APPLICATION AND STRUCTURE

NISHIKI ULTRABURST is a pyrotechnic cartridge used for breaking and crushing stones, rock, concrete, foundations, etc. Its areas of application include demolition operations, quarries, and underwater. Low stone throw and minimal vibrations, and therefore a small safety distance, are particular advantages.

NISHIKI ULTRABURST generates a very large amount of gas with high pressure in a short time when confined. It has no effect when unconfined.

The use of NISHIKI ULTRABURST is not an explosive and therefore not a detonation. However, please observe the current version of your country's pyrotechnics law.

MECHANISM OF ACTION

The principle of a rock-breaking cartridge is based on the non-detonative decomposition of a pyrotechnic mixture. Water vapor, nitrogen, and some carbon dioxide are the reaction products released after ignition. These gases penetrate both the cracks created by percussion drilling and the natural cracks in the rock/concrete, causing it to split. The propellant powder of NISHIKI ULTRABURST is made exclusively from natural, plant-based raw materials.

STORAGE AND TRANSPORTATION

- Store cartridges in a dry place and do not expose them to extreme temperatures.
- Cartridges should be kept in their original packaging in a secure location in a lockable room or container.
- Transportation must be carried out in accordance with the applicable regulations for the transport of dangerous goods according to the Explosives Act (UN0432 1.4S). A fire extinguisher must be carried in the car.

Storage conditions: see safety data sheet

HANDLING

- Handling only by qualified personnel
- Avoid temperature fluctuations

PREPARATORY MEASURES

Determine the rock/concrete structure. Stable and hard rock structures (e.g., granite) break differently than softer stone (e.g., sandstone) or heavily weathered rock. Hard structures can be broken most easily due to their brittleness. Determine the optimal cartridge size and quantity required for the specific structure. Determine the number of required drill holes, considering the desired break size or split and the associated costs. For small-scale fragmentation, a charge amount of 80g per cubic meter is recommended. Depending on the desired result, for example, 1 cartridge of 80g or 2 cartridges of 40g can be used. If the rock is to be split in a line, as is common in rock loosening, the holes should be arranged in a line
If the goal is to create the smallest possible rock fragments, it is recommended to stagger the drill holes, with a distance of approximately 500 - 700 mm between them. The distance of the first row to the free surface should be 500 mm. The drill holes should be drilled at a specific angle to create a better breaking point. For concrete, the drill holes should be staggered. Depending on the size of the object, a side distance of 350 mm to the free surface and a drill hole distance of 350 - 500 mm is recommended. The reinforcement/armature in the concrete makes drilling more difficult. For concrete, it is advisable to try to obtain the reinforcement plans (armature plans) for the affected object in advance and drill accordingly.

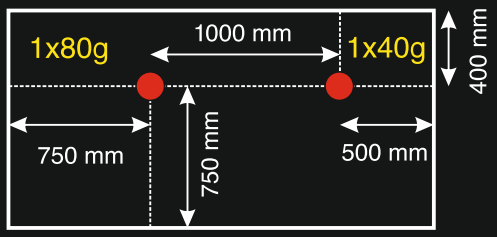
USAGE

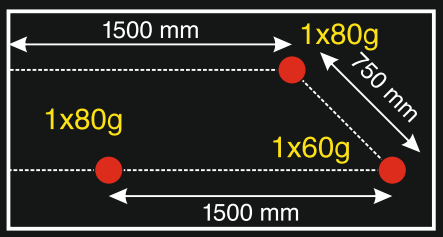
1. 1.Drill vertical holes with a diameter of:
   2.Caliber 20 mm: 22 mm / Caliber 25 mm: 28 mm / Caliber 32 mm: 34 - 35 mm / Caliber 40 mm: 45 - 50 mm into the rock/concrete, with a depth of about 60% of the rock/concrete.
2. Before loading, check the resistance of the cartridge (0.4 - 0.8 / with 1.8 m connection cable).
3. Then load the appropriate cartridge into the cleaned drill hole. A rod can be used for insertion.
4. When the cartridge is at the bottom of the drill hole, fill the hole with suitable tamping material, e.g., 6 mm gravel, moist sand, two-component adhesive, or plugs, etc., up to the edge.
   It is important that the hole is properly tamped.
5. Test the resistance with an approved circuit tester to ensure that the cables were not damaged during loading.
6. Secure the work area. The safety distance must be at least 30 m. This can be adjusted by the responsible user through appropriate measures.
7. Connect the cartridges in series. The connections must be insulated and protected against moisture and water ingress. (Tip: Scotchlok UR2 connectors)
8. The end of the ignition line must be short-circuited during work. Connect the ignition line to the ignition circuit and ensure that the connections are insulated.
9. Move to the safety distance and test the circuit for continuity and resistance.
   Note: the ignition circuit resistance is calculated as follows:
   R = R (Cartridge 1) + R (Cartridge 2) + R (Ignition line)
10. Ensure the work area is secure before connecting the ignition cable to the ignition device.
11. Connect the ignition line to the ignition device.
12. Give the signal to ignite (horn or siren). After the first signal (long tone), all persons in the ignition area must immediately take cover or leave the danger zone.
13. Prepare the ignition device for ignition.
14. Second signal “Attention ignition” (two short tones).
15. Ignition!
16. Ensure the danger area is safe.
17. Signal “Ignition completed” (three short tones).
18. Remove the ignition cable from the ignition device.
19. Check the result:
    Holes from which cables are still protruding and appear as if no ignition occurred must be checked.
    If the circuit tester shows no continuity,
    the cartridge was ignited, but the gases escaped into cavities in the rock or
    at the bottom of the rock. If the hole cannot be flushed and the cartridge cannot be removed, a neighboring hole must be drilled parallel at a distance of 7 - 15 cm from the existing hole and the cartridge pushed out.
20. The area can be released again.
21. Collect all used cartridges and dispose of them appropriately.

