

REACTIVE CROSS-LINKING FOUNTAIN SOLUTION

RCL - A New Approach

R-C-L (Reactive Cross-Linking®) fountain solution concentrate is a patented formulation and a radically new chemical composition designed specifically for the offset printing process. The advent of RCL establishes a new approach to solving lithographic issues such as ink setting, ink drying, ink and water balance, ink set-off, dot gain and environmental compliance.

RCL's chemical formulation is made of a blend of ingredients, some familiar, others entirely new. RCL incorporates Sudanese gum arabic as its base. This natural ingredient, the finest available, has been used in fountain solutions for decades. Sudanese gum arabic allows the press operator to use a minimum amount of moisture and still maintain excellent color fidelity of the ink. The base mixture is compatible with metal, silver and polyester plates. The key ingredient is a new catalyst developed specifically to induce cross-linking between the ink and paper.

RCL infuses the ink with reactive qualities, causing it to cross-link when the printed substrate is exposed to the ambient temperature. It increases rapidly when exposed to infrared/ultraviolet radiation or to high-velocity hot air in lithographic printing operations.

What Is Cross-Linking?

Cross-linking is a chemical reaction that causes bonding at the

molecular level. The catalyst in RCL causes a chain reaction that chemically links the ink molecules to each other and forms a barrier to inhibit the transfer or offsetting of the ink, even while the ink is still wet. The action is instantaneous.

Continued cross-linking action causes the ink to set up and dry at a much faster rate than with ordinary fountain solutions, resulting in reduced dot gain and sharper print definition. While no additional drying apparatus is needed, RCL sharply increases its cross-linking effectiveness with stimulus from IR or UV dryers.

The unique blend of wetting agents reduces or eliminates the need for isopropyl alcohol, thereby reducing VOC emissions in the pressroom.

What Is a Catalyst?

A catalyst is a substance that alters and increases the rate at which a chemical reaction takes place. The desired chemical reaction needed in offset lithography is the bonding of ink to paper. It is the inclusion of the patented catalyst that gives RCL its unique ability to cross-link ink to paper.



Using RCL in Your Operation

1. Drain and clean the dampening system, changing filters if used.
2. Refill with fresh water.
3. Add 3-5 ounces of RCL per gallon of water.
4. Do not add any other chemicals.
5. RCL is buffered to maintain a pH of 3.7-3.8 and 1400 µmoh's.

If using spray powder, it is recommended that you start with a new pile, and:

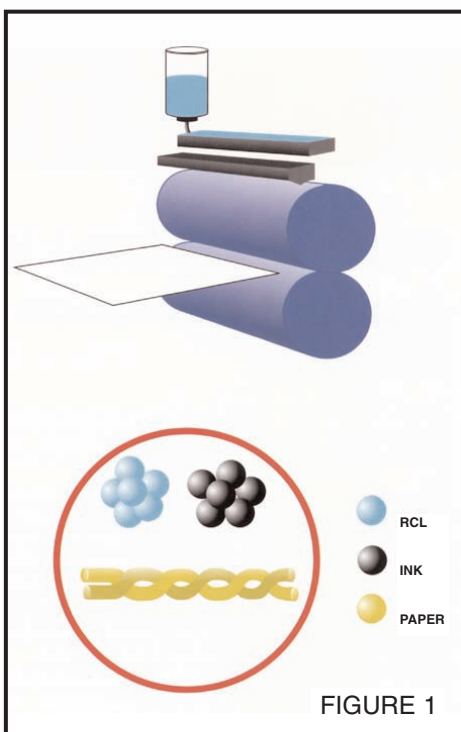
1. Turn the spray powder unit off for the first 50 sheets.
 2. Set the spray powder dial at 1/2 for the next 50 sheets.
 3. Increase settings by 1/2 per 50 sheets, until reaching a setting of 2.
 4. Turn the powder to the normal setting for the rest of the pile.
- This procedure is effective to determine the optimum spray powder setting for continuous running.

RCL contains anti-foaming agents which allows it to be used in recirculating fountain systems. RCL is formulated to be used without adding alcohol in dampening systems with soft metering and form rollers (18-22 durometer) and where the proper roller settings have been made. Alcohol may be added for dampening systems that require decreased surface tension without adversely affecting RCL's performance.

