

## Press information

### New KYOCERA a-Si Photoreceptor Drum for Document Equipment Improves Durability, Reduces Internal Friction by 30 Percent

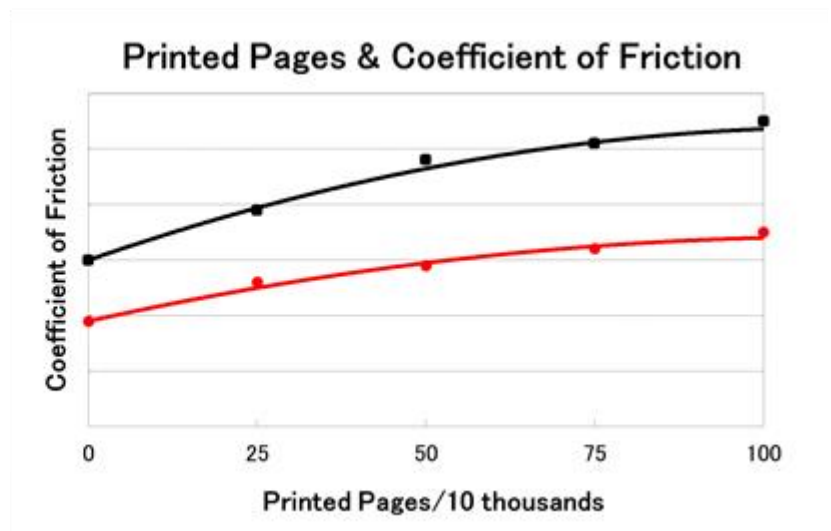
**Core imaging component can print one million pages while reducing internal component wear, extending equipment operating life**

**Kyoto, Japan/Neuss, Germany, April 3, 2017.** Kyocera Corporation introduced a new imaging component that is expected to set a new standard for durability in office document equipment, including laser printers and multifunctional products (MFPs) that use electrophotographic technology.

Kyocera's new LF Series amorphous silicon (a-Si) photoreceptor drum features a coefficient of friction 30 percent\*<sup>1</sup> lower than that of the company's conventional a-Si drum, while upholding the conventional model's status of offering the world's longest operating life (approximately one million printed pages without drum replacement)\*<sup>2</sup>. The new product is now available for shipment to equipment manufacturers worldwide.



LF Series a-Si photoreceptor drum





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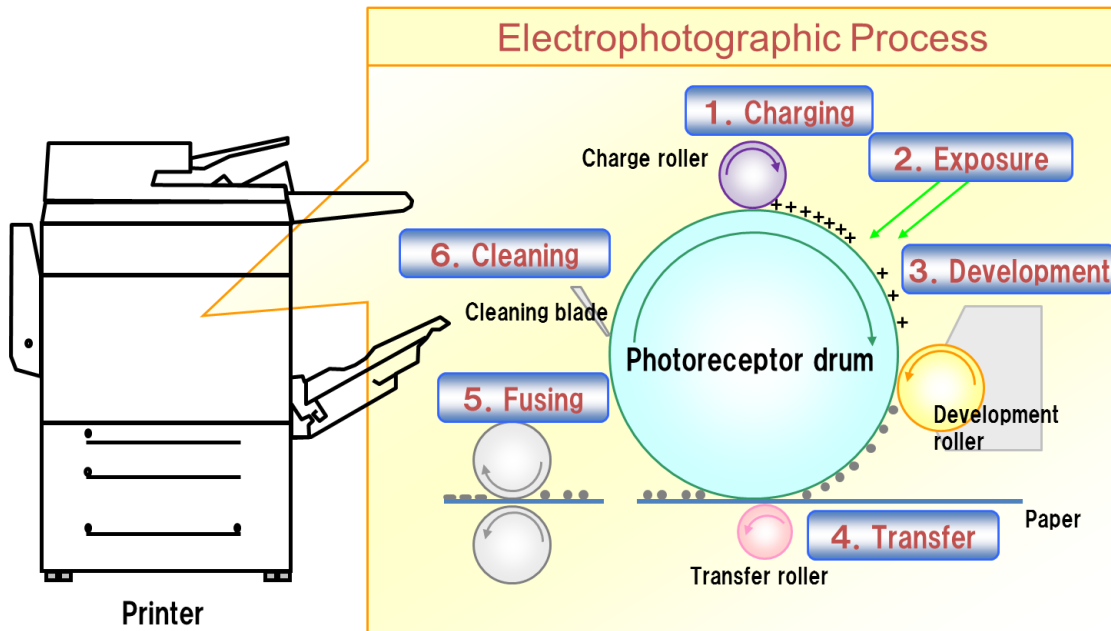
### Product Overview

Product name	LF Series a-Si photoreceptor drum
Size	Diameter: 30-40mm; Length: 360mm
Production facility	Shiga Yokkaichi Plant (Japan)

In a key enhancement to the MS Series a-Si photoreceptor drum that Kyocera launched in 2011, the new LF Series incorporates a proprietary coating with submicron-scale variations in surface topography — including microasperities measuring approximately  $1 \times 10^{-4}$  mm. This unique surface treatment serves to reduce friction with peripheral components that contact the drum by approximately 30 percent. Consequently, by reducing internal friction, the new a-Si drum contributes to extending the operating life of the printing equipment as a total system, while retaining the world's longest drum lifespan of approximately one million pages.

