

The image depicts two soldiers in full-body bomb suits, including helmets with clear face shields and communication equipment. They are standing in a dark, smoky environment. In the background, there is a large, bright orange explosion on the left, a military aircraft flying in the sky, and a military vehicle on the right. The overall scene suggests a high-risk, combat-related scenario.

GARANT - EOD/IEDD Protection

**Bomb Suit SPS15
Hybrid III & Primus breakable**

CTS Dummy Conference Münster (GER) 07-2025

GARANT Protection

Family owned business in 3rd generation

Since more than **70 years** in the market (1st patent 1953)

Based in Switzerland & Germany

Worldwide activities

Inhouse R&D + Manufacturing + Distribution

NATO-Supplier

Aircraft Industry Supplier

ISO 9001:2015

Trademarks: *GARANT®*, *SPS®*, *TiG®*, *FlexLiner®*, *FirmLiner®*



EOD/IEDD Products – PPE & other protection equipment



EOD/IEDD Products – Bomb Suit History



**BSA
1978**



**BPS-2
2003**



**SPS 10
2010**



**SPS-3
2006**



**BPS-1
1984**

EOD/IEDD Bomb Suits & Search Suits



**SPS-15
Bomb Suit**



**SPS-10a
Bomb Suit**



**TPS-600
Modular Tactical Suit**

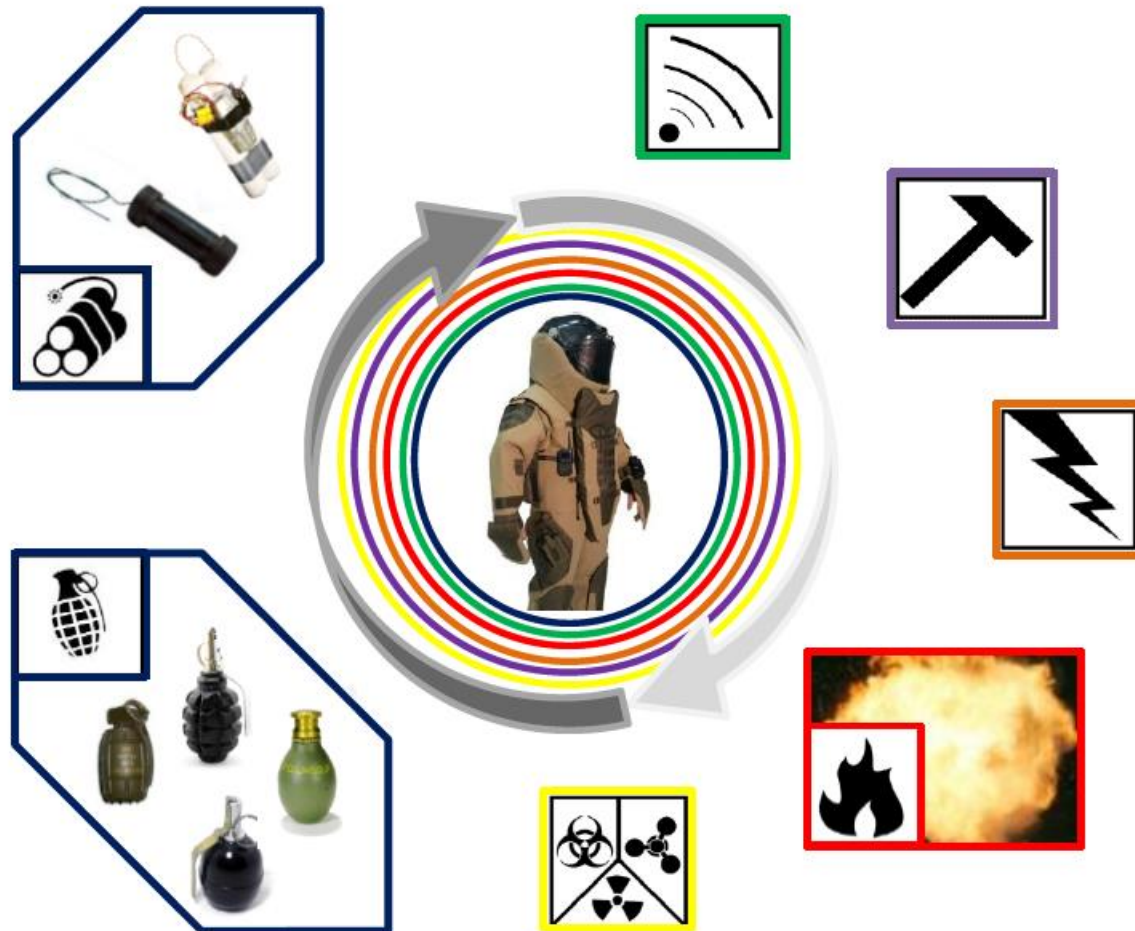


**LPS-475
Search Suit**

EOD/IEDD Bomb Suit SPS-15



EOD/IEDD Bomb Suits & Search Suits – 360° Protection Principle



EOD/IEDD Fragmentation Protection

Bomb Suit originally designed as
Fragment Protection Suit

Fragmentation Protection is one of
the most important purposes of a «Bomb Suit»

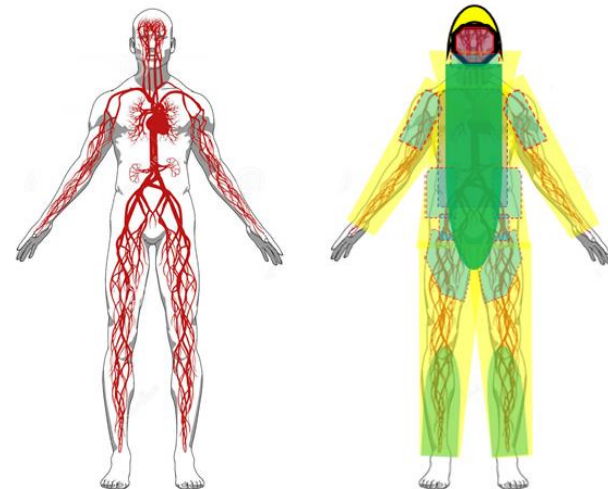
Fragments can occur in different

shapes (pre-shaped / donation shaped)
weights
velocities
angles
materials

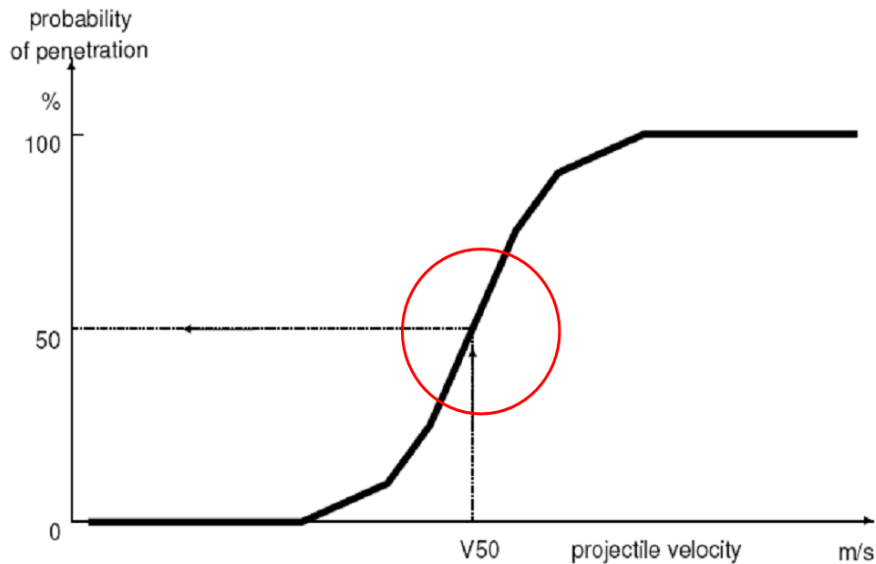
**Human Tolerance to fragment
impact is very low.**



