

## NAME OF PRODUCT

Uponor Indoor Air System for flats

## MANUFACTURER

Uponor Suomi Oy  
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## PRODUCT DESCRIPTION

The ducts and duct parts of Uponor Indoor Air System made on polypropylene is intended to be used in inlet and exhaust air ducts of apartment-specific Indoor Air Systems in multi-storey buildings in new building and in renovation. The nominal diameters of the ducts and duct parts are Ø100, Ø125, Ø160 and Ø200mm.

Due to the manufacturing techniques and the material the ducts and duct parts are antistatic and the inner surfaces are clean, oil-free and even.

## CERTIFICATION PROCEDURE

This certificate is based on the testing of the product, inspection of the quality control system and the design and installation information received from the certificate holder.

The general certification procedures are based on the certification system of VTT Expert Services Ltd.

This certificate is valid at the most until 24.4.2019 and the conditions of validity are presented in section 15.

To check the validity of this certificate, contact VTT Expert Services Ltd, phone +358 20 722 4911.

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## REGULATIONS, STANDARDS AND INSTRUCTIONS

### 1. Regulations and product standards

**1.1** According to VTT Expert Services examination, the ducts and duct parts of Uponor Indoor Air System meet the following requirements of the Finnish building regulations, when relevant in the use of the system:

D2	Indoor climate and ventilation of buildings, regulations and guidelines 2003.
E1	Structural fire safety in buildings, regulations and guidelines 2002, according to chapter 8 of this certificate.
E7	Fire safety of ventilation installations, guidelines 2004, according to chapter 8 of this certificate.
SFS 3543	Ventilating sheet metal ducts. Strength and air tightness 1987. 2. edition according to the chapter 7 of this certificate.
RT 07-10741	Indoor air classification (Sisäilmastoluokitus) 2000. Rakennus-tietosäätiö RTS. 2001, according to the chapter 10 of this certificate.
ISO 5221	Air distribution and diffusion-Rules to methods of measuring air flow rate in an air handling duct
CEN instruction N 472 REV A.	Experimental determination of mechanical energy loss coefficient of air handling components, August 1998

### 2. Other standards and instructions

**2.1** The manufacturer of the product has declared that he will follow the following guidelines and standards:

IEC 61340-4-10:	Standard test methods for specific applications – Two-point resistance measurement (kanaviston antistaattisuus)
SFS-EN ISO 9001	Quality management systems. Model for quality assurance in design or product development, production, installation and in after delivery services.
SFS-EN ISO 14001	Environmental management systems. Requirements with guidance for use.
FDS-Fire simulation program	(Research report VTT-R-05113-10)

## PRODUCT INFORMATION

### 3. Product description, marking and quality control

**3.1** The ducts and duct parts of Uponor Indoor Air System made on polypropylene are intended to be used in inlet and exhaust air ducts of apartment-specific Indoor Air Systems in one-family, terraced and semi-detached houses. The nominal diameters of the ducts and duct parts are Ø100, Ø125, Ø160 and Ø200mm.

**3.2** The ducts, which are black, are marked, at one meter intervals, with the product name Uponor indoor air duct, the size and length (3000 mm) of the duct, material marking (PP), information of the production time, production site mark, number of the machine, VTT-C-6220-10, SITAC type approval number and mark, SITAC accreditation number, bar-code and EAN code.

The insulated duct is marked on the insulation, Uponor-preinsulated indoor air duct, the size and length (3000 mm), recycling mark, material marking (PE).

The black duct parts are marked with sign Uponor, the name and code of product, material marking, recycling mark, and the information of production time and lot.

The insulated duct parts are marked with the stamped text, Uponor indoor air and the size.

The plastic bags of the duct parts have a sticker with the product name bar-code and EAN-code.

**3.3** The antistatic of the products is confirmed during the production according to the standard IEC 61340-4-10: *Standard test methods for specific applications – Two-point resistance measurement*.

**3.4** The manufacturer's internal quality control is performed according to the quality control instructions of Uponor Some Oy.

**3.5** The manufacturer has certified quality management system according to standard SFS-EN ISO 9001 and environmental management system according to standard SFS-EN ISO 14001.

**3.6** The external quality control of the ventilation ducts and duct parts is performed by VTT according to the valid quality control agreement. The surveillance includes inspection of internal quality control, sampling and testing of samples with the extent defined in the agreement.

## **4. Delivery and storage on site**

**4.1** The ducts are delivered in three meter long sections, with plugged ends. The duct parts are delivered packed in plastic bags.

**4.2** When stored the shield plug shall be in place and the parts in the plastic covering bags. In long term storage the ducts shall be protected from straight sun light.

## **DESIGN INFORMATION**

### **5. General**

**5.1** The design information given in this certificate is based on the assumption that structural solutions, fastening methods and other basic information are according to this certificate and that the requirements, instructions and standards are followed.