Kyocera has promoted environment-friendly document equipment through its long-life a-Si photoreceptor technology since 1984. The company hopes that the longer equipment life made possible by its newly developed LF Series print drum will reduce environmental impact even further.

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## Development Background

Many types of printers on the market today utilize disposable imaging components. In contrast, since the launch of Kyocera's first a-Si photoreceptor drum in 1984, the company has used its proprietary technology to continuously develop the photoreceptor drum into a durable device with a lifespan equivalent to the mechanical life of the printer itself.

Enhancing the lifespan of electrophotographic printing equipment requires not only a more durable photoreceptor drum, but also more long-lasting internal components. Reducing the friction of the photoreceptor drum surface is therefore essential, since this surface forms a contact interface with numerous other internal components that are all subjected to increasingly faster print speeds.

Kyocera developed the world's first<sup>\*3</sup> a-Si photoreceptor drum with submicron-sized asperities by combining its proprietary thin-film forming expertise utilizing DC electricity with its surface-processing technology.

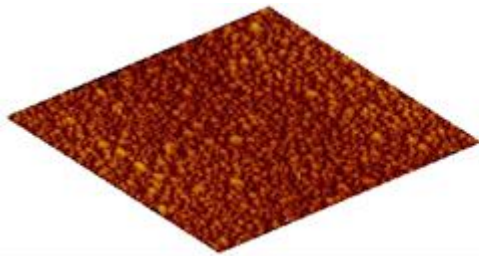
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### Product Features

#### 1. Surface with submicron-sized asperities reduces friction with peripheral components

The photoreceptor drum surface possesses submicron-sized asperities created through Kyocera's surface-processing technology to decrease the area of contact with peripheral components and thereby reduce the coefficient of friction by approximately 30 percent. The new photoreceptor drum thus helps extend the lifespan of peripheral components and the printer itself.

#### Comparison of Surfaces



LF Series



Conventional s-Si drum

#### 2. Contributing to higher-quality printing through improved toner-cleaning performance

Higher-quality printing can be attained using toner particles with a nearly-perfect spherical shape for uniform toner transfer. However, toner with irregularly-shaped particles is commonly used because spherically-shaped particles reduce efficiency in toner-cleaning systems. The LF Series reduces friction at the cleaning-blade interface by forming precisely controlled, submicron-sized asperities on the surface of the photoreceptor drum. This unique feature simplifies toner cleaning while enabling the use of toner particles having a nearly perfect spherical shape, thus contributing to higher-quality printing. By combining Kyocera's thin-film technologies (utilizing DC electricity) and advanced surface processing technologies for photoreceptor drums, the LS Series provides the industry's highest level of print quality while lasting up to approximately one million pages.



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\*1) Compared to Kyocera's conventional a-Si drum with similar functions.

\*2) World's longest operating life among conventional a-Si drums with similar functions, based on research by Kyocera as of January 18, 2017.

\*3) World's first a-Si photoreceptor drum with submicron-sized asperities for electrophotographic printing, based on research by Kyocera as of January 18, 2017.

For more information on Kyocera: <http://global.kyocera.com>

## About Kyocera

Headquartered in Kyoto, Japan, Kyocera Corporation is one of the world's leading manufacturers of fine ceramic components for the technology industry. The strategically important divisions in the Kyocera Group, which is comprised of 235 subsidiaries (as of March 31, 2016), are information and communications technologies, products which increase quality of life, and environmentally friendly products. The technology group is also one of the oldest producers of solar energy systems worldwide, with more than 40 years of experience in the industry.

The company is ranked #531 on Forbes magazine's 2016 "Global 2000" listing of the world's largest publicly traded companies.

With a global workforce of over 69,000 employees, Kyocera posted net sales of approximately €11.59 billion in fiscal year 2015/2016. The products marketed by the company in Europe include printers, digital copying systems, microelectronic components, and fine ceramic products. The Kyocera Group has two independent companies in the Federal Republic of Germany: Kyocera Fineceramics GmbH in Neuss and Esslingen and Kyocera Document Solutions in Meerbusch.

The company also takes an active interest in cultural affairs. The Kyoto Prize, a prominent international award, is presented each year by the Inamori Foundation — established by Kyocera founder Dr. Kazuo Inamori — to individuals and groups worldwide who have contributed significantly to the scientific, cultural, and spiritual betterment of humankind (converted at approximately €360,000 per prize category).

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