SunWave™ Lumina LH

High performance lithographic offset inks for LED and low energy UV curing

1. Description

SunWave Lumina LH is a set of high performance, low hazard, UV curable, lithographic offset process inks designed for printing in commercial and non-food packaging applications, using the latest generation of state of the art 'low energy' LED and UV curing lamp technologies.

2. Product features

SunWave Lumina LH inks benefit from the following**;**

- Sheetfed or web offset printable with excellent lithographic performance and stable printing with minimum wash ups
- Excellent duct flow
- Fast curing by LED systems emitting in the range 385-395 nm and low energy mercury UV lamps
- Process colours conform to ISO2846-1, which then allows compliance to ISO12647-2 when used with appropriate substrates and reprographics etc.
- Designed for printing on paper and board and appropriately selected paper label substrates
- Excellent dot gain and trapping properties for high print quality, including reversed out print
- Formulated without materials classified as Reprotoxic Class 2 and meeting the requirements for Nordic Ecolabelling
- Certified "good" deinkability from paper according to Ingede Method 11

3. Product Suitability

3.1 Applications

SunWave Lumina LH inks are intended for use in the following areas:

- Paper and carton board, non-food packaging
- Commercial printing applications, including book and magazine printing, company reports, tags and labels, tickets, greetings cards, CD/DVD covers and inserts and other such type of applications
- Appropriately selected grades of paper, board, paper labels and self-adhesive label substrates.
- Can be in-line or off-line coated* and with foil stamping and lamination processes

SunWave Lumina LH inks are **not** suitable for use in the following applications:

- Primary packaging for food, where the packaged goods are in direct contact with the non-printed side of the packaging, e.g. juice or milk cartons
- Primary outer wrap (also known as secondary or indirect) packaging
- Inserts for food, pharmaceutical or sensitive goods packaging
- Microwave or ovenable applications
- Any application, where ink component migration could affect or damage material in close proximity, or in direct contact with the print. We advise a risk assessment and or a trial is made in such cases
- Direct food contact, or where low migration properties are demanded due to pack design or the nature of the packaged goods due to the risk of direct contact

Whilst **SunWave Lumina** inks are versatile in performance, they may not be suitable if used outside the above defined applications. If in doubt, please check suitability with your local Sun Chemical representative.

3.2 Substrates

SunWave Lumina LH inks are suitable for use on paper and carton board and appropriately selected self-adhesive label substrates. Please note that there can be significant variation between different grades of substrates. Printers should seek and follow specific advice from their substrate supplier and make any tests necessary, to prove performance under realistic conditions before commencing with commercial printing.

3.3 Print Finishing

SunWave Lumina LH inks can be coated to improve gloss, physical and chemical resistance properties. Certain coatings suitable for energy efficient curing systems are available for use with these inks and further products are currently in development. Please contact your local Sun Chemical representative for specific, up to date recommendations. Materials printed with **SunWave Lumina LH** inks can be successfully laminated in-line or off-line using solvent-less adhesives and using standard converting processes and subject to test prior to bulk production.

Due to the UV output wavelength characteristics of energy efficient UV lamps and particularly LEDs, some restrictions may apply when developing UV coatings that are functional for many applications. In particular, yellowing on cure may be an issue. For practical reasons it may sometimes be advisable to use standard mercury UV end-of-press curing lamps and standard UV coatings for maximum performance and appearance.

4. Safety, Health and Environment

4.1 Product Handling

SunWave Lumina LH inks should be used in accordance with normal standards of industrial hygiene and good working practice. Please refer to the Product Safety Data Sheet for specific information.

4.2 Manufacturing and Materials

SunWave Lumina LH inks are produced in accordance with the latest EuPIA Guidelines for the selection of raw materials for use in printing inks. They are formulated without materials classified as Reprotoxic Class 2 and meet the requirements for Nordic Ecolabelling.

4.3 Storage

SunWave Lumina LH inks are supplied in 3 kg black plastic buckets, 2kg plastic cartridges and 200Kg metal drums. Shelf life is 2 years from date of manufacture, when stored in original unopened containers between 5° and 25°C and protected from direct sunlight. Except WVLH46 which has a shelf life of 1 year. The inks may remain useable for longer periods, but once they have reached this age, should be checked before use. If in doubt, please contact your SunChemical representative for advice. Inks returned from press that have not been contaminated in any way should be re-sealed using their original lids to ensure they are not exposed to light and re-used as soon as is practically possible.

