



Hilti CP 678 Firestop Cable Coating

System Submission Folder

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Firestop cable coating CP 678



APPLICATIONS

- Protection of cables and bunched cables on cable trays
- Meets IEC 60332-3-22 Category A standard for reduced spread of flame
- Factory Mutual Approved (fire retardant coating of electrical cables)
- For use in power plants, telecommunications complexes, industrial plants, petrochemical plants, paper mills, factories and production facilities
- Easy to apply using a paint brush or airless spray gun

ADVANTAGES

- Intumescent
- Water soluble, odourless and solvent free
- Free of fibres and asbestos
- No derating effects on cables
- Rapid drying, remains flexible when dry
- Compatible with the sheathing of electrical cables



Seismic



Low VOC



Mould & Mildew

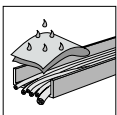
Consumption Guide

Test Standard	Dry film thickness	Wet film thickness	Approx. Requirement
IEC 60332-3	1.0 mm coating	1.4 mm coating	1.8 kg/m ² (1.4 liters/m ²)
Factory Mutual Approval	1.6 mm coating	2.2 mm coating	2.86 kg/m ² (2.2 liters/m ²)

Note (a): Each 20 kilogram container of CP 678 contains approximately 15.4 liters.

Note (b): For cable trays or cable bundles with large cables, allow approx. 10% wastage for application by brush or roller.
For cable trays or cable bundles with small cables, allow approx. 20% wastage for application by brush or roller.

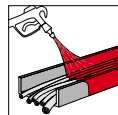
Application Procedure



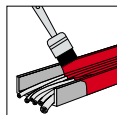
Clean cables



Mix coating



Apply coating



Technical data

Chemical basis	Acrylate
Weight	20 kg
Application temperature range	5 - 40 °C
Temperature resistance range	-30 - 80 °C
Storage and transportation temperature range	5 - 30 °C
Shelf life ¹⁾	18 Months
Colour	White

¹⁾ at 77°F/25°C and 50% relative humidity; from date of manufacture



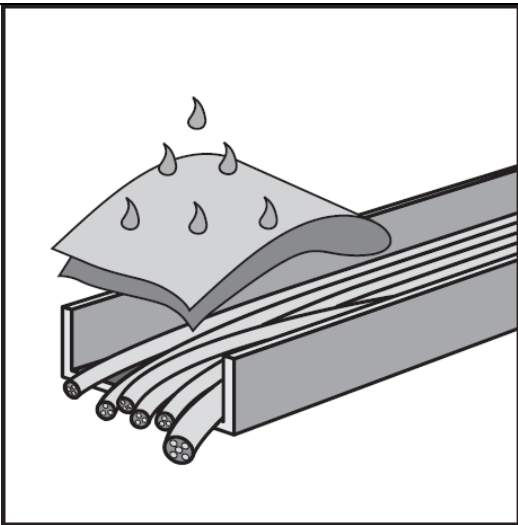
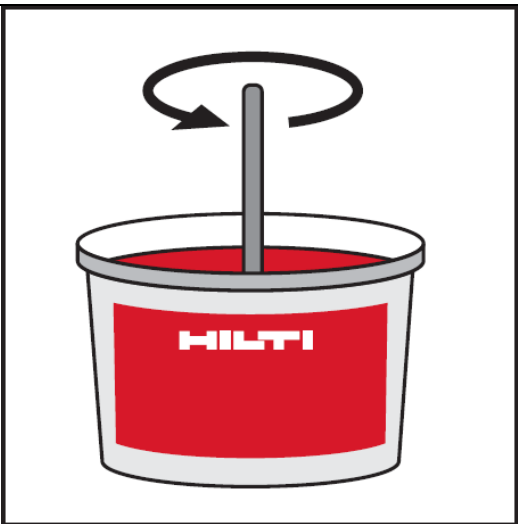
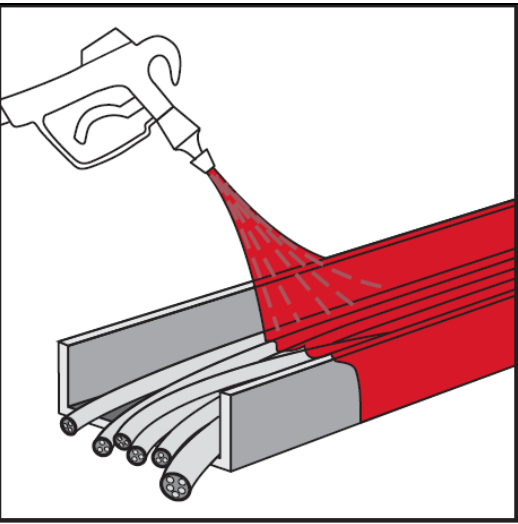
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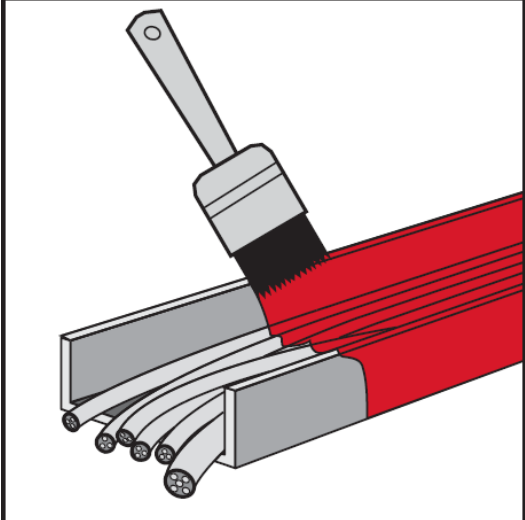


Ordering designation	Weight	Package contents	Sales pack quantity	Item number
CP 678 20KG	20 kg	1x Firestop cable coating CP 678	1 pc	2348155

Please visit Hilti website for the latest item numbers and related products

Subject: Method Statement of CP 678
Material: CP 678 Cable coating
Accessory: Nil

Setting Operation		
1	Clean the cables. The cables and cable supporting structures must be dry and free from dust, grease or oil, and installed in compliance with local building and electrical standards.	
2	Thoroughly mix CP 678, until it becomes workable for application. Any separated water in the container must also be mixed in. Note: do not add water!	
3a	Coat the cable or bunched cables on all sides by an airless spray (with airless spray gun with recommended 0.029" nozzle and 40° spray angle)	

3b	Coat the cable or bunched cables on all sides by a brush.	
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Safety precautions:

- Keep out of reach of children
- Wear protective clothing, goggles and gloves when installing
- Keep away from foodstuffs
- Particular danger of slipping on leaked / spilled product
- Ensure adequate ventilation

APPROVAL REPORT

Hilti CP 678
FIRE RETARDANT CABLE COATING
FOR GROUPED ELECTRICAL CABLES

Prepared For:

Hilti AG
FL-9494 Schaan
Fuerstentum
Liechtenstein

005329
Class 3971
Date: August 20, 1999



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3005329
Class 3971

August 20, 1999

**Hilti CP 678
FIRE RETARDANT CABLE COATING
FOR
GROUPED ELECTRICAL CABLES**

from

**Hilti AG
FL-9494 Schaan
Fuerstentum
Liechtenstein**

I INTRODUCTION

1.1 Hilti AG requested Factory Mutual Research Corporation (FMRC) Approval of their Hilti CP 678 Fire Retardant Cable Coating for use as a protective coating for grouped electrical cables.

