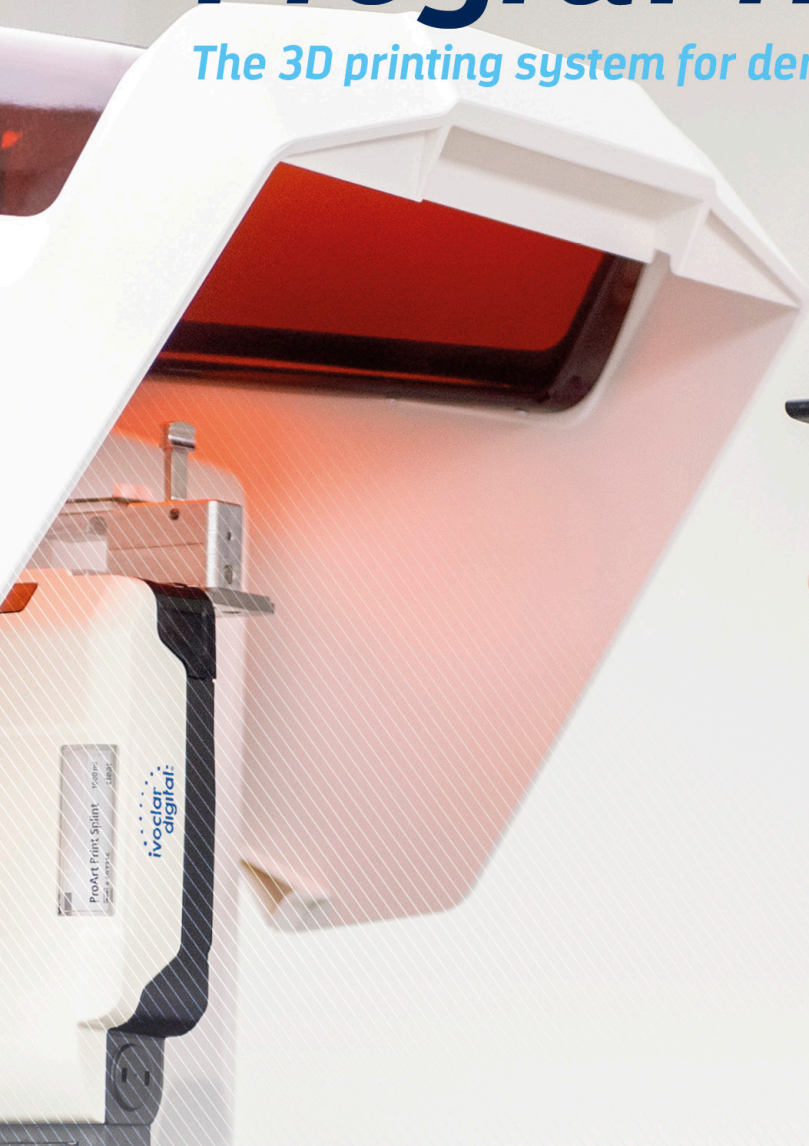# PrograPrint®

**The 3D printing system for dental applications**

## ENGINEERED
## TO MEET
## DENTAL NEEDS

ivoclar
digital®

# PrograPrint®

## The system

PrograPrint® is a 3D printing system that is specially designed for dental applications. The system is integrated into a validated workflow, consisting of a range of materials, software and equipment for printing, cleaning and post-curing.

The centrepiece of the system is the PrograPrint PR5 3D printer. Featuring an innovative cartridge system, the printer enables a straightforward and virtually contactless procedure of handling the materials. Automatic material recognition and an intuitive user interface make printing your objects an easy task.

The specially developed Light Engine is an integral part of the PrograPrint PR5 and is significantly responsible for the high-precision print results. It also ensures uniform precision throughout the platform. The Light Engine is distinguished by a high resolution of 4 million pixels and a high light intensity of 16 mW/cm².