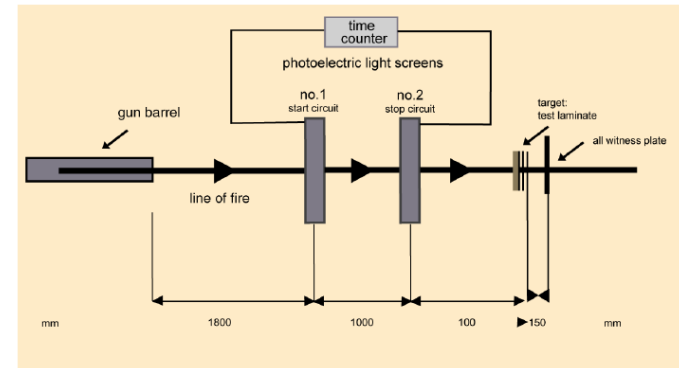
Figure 10. Open sources. Internet



EOD/IEDD Fragmentation Protection



v50-Testing according to STANAG 2920



V50-Testing acc. STANAG 2920 resp. MIL-SPEC-662F resp. STANAG 4569

0.325g (5gr.) - 1.1g (17gr.) - 2.84g (44gr.) - 13.39g (207gr.) & 52.73g (814 gr.)

1

2

3

4

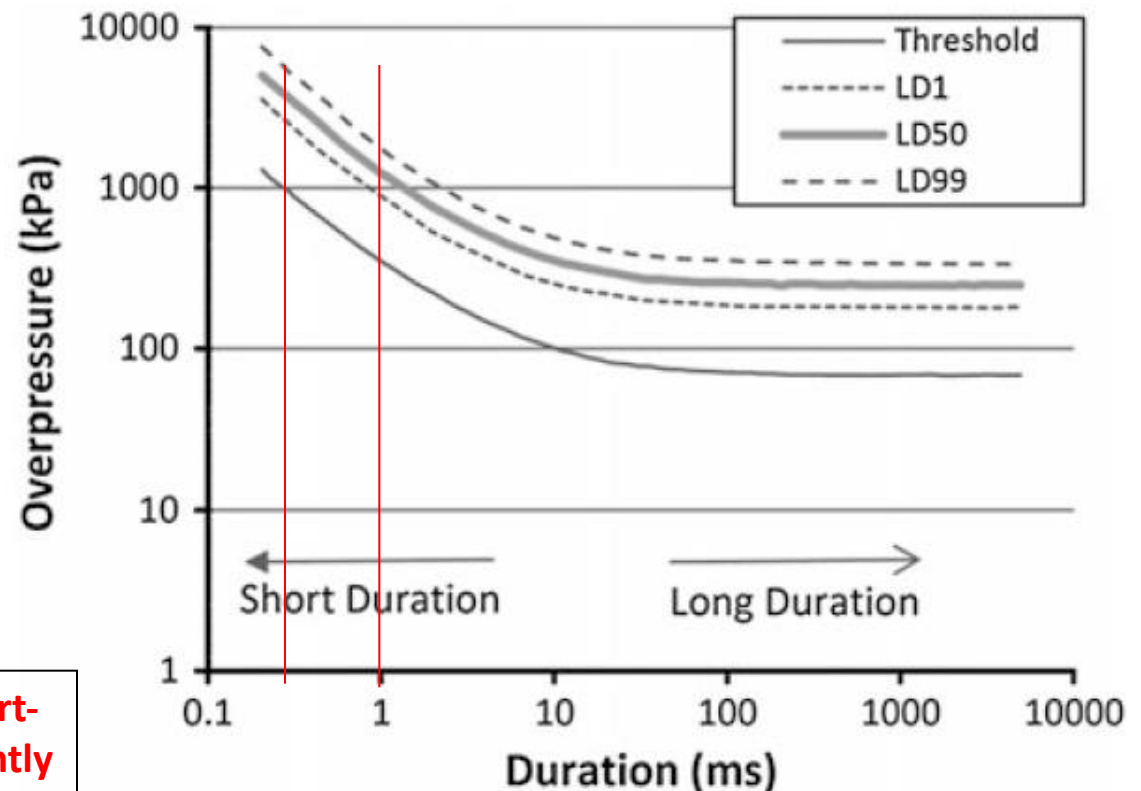
5

EOD/IEDD Blast Protection

Fig. 10.15 Bowen pulmonary iso-injury curves (70 kg man with long axis of the body perpendicular to the blast wave propagation) (adapted from Bowen et al. 1968)



The pressure tolerance for short-duration blast loads is significantly higher than for long-duration blast loads.



