

www.unitech.eu.com

*Supporting
those who
light your
world*



CE TEST STANDARD
FOR PROTECTIVE CLOTHING














What should you understand about CE test standard for protective clothing?

According to European Commission, Regulation (EU) 2016/425 covers the design, manufacture and marketing of PPE. It defines legal obligations to ensure PPE on the EU internal market provides the highest level of protection against risks. The CE mark affixed to PPE will provide evidence of compliance which product applicable to EU legislation. It indicates risk categories of which PPE is intended to protect users, such as protective clothing complies with Category III is appropriate to prevent death or irreversible health damages.

Standard Definition of Protective Clothing

In order to facilitate selection of appropriate protective clothing, the European Union has listed different standards of protection and its pictogram.

Standard	Pictogram	Definition
TYPE 1		Gas-tight protective clothing
TYPE 2		Non-gas-tight protective clothing
TYPE 3		Protection against pressurized liquid jet
TYPE 4		Protection against saturated liquid splash
TYPE 5		Protection against harmful particulates
TYPE 6		Protection against liquid spray

Standard	Pictogram	Definition
EN 1073-2		Protection against radioactive contamination
EN 1149-5		Electrostatic dissipative protective clothing
EN 14126		Protection against biological hazards
DIN 32781		Protection against pesticides
EN ISO 14116		Protection against limited flame spread

Test Method for Standard Categorization

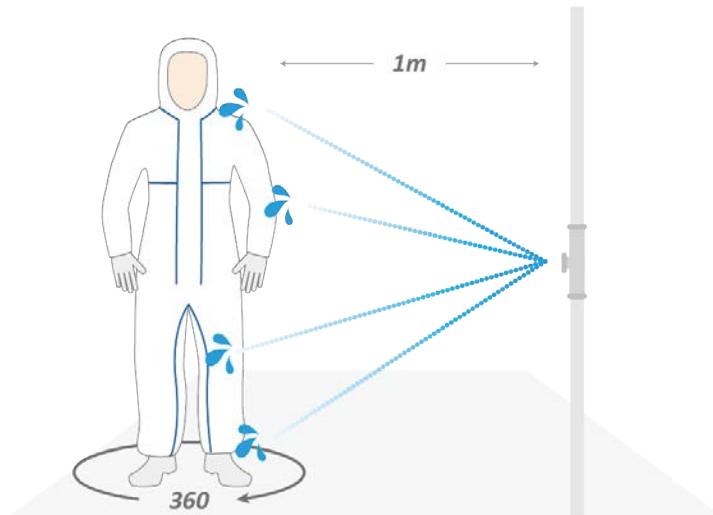
For protective clothing to pass standard tests, it must meet or exceed minimum requirements of materials' physical and chemical properties. Once test results are confirmed, it is qualified to carry standard pictogram and need to be correctly identified or labeled on marketing materials.



Type 1 EN 943-1 Gas-tight suits / Type 2 EN 943-1 Non-gas-tight suits

Performance requirements for ventilated and non-ventilated 'Gas-tight' (Type 1) and 'Non-gas-tight' (Type 2) chemical protection suits.

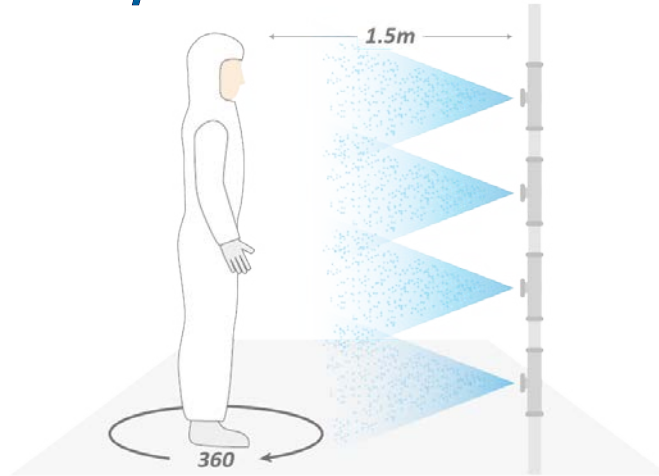
- Type 1a: Self-contained breathing apparatus worn on the inside.
- Type 1b: Self-contained breathing apparatus worn on the outside.
- Type 1c: Air supply via a compressed-air hose system.
- Type 2: Ventilated and positive pressure by air supply via a compressed-air hose system.



