation velocity than Fordyn. Redex is mainly manufactured as a booster. By initiating insensitive explosives like Anfo and emulsion explosives with Redex you will have more secure detonation. Redex is applicable for surface blasting because of high detonation velocity.

## 2. Packages

Name	Ø /mm	Lenght / mm	Explosive g/cartridge	Explosive in box /kg
Fordyn / Redex, paper cartridge	25	380	ca 250	25
Fordyn, paper cartridge	29	380	ca 350	25
Fordyn, paper cartridge	35	380	ca 500	25
Fordyn / Redex, plastic cartridge	43	ca 560	ca 1100	25
Fordyn, plastic cartridge	50	ca 560	ca 1600	25
Fordyn / Redex, plastic cartridge	55	ca 560	ca 1900	25
Fordyn, plastic cartridge	60	ca 560	ca 2100	25
Fordyn, plastic cartridge	65	ca 560	ca 2500	25
Fordyn, plastic cartridge	75	ca 500	ca 3100	25
Fordyn, plastic cartridge	85	ca 500	ca 4200	25

<sup>1</sup>A single cartridges weight can vary depending on density inside the allowed limits, but the box is always 25 kg ± 0,5 kg

Transport classification	
RID/ADR	1.1D, 4 Blasting Explosive, type A
IMDG	1.1 D
UN number	0081
Class	1.1

### 3. Explosion technical features

Specidications	Unit	Fordyn	Redex
Form		Plastic	Plastic
Density	kg/dm <sup>3</sup>	1.45 - 1.55	1.45 - 1.55
Velocity of detonation	m/s	> 2 000	> 6 000
Transmission	cm	> 2	> 2
<b>Typical and theoretical values</b>			
Velocity of detonation*	m/s	6 000	6 800
Transmission**	cm	3-8 (Ø 25 mm)	18 - 20 (Ø 25 mm)
Oxygen balance	%	+ 3.3	- 6.2
Gas volyme***	dm <sup>3</sup> /kg	850	810
Explosions heat***	MJ/kg	4.5	5.5
Power / unit weight***	S	1.09 (ANFO 1.00)	1.30
Initiation method		At least EN 13763-15 #3 strength detonator (before detonator no. 8) Detonating Cord	At least EN 13763-15 #3 strength detonator (before detonator no. 8) Detonating Cord
Cold sensitivity		Reliable down to - 25 °C	Reliable down to - 25 °C
Max water depth		Reliable down to 25 m	Reliable down to 25 m

\* steel pipe Ø 55 mm, \*\* free space, 20 °C, \*\*\* Cheetah 2,0 (NTP), theoretical

## 4. Main raw materials and their hazard clauses

Raw material	Fordyn	Redex
Ammonium nitrate	O; R8 Xi; R36 Ox. Sol. 3; H272 Eye Irrit. 2; H319	O; R8 Xi; R36 Ox. Sol. 3; H272 Eye Irrit. 2; H319
Nitroglycol (etyleneglycoldinitrate)	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	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
Nitrocellulose	F; R11	F; R11
Hexogen	-	Xn; R48/22 T; R39/25 T; R25 E; R2 Expl. 1.1; H201 Acute tox. 3; H301 STOT SE1; H370 STOT RE2; H373

## 5. Storage life and weather resistance

The functionality of Fordyn and Redex is guaranteed two years from manufacturing date, if the product is stored in unopened boxes or individual cartridges in airtight plastic bags. Their shelf life shortens in humid and warm (> 25 °C) conditions. As Fordyn and Redex ages their detonation velocity decreases but it is still always higher than 2000 m/s. The products are stored according to valid legislation.

The frost resistance of Fordyn and Redex is quite good. The transmission and initiation sensitivity property are slightly lower and mass hardens somewhat at sub-zero temperatures.

Water resistance for Fordyn and Redex is good (2-3 days).

## 6. Handling safety

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Fordyn and Redex are CE-accepted products, which fulfil the substantive safety requirements according to the EU directive. The testing has been conducted by notified body for civil explosives (PvTeknTL, 0812). The products have to fulfil e.g. the following handling safety requirements:

Test	Requirements
Impact sensitivity (BAM)	$\geq 2$ J
Abrasion sensitivity (Julius Peters)	$\geq 80$ N
Heat stability	75 °C, 48 h (no reaction)

Nitro glycol might cause headache and reduced blood pressure due to skin contact or respiration. Skin contact should be avoided by using protective gloves. Any explosive substance on the skin must be removed and skin 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 contacted. Overall and other work clothes, which contain dried explosive, may be sensitive to ignition. Explosive substance caught on clothes should be removed mechanically, after which the clothes are washed using normal wet cleaning.

## 7. Environmental impact

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The water resistance of Fordyn and Redex is good. Unexploded explosive agent, however, dissolves gradually ammonium nitrate into water. Nitro glycol does not dissolve into water and it degrades very slowly in nature. Nitrate has a eutrophic effect on the water system and it soils the ground water.

Careful and clean charging helps to minimize harmful environmental effects. In addition, the amount of harmful fire gases (CO, NO<sub>x</sub>) 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 complete, the main explosion products produced are carbon dioxide, water vapor and nitrogen gas. In practice, however, this ideal is never achieved and the oxygen balance is usually slightly negative or slightly positive.

The oxygen balance of Fordyn is + 3.3% and the oxygen balance of Redex is - 6.2%. Some amounts of NO<sub>x</sub> gases and carbon monoxide are always being formed during explosion. The more positive the oxygen balance is the more NO<sub>x</sub> gases are produced in proportion to carbon monoxide. In open space these gases are rapidly dispersed. When blasting in a confined space, e.g. underground or at an excavation or other location, where toxic or harmful explosion gases can accumulate, one should not enter the blast site before the gases are dispersed (for example by ventilation) so that they do not cause a health hazard.

## 8. Operating instructions

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Fordyn is suited for all kind of blasting under normal conditions. The main use of Fordyn is in underwater blasting and as initiator in bench blasting. Fordyn and Redex are plastic explosives, with high density and high velocity of detonation, which results in high performance. In underwater blasting between 25 - 50 m depth, we recommend usage of Forprime 1700 booster.

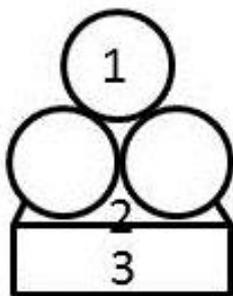
Fordyn and Redex -charges can be dropped into the blast hole if the depth of the hole is not more than 30 meters. If the blasting hole has roughly the same diameter as the charge, the charge can be dropped up to 50 meters. If the charge contains a detonator the charge must always be lowered down carefully with the help of a thread.

When Redex is used as a plaster shot, one has to take into consideration the risk-zone caused by the blast. For example, 1 kg of Redex requires a risk-zone of 150 meters. Plaster shots cannot be used in populated areas or in the proximity of any buildings.

## 9. Disposal

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All Fordyn or Redex products that are in doubt to 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.

Forcic 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 Forcic for disposal must have the appropriate denotations. Contact customer care or technical services before shipping the product.

## 10. Reclamation instructions

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If the product has detectable defects or it does not function in the expected manner, the following data shall immediately be given to Forcic 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 Forcic service station from which they are delivered to the manufacturing plant for further examination. Returned products must be accompanied with a filled out Forcic product return form which you can print out on our website (<http://www.forcic.fi/forcic-explosives>, menu products). Contact customer care or technical services before returning the product.