

Tests of partial protective clothing(Covid-19)

(1 appendix)

1. Commission

The commission was to test protective clothing against liquid chemicals (Type 4, partial body protection) according to SS EN 14605 regarding the situation of Covid-19.

2. Test object

The protective clothing with article number ST-089-10 was to be tested according to SS EN 14605. The test object is a long sleeve plastic apron made of LDPE and a description of the test object can be seen in product data sheet in Appendix 1.

3. Method

3.1. Movements

Seven movements is performed according to SS EN 14605, part 4.3.4.1 General and preliminary testing, see below.

Movement 1: kneel on both knees, lean forward and place both hands on the floor (45 ± 5) cm in front of the knees, crawl forward and backwards on hands and knees for a distance of three metres in each direction.

Movement 2: climb a vertical ladder at least four steps, rungs to be as encountered on a typical ladder.

Movement 3: position hands at chest level, palms out; reach directly overhead, interlock thumbs, extend arms fully upwards.

Movement 4: kneel on right knee, place left foot on floor with left knee bent (90 ± 10) °; touch thumb of right hand to toe of left shoe. Repeat movement with alternate posture, i.e. by kneeling on left knee and placing the right foot on the floor with knee bent at 90°;

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Movement 5: extend arms fully in front of body, lock thumbs together, twist upper body (90 ± 10) ° left and right.

Movement 6: stand with feet shoulder width apart, arms at side; raise arms until they are parallel to the floor in front of the body; squat down as far as possible.

Movement 7: kneel as in movement 4, left arm hanging loosely at side; raise arm fully overhead. Repeat movement with alternate posture by alternating arms.

3.2. Innocuousness and information about the product

Innocuousness according SS EN 13688 shall be checked of test object.

Documents and information of the test object protective clothing with article number ST-089-10 be checked according to SS EN 14605 section 6.

3.3. Cracking

Determination of resistance to damage of protective clothing with article number ST-089-10 by flexing is done according to EN ISO 7854:1995 method B.

3.4. Tear resist

Determination of tear resistance of protective clothing with article number ST-089-10 is done according to SS-EN ISO 9073-4:1997.

3.5. Tensile strength

Determination of maximum force and elongation at maximum force of protective clothing with article number ST-089-10 is done using the strip method SS EN ISO 13934-1:2013.

3.6. Puncture

The mechanical properties of protective clothing with article number ST-089-10 is tested with puncture resistance according to SS-EN 863:1995.

3.7. Permeation

Determination of resistance of protective clothing with article number ST-089-10 to permeation by liquids according to ISO 6529:2013 method A.

3.8. Seam strength

Determination of maximum force of protective clothing with article number ST-089-10 to seam rupture using the grab method according to ISO 13935-2:2014.

4. Results

In this section all results from the performed tests can be reviewed and a shortened table can be seen below.

Table 1. Abbreviated table of results from testing. Further down in the document and in appendixes more information about the tests can be reviewed.

Test	Requirement	Results	OK/NOK
Movements	No cracking	No cracking	OK
Cracking	> 1000 cycles	> 1000 cycles	OK
Tear resist	> 10 N	12 N	OK
Tensile strength	> 30 N	31 N	OK
Puncture	> 5 N	5.5 N	OK
Permeation	$\leq 1 \mu\text{g}/\text{cm}^2/\text{min}$ and $\leq 150 \mu\text{g}/\text{cm}^2$ during 10 minutes	$\leq 1 \mu\text{g}/\text{cm}^2/\text{min}$ $\leq 150 \mu\text{g}/\text{cm}^2$	OK
Seam strength	> 30 N	43 N	OK

4.1. Movements

All movements according to SS EN 14605, part 4.3.4.1 General and preliminary testing, were done and there were no signs of cracking of the product and all movements could be done with simplicity. Test is performed by Carl Börrisson.

4.2. Innocuousness

The innocuousness was checked according to SS-EN 13688 and according to the documents sent by manufacturer no harmful substances could be found in the garment.

Documents and information is reviewed by RISE according to SS EN 14605 section 6 of the protective clothing with article number ST-089-10 and can be seen in appendix 1.

How the manufacturer is going to mark the product has not been reviewed by RISE. The marking need the reference by performed test SS EN 14605, product identification number and also marking Covid-19.

No pictogram marking has been seen by RISE.

4.3. Cracking

Determination of resistance to damage of protective clothing was done according to EN ISO 7854:1995 method B and the result can be seen in appendix 2. The product meet the requirement according to SS-EN 14325:2018 to withstand > 1000 cycles.

4.4. Tear resist

Determination of tear resistance of the protective clothing was done according to SS-EN ISO 9073-4:1997. The test results can be seen in appendix 3. The product meet the requirement according to SS-EN 14325:2018 of >10 N (Result: 12 N).

4.5. Tensile strength

Determination of maximum force and elongation at maximum force of protective clothing was done using the strip method SS EN ISO 13934-1:2013. The result from the performed test can be seen in appendix 4. The product meet the requirement of SS-EN 14325:2018 with > 30 N (Result: 31 N).

4.6. Puncture

The mechanical properties of protective clothing was tested with puncture resistance according to SS-EN 863:1995. The test results can be seen in appendix 5. The product meet the requirement according SS-EN 14325:2018 to of > 5 N (Result: 5.5 N).

4.7. Permeation

Determination of resistance of protective clothing to permeation by liquids was done according to ISO 6529:2013 method A. The results can be seen in appendix 6. The product meet the requirement according SS-EN 14325:2018.

4.8. Seam strength

Determination of maximum force of protective clothing to seam rupture using the grab method was done according to ISO 13935-2:2014. The results can be seen in appendix 7. The product meet the requirement according to SS-EN 14325:2018 of > 30 N (Result: 43 N).

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Appendix

1. Teknisk beskrivning Rock ST-089-10.pdf
2. Cracking EN ISO 7854.xlsx
3. 2P04498-01 Stego Plast Rivtest EN ISO 9073-4 1997.pdf
4. 2P04498-01 Stego Dragtest EN ISO 13934-1 2013.pdf
5. 2P04498-01 Stego Punktering EN 863 1995.pdf
6. 2P04498 Stego Plast permeabilitetsresultat.pdf
7. 2P04498-01 Stego Plast Vacuumforming AB Sömtest EN ISO 13935-2 2014.pdf

Appendix 1