1bar = 100kPa

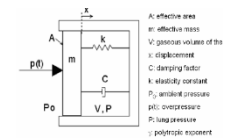
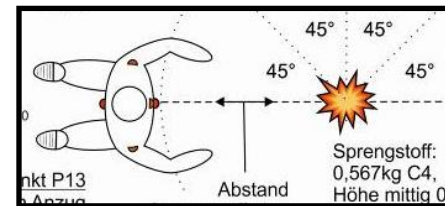
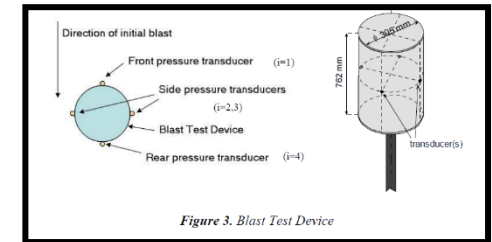
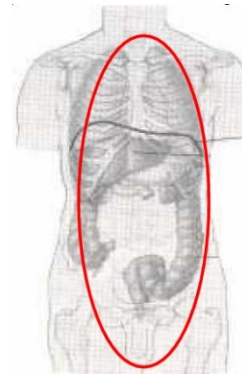
EOD/IEDD Blast Protection

Human related pressure results

⇒ not only measurement of pressure reduction!

⇒ **Axelson-Criterion**

⇒ measurement of complex blast waves
(reflecting and over-lapping blast waves)



Gleichung 1

$$M \ddot{x} + D \dot{x} + Kx = A \left[p(t) - p_0 - \left(\frac{P_0}{V_0 - A x} \right)^{\gamma} P_0 \right]$$

Gleichung 2

$$ASB = 0,124 + 0,117 \cdot V^{0,6}$$

Injury Level	ASII	V (m/s)	AIS Range
no injury	0,0 - 0,2	0,0 - 3,6	0
trace to slight	0,2 - 1,0	3,6 - 7,5	1 - 4
slight to moderate	0,3 - 1,9	4,3 - 9,8	2 - 4
moderate to extensive	1,0 - 7,1	7,5 - 16,9	3 - 5
>50% lethality	> 3,6	> 12,8	- 6

EOD/IEDD Blast Protection



Hybrid III

vs.

Primus

OR

Hybrid III

and

Primus

?!?