4.4 Waste Disposal

Printing inks, coatings and printing residues should be disposed of in accordance with Local, EU and National regulations. Please refer to the product Safety Data Sheet for additional information.

5. Printing Conditions

5.1 Printing Conditions

SunWave Lumina LH inks are supplied press-ready and should not need adjusting under normal printing conditions. Where possible, the use of additives should be avoided, or cure properties may be compromised. The press and roller system should be thoroughly cleaned to avoid cross-contamination by products previously used, especially conventional oil-based inks, as cure may be affected.

These inks are highly reactive in daylight conditions and sensitive to other UV light sources like overhead lights, skylights, etc. As a result, inks should not be left in the duct or on press overnight, or for extended periods when printing is not taking place. If these inks should polymerise on-press as a result of a light exposure, they become difficult to clean off and roller damage may result.

5.2 Additives

A number of press-side additives are available for adjusting properties in non-standard conditions or applications. As a general principle, use of additives should be a last resort, when process adjustment has not solved particular application issues. Further, the maximum addition level should be respected, to avoid the potential creation of other issues.

5.3 Wash Up

A variety of proprietary wash-up solutions are available which are suitable for use with UV inks and press components, including rollers, blankets and plates.

5.4 Fountain Solutions

Depending on press type and substrate, a number of **SunFount®** fountain solution additives are available from Sun Chemical for use with these inks, to provide optimum emulsification and printing properties. These inks are usually run with low or no alcohol founts and **SunFount 530 and HP500-1** are proven products for most applications.

Please contact your Sun Chemical representative for consumables advice and recommendations.

6. End-Use Safety / Assumptions

Acceptable technical performance of **SunWave Lumina LH** inks is dependent on:

- The application of Good Manufacturing Practice
- The press being fitted for UV printing, including suitable rollers, blankets and plates
- The press and associated equipment, being free from contamination from previously used products
- The ink should not be mixed with other products, or else cure properties may be compromised
- Control of film weight and print density
- Adequate curing capacity on-press to ensure that the print is fully cured before conversion. A minimum UV-LED 385/395nm dose of at least 150mJ/cm^{2*} per lamp is normally recommended.

* UV dose measured with Fujifilm UVScale M film. Dose is total of UVA, UVB, UVC and UVV - Test method available on request.

The wide range of substrates, print combinations and ink and coating products with different UV responses can significantly affect the way UV curing products cure. Target UV dose should be determined by experimentation to achieve the required physical performance of the cured ink film for each print structure. The target figure provided is only for starting guidance.

Choice and control of film weight, curing and substrate are printer technical requirements for which Sun Chemical cannot accept responsibility. Depending on measuring equipment the process inks are designed to be printed at the following typical print density values. It is strongly recommended these are not exceeded as cure may be impacted and print handling properties compromised.

	ANSI T FILTER	DIN 16536
Yellow	0.90-1.10	1.25-1.35
Magenta	1.35-1.45	1.35-1.45
Cyan	1.35-1.45	1.35-1.45
Black	1.70-1.80	1.70-1.80

Excessive film weights may lead to poor cure, marking during subsequent handling and set-off in the stack. In particular, print density of black should be closely monitored during printing and controlled. High colour build by excessive trapping of these inks may also result in poor cure and reprographic adjustments are recommended to minimise unnecessary trapping.

7. SunWave™ Lumina – Product Information

	Product Code	Product	Lightfastness # Full Strength	Alcohol #	Alkali #
PROCESS COLOURS	WVLH26	Process Yellow	5	+	+
	WVLH27	Process Magenta	5	+	-
	WVLH25	Process Cyan	7	+	+
	WVLH46	Process Black	7	+	+

Test methods are available on request. Note: the data refers to pigment properties, not those of the cured film.
Lightfastness is measured according to Blue Wool Scale. Under wet conditions such as during external exposure lightfastness is significantly worse for certain colours.

A range of complimentary low energy curing coatings and metallic inks are available. Please contact your local Sun Chemical representative for further information.

Please visit www.sunchemical.com for further information on Sun Chemical products and services and contact your local Sun Chemical representative for specific product advice.