1.2 Hilti CP 678 Cable Coating is a fire retardant, asbestos-free, non-toxic, flexible, intumescent coating. It is white in appearance before and after curing.

1.3 The product contains water, and therefore precautions should be taken to ensure that any storage, transportation, or application of the material is done at temperatures above freezing and in accord with the manufacturer's instructions.

1.4 These coatings prevent flame spread in conductors when exposed to a moderate fire source that might occur from arcs or sparks falling or occurring in the cable tray, or from fire exposure of combustible trash or foreign material around the cable(s) in grouped or trayed conditions. These coatings were not tested to maintain cable protection under severe and extended fire exposure conditions.

When applied according to the manufacturer's instructions, the protective coating does not of itself require electrical derating.

Observe any special instructions listed with the product.

II DESCRIPTION

2.1 Appendix 1 reproduces the manufacturer's data sheet.

2.2 Surfaces to be coated with Hilti CP 678 Cable Coating must be clean and free from oil, grease, and dirt. Cleanup is accomplished with water before the material cures.

2.3 The most effective application of this coating is by airless equipment or brush. The coating dries to the touch in 6 to 8 hours and cures thoroughly in 24 to 48 hours, depending on cable temperature, ambient temperature, and relative humidity. Minimum required thickness for dry coating is 1/16 in. (1.59 mm).

2.4 After curing, the coating remains sufficiently pliable so that individual cables may be removed from a grouping if necessary, and damaged portions of the protective coating may be repaired by spraying.

The coating has good adhesive properties and will stick readily to vertical and overhead surfaces. When exposed to flame, it does not melt or drip, but merely intumesces.

III MARKINGS

Hilti CP 678 Cable Coating is available in 20 kg resealable plastic buckets with special packaging available upon request. The manufacturer's name and address, product name, batch number, application instructions and the Factory Mutual Approval mark are shown on the container label.

IV TESTS

4.1 Four strips of Hilti CP 678 Cable Coating, 18 in. (457 mm), 3 in. (76 mm) wide and 1/16 in. (1.59 mm) thick were prepared and conditioned at room temperature. Two specimens were clamped vertically and parallel 1/2 in. (13 mm) apart to expose 17 in. (432 mm) from the free (lower) end. A Bunsen burner with a 2 in. (51 mm) total flame height with a 1 in. (25 mm) inner core was then positioned vertically under the free end of one specimen for a two minute period with the flame cone just touching the specimen. Examination at the end of the fire exposure period showed flames did impinge and scorch the specimens up to 5 in. (127 mm) above the lower gauge mark. There was some disintegration of the specimen below the 3 in. (76 mm) gauge mark when handled by squeezing lightly between the thumb and two fingers. The area above the 3 in. (76 mm) gauge mark remained intact. Direct flame impingement did cause some loss of flexibility, but this area was considered structurally sound.

4.2 The test outlined in paragraph 4.1 was repeated with the second set of specimens and the results were similar. These test results satisfy Approval requirements which allow no degradation of specimen above the 3 in. (76 mm) gauge mark and no scorching or burning above the 17 in. (432 mm) gauge mark.

4.3 Ten 3 ft (0.9 m) long samples of 2/0, 600 V, 90°C, 285 ampere rated (National Electrical Code) copper cables were given a high potential check of 1000 V, plus 200 percent of rated voltage for one minute. The cables were wrapped tightly in aluminum foil and the potential applied between the foil and the copper conductor and any leakage current in milliamperes was recorded for each cable sample. Cables were then coated according to the manufacturer's instructions and, after the recommended curing time, this high potential test was repeated to ensure no change or damage occurred to the cable insulation prior or during coating. (This test is also repeated after the fire tests described below as a means of determining any coating breakdown).

4.4 Three 3 ft (0.9 m) long coated cables were individually heated electrically with 150 percent of rated current (428 A) until the copper conductor stabilized at 190°F (88°C). A flame from a Meeker gas burner was adjusted to give an overall flame height of 5 in. (127 mm) with a 3 in. (76 mm) inner cone (natural gas) and applied to the horizontally positioned cable for two minutes with the tip of the inner cone touching the bottom of the coated cable. At the end of a two minute flame exposure, there was simultaneous burner flame cutoff and electrical shutdown. All flaming extinguished immediately. After cooling, the charred and scorched area exposed to the burner flame was measured and found to be 3 to 4 in. (76 to 102 mm) in length. This satisfies Approval requirements that burning shall not continue longer than one minute after flame cutoff and the burned (exposed area) shall not exceed 9 in. (228 mm) in length.

4.5 Results on the second and third cables exposed to the test described in paragraph 4.4 were similar. These three cables were then given a repeat of the high potential test described in paragraph 4.3 and current leakage averaged 0.72 milliamperes. This satisfies the Approval requirement that leakage current shall not exceed 5.0 milliamperes when measured between the conductor and the outer jacket during this high potential test.

4.6 A 3 ft (0.9 m) length of cable coated with Hilti CP 678 Cable Coating was subjected to a saltwater test consisting of 8 hours submerged alternating with 16 hours drying in a 24 hours span in a 1 percent saltwater solution over a 30 day period with the water temperature at 150°F (66°C). At the end of this period, the sample was allowed to dry for 36 hours. There was no disintegration or deterioration of the coating. The cable sample was then subject to the fire tests described in paragraph 4.4 and the required high potential test; the results of these test were satisfactory.

4.7 Two 3 ft (0.9 m) lengths of cable coated with Hilti CP 678 Cable Coating were subjected to alternating temperatures of 160°F (71°C) and -40°F (-40°C) for 24 hours over a two week duration. At the end of this accelerated aging test period, the cables were subjected to the test described in paragraph 4.4 and the high potential test. The results of these tests were satisfactory.

4.8 A coated cable section was subjected to an ampacity test prior to which a No. 28 gauge chromel-alumel thermocouple was imbedded in the bare copper conductor. The cable was then subjected to its rated current carrying capacity of 285 A (according to the National Electrical Code) until the temperature indicated by the thermocouple had stabilized, in approximately one hour at 140°F (60°C). This is well below the 90°C maximum temperature rating of the cable insulation; therefore, no electrical derating is necessary when a cable is sprayed with Hilti CP 678 Cable Coating according to the manufacturer's recommendations.

4.9 A sample cable length coated with Hilti CP 678 Cable Coating has been under actual weather exposure test conditions for approximately ten months. The coated cable sample appears satisfactory at this time; however, continued observation of this sample is planned to supplement present field experience.

V FACILITIES AND PROCEDURES AUDIT

The plant manufacturing this product has been subjected to a FMRC Facilities and Procedures Audit with satisfactory results.

VI CONCLUSIONS

Hilti AG's CP 678 Cable Coating meets Factory Mutual Approval requirements.

ORIGINAL TEST DATA: Project Data Record 3001128

ATTACHMENTS: Appendix 1, Manufacturer's Product Data Information

EXAMINATION AND TESTS BY: C.R. Ribak

REPORT BY:

REVIEWED BY:

C. R. Ribak

C. R. Ribak
Engineer - Fuels Section

A. V. Brandao

A. V. Brandao, P.E.
Manager - Fuels Section

Appendix 1

Hilti CP 678 CABLE COATING**Product Description**

Hilti CP 678 is a single component expandable fire resistant coating for grouped cables with combustible insulation.