Our dental expertise and insights into your requirements have been fundamental to the development of the PrograPrint system. This emphasis on meeting your needs is what motivates us to develop high-quality products for you to use.

Grow your digital portfolio and benefit from the advantages that additive manufacturing brings to your work.

## YOUR BENEFITS

- High precision thanks to the specially developed Light Engine
- Straightforward handling procedure with an innovative cartridge system and intuitive operation
- High-quality materials for outstanding results
- Complete workflow that provides high process reliability

Only use PrograPrint Clean in an extraction cabinet.
The instructions and notices in the Operating Instructions must be observed.

# *PrograPrint® PR5*
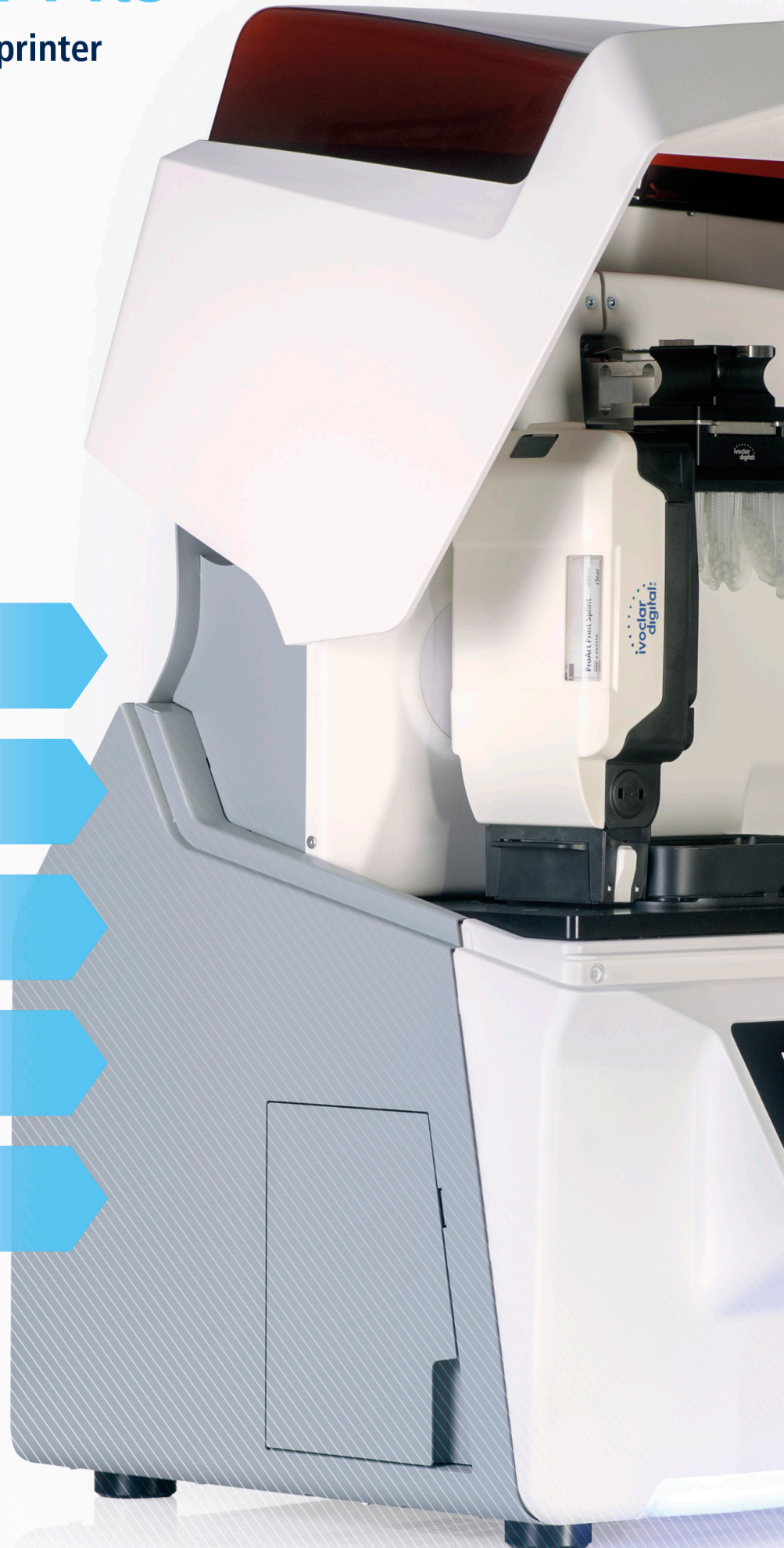
## The high-precision 3D printer

Specially developed
Light Engine

Clean and easy-to-use
material cartridge

Contactless
RFID material recognition

Intuitive operation
via touchscreen

Optical status display

The PrograPrint PR5 3D printer, equipped with the specially developed Light Engine, is the centrepiece of the PrograPrint system. The printer is tailored to the requirements of dental applications and wins operators over with its ease of use and high-precision printing ability.

The Light Engine is equipped with a high-quality LED light source. The materials are cured by UV light with a wavelength of 388 nm. This light curing is key to reliable print results. The high precision and light intensity is made possible by continuous automatic calibration. The Light Engine was developed on the basis of the DLP process and has a high resolution of 4 million pixels.

With an exact pixel size of 49 µm and layer thicknesses of 50 – 100 µm, high-precision printed objects can be produced on the entire platform.

## HIGH PRECISION THANKS TO:

- 4 million pixel resolution
  (49 µm pixel size)
- 50 – 100 µm layer thickness
- Consistently high light intensity
  due to automatic calibration

