



FORDYN

H-DYNAMITE

REDEX

Product information 26.4.2007

1. Product description and use

Fordyn and H-Dynamit are yellowish, plastic explosives which contain among others nitroglycol and ammoniumnitrate. Fordyn is used due to its high density and high energy in underwater blasting, bottom charge in bench blasting and trench blasting. Due to the easyness of portioning the explosive the product is suitable to use when you need small portions of explosives. Forcit also manufacture on special order H-Dynamit för underwater blasting. H-dynamite is tested at 50 m depth.

Redex is a special dynamit, whitch contains RDX. The RDX makes the velocity of detonation higher 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. The colour of Redex is orange.

2. Packages

Name	Ø /mm	length / mm	explosive g/cartridge	explosive in box /kg
Fordyn, cartridge	24	200	Ca 130	25
Fordyn, cartridge	29	200	Ca 200	25
Fordyn, cartridge	43	ca 560	Ca 1100	25
Fordyn, cartridge	50	ca 560	Ca 1600	25
Fordyn, cartridge	55	ca 560	Ca 1900	25
Fordyn, cartridge	60	ca 560	Ca 2100	25
Fordyn, cartridge	65	ca 560	Ca 2500	25
Fordyn, cartridge	70	ca 560	Ca 2800	25
Fordyn, cartridge	75	ca 500	Ca 3100	25
Fordyn, cartridge	85	ca 500	Ca 4200	25
H-Dynamit, cartridge *	60	ca 560	n. 2100	25
H-Dynamit, cartridge *	65	ca 560	n. 2500	25
H-Dynamit, cartridge *	70	ca 560	n. 2800	25
H-Dynamit, cartridge *	75	ca 500	n. 3100	25
H-Dynamit, cartridge *	85	ca 500	n. 4200	25
Redex, cartridge	43	ca 560	Ca 1100	25

* specialproduct

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

3. Explosion technical features

	Unit	Fordyn	H-Dynamit	Redex
Specifications				
Form		Plastisk	Plastisk	Plastisk
Density	Kg/dm ³	1,45 - 1,55	1,45 - 1,55	1,45 - 1,55
Velocity of detonation	m/s	>2 000	>2 000	> 6 600
Transmission	Cm	>2	>2	>2
Typical and theoretical values				
Velocity of detonation*	m/s	6 000	6 000	6 800
Transmission**	cm	3-8 (Ø 25 mm)	3-8 (Ø 25 mm)	30 (Ø 39 mm)
Oxyge balance	%	+ 3,3	+ 3,3	- 1,3
Gas volyme***	dm ³ /kg	880	830	808
Explosions heat***	MJ/kg	4,30	4,30	5,75
Power / unit weight*	S	1,06 (ANFO 1,00)	1,05	1,39
Initiation sensitivity				
Detonator		Detonator sensitive	Detonator sensitive	Detonator sensitive
Detonating cord		Usable	Usable	Usable
Reliability		Tested - 25 °C		
Största vattendjupet		Tested 25 m	Tested 50 m	

* steelpipe Ø 55 mm, ** free, 20 °C, *** Cheetah 2,0 (NTP), theoretical

4. Main raw materials and their hazard clauses

Raw material	Fordyn	Redex
Ammoniumnitrate	O; Xi R8 -38	O; Xi R8 -38
Nitroglykol (ethylene-glycol-di-nitrate)	E, T; R2-26/27/28-33	E, T; R2-26/27/28-33
Nitrocellullose	F; R11	F; R11
Treepowder	X	X
RDX	-	E, T, R6/20/22/40/47

5. Storage and shelf life

In dry conditions Fordyn, H-Dynamit and Redex 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 Fordyn and Redex is good. Transmission and initiation sensitivity properties are slightly lower at sub-zero temperatures.

Water resistance for Fordyn, H-Dynamit och Redex is good (2-3 days).

6. Handling safety

Fordyn, H-Dynamit and Redex are CE-accepted products, which fulfil the substantive safety requirements according to the EU directive. ("Essential safety requirements"). The testing has been conducted at the Finnish defence Forces Research Institute of technology (PvTeknTL, O812), a civil explosives notified body in Finland. The products have to fulfil e.g. the following handling safety requirements.

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

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 consulted. Substance caught on clothes should be removed mechanically, after which the clothes are washed with normal wet cleaning.

7. Environmental impact

The water resistance of Fordyn, H-Dynamit and Redex is excellent, although unexploded agent dissolves gradually into water, with a result of nitrate and nitroglycol ending up in nature. Nitroglycol doesn't dissolve into water and degrades very slowly in nature. Nitrate has a overfertilizing 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_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 complete, the main explosion products produced are carbon dioxide, water vapour and nitrogen gas. In practice, this ideal is never achieved and the oxygen balance is usually slightly negative or slightly positive.

The oxygen balance of Fordyn is + 3,3%, which results in small amounts of NO_x gases and carbon monoxide being formed during explosion. The oxygen balance of Redex is -1,3%. The more positive the oxygen balance is the more NO_x gases are produced in proportion to carbon monoxide. In open air 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. NOTE! Since carbon monoxide is heavier than air, it accumulates in locations that are lower than the surroundings, such as the bottom of a well.

8. Operating instructions

Fordyn is suited for all kind of blasting under normal conditions. The main use of Fordyn is blasting under water and initiator in bench blasting. H-dynamit is a special dynamite mainly used in under water blasting at sea depth up to 50 meters.

Fordyn, H-Dynamit and Redex are plastic explosives, with high density and high velocity of detonation, which results in high performance.

Fordyn, H-Dynamit or 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 easily.

When Redex is used as 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 nearby any buildings.

Fordyn, H-Dynamit or Redex that are not presumed to be fit for blasting must be disposed of by burning them together with additional combustible materials. Not more than 5 kg of explosive, with a maximum thickness of 5 cm, is allowed to be disposed at one time. More detailed disposal instructions can be found in the Finnish legislation for blasting (Räjätys- ja louhintatyön järjestysohje) paragraphs 71 and 73.

OY FORCIT AB accepts outdated explosives for disposal. Returned explosives are not compensated and the costs for disposal are agreed separately case by case.



Reclamation instructions:

If defects are found in the products or they function unexpectedly, the following information regarding the product must be supplied to the Forcit explosive plant in writing:

- the dimensions of the product and the date from the package
- the appearance of the product and the description of the handling characteristics
- the conditions and charging procedure at the blasting site

A sample of the deviant product is to be delivered immediately to the producing plant for further investigations. The sample must be marked properly with identification data to ensure right identification.