Hilti CP 678 expands approximately 50 times its original size when exposed to heat. The expanded material forms a char which insulates against the heat of the fire.

Hilti CP 678 is a water base compound and has excellent adhesion properties.

Advantages**Fire Resistance**

Will not burn in liquid or solid state. Under fire conditions, forms a char and prevents spread of flames along cables in cable trays, vertical and horizontal.

Application

Single component, water base material. Equipment, tools, and spills easily cleaned with water.

Non-toxic

Contains no asbestos, harmful solvents, or dangerous chemicals.

Typical Usage

Hilti CP 678 is suitable as a coating for grouped electrical cables or individual cables having combustible insulation.

Hilti CP 678 provides a low cost fire protection for cables and can be applied by brush or airless spraying equipment.

Appendix 1, continued

Typical properties

Appearance:	White
Tack Free Time:	6 - 8 Hours
Specific Gravity:	1.32 gm/cc $\pm$ 0.03 gm/cc
Solids by Volume:	75% $\pm$ 1%
Flash Point:	None determined
Solvent:	Water
Storage Limits:	Keep from freezing
Shelf Life:	Approximately 18 month
Application and Hazard: Class:	All ingredients of Hilti CP 678 are physiologically and not subject to identification.
Packaging:	Hilti CP 678 is packaged in 20 kg quantities in resealable plastic buckets. Special packaging is available upon request.

Recommendations for the use of our products are based on tests we believe to be reliable. Manufacturer and seller are not responsible for results where the product is used under conditions beyond our control. Under no circumstances will Hilti be liable for consequential damages or damages to anyone in excess of the purchase price of the product or services. Specifications are subject to change without notice.

The information given above is correct to the best of our knowledge. We reserve the right to change the information without prior notice.

Test Report

WARRES No. 302456

BS 476: Part 7: 1997
Method For Classification Of The
Surface Spread Of Flame Of Products

Sponsored By

Hilti Entwicklung Elektrowerkzeuge GmbH
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(Part7_DS) The Professionals in Fire Safety

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Test Report

WARRES No. 302456

**BS 476: Part 7: 1997
Method For Classification Of The
Surface Spread Of Flame Of Products****Sponsored By**

**Hilti Entwicklung Elektrowerkzeuge GmbH
86916 Kaufering
Hiltisrae 6
Amtsgericht Augsburg
HRB 16295
Germany**

1 Purpose of Test

To determine the classification of specimens of a product when they are tested in accordance with BS 476: Part 7: 1997, "Fire tests on building materials and structures, method for classification of the surface spread of flame of products".

2 Scope Of Test

BS 476: Part 7: 1997 specifies a method of test for measuring the lateral spread of flame along the surface of a specimen of a product orientated in the vertical position, and a classification system based on the rate and extent of flame spread. It provides data suitable for comparing the performances of essentially flat materials, composites, or assemblies, which are used primarily as the exposed surfaces of walls or ceilings.

3 Description Of Test Specimens

The description of the specimens given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

The specimens consisted of "Aestuveraester Bauplatte", a light weight concrete base plate coated on one face with a single coating of "Hilti CP678 Cable Coating", applied to a dry film thickness of 1mm.

"Hilti CP678 Cable Coating" was stated by the sponsor to comprise a water based intumescent coating having an applied density of approximately 1300kg/m³ and intended for use for internal application purposes only.

The lightweight concrete base plate was stated by the sponsor to have been produced by Aestuverbauplatten GmbH, Germany and to have a density ranging from 600 to 1000kg/m³.

A full technical specification of both the cable coating and the light weight concrete base plate have been provided and are held on our confidential file relating to this investigation.

The specimens were supplied by the sponsor. Warrington Fire Research Centre was not involved in any selection or sampling procedure.

4 Conditioning Of Specimens

The specimens were received on the 1st August 2001.

Prior to test the specimens were conditioned to constant mass at a temperature of $23 \pm 2^{\circ}\text{C}$ and a relative humidity of $50 \pm 10\%$.

5 Date Of Test

The test was performed on 13th September 2001.

6 Test Procedure

The test was performed in accordance with the procedure specified in BS 476: Part 7: 1997, and this report should be read in conjunction with that British Standard.

7 Form In Which The Specimens Were Tested

The specimens were tested in the form of a composite.

8 Exposed Face

The coated face of the specimens was exposed to the radiant heat of the test when the specimens were mounted in the test position.

9 Test Results And Classification

The test results relate only to the behaviour of the test specimens of the product under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

The test results relate only to the specimens of the product in the form in which they were tested. Small differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product which is supplied or used is fully represented by the specimens which were tested.

The test results for the individual specimens, together with observations made during the test and comments on any difficulties encountered during the test are given in Table 1.

IN ACCORDANCE WITH THE CLASS DEFINITIONS GIVEN IN BS 476: PART 7: 1997, THE SPECIMENS TESTED ARE CLASSIFIED AS CLASS 1.

Note: If the prefix 'D' or suffix 'R' or 'Y' is included in the classification, this indicates that the results should be treated with caution. An explanation of the reason for the prefix and suffixes is given in Appendix 1, together with the irradiance along the horizontal reference line of the specimen position during the test and the classification limits specified in the Standard.

10 Interpretation Of Test Results

Attention is drawn to Appendix 2 entitled "Effect of thermal characteristics on the performance of assemblies".

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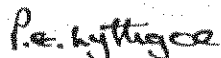
11 **Validity**

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

This report may only be reproduced in full. Extracts or abridgements shall not be published without permission of Warrington Fire Research Centre

Tested By

C DEAN
Laboratory Supervisor
Testing Department

Approved

P E Lythgoe
Testing Manager
For and on behalf of
WARRINGTON FIRE RESEARCH CENTRE

Date Of Issue : 05 October 2001

(Part7_DS)

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Table 1

SPECIMEN No.	1	2	3	4	5	6
Maximum distance travelled at 1.5 minutes (mm)	50	50	50	50	50	50
Distance (mm)						
Time to travel to indicated distance (minutes, seconds)						
75						
165						
190						
215						
240						
265						
290						
375						
455						
500						
525						
600						
675						
710						
750						
785						
825						
900						
Time to reach maximum distance travelled (minutes, seconds)	1:00	1:00	1:00	1:00	1:00	1:00
Maximum distance travelled in 10 minutes (mm)	50	50	50	50	50	50

Note: Six specimens are usually tested. If the test on any specimen is deemed to be invalid, as defined in the Standard, it is permissible for up to a maximum of nine specimens to be tested in order to obtain the six valid test results.

OBSERVATIONS MADE DURING TEST AND COMMENTS ON ANY DIFFICULTIES ENCOUNTERED DURING THE TEST.

NONE

Appendix 1

Irradiance along the horizontal reference line of the specimen position during the test.

Distance along reference line from the hotter end of the specimen position (in mm)	75	225	375	525	675	825
Irradiance at points specified above (kW/m ²)	32.5	21.0	14.5	10.0	7.0	5.0

Note: a tolerance of ± 0.5 kW/m² is specified on the irradiance measurement.