# PograPrint® Cartridge

## The clean cartridge system

The newly developed PograPrint Cartridge system allows easy and clean handling of the materials. The resin bottle, with the valve attached to it, is inserted into the cartridge.

The valve automatically regulates the fill level of the material tank during the printing process. The resin bottle is stored in the PograPrint Cartridge until the next use. In this way, the material is protected from ambient light and premature curing is avoided.

The PograPrint PR5 uses RFID technology for automatic material recognition, preventing the resins from getting mixed up. The remaining resin and the condition of the resin tank are consistently monitored to avoid misprints.
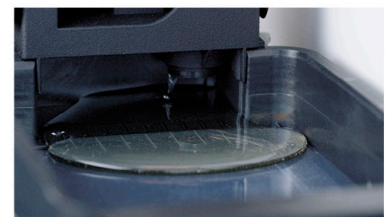
**View full video
on easy material handling:**

www.ivoclardigital.com/prograprint-handling

# ProArt Print

## The high-quality materials

### ProArt Print Model

ProArt Print Model is an opaque beige-coloured material designed for the manufacture of models, such as implant models, models for the fabrication of thermoformed splints and full/hollow models with removable dies.

High precision models are fundamental to achieving accurately fitting final restorations. In addition, the printed models feature an excellent dimensional stability. This is an advantage, in particular in complex cases and long-span restorative work. The versatile material is easy to use as it is very similar in appearance and touch to conventional plaster.

**YOUR BENEFITS**

- Easy to use
- Outstanding dimensional stability
- High precision

### ProArt Print Splint

ProArt Print Splint is suitable for the manufacture of occlusal splints, drilling templates and try-in bases for fixed and removable prosthetics. The printed objects are distinguished by good polishing properties, high translucency and strength, without being brittle.

These properties mean the material is ideal for producing inconspicuous and robust splints. They are used as therapeutic appliances to correct TMJ problems and make occlusal adjustments. When it is used to create a drilling template, the transparent material also allows a better overview of the oral situation.

