

# IMITATION PRODUCTS

## RISK OF USING IMITATION PRODUCT IN DEFENSIVE STRUCTURES.

### ABSTRACT

HESCO protective barriers have earned global recognition for protecting billions of dollars' worth of critical infrastructure and saving countless lives, in both civil applications and throughout every major conflict since the first Gulf War. It is inevitable that others seek to copy that success. In this paper we discuss the issues faced when imitators use inferior materials and production methods, resulting in products that appear very like HESCO products, but differ in crucial ways.

### HESCO<sup>®</sup> PROTECTIVE BARRIERS

Due to the deceptively simple design of HESCO units, it can be very difficult to detect the difference between genuine Hesco product and imitation product. Yet the difference between the products, given the context in which they are deployed, can mean the difference between success and failure. Figure 1 shows failure of the fabric in a non-HESCO wire baskets, currently available on the market. Imitation products are often available in similar varying sizes and configurations, all with a cloth or geotextile lining of a similar colour; some are even branded, falsely, with the 'HESCO' name. These cosmetic appearances are where the similarities end.

When examining the lengths to which Hesco develop each product, the engineering with which the protective coated steel baskets have been produced and the extensive testing all materials and processes have undergone, then the inferiority of imitation products becomes clear along with the associated hazards of using them.

Hesco representatives have witnessed numerous imitations and their inevitable failure. As Figure 1 shows the effects of using inadequate lining material, so Figure 2 demonstrates degradation and malfunction from poorly welded mesh.



Figure 1  
*The degradation of a poorly formulated geotextile polymer used in imitation products.*



Figure 2  
*Failure of cell walls in imitation product due to poor weld strength, risking potential collapse in the structure*



## ENVIRONMENTAL AND PERFORMANCE

HESCO products have been subjected to rigorous laboratory environmental and performance testing, validating the durability of the materials and procedures that Hesco use.

All HESCO Barriers have a typical design life of five years, depending on atmospheric environment, and HESCO as standard offers a two year warranty on its core MIL product. Based on years of research and observation our product, having been deployed in some of the harshest UV conditions, have lasted in excess of 10 years and in terms of blast and ballistic protection were still as effective as the day they were first installed. HESCO barriers have been environmentally tested and certified to offer resistance to damage by fluid contamination including resistance to exposure to fuels, hydraulic oils, lubricating oils, solvents, cleaning fluids, runway de-icers, insecticides, coolant and fire-extinguishing products. In addition, the units do not promote or sustain the growth of fungus and bacteria in storage or in use which may otherwise damage or render the unit unusable.

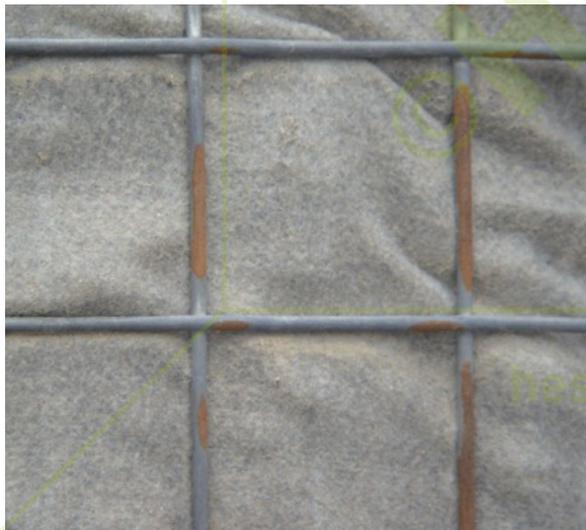


Figure 3  
*Early stage corrosion typical of imitation products, where the quality control of the galvanising process has been less than that specified by Hesco.*

## TESTING

HESCO Products have undergone a vast array of testing by numerous militaries and organisations worldwide. The majority of testing has been undertaken by world leading authorities in the field of penetration mechanics, blast and fragmentation mitigation. The majority of test information is owned by either the military or the testing authority undertaking the test. In the case of the British military a large proportion of this information is classified and not publicly available, hence certain data has been omitted to facilitate the distribution of this document.