Classification of spread of flame

CLASSIFICATION	SPREAD OF FLAME AT 1.5 MIN		FINAL SPREAD OF FLAME	
	LIMIT	LIMIT FOR ONE SPECIMEN IN SAMPLE	LIMIT	LIMIT FOR ONE SPECIMEN IN SAMPLE
	mm	mm	mm	mm
Class 1	165	165 + 25	165	165 + 25
Class 2	215	215 + 25	455	455 + 45
Class 3	265	265 + 25	710	710 + 75
Class 4	exceeding the limits for Class 3			

Explanation of prefix and suffixes which may be added to the classification

1. A suffix R is added to the classification if more than six specimens are required in order to obtain six valid test results (e.g. class 2R).
2. A prefix D is added to the classification of any product which does not comply with the surface characteristics specified in the Standard and has therefore been tested in a modified form (e.g. class D3).
3. A suffix Y is added to the classification if any softening and/or other behaviour that may affect the flame spread occurs (e.g. class 3Y).

For example, a classification of D3RY could be achieved indicating (a) a modified surface has been used; (b) a class 3 result has been obtained; (c) additional specimens have been used to obtain 6 valid results and; (d) softening and/or other behaviour has occurred which is considered to have affected the test result.

Appendix 2

Effect of Thermal Characteristics on the Performance of Specimens

The result of a test in accordance with BS 476: Part 7: 1997 is applicable only to the specimens in the form in which they were tested. Small differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test result. It is important that the specimens which are tested fully represent the product which is supplied and the manner in which it will be used. This may require a product to be tested in a number of different ways to determine the classification which will be achieved in its different methods of use.

A surface coating, for example, may be applied to a selected substrate using a particular method and application rate. The test classification which is achieved for that set of specimens will be applicable only to that situation. If the substrate or method and rate of application in a particular practical situation are different from that which was tested, then it will be necessary to determine the classification which will be achieved for that situation. Similarly, specimens incorporating a wallcovering must be fully representative of the situation which occurs in practice and will normally consist of the wallcovering bonded to a chosen substrate with a chosen adhesive; the test result will only apply to that composite system. The same principle applies to any composite or assembly which is being investigated.

It is sometimes possible to assume a 'worst case' situation which will enable a chosen set, or sets, of specimens to be constructed and tested to provide a foundation for the assessment of the probable performance of variations within the system. Similarly, it is sometimes possible to formulate a series of exploratory tests to investigate the effect of variations within a product or system, usually culminating in a series of formal tests to provide the basis for a composite assessment of pre-determined variables. In such cases, however, it is essential that careful planning of the programmes is undertaken by suitably qualified fire safety practitioners.

The following is re-produced from Appendix B of BS 476: Part 7: 1997:

With thin materials or composites, particularly those with a high thermal conductivity, the presence of an air gap and the nature of any underlying construction may significantly affect the ignition performance of the exposed surface. Increasing the thermal capacity of the underlying construction increases the "heat sink" effect and may delay ignition of the exposed surface. Any backing provided to the test specimen and in intimate contact with it, such as the non-combustible spacers, may alter this "heat sink" effect and may be fundamental to the test result itself. The influence of the underlying layers on the performance of the assembly should be understood and care should be taken to ensure that the result obtained on any assembly is relevant to its use in practice.

The following advice is offered on the construction and preparation of test specimens;

- (a) Where the thermal properties of the product are such that no significant heat loss to the underlying layers can occur, e.g. a material or composite greater than approximately 6 mm thick of high thermal capacity and/or low thermal conductivity, then the product should be tested backed only by the backing board.
- (b) Where the product is normally used as a free-standing sheet and the characteristics noted in (a) do not apply, then an air space should be provided at the back of the product by testing over spacers of non-combustible insulation board 20 mm wide and (25 ± 1) mm thick.
- (c) Where the product is to be used over a low density non-combustible substrate and the characteristics noted in (a) do not apply, then the product should be tested in conjunction with that substrate.
- (d) Where the product is to be used over a combustible substrate and the characteristics noted in (a) do not apply, then the product should be tested in conjunction with that substrate.

NOTE: Discussions are taking place in ISO/TC92/SC1 concerning the possible use of a restricted range of reference substrates (mainly non-combustible) where it is not apparent or possible to test materials or products in the representative end-use substrate.

Test Report

WARRES No. 302457

BS 476: Part 6: 1989
Method Of Test For
Fire Propagation For Products

Sponsored By

Hilti Entwicklung Elektrowerkzeuge GmbH
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(Part6_DS)

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Test Report**WARRES No. 302457****BS 476: Part 6: 1989
Method of Test For
Fire Propagation for Products****Sponsored By****Hilti Entwicklung Elektrowerkzeuge GmbH
86916 Kaufering
Hiltisrae 6
Amtsgericht Augsburg
HRB 16295
Germany****1 Purpose Of Test**

To determine the fire propagation index of specimens of a product when they are tested in accordance with BS476: Part 6: 1989 "Fire tests on building materials and structures, method of test for fire propagation for products".

2 Scope Of Test

BS 476: Part 6: 1989 specifies a method of test, the result being expressed as a fire propagation index, that provides a comparative measure of the contribution to the growth of fire made by an essentially flat material, composite or assembly. It is primarily intended for the assessment of the performance of internal wall and ceiling linings.

3 Description Of Test Specimens

The description of the specimens given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

The specimens consisted of "Aestuveraester Bauplatte", a light weight concrete base plate coated on one face with a single coating of "Hilti CP678 Cable Coating", applied to a dry film thickness of 1mm.

"Hilti CP678 Cable Coating" was stated by the sponsor to comprise a water based intumescent coating having an applied density of approximately 1300kg/m³ and intended for use for internal application purposes only.

The lightweight concrete base plate was stated by the sponsor to have been produced by Aestuverbauplatten GmbH, Germany and to have a density ranging from 600 to 1000kg/m³.

A full technical specification of both the cable coating and the light weight concrete base plate have been provided and are held on our confidential file relating to this investigation.

The specimens were supplied by the sponsor. Warrington Fire Research Centre was not involved in any selection or sampling procedure.

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CONSULTANCY TESTING

4 Conditioning Of Specimens

The specimens were received on the 1st August 2001.

Prior to testing the specimens were conditioned to constant mass at a temperature of $23 \pm 2^{\circ}\text{C}$ and a relative humidity of $50 \pm 10\%$.

5 Date Of Test

The test was performed on the 13th September 2001.

6 Test Procedure

The test was performed in accordance with the procedure specified in BS 476: Part 6: 1989 and this report should be read in conjunction with that British Standard.

7 Form In Which Specimens Were Tested

The specimens were tested in the form of a composite.

8 Exposed Face

The coated face of the specimen was exposed to the heating conditions of the test.

9 Test Results

The test results relate only to the behaviour of the test specimens of the product under the particular conditions of test, they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

The test results relate only to the specimens of the product in the form in which they were tested. Small differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product, which is supplied or used, is fully represented by the specimens, which were tested.

A total of three specimens was tested. The laboratory record sheet relating to each of the test specimens is appended to this report.

Throughout the test on each specimen careful observation was made of the product's behaviour within the apparatus and special note was taken of any of the phenomena listed in clause 10.2 of the Standard. None of the listed phenomena was observed and the test results on all three specimens tested were valid.