**YOUR BENEFITS**

- High transparency
- Good stability, without brittleness
- High material strength
- Good polishing qualities

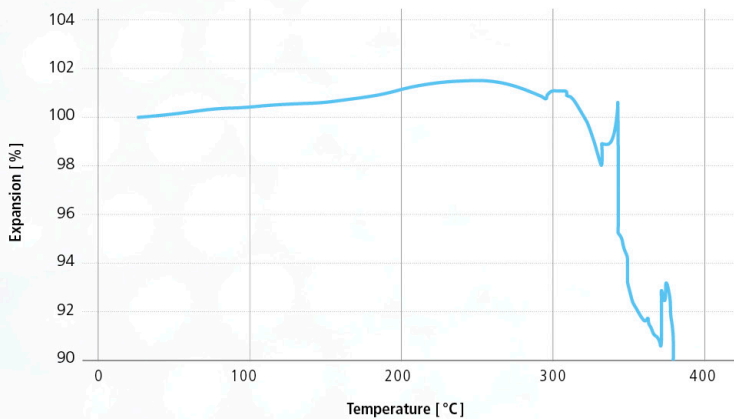ProArt Print Splint provides the advantage of a high level of transparency of the printed objects.

# ProArt Print Wax

ProArt Print Wax burns out without leaving residue and is therefore especially suited for pressed restorations. In the press technology, ProArt Print Wax is the ideal auxiliary for use with IPS e.max Press.

The press ceramic allows both the production of monochromatic as well as polychromatic restorations and implant restorations. Inlays, onlays, crowns and bridges can be produced using this material. In addition, it can be employed to print wax trees with the help of the "Digital Wax Tree" software add-on.

## Reduced expansion

When the wax objects are burned-out there is usually an expansion of the 3D printing materials.

ProArt Print Wax features a special burn-out agent which reduces the degree of thermal expansion. This characteristic means that casting ring cracks and flash are reduced. Therefore, it is possible to produce more complex and finely detailed pressed objects.



Source: TU Wien, on behalf of Ivoclar Vivadent, Vienna / Schaan, 2019

ESPECIALLY FOR
IPS e.max®Press

**Material is directly ready-for-use**
Our ProArt Print materials do not require long, manual mixing times or shaking.

# THE DIGITAL PRESS PROCESS

## Design it, print it, press it

The conventional pressing process can be ideally combined with the printing process.
This results in an efficient, digital pressing procedure:

### 1 Scanning and designing

The patient's oral situation is digitally recorded with an intraoral or laboratory scanner. This data is used in the CAD/CAM software, and the corresponding 3D printing data is created.

### 2 3D printing

With ProArt Print Wax, a wax pattern of the restoration is printed for further processing. In parallel with the next steps, a model on which the restoration is checked a final time can be printed with ProArt Print Model.

### 3 Investing and burning out

The printed objects are invested in the conventional manner using IPS PressVEST Premium, and then heated in a furnace to burn-out.

### 4 Pressing

The objects are pressed in the intelligent press and ceramic furnaces Programat® EP 3010 or EP 5010. Thanks to the fully automatic press function (FPF), the pressing procedure is activated simply and conveniently at the touch of a button.

### 5 Finishing

The pressed objects can be individually finished with IPS e.max Ceram. Impressive press results are produced.

▶ IPS e.max® Press is the first-class, original lithium disilicate glass ceramic ($LS_2$) for the press technique. It unites fit, function and esthetics whilst maintaining a high level of strength. A selection of translucency levels and shades allow a wide range application.

# PograPrint® Clean*

## The efficient cleaning unit

PograPrint Clean is designed for cleaning printed 3D objects and removing any unpolymerized resin, using isopropanol (IPA). Printed objects can be left on the build platform when they are inserted and cleaned in the cleaning unit.

The cleaner features a self-reversing magnetic stirrer and a two-stage cleaning procedure for optimum results. A sturdy stainless steel construction ensures the longevity of the unit. PograPrint Clean has been specially designed for cleaning ProArt Print objects.

PograPrint Clean is TÜV certified.