EOD/IEDD Blast Protection

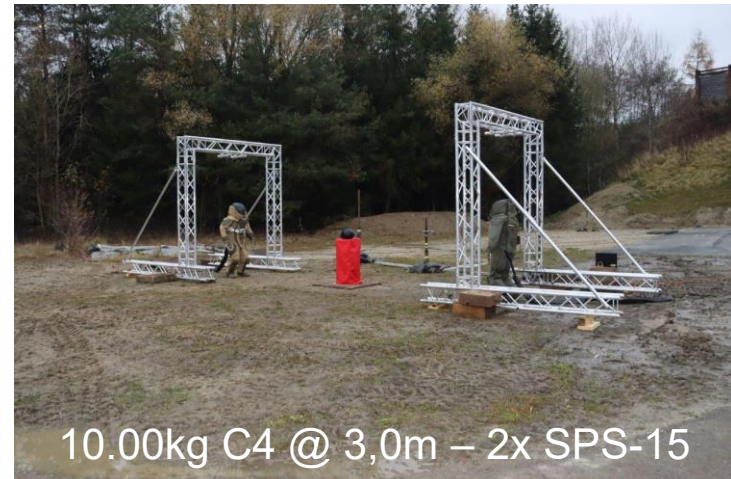


Hybrid III



Primus

EOD/IEDD Blast Protection



EOD/IEDD Blast Protection



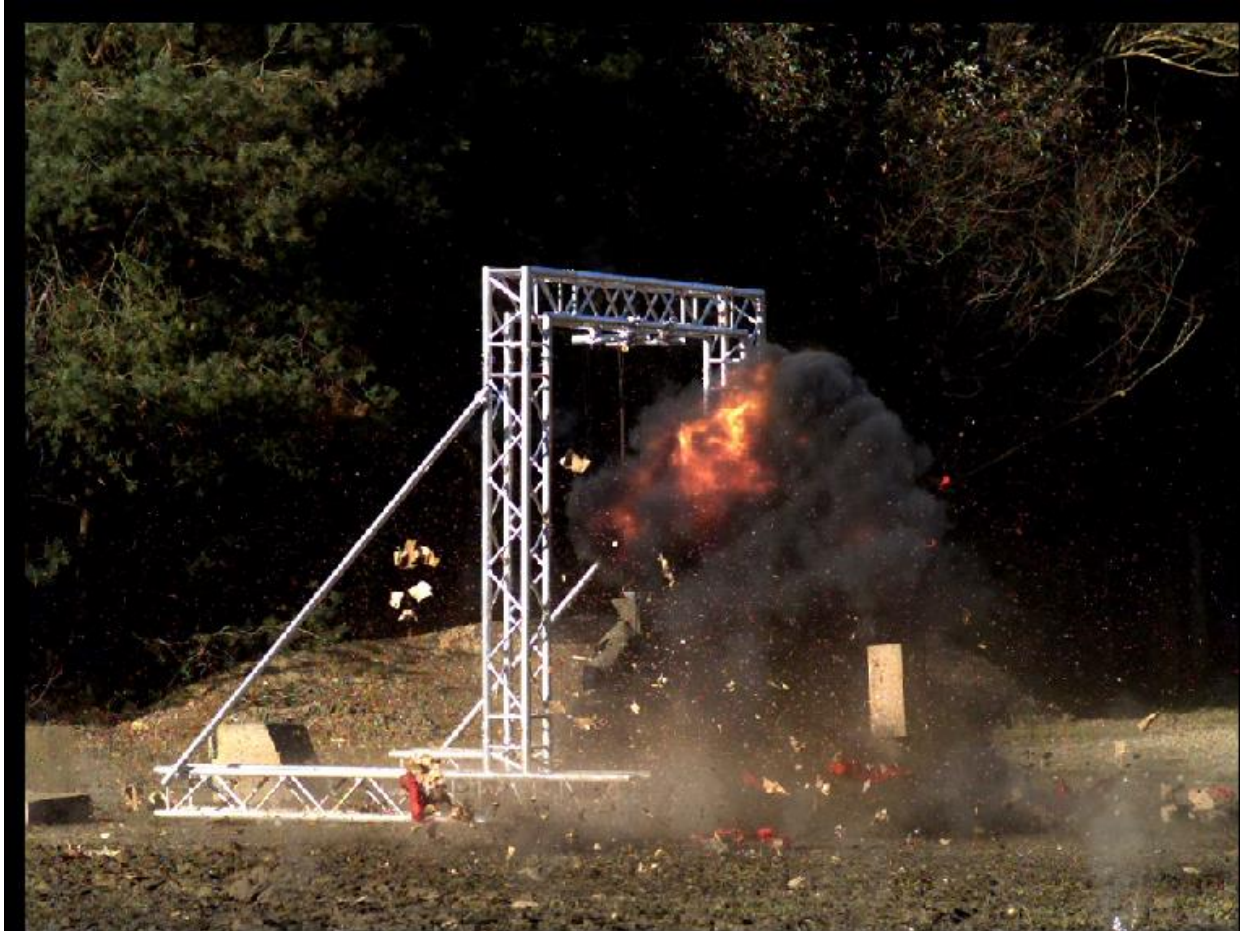
0,567kg C4 @ 0.6m – 2x SPS-15

EOD/IEDD Blast Protection



10.00kg C4 @ 3.0m – 2x SPS-15

EOD/IEDD Blast Protection



1x HG-85 @ 0.6m – 1x TPS-600

EOD/IEDD Blast Protection



EOD/IEDD Blast Protection



For now

Hybrid III

and

Primus



Thank you very much
for your attention!





www.garant-protection.com

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