The following test results were obtained for the product.

Fire propagation index, I	=	4.9
subindex, i_1	=	2.0
subindex, i_2	=	2.4
subindex, i_3	=	0.5

Note: If a suffix 'R' is included in the above fire propagation index, I, then this indicates that the results should be treated with caution.

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10 Interpretation Of Test Results

Attention is drawn to Appendix 1, entitled 'Effect of thermal characteristics on the performance of assemblies'.

11 Validity

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

This report may only be reproduced in full. Extracts or abridgements shall not be published without permission of Warrington Fire Research Centre

Tested By

C DEAN
Laboratory Supervisor
Testing Department

Approved

P E LYTHGOE
Testing Manager
For and on behalf of
WARRINGTON FIRE RESEARCH CENTRE

Date of issue: 05 October 2001

(Part6_DS)

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APPENDIX 1

Effect of Thermal Characteristics on the Performance of Assemblies

The result of a test in accordance with BS 476: Part 6: 1989 is applicable only to the specimens in the form in which they were tested. Small differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test result. It is important that the specimens which are tested fully represent the product which is supplied and the manner in which it will be used. This may require a product to be tested in a number of different ways to determine the classification which will be achieved in its different methods of use.

A surface coating, for example, may be applied to a selected substrate using a particular method and application rate. The test classification which is achieved for that set of specimens will be applicable only to that situation. If the substrate or method and rate of application in a particular practical situation are different from that which was tested, then it will be necessary to determine the classification which will be achieved for that situation. Similarly, specimens incorporating a wallcovering must be fully representative of the situation which occurs in practice and will normally consist of the wallcovering bonded to a chosen substrate with a chosen adhesive; the test result will apply only to that composite system. The same principle applies to any composite or assembly which is being investigated.

It is sometimes possible to assume a 'worst case' situation which will enable a chosen set, or sets, of specimens to be constructed and tested to provide a foundation for the assessment of the probable performance of variations within the system. Similarly, it is sometimes possible to formulate a series of exploratory tests to investigate the effect of variations within a product or system, usually culminating in a series of formal tests to provide the basis for a composite assessment of pre-determined variables. In such cases, however, it is essential that careful planning of the programmes is undertaken by suitably qualified fire safety practitioners.

The following is re-produced from Appendix B of BS 476: Part 6: 1989:

With thin materials or composites, particularly those with a high thermal conductivity, the presence of an air gap and the nature of any underlying construction may significantly affect the ignition performance of the exposed surface. Increasing the thermal capacity of the underlying construction increases the "heat sink" effect and may delay ignition of the exposed surface. Any backing provided to the test specimen and in intimate contact with it, such as the non-combustible packing pieces, may alter this "heat sink" effect and may be fundamental to the test result itself. The influence of the underlying layers on the performance of the assembly should be understood and care should be taken to ensure that the result obtained on any assembly is relevant to its use in practice.

The following advice is offered on the construction and preparation of test specimens:

- (a) Where the thermal properties of the product are such that no significant heat loss to the underlying layers can occur, e.g. a material/composite greater than approximately 6 mm thick of high thermal capacity and/or low thermal conductivity, then the product should be tested backed only by the specimen holder.
- (b) Where the product is normally used as a free-standing sheet and the characteristics noted in (a) do not apply, then an airspace should be provided at the back of the product by testing over asbestos cement perimeter battens 20 mm wide and 12.5 mm thick.
- (c) Where the product is to be used over a low density non-combustible substrate and the characteristics noted in (a) do not apply, then the product should be tested in conjunction with that substrate.
- (d) Where the product is to be used over a combustible substrate and the characteristics noted in (a) do not apply, then the product should be tested in conjunction with that substrate.

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Laboratory Record Sheet

FIRE PROPAGATION TEST - B.S.476:PART 6:1989

Sponsor : Hilti Entwicklung Elektrowerkzeuge GmbH

Specimen No : 1

Date : 14/09/01

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	16	14	0.40	1.98
1.00	24	22	0.20	
1.50	31	26	0.33	
2.00	38	31	0.35	
2.50	43	33	0.40	
3.00	47	38	0.30	
4.00	79	65	0.35	2.20
5.00	126	104	0.44	
6.00	158	130	0.47	
7.00	177	153	0.34	
8.00	189	171	0.23	
9.00	200	184	0.18	
10.00	213	194	0.19	
12.00	232	209	0.19	0.71
14.00	245	223	0.16	
16.00	254	232	0.14	
18.00	260	238	0.12	
20.00	263	244	0.10	
Total Index of Performance S			=	4.89

SubIndex s₁ 1.98SubIndex s₂ 2.20SubIndex s₃ 0.71

Index of Performance S 4.89

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Laboratory Record Sheet

FIRE PROPAGATION TEST - B.S.476:PART 6:1989

Sponsor : Hilti Entwicklung Elektrowerkzeuge GmbH

Specimen No : 2

Date : 14/09/01

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	15	14	0.20	1.50
1.00	24	22	0.20	
1.50	30	26	0.27	
2.00	36	31	0.25	
2.50	40	33	0.28	
3.00	47	38	0.30	
4.00	78	65	0.33	2.43
5.00	127	104	0.46	
6.00	155	130	0.42	
7.00	180	153	0.39	
8.00	196	171	0.31	
9.00	210	184	0.29	
10.00	217	194	0.23	
12.00	226	209	0.14	0.46
14.00	236	223	0.09	
16.00	245	232	0.08	
18.00	252	238	0.08	
20.00	257	244	0.07	
Total Index of Performance S			=	4.39

SubIndex s₁ 1.50SubIndex s₂ 2.43SubIndex s₃ 0.46

Index of Performance S 4.39

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Laboratory Record Sheet

FIRE PROPAGATION TEST - B.S.476:PART 6:1989

Sponsor : Hilti Entwicklung Elektrowerkzeuge GmbH

Specimen No : 3

Date : 14/09/01

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	17	14	0.60	2.40
1.00	25	22	0.30	
1.50	31	26	0.33	
2.00	39	31	0.40	
2.50	44	33	0.44	
3.00	48	38	0.33	
4.00	91	65	0.65	2.54
5.00	128	104	0.48	
6.00	161	130	0.52	
7.00	175	153	0.31	
8.00	189	171	0.23	
9.00	201	184	0.19	
10.00	210	194	0.16	
12.00	227	209	0.15	0.61
14.00	244	223	0.15	
16.00	251	232	0.12	
18.00	257	238	0.11	
20.00	260	244	0.08	
Total Index of Performance S			=	5.55

SubIndex s₁ 2.40SubIndex s₂ 2.54SubIndex s₃ 0.61

Index of Performance S 5.55

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88 Empire Drive • St. Paul, Minnesota • 55103
(651) 642-1150 • fax (651) 642-1239

VOC Content Test Certificate

October 26, 2009

Supplier: Hilti Entwicklungsgesellschaft mbH
BU Chemicals
Hiltistrasse 6
86916 Kaufering
GERMANY

Sample Description: Hilti CP 678

Date tested: July 20, 2009

Test Method: SCAQMD method 304-91 Determination of Volatile Organic Compounds (VOC) in various materials as referenced by South Coast Air Quality Management District (SCAQMD) rule 1168. The values also comply with the requirements of EPA test method #24.