PograPrint®
CLEAN

ivoclar
digital

**TÜV certified**

**Sturdy stainless steel construction**

**Holder for the PograPrint Stage**

**Two cleaning containers
for pre- and post-cleaning**

**Powerful magnetic stirrer**

*Only use PograPrint Clean in an extraction cabinet.
The instructions and notices in the Operating Instructions must be observed.

# PrograPrint® Cure

## The universal light-curing unit

PrograPrint Cure is a LED light-curing unit that is designed for curing printed objects. The unit is characterized by its high light intensity. The special reflective coating inside the curing chamber ensures a uniform distribution of light and therefore optimum exposure to light of the printed objects. The curing chamber is spacious enough to accommodate the printed objects together with the build platform of the PrograPrint PR5.

Due to the consistently high level of light intensity, the PrograPrint Cure device can also be used to harden light-curing laboratory composites, such as SR Nexco®. Pre-set curing programs provide a high level of operating comfort. You can also set up your own programs for other materials that you may wish to cure in the unit.

- **Spacious curing chamber**

- **Easy operation via touchscreen**

- **Optical status display**

- **Also ideal for laboratory composites**

- **Individually programmable programs**

# THE VALIDATED WORKFLOW

High processing safety and reproducible results are essential advantages of a validated workflow. This allows the high standards on quality and biocompatibility to be met, in particular when printing objects that are used in the patient's mouth.

The optimized working steps enable efficient and economical production. They have been reduced to the necessary manual steps and can be easily learned. This allows a simple introduction into the world of 3D printing.

Our many years of dental knowledge and experience were invested in the development of PrograPrint. The development of the light-curing materials and coordinated light-curing devices is based on this comprehensive know-how. The results can be seen in the excellent products and an end-to-end process for the production of your dental applications.

The printing procedure begins with the design of the objects, continues over printing and cleaning and then ends with the post-curing process. All under one roof.

**Selecting material**

**1**       **2**

**Scanning and designing**

## EFFICIENT PRODUCTION

The advantage of the additive manufacturing method is the high number of simultaneously produced printed objects in the same period of time. With PrograPrint, it is possible to print 40 crowns, 7 splints or 6 models in one printing procedure.

3shape

## 3Shape CAMbridge™ unites designing and printing

The carefully created CAD designs must be prepared for 3D printing. The 3Shape software CAMbridge, which was specifically designed for dental applications, is used for this purpose. It unites designing and printing. The CAMbridge positions the designed restorations onto a virtual construction platform and provides them with the necessary support structures. Built-in automated intelligence makes the placement of the support structures easier and detects any potential errors. This controlling mechanism prevents misprints.

The printing data calculated with the software comprises the individual layers (slices) required for printing the objects. The specially developed PrograPrint Manager optimizes this data and transfers it to the 3D printer PrograPrint PR5. The printing job can then be started.
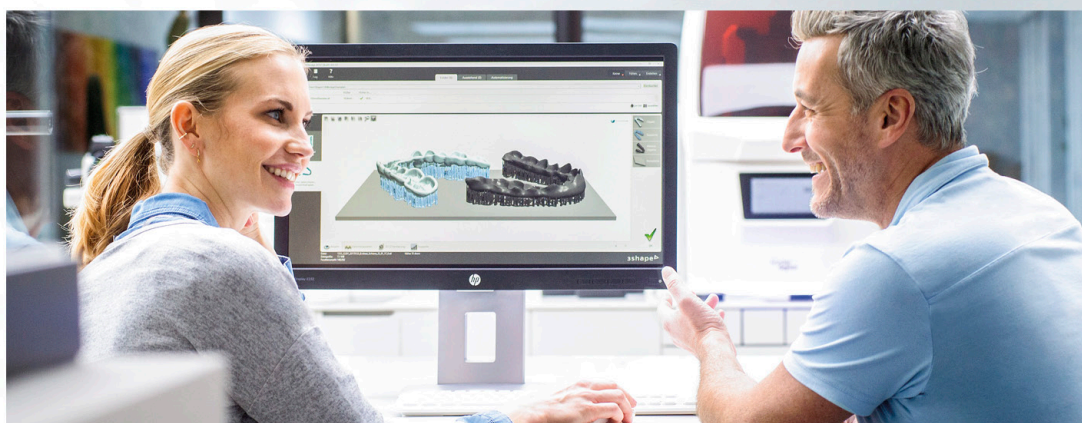