Type 3 EN 14605 Liquid Jet Suits

Determination of resistance to penetration by a jet of liquid.

- Fabric, seams and joints being tested with intense and pressurized liquid jet.
- Low surface tension of liquid jets.
- Requires coveralls with fully sealed seam.
- One nozzle sprays at potential weak areas of coverall including chinstrap, crotch, zipper flap and joints.



Type 4 EN 14605 Liquid Jet Suits

Determination of resistance to penetration by a jet of liquid.

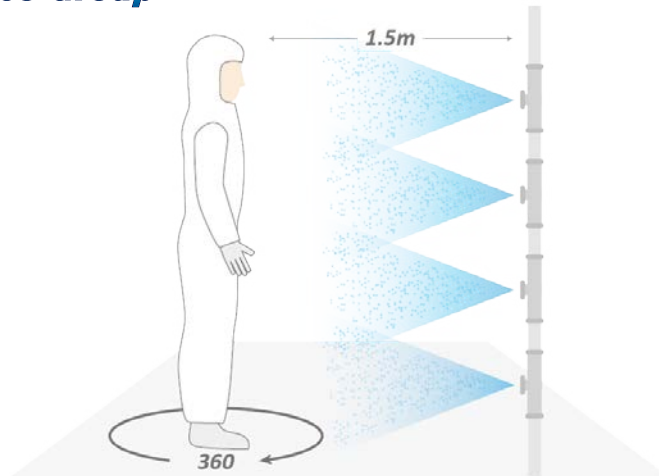
- 4 nozzles with general overspray of liquid without penetration on coverall.
- Low surface tension of liquid sprays being tested on whole garment to experiment saturation of fabric.
- Fabric, seams and joints being tested without pressurized liquid.



Type 5 EN ISO 13982-1 Particulate Tight Suits

Determination of inward leakage of aerosols & solid particles.

- Spray cabin filled with dust.
- The test is performed by real person, aims to simulate daily use.
- Subject (real person) performs 3 exercises on treadmill.
- Particle inward leakage(IL) and total inward leakage(TIL) must meet test requirements.



Type 5 EN ISO 13982-1 Particulate Tight Suits

Determination of inward leakage of aerosols & solid particles.

- 4 nozzles with general overspray of liquid without penetration on coverall.
- Low surface tension of liquid sprays being tested on whole garment to experiment saturation of fabric.
- Fabric, seams and joints being tested without pressurized liquid.
- About 40% of the liquid spray is loaded onto the suit compared with Type 4 test.



EN 1073-2 Against Radioactive Contamination

Determination of inward leakage of aerosols & solid particles.

- The standard was developed to be applied in nuclear industry without protection against ionizing radiation.
- The test follows the same protocols as Type 5 test with different judgement criteria.





EN 1149-5 Antistatic

- The standard specifies a set of requirements and test methods to measure the fabric protection against static electricity or charge decay.
- Electrostatic resistance is required when the wearer is exposed to environments where sparks could cause explosions or ignition.
- Coveralls according to this standard do not offer protection from main voltages.



EN 14126 Against Biological Hazards

- The standard specifies a set of requirements and test methods to measure the fabric protection against infective agents.
- ISO 16603, ISO 16604, ISO/DIS 22611 determines penetration by blood, body fluids, blood borne and biologically contaminated aerosol.
- ISO 22612, ISO 22610 determines the resistance of dry and wet microbial penetration.



DIN 32781 Against Pesticides

- The test standard covers requirements in chemical penetration, fabric strength and ergonomics.
- The certification includes EN 14786, which simulates liquid spray of drugs.
- Five different pesticides including U46-D-Fluid (BASF), Pirimor Granulat (Syngenta), Amistar(Syngenta), Betanal Expert(Bayer), Folicur(Bayer) are tested to ensure protection against pesticides.