## **6. Installation**

**6.1** The ducts and duct parts are installed, connected to each other, insulated and encapsulated according to the instructions given by the manufacturer. The joint is made pursing by hand. No screws or rivets are needed to use in the joints.

**6.2** The ducts can be cut by an ordinary fine toothed saw.

**6.3** The duct should not be thrown, dragged or bruised. It is not recommended to install the ducts in temperatures under -15 °C.

**6.4** The ducts and duct parts shall be protected from getting dirty in intermediate storing during installation.

**6.5** The maximum allowed support distance is 1500 mm and the supports are installed so that there is a support close to each joint/part.

## **7. Structural performance**

**7.1** The ducts fulfil, if installed according to the directions (maximum support gap is 1500 mm), strength requirements of standard SFS 3543.

**7.2** The ducts and duct parts fulfil the tightness requirements of class D of the standard SFS 3543.

**7.3** The durability for impacts and bruises during installation is taken in account in the installation directions.

## **8. Fire Safety**

**8.1** The plastic ducts and duct parts of Uponor Indoor Air System are suitable to be used in inlet and exhaust air ducts of apartment-specific Indoor Air Systems in multi-storey buildings of the fire class P1 defined in the Finnish Building Code part E1.

According to Uponor Indoor Air System design and installation instructions 25.4.2014, a steel sheet spiral duct insulated with EI 30 fire class insulation is used as kitchen stove local exhaust duct. The minimum material thickness of the spiral duct is 0,5 mm.

**8.2** The ducts and duct parts are installed according to Uponor Indoor Air System design and installation instructions into capsule, into cavity of suspended ceiling and/or into vertical cavity which have as cladding material A2-s1,d0 class construction product. Insulation of the ducts and duct parts are done according to the design and installation instructions.

Flow suppressors according to the Finnish Building Code E7 paragraph 6.1, which restrict the spread of combustion gas, are used as ventilators of the ducts.

**8.3** In the Uponor indoor air system possible penetrations between fire departments shall be done in such a way that compartmentation requirements are met.

**8.4** The fulfilment fire safety requirements of Uponor Indoor Air System have been shown according to Finnish Building Code part E1 chapter 1.3.2.

With the provisions of the paragraphs 8.1, 8.2 and 8.3 the fire safety meeting the regulations is maintained in the apartments of multi-storey building at the same level as in solutions done with C-s2,d1 class ventilation ducts.

## **9. Durability**

**9.1** The thermal resistance of the ducts is in continuous use -50 °C - +85 °C. The recommended minimum installation and handling temperature is -15 °C.

## **10. Environmental aspects**

**10.1** The material of ducts and duct parts fulfil the requirements of the emission class M1 of construction materials in Indoor air classification (Sisäilmastoluokitus) 2000.

# **INSTRUCTIONS FOR INSTALLATION AND USE**

## **11. Manufacturer's instructions**

**11.1** The installation and maintenance of the duct system is performed according to the Uponor Indoor Air System installation and design instructions 25.4.2014.

# **TECHNICAL ASSESSMENT**

## **12. Testing and calculations for this certificate**

**12.1** The following properties of the ducts and duct parts have been defined at VTT.

- Tightness
- Pressure losses (diagrams)
- Fire behaviour with calculations
- The emission class of the material.

## **13. Other material**

**13.1** The manufacturer's installation and design instructions of Uponor Indoor Air System 25.4.2014.

**13.2** The tests and investigations by VTT, University of Kuopio and Helsinki University of Technology concerning the contamination, cleanability and susceptibility to moulding of the duct system.

**13.3** The quality control instructions of the manufacturer.

**13.4** The raw material supplier's report of applicability of the material for food use.

## VALIDITY OF THE CERTIFICATE

### 14. Validity period of the certificate

This certificate is valid at the most until April 24, 2019.

### 15. Conditions of validity

The certificate is valid assuming that no fundamental changes are made to the product, and that the manufacturer has a valid quality control contract. A list of valid certificates is available from VTT Expert Services Ltd.

### 16. Other conditions

The references made in this certificate to standards and instructions are valid in the format used at the time the certificate was awarded.

The recommendations in this certificate concerning the safe use of this product are minimum requirements that shall be satisfied when using the product. The certificate does not override current or future requirements imposed by laws and statutes. In addition to the issues presented in this certificate, design, manufacturing and use shall follow appropriate construction methods.

The manufacturer is in charge of the product's quality and factory production control. In awarding this certificate, VTT Expert Services Ltd does not bind itself to indemnification liability concerning personal injury or other damage that may directly or indirectly result from using the product described in this certificate.

VTT Expert Services Ltd finds the plastic ducts and duct parts of Uponor Indoor Air System for apartments to be suitable for use in construction as described in this certificate. This updated certificate No: VTT-C-6220-10 has been awarded as described above to Uponor Suomi Oy.

On behalf of VTT Expert Services Ltd on April 25, 2014



Tiina Ala-Outinen  
Business Manager



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Assessment Manager

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