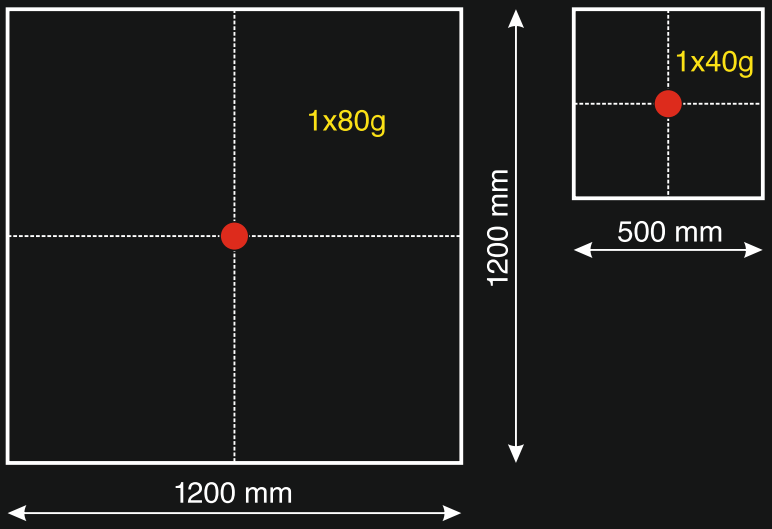
BEHAVIOR / DISPOSAL OF FAILURES

- If it is determined that cartridges have not fully or partially ignited after detonation, they must be treated as failures.
- The qualified person must immediately dispose of failures.
- . If the failure is due to a defect in the ignition system, the defect must be corrected, the ignition system renewed if necessary, and the ignition repeated.
- A new drill hole should be made parallel to the failure at a distance of 7 - 15 cm, and the failure should be loosened or ignited from the drill hole.
- If disposal of the failure according to paragraph 2 is not feasible or unsuccessful, further treatment of the failure must be carried out according to the instructions of an expert.

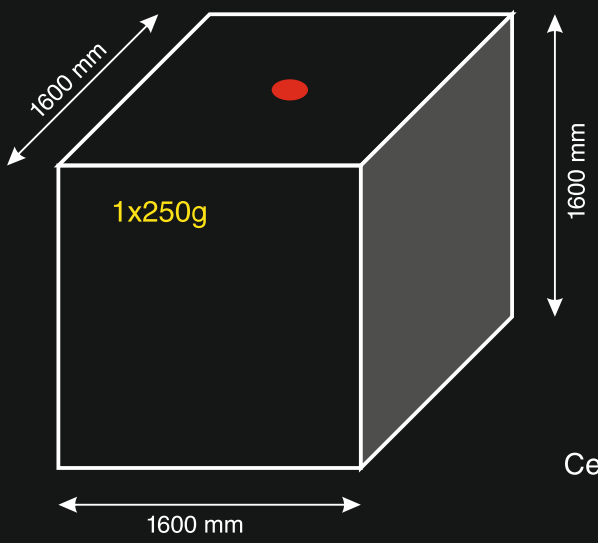
EXAMPLES OF DRILLING PATTERNS:

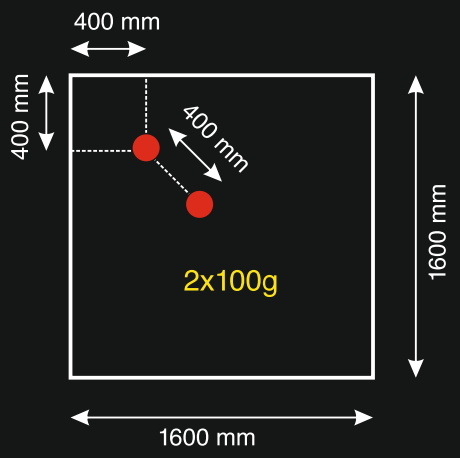






FOUNDATION





Central placement or staggered drilling