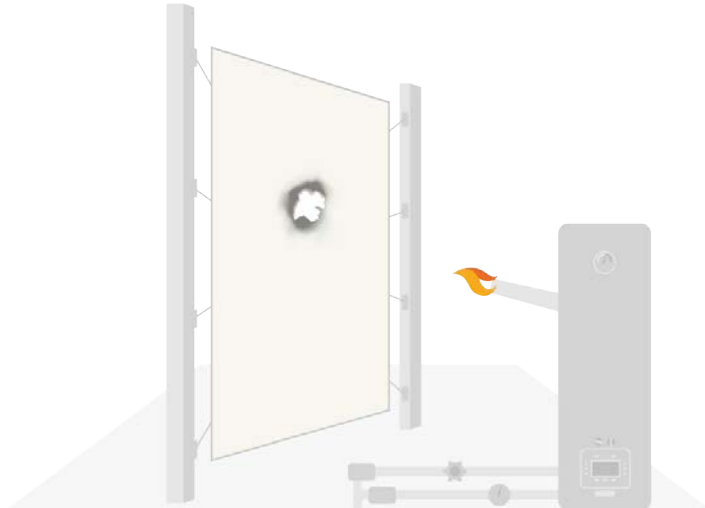


EN ISO 14116 Flame Retardant Test

To check whether the fabric/materials burn while contacting heat source. Whether the fabric stops flame spreading if burned.

Requirements for limited flame spread Index 1

- No spreading of the flame.
- No flaming debris.
- No afterglow.
- A hole may be formed.



Other Key Consideration Factors

The standard pictogram means the protective clothing meets certain minimum requirements with controlled environment and variables. However, in the reality, wearers dealing with hazards may face uncertainties in workplace. Therefore, it is essential to take below factors into consideration:

- **Environment Risk** – Identify potential hazards assessments including states of matter, chemical temperature and estimated exposure time.
- **Design of Protective Clothing** – Smart fitting ensures protective clothing provides wearers with comfort and appropriate protection.
- **Correct Usage** – Correct donning and doffing process secure wearers from exposure of hazards and avoid contamination.

In conclusion, understanding of standard is relatively important to assist selection of appropriate PPE to meet workplace safety requirements. The little yet important pictogram label indicates an assured level of safety and compliance with European standards. Do remember that no garment can provide absolute protection against all chemical exposures in all conditions, but higher protection level protective clothing is relatively more appropriate in managing uncertainty in the workplace.



www.unitech.eu.com

UniTech Services Group

Barsebäck Kraft AB
Box 524
SE-24625 Löddeköpinge
Sweden

Jan Bjerler

Director Business Development
Northern Europe
Tel: +46 709677089
jbjerler@unitech.eu.com

Christer Sager

Product Development
Tel: +46 733815588
csager@unitech.eu.com

Thomas Lundius

Account Manager
Tel: +46 709677117
tlundius@unitech.eu.com

UniTech Services SAS

Parc Avenue / La Malvesine
13720 La Bouilladisse, France
Tel: +33 96 5012247

Jacques Grisot

Plant Manager
Tel: +33 96 5012247
jgrisot@unitech.eu.com

Anne-Claude Tabuto

Admin Assistant
Tel: +33 96 5012247
atabuto@unitech.eu.com

Yacine Benattou

Account Manager
Tel: +33 96 5012247
Mob: +33 68 9415045
ybenattou@unitech.eu.com

UniTech Services Group Ltd.

Unit 5, Oakwood Close
Pen-Y-Fan Industrial Estate
Crumlin, Newport, NP11 3HY. UK
Tel: +44 1495 249688

Paul Chesters

Technical Account Manager
Tel: +44 1495 249688
Mob: +44 7584518558
pchesters@unitechgb.com

Archibald Montgomery

Technical Account Manager
Tel: +44 1495 249688
Mob: +44 7771374196
amontgomery@unitechgb.com

UniTech Services GmbH

Brookdiek 2 L
D-49824 Laar
Deutschland
Tel: +49 5947 9102910
unitechgmbh@unitech.eu.com

Burkhardt Schmitt

Managing Director
Tel: +49 5947 9102910
bschmitt@unitech.eu.com