A large proportion of testing has been conducted in accordance with STANAG 2280 - Test Procedures and Classification of the Effects of Weapons on Structures or the equivalent. The weapon systems tested against HESCO products include:

- a. Small arms ammunition (5.56 - 14.5mm AP)
- b. Cannon (20 - 40mm including HE, AP and long rod)
- c. Shaped charges (RPG 7 and RPG 18)
- d. Grenades
- e. Mortars (81 and 82mm) both in close proximity and in contact
- f. Artillery (122, 152 and 155mm) - both in close proximity and in contact
- g. Air delivered munitions (US Mk 82) - both in close proximity and in contact
- h. Bare military grade high explosive and homemade explosive charges such as ANFO.
- i. Vehicle Borne Improvised Explosive Devices (VBIED)
- j. Thermobaric weapons



## BEYOND THE LIMITS

1. HESCO was first introduced to the British Military in 1991 where it was subjected to testing against a wide range of small arms ammunition. These tests were conducted by the DRA Fortifications section, (UK MOD Research Agency) and by the British Army Infantry Trials Team. DRA Fortifications is now part of QinetiQ. The tests were conducted against the HESCO MIL 2 units filled with a good quality fill material. The MIL 2 unit at 600mm thick is the smallest unit manufactured by HESCO. The weapons used included:
  - a. Shotgun - various gauges
  - b. 7.62 x 51mm NATO round, single shot and general-purpose machine gun
  - c. 7.62 x 39mm Soviet round, single shot and general-purpose machine gun
  - d. 12.7 x 99mm BMG Armour piercing round
  - e. 30 x 170mm Rarden HEI and APDS rounds
  - f. 12.7 x 108mm Soviet round
  - g. 14.5 x 114mm Soviet AP round
2. HESCO MIL 1 Units have also been tested against:
  - a. 12.7mm BMG and fired in bursts of 3 - 5 rounds. The cells were sand filled - no rounds perforated the unit.
  - b. 81mm mortar, in close proximity and in contact - no fragmentation perforated the unit
  - c. 155mm HE artillery shell, in close proximity and in contact - no fragmentation perforated the unit
  - d. Simulated 120mm HESH round in direct contact - no fragmentation perforated the unit
3. In 1993 HESCO, in conjunction with the UK MOD developed a Collective Protection system (COLPRO) designed to provide protection against 155mm artillery shells with SQ fuses. The system comprised a 20ft ISO container protected by a combination of HESCO MIL 1 and 2 units. The MIL 2 units provided the overhead protection element and the test proved that the system could prevent serious casualties from this threat. This system has subsequently been used extensively around the world to provide protection against indirect fire weapons.
4. In 1995 the US military tested HESCO MIL units against 155mm artillery shells in close proximity. Damage was judged as "superficial".
5. Date tbc, The UK military tested the HESCO barriers against RPG 7. Gravel filled HESCO MIL 1 units will prevent perforation of RPG 7 approx. 90% of the time.
6. A HESCO MIL unit wall structure was tested by the US against 235lbs of ANFO, with minor damage. The second test was a Mk 82 bomb at short range resulting in superficial damage. The wall was not breached in either of the tests.
7. In 1997, The German MOD tested MIL units along with other gabion systems. Weapons systems used were similar to previous testing by other militaries. The results achieved were similar to those previously achieved elsewhere. The system was also tested against anti-tank grenades and 82mm mortar in contact. The resulting damage was judged as "not significant".
8. The Dutch Trials Agency, TNO conducted trials using HESCO MIL units. These originated with the testing of the COLPRO system, achieving similar results as the UK. The Dutch have also recently trialled HESCO MIL units for ammunition storage separation walls resulting in the Quantity -Distances being reduced. The test consisted of 501kg of explosives within 155mm shells in a 20ft ISO container. Detonators were stored within adjacent container units to the donor charge. The explosive charge was initiated, resulting in severe damage to the adjacent container units but no sympathetic detonation of the receptor charge occurred.
9. Recent testing of HESCO MIL units has been carried out by firing 107mm rockets and 120mm mortars into a HESCO MIL unit wall. A mortar round was also statically detonated in contact with the wall.