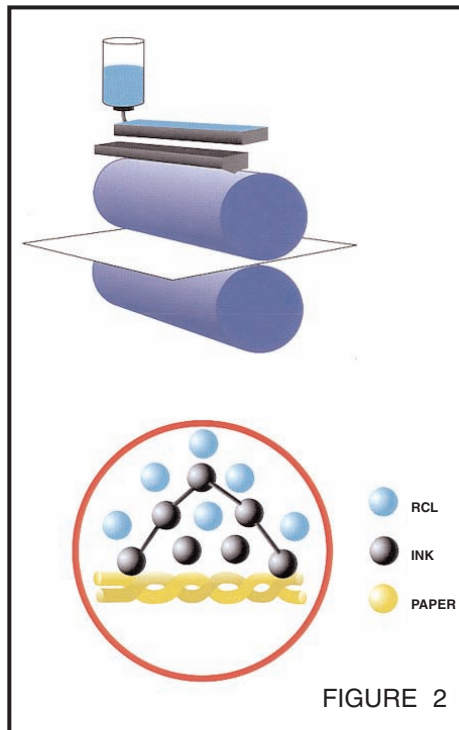
While no infrared or ultraviolet dryers are necessary to achieve faster drying results, IR or UV combined with air knives increases the cross-linking action in inks on high pile delivery presses. Hot air dryers have proven to be most effective on low pile delivery presses. Good results are achieved with pile temperatures of 90-95°F/32-35°C, while optimum results are achieved at temperatures of 100-110°F/38-43°C.

How Does This Work?

Figure 1 represents the press at the beginning of the printing process. RCL is mixed with distilled water (recommended) at a ratio of



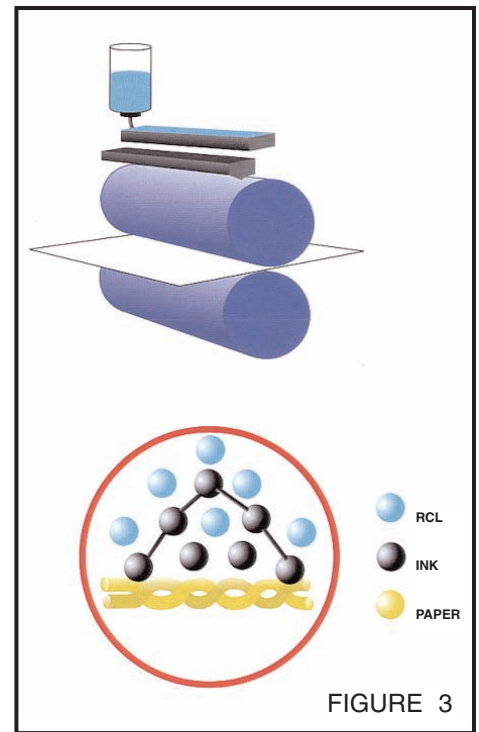
3-5 ounces per gallon. RCL is compatible with all ink types, including oil, rubber-based, soy and other agritech inks, and it is compatible with metal, silver and polyester plates. The printing substrate can be any type, from porous bond to printable plastic. The benefit of RCL is its ability to promote ink bonding with any ink on any substrate.



In Figure 2, the mixture of RCL and ink meets at the printing substrate and an instantaneous bonding reaction occurs. It is the interaction of temperature with the chemical properties of RCL that causes a chain reaction of the ink molecules.

The speed of this reaction is proportional to the amount of heat present. While ambient temperature is sufficient to cause the reaction, IR, UV and/or hot air knife stimulus increases its effective speed.

The bonding eliminates ink set-off. Higher delivery piles, reduced waste and the reduction or elimination of epoxy powder are just a



few of the benefits. The catalyst in RCL is a UV-absorber: as UV energy is present in visible light, the catalyst reacts immediately.

The unique wetting agents contained in RCL allow the press operator to maintain minimum ink film thickness, while the catalyst's bonding of the ink film reduces dot gain, improves color fidelity and yields higher gloss levels.

The cross-linking action continues after the printing process (Figure 3). The catalyst continues its promotion of cross-linking and speeds the process of the ink drying. Due to the increased speed of ink setting and drying, press sheets can move more quickly to postpress activities. With higher delivery loads and faster ink settings, a reduction in floor space requirements is achieved.

An added benefit is the reduction or elimination of spray powder. This reduces press maintenance and the expense of powder. Another benefit is for multiple-pass work, where using powder on all but the final pass is undesirable.

FEATURES AND BENEFITS

Faster ink settings and faster ink drying	High delivery loads. Less floor space required. Less waste. Reduced need for powder. Reduced dot gain. Increased speed of job turn-around.
All inks; all paper and plastic substrates	Increased latitude for expanding applications. Ease of operation.
UV-absorbing catalytic agent	Simplified wet trap. Better adhesion between the coating and its ink when dry trapping. Increased gloss levels. Sharper color.
Cross-links simultaneously with aqueous coatings	Significant reduction of "dryback."
Compatible with UV inks	Increased opacity of dark colors. Instantaneous ink setting.
Reduces or eliminates the need for spray powder	Less press maintenance. Reduced costs.



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Grafitec International Inc., 2684 N.W. 97 Avenue, Miami, FL 33172, Tel: 305/718-9941, Fax: 305/718-9362
E-mail: grafitec@grafitec.com, Internet: www.grafitec.com