Test Data: Legend Project Number 0903311

Specification	Product
LEED 2009 (LEED 3.0) LEED 2.2 IEQ-4.1: Low-Emitting Materials – Architectural Coating Non Flat Applications	Hilti CP 678
Green Building Council of Australia Green Star Office Design 3.0, IEQ-13 Green Star Office Design 2.0, IEQ-13 Green Star Office Interiors 1.1, IEQ-11	
Architectural Coating Non Flat Applications; VOC Limit: 150 g/L	Product contains: 60 g/L of VOC

William Welbes
Vice President of Laboratory Operations

Allen Noreen, Ph.D.
Technical Director

Buildings Department

屋宇署

Our Ref. 本署檔號: (24) BD GR/BM/2(185)

Your Ref. 來函檔號:

Tel. No. 電話: 848 2838

Fax No. 傳真: 840 0451

Hilci (Hong Kong) Ltd.
Unit 3 5/F Harbour Centre Tower 2
8 Hok Cheung Street Hung Hom
Kowloon

26 May 1994

Dear Sirs,

Fire Resisting Penetration Sealing System
As Supplied By Hilci (GB) Ltd.

Thank you for your letters dated 4.3.94 and 27.4.94 and the accompanying test/assessment reports on the above. You are asking for comments on the acceptability of the fire resisting product in the context of relevant provisions of the Buildings Ordinance, Chapter 123 of the Law of Hong Kong and its subsidiary legislation.

Under the Buildings Ordinance, "authorized persons" (i.e. architects, engineers or surveyors registered with the Building Authority) are required to supervise building works including the selection and installation of fire resisting products and to certify compliance with the Buildings Ordinance upon completion of works. Authorized persons are therefore responsible for ensuring the safety requirements inter alia of fire resisting products in the building projects which they have been appointed by the developer to coordinate and supervise.

In establishing the acceptability of fire resisting products, reference may be made to the performance standards laid down in Building (Construction) Regulation 90, the current Code of Practice for Fire Resisting Construction issued by the Building Authority and British Standard 476: Parts 20 to 24. Reliance may also be placed on the test/assessment report prepared by a recognized laboratory or an equivalent establishment.

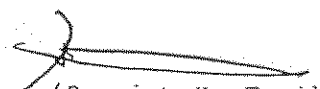
The Buildings Department has a list of recognized laboratories. This is available for reference at our office:

Technical Administration (Building) Unit
Buildings Department
11/F Murray Building
Garden Road Hong Kong

Before fire resisting products are installed in a building project, the authorized person appointed for the project should be approached for advice and guidance.

Your test/assessment reports are returned herewith. In this respect, please note that paragraph 3 of my letter dated 25 January 1994 is no longer applicable. The delay in replying is regretted.

Yours faithfully,


(Patrick H. Tsui)

Technical Secretary/Building
for Director of Buildings

消防處

防火組

香港九龍尖沙咀東部康莊道1號
消防總部大廈



FIRE SERVICES DEPARTMENT,
FIRE PROTECTION BUREAU,

FIRE SERVICES HEADQUARTERS BUILDING,
No. 1 Hong Chong Road,
Tsim Sha Tsui, East Kowloon,
Hong Kong.

本處編號 Our Ref.: FPB 207/0005

來函編號 Your Ref.: L026/92HK

電訊掛號 Telex: 39607 HKFSD HX

圖文傳真 Fax: 852-3110066
852-3689744

電話 Tel. No.:

733 7596

29 April 1992

Hilti (Hong Kong) Ltd.,
Unit 3, 5/F, Harbour Centre,
Tower 2,
8 Hok Cheung Street,
Hung Hom, Kowloon.

Dear Sirs,

"HILTI" Fire Prevention System

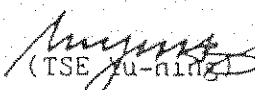
I refer to your letter of 30.3.92 and the enclosures attached thereto.

Based on the information contained in your letter under reference and the given test report, I understand that the captioned product is a building material which should be approved by the Director of Buildings and Lands. As such, I am not in a position to process your application and you are advised to refer your enquiry to the Director of Buildings and Lands, whose address is listed hereunder :-

The Director of Buildings and Lands,
(Attn.: Technical Secretary/Building, B.O.O.)
Murray Building,
Garden Road,
Central,
Hong Kong.

Please feel free to contact us should you have any other question in this matter.

Yours faithfully,


(TSE Yu-ning)
for Director of Fire Services



ARCHITECTURAL SERVICES DEPARTMENT 建築署

QUEENSWAY GOVERNMENT OFFICES, 66 QUEENSWAY, HONG KONG. 香港金鐘道六十六號金鐘道政府合署
FAX 852-2869 0289

Our Ref : ASD 16/92101/AML/APP
Your Ref. : -----
Tel. No. : 2867 3631
Fax No. : 2877 0594

06 June 1997

Hilti (HK) Ltd
17/F, Tower 6, China HK City,
33 Canton Rd., TST

Dear Sirs,

~~Architectural Services Department~~
List of Acceptable Materials
~~Hilti Firestop Products~~
Ref. no. 0001P

I am pleased to inform you that approval has been given to include the above product/material in this Department's List of Acceptable Materials. Initially, this listing is for a probationary status and this will be reviewed after the submission of satisfactory performance reports on completion of projects undertaken by this Department where your product has been used.

The Architectural Services Department List of Acceptable Materials is a restricted internal document. This letter should not be used for commercial or marketing purposes and failure to comply with this may result in the removal of the product from the List.

Yours faithfully,

(W.M. TANG)

Technical Secretary/2

for Chief Architect/ Central Management Branch
Architectural Services Department

Attn. : To whom it may concern

Date : 26 September 2023
Ref. : 112/FP/DY/23

Subject : Country of Origin- Hilti CP 678 Firestop Cable Coating

Dear Sir / Madam,

Enclosed please find the information of Hilti CP 678 Firestop Cable Coating. .

Brand Name : Hilti

Model Name : Hilti CP 678 Firestop Cable Coating

Manufacturer : Hilti Corporation

Address of Manufacturer : FL-9494, Principality of Liechtenstein.

Manufacturer Contact Person : Dennis Yeung

Supplier : Hilti (Hong Kong) Ltd

Address of Supplier : 701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong

Supplier Contact Person : Dennis Yeung (+852 9723 4621)

Country of Origin : Germany

Should you have further questions, please do not hesitate to contact our Technical Representatives, Customer Service Hotline at 8228-8118, or email us at hksales@hilti.com.

Yours faithfully,



Dennis Yeung
Head of Product Leadership Strategy, F&P

Hilti (Hong Kong) Ltd.
701-704 | Tower A | Manulife Financial Centre
223 Wai Yip Street | Kwun Tong
Kowloon | Hong Kong
P +852-8228 8118 | **F** +852-2954 1751
www.hilti.com.hk

July 30, 2014

To Whom It May Concern:

Re: Hilti Cable Coating Interior CP 678– LEED Info.

- The Hilti Cable Coating Interior CP 678 is manufactured in Germany.
- The package of Hilti Cable Coating Interior CP 678 can be completely recycled.
- There is no recycled content in Hilti Cable Coating Interior CP 678 and it cannot be recycled.
- The Hilti Cable Coating Interior CP 678 does not share any rapidly renewable materials.
- The VOC content of Hilti Cable Coating Interior CP 678 is 60 g/l.