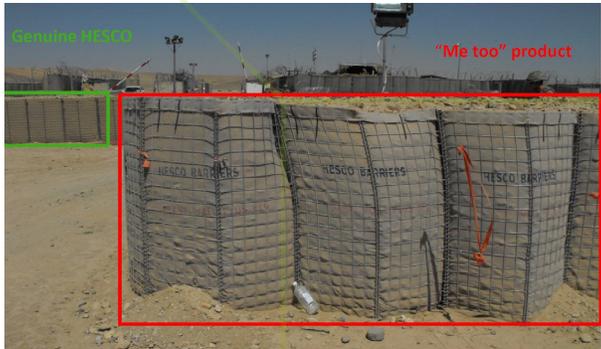


Figure 3  
Examples of failed 'me too' products

## QUALITY

HESCO units, when kept on pallets in their packaging, can be stored outside in the open air in excess of 5 years with little or no deterioration in performance. When stored under cover they have a typical shelf life of ten years. From experience there are many imitation products which deteriorate in storage and have often failed before they have even been used.

Inconsistent coating weights on imitation product result in corrosion of the mesh elements at a very early stage (Figure 3). The steel wire mesh, used in the construction of the HESCO units, has been evaluated for corrosion resistance, with the standard of the protective coating conforming to the relevant British and American standards. See Advice Note 2 on the Durability of HESCO Wire and Mesh.

The typical five year design life of HESCO products is valid with little or no maintenance. HESCO personnel have encountered imitation product failing in as little as 12 months of installation, as typically shown in Figures 1 and 2.

HESCO is committed to maintaining the very highest standards in product quality, and has held the ISO 9001 accreditation for many years, ensuring that our Quality Management System is independently audited on a regular basis to ensure we meet the strict requirements of that internationally recognised standard.

## HESCO OFFER

HESCO offers a full design and training service, comprising of qualified engineers, scientists and training staff. It is this level of competency which has taken HESCO two decades to acquire and also why it employs engineers specializing in Weapons Effects on Structures and protective camp design. As well as manufacturing, Hesco has design, construction and weapons effects calculations as well as years of empirical evidence demonstrating the effectiveness of the HESCO product against a wide variety of weapon systems.

Hesco also supplies end users with technical support by former military personnel, all with firsthand experience in using HESCO Products. This unique support offered by Hesco has proved essential when large protective structures are required, or when barriers integrate with existing structures.





To make sure that you benefit from our superior products and many years of experience, you should ensure that you are sourcing genuine HESCO products. Genuine HESCO units, such as those widely used by the US military and NATO are manufactured in the EU, but are also stocked in strategic locations around the world. If you are offered "HESCO" product sourced from any other manufacturing locations it will not be genuine.

HESCO products are fitted with a steel authentication tag, shown on the right. However, if you have any concerns about the authenticity of the product being sourced on your behalf, please don't hesitate to contact us.

## CONCLUSION

This brief summary paper is only a proportion of the testing that Hesco has undertaken to ensure the continued performance of the system and the number of protective uses that they can be applied to. Simply replicating the look of a product does not guarantee performance. Every HESCO product developed offers assurance to the end user that it has undergone a rigorous testing regime and been subjected to quality control from development to dispatch.

This assurance combined with the training and support offered is what sets HESCO Products apart from its competitors and from imitation product.

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HESCO® Product Imitation  
Risk of Using Imitation Product in Defensive Structures.

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