**Printing**

**Post-curing**

**3**  **4**  **5**  **6**

**CAM / Slicing**

**Cleaning**

## YOUR BENEFITS

- Risk minimization through validated workflow
- Prevents misprints
- Efficient and economical production

"I was impressed by the highly precise printing results. In particular, the fit of models with dies is remarkable. The system is really easy and straightforward to use – just great!"

**Lee Culp**
USA

"PrograPrint is simply amazing. I get very precise results which do not require any reworking. In addition, the printed models feature a great colour. Finally, my digital workflow is complete."

**Dominique Vinci**
Switzerland

# TECHNICAL SPECIFICATIONS

## PrograPrint® PR5

| | |
|---|---|
| Dimensions of build platform | 125.44 x 78.4 mm |
| Layer thickness | 50 – 100 µm |
| Pixel resolution | 49 µm |
| Wavelength range | 388 nm |
| Light intensity (max.) | 16 mW/cm² |
| Operation | Built-in touchscreen |
| Connections | USB and LAN |
| Weight | 54 kg |
| Dimensions (W x H x D) | 455 x 758 x 550 mm |
| Power supply | 100 – 240 V / 50 – 60 Hz |

Included accessories: Tweezers, cutters, scraper, silicone spatula, cleaning cloth, USB flash drive, test set

## PrograPrint® Clean*

| | |
|---|---|
| Filling capacity of tanks | approx. 4 litres per tank |
| Operation | Buttons and graphic display |
| Weight | approx. 25 kg |
| Dimensions (W x H x D) | 450 x 320 x 360 mm |
| Power supply (magnetic stirrer) | 100 – 240 V / 50 – 60 Hz |

\* Only use PrograPrint Clean in an extraction cabinet.
  The instructions and notices in the Operating Instructions must be observed.

Included accessories: 1 basic unit with lid, 2 cleaning containers, 1 magnetic stirrer, 2 magnetic stir bars,
1 build platform holder, 1 hand vacuum pump for tank drainage

## PrograPrint® Cure

| | |
|---|---|
| Light intensity | 274 mW/cm² ± 10% |
| Wavelength range | 405 / 460 nm |
| Operation | Built-in touchscreen |
| Weight | 17 kg |
| Dimensions (W x H x D) | 245 x 440 x 490 mm |
| Power supply | 100 – 240 V / 50 – 60 Hz |

Included accessories: Object tray, accessories set, crown holder

# DIGITAL EXPERTISE
## UNDER ONE ROOF

Ivoclar Digital is a competent digital partner, which supports dentists and dental technicians along the entire digital process chain. A great deal of importance is placed on simple and understandable procedures. The portfolio for the digital work process is divided into four areas:

## CONSULT

IvoSmile®, the innovative software application based on augmented reality, supports the dialogue between dental professionals and their patients

## DESIGN

Versatile scanners, intuitive design software from our partners and exclusive add-ons

## DECIDE

High-performance materials such as IPS e.max® – the world's most used all-ceramic system [1]

## PRODUCE

Technologically high-quality equipment for the production of esthetic restorations

## S E R V I C E +

**Service+** The offer is complete with Service+. The service provision makes your entry into digital production easier and serves as a back-up partner for dental laboratories. *

* Service+ is available in the following countries: Austria, Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Holland, Hungary, Ireland, Italy, Liechtenstein, Luxembourg, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, and United Kingdom.

[1] Based on sales figures

704389 / EN / 2019-11

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