If you would like to know more about Hilti solutions for LEED buildings or should you have any further question please feel free to contact me at my email or mobile number as shown below.

Sincerely,



Andrew Lau

Product Manager - Firestop

Hilti (Hong Kong) Limited

Email: andrew.lau@hilti.com

Mobile: (852) 9843-6291

Hilti (Hong Kong) Ltd.
701-704 | Tower A | Manulife Financial Centre
223 Wai Yip Street | Kwun Tong

Kowloon | Hong Kong

P +852-8228 8118 | **F** +852-2954 1751

www.hilti.com.hk

To whom it may concern

Date: 22nd April 2016

Dear Sir / Madam,

Subject: Hilti Firestop Products non-CFC and Ozone Confirmation

Referring to your enquiry about the captioned subject, please be advised that:

Hilti firestop products, CP678 Cable Coating is free of CFC, HCFC nor other ozone depletion elements.

CFC, HCFC and ozone depletion elements were not used during the product process neither.

Should you have further questions, please do not hesitate to contact our Technical Representatives or Customer Service Hotline at 8228-8118.

Yours sincerely,



Andrew Lau
Product Manager

CP 678

Safety Data Sheet

according to the United Nations GHS (Rev. 4, 2011)

Issue date: 01/10/2021

Revision date: 01/10/2021

Supersedes: 07/10/2019

Version: 6.0

SECTION 1: Identification

1.1. GHS Product identifier

Product form	Mixture
Trade name	CP 678
UN-No. (ADR)	3077
Product code	BU Fire Protection



1.2. Other means of identification

No additional information available

1.3. Recommended use of the chemical and restrictions on use

Use of the substance/mixture	Firestop coating
------------------------------	------------------

1.4. Supplier's details

Supplier	Department issuing data specification sheet
Hilti (Hong Kong) Ltd. 701-704, 7/F, Tower A, Manulife Financial Centre 223 Wai Yip Street, Kwun Tong Kowloon - Hong Kong T +852 27734 700	Hilti AG Feldkircherstraße 100 9494 Schaan - Liechtenstein T +423 234 2111

1.5. Emergency phone number

Emergency number	Schweizerisches Toxikologisches Informationszentrum – 24h Service +41 44 251 51 51 (international) +852 27734 700
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SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

Classification according to the United Nations GHS

Carcinogenicity, Category 2	H351	Calculation method
Reproductive toxicity, Category 2	H361	Calculation method
Hazardous to the aquatic environment — Chronic Hazard, Category 1	H410	Calculation method

Full text of H-statements: see section 16

Adverse physicochemical, human health and environmental effects	Suspected of causing cancer, Harmful to aquatic life with long lasting effects.
---	---

CP 678

Safety Data Sheet

according to the United Nations GHS (Rev. 4, 2011)

2.2. GHS Label elements, including precautionary statements

Labelling according to the United Nations GHS

Hazard pictograms (GHS UN)



GHS08

GHS09

Signal word (GHS UN)

Warning

Hazardous ingredients

Tris[2-chloro-1-(chloromethyl)ethyl] phosphate; melamine

Hazard statements (GHS UN)

H351 - Suspected of causing cancer
H361 - Suspected of damaging fertility or the unborn child
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (GHS UN)

P201 - Obtain special instructions before use.
P273 - Avoid release to the environment.
P280 - Wear eye protection, protective clothing, protective gloves.
P302+P352 - IF ON SKIN: Wash with plenty of water/....
P308+P313 - IF exposed or concerned: Get medical advice, medical attention.

2.3. Other hazards which do not result in classification

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to the United Nations GHS
melamine	(CAS-No.) 108-78-1	10 – 15	Acute toxicity (oral), Category 5, H303 Carcinogenicity, Category 2, H351 Reproductive toxicity, Category 2, H361 Hazardous to the aquatic environment - Acute Hazard Not classified
Tris[2-chloro-1-(chloromethyl)ethyl] phosphate	(CAS-No.) 13674-87-8	1 – 5	Flammable liquids Not classified Acute toxicity (dermal) Not classified Acute toxicity (inhalation:dust,mist) Not classified Carcinogenicity, Category 2, H351 Hazardous to the aquatic environment — Acute Hazard, Category 2, H401 Hazardous to the aquatic environment — Chronic Hazard, Category 1, H410 (M=10)

Full text of H-statements: see section 16

SECTION 4: First-aid measures

4.1. Description of necessary first-aid measures

First-aid measures general

IF exposed or concerned: Get medical advice/attention.

First-aid measures after inhalation

Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention if you feel unwell.

First-aid measures after skin contact

Wash skin with plenty of water.

First-aid measures after eye contact

Rinse eyes with water as a precaution.

CP 678

Safety Data Sheet

according to the United Nations GHS (Rev. 4, 2011)

First-aid measures after ingestion	Get medical advice/attention if you feel unwell. Call a poison center or a doctor if you feel unwell.
------------------------------------	---

4.2. Most important symptoms/effects, acute and delayed

No additional information available

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

Suitable extinguishing media	Water spray. Dry powder. Foam. Carbon dioxide.
------------------------------	--

5.2. Specific hazards arising from the chemical

Hazardous decomposition products in case of fire	Carbon dioxide. Carbon monoxide.
--	----------------------------------

5.3. Special protective actions for fire-fighters

Protection during firefighting	Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
--------------------------------	--

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel	
Emergency procedures	Ventilate spillage area.
6.1.2. For emergency responders	
Protective equipment	Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and materials for containment and cleaning up

Methods for cleaning up	Mechanically recover the product. Notify authorities if product enters sewers or public waters.
Other information	Dispose of materials or solid residues at an authorized site.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	Ensure good ventilation of the work station. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear personal protective equipment.
Hygiene measures	Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	Store in a dry place. Store locked up. Store in a well-ventilated place. Keep cool.
--------------------	---

CP 678

Safety Data Sheet

according to the United Nations GHS (Rev. 4, 2011)

Upper explosive limit (UEL)	Not applicable
Flash point	Not applicable
Auto-ignition temperature	Not applicable
Decomposition temperature	Not available
pH	Not available
pH solution	Not available
Viscosity, kinematic (calculated value) (40 °C)	46153.846 mm ² /s
Partition coefficient n-octanol/water (Log Kow)	Not available
Vapour pressure	23 hPa
Vapour pressure at 50 °C	Not available
Density	1.3 g/cm ³
Relative density	Not available
Relative vapour density at 20 °C	Not applicable
Solubility	Miscible with water.
Viscosity, dynamic	60000 mPa·s
Explosive properties	Product is not explosive
Particle size	Not available
Particle size distribution	Not available
Particle shape	Not available
Particle aspect ratio	Not available
Particle specific surface area	Not available

9.2. Data relevant with regard to physical hazard classes (supplemental)

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	Not classified
Acute toxicity (dermal)	Not classified

CP 678

Safety Data Sheet

according to the United Nations GHS (Rev. 4, 2011)

Acute toxicity (inhalation) Not classified

Tris[2-chloro-1-(chloromethyl)ethyl] phosphate (13674-87-8)	
LD50 oral rat	> 2000 mg/kg (Rat, Oral)
LD50 dermal rat	> 2000 mg/kg (Rat, Dermal)
LD50 dermal rabbit	> 23700 mg/kg (Rabbit, Dermal)
LC50 Inhalation - Rat	> 5.22 mg/l (4 h, Rat, Inhalation)
melamine (108-78-1)	
LD50 oral rat	3161 – 3828 mg/kg bodyweight (Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 dermal rabbit	> 1000 mg/kg (Rabbit, Experimental value, Dermal)
LC50 Inhalation - Rat	> 5.19 mg/l (OECD 403: Acute Inhalation Toxicity, 4 h, Rat, Male / female, Experimental value, Inhalation (aerosol))
Skin corrosion/irritation	Not classified
Serious eye damage/irritation	Not classified
Respiratory or skin sensitisation	Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity	Suspected of causing cancer.
Reproductive toxicity	Suspected of damaging fertility or the unborn child.
STOT-single exposure	Not classified
STOT-repeated exposure	Not classified
Aspiration hazard	Not classified
CP 678	
Viscosity, kinematic	46153.846 mm ² /s

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	Harmful to aquatic life. Harmful to aquatic life with long lasting effects.
Hazardous to the aquatic environment, short-term (acute)	Not classified
Hazardous to the aquatic environment, long-term (chronic)	Very toxic to aquatic life with long lasting effects.
Classification procedure (Hazardous to the aquatic environment, long-term (chronic))	Calculation method

Tris[2-chloro-1-(chloromethyl)ethyl] phosphate (13674-87-8)	
LC50 - Fish [1]	1.1 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Oncorhynchus mykiss, Semi-static system, Fresh water, Experimental value, Nominal concentration)
EC50 - Crustacea [1]	3.8 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Flow-through system, Fresh water, Experimental value, GLP)
ErC50 algae	4.5 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, GLP)
melamine (108-78-1)	
LC50 - Fish [1]	> 3000 mg/l (96 h, Oncorhynchus mykiss, Semi-static system, Fresh water, Experimental value, Nominal concentration)
EC50 - Crustacea [1]	200 mg/l (EPA OPP 72-2, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)
EC50 96h - Algae [1]	325 mg/l (Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Nominal concentration)

12.2. Persistence and degradability

CP 678	
Persistence and degradability	No additional information available

CP 678

Safety Data Sheet

according to the United Nations GHS (Rev. 4, 2011)

Tris[2-chloro-1-(chloromethyl)ethyl] phosphate (13674-87-8)	
Persistence and degradability	Not readily biodegradable in water.
melamine (108-78-1)	
Persistence and degradability	Not readily biodegradable in water.
ThOD	3.04 g O ₂ /g substance

12.3. Bioaccumulative potential

CP 678	
Bioaccumulative potential	No additional information available
Tris[2-chloro-1-(chloromethyl)ethyl] phosphate (13674-87-8)	
BCF - Fish [1]	0.3 – 3.3 (6 week(s), Cyprinus carpio, Literature study)
BCF - Fish [2]	50 – 89 (720 h, Oryzias latipes, Static system, Literature study)
Partition coefficient n-octanol/water (Log Kow)	3.69 (Experimental value, EU Method A.8: Partition Coefficient, 20 °C)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).
melamine (108-78-1)	
BCF - Fish [1]	0.05 – 0.11 (72 h, Oncorhynchus mykiss, Static system, Fresh water, Experimental value)
Partition coefficient n-octanol/water (Log Kow)	-1.22 (Experimental value, OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method, 22 °C)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

CP 678	
Mobility in soil	No additional information available
Tris[2-chloro-1-(chloromethyl)ethyl] phosphate (13674-87-8)	
Partition coefficient n-octanol/water (Log Koc)	3.25 (log Koc, OECD 106: Adsorption/Desorption Using a Batch Equilibrium Method, Experimental value, GLP)
Ecology - soil	Low potential for mobility in soil.
melamine (108-78-1)	
Partition coefficient n-octanol/water (Log Koc)	1.51 (log Koc, SRC PCKOCWIN v2.0, QSAR)
Ecology - soil	Highly mobile in soil.

12.5. Other adverse effects

Ozone	Not classified
Other adverse effects	No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods	Dispose of contents/container in accordance with licensed collector's sorting instructions.
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SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / RID /

ADR	IMDG	IATA	RID
14.1. UN number or ID number			
UN 3077	UN 3077	UN 3077	UN 3077

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ADR	IMDG	IATA	RID
14.2. UN proper shipping name			
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (tris[2-chloro-1-(chloromethyl)ethyl] phosphate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (tris[2-chloro-1-(chloromethyl)ethyl] phosphate)	Environmentally hazardous substance, solid, n.o.s. (tris[2-chloro-1-(chloromethyl)ethyl] phosphate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (tris[2-chloro-1-(chloromethyl)ethyl] phosphate)
Transport document description			
UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (tris[2-chloro-1-(chloromethyl)ethyl] phosphate), 9, III, (-)	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (tris[2-chloro-1-(chloromethyl)ethyl] phosphate), 9, III, MARINE POLLUTANT	UN 3077 Environmentally hazardous substance, solid, n.o.s. (tris[2-chloro-1-(chloromethyl)ethyl] phosphate), 9, III	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (tris[2-chloro-1-(chloromethyl)ethyl] phosphate), 9, III
14.3. Transport hazard class(es)			
9	9	9	9
			
14.4. Packing group			
III	III	III	III
14.5. Environmental hazards			
Dangerous for the environment: Yes	Dangerous for the environment: Yes Marine pollutant: Yes	Dangerous for the environment: Yes	Dangerous for the environment: Yes
No supplementary information available			

14.6. Special precautions for user

Overland transport

Classification code (ADR)	M7
Special provisions (ADR)	274, 335, 375, 601
Limited quantities (ADR)	5kg
Packing instructions (ADR)	P002, IBC08, LP02, R001
Mixed packing provisions (ADR)	MP10
Transport category (ADR)	3
Orange plates	

Tunnel restriction code (ADR)

-

Transport by sea

Special provisions (IMDG)	274, 335, 966, 967, 969
Limited quantities (IMDG)	5 kg
Packing instructions (IMDG)	LP02, P002
EmS-No. (Fire)	F-A
EmS-No. (Spillage)	S-F
Stowage category (IMDG)	A
Stowage and handling (IMDG)	SW23

Air transport

PCA packing instructions (IATA)	956
PCA max net quantity (IATA)	400kg



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CAO packing instructions (IATA)	956
Special provisions (IATA)	A97, A158, A179, A197, A215
Rail transport	
Special provisions (RID)	274, 335, 375, 601
Limited quantities (RID)	5kg
Packing instructions (RID)	P002, IBC08, LP02, R001

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations specific for the product in question

No additional information available

SECTION 16: Other information

SDS Major/Minor	None
Issue date	01/10/2021
Revision date	01/10/2021
Supersedes	07/10/2019

Section	Changed item	Change	Comments
1.1	Name	Modified	
3	Composition/information on ingredients	Modified	

Full text of H-statements:	
H303	May be harmful if swallowed
H351	Suspected of causing cancer
H361	Suspected of damaging fertility or the unborn child
H401	Toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

SDS_UN_Hilti

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.



Hilti CP 678 Firestop Cable Coating Job Reference

[illegible]