

APEX MANUFACTURES ANILOX ROLLS WITH REVOLUTIONARY LASER-TECHNOLOGY

Laser engraved anilox rolls of APEX now undergo a unique post-treatment called the ULTRA MELT™ technology. The result is a remarkable quality improvement. Decreased chances of score-lines, longer life time and improved cleaning characteristics are the most eye catching advantages.

The up-grade is most profitable for flexo-printers who combine a high quality printing demand with high machine speeds, such as flexible packaging printers and pre-printers in the corrugated industry. However the advantages will appeal to all anilox users where score-lines, fast polluting and hard to clean anilox rolls are a plague.

The advantages Apex achieved with the ULTRA MELT™ technology are remarkable. After finalizing an extensive test programme, enthusiastic users report many improvements:

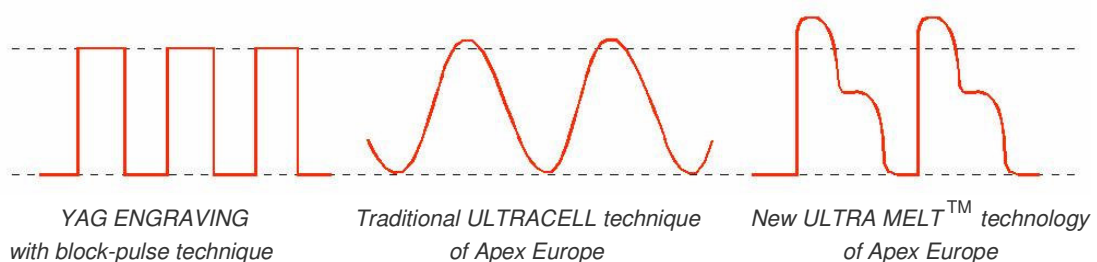
- Far less sensitive for score-lines and mechanical damage;
- More control over print result;
- Roller has self cleaning tendency;
- Longer life time expectancy;
- Less wear and tear of doctor blades;
- Improved ink release.

THE ULTRA MELT™ TECHNOLOGY

In essence the ULTRA MELT™ technology can be described as controlling the intensity range of the laser beam which engraves the anilox cells.

The engraving procedure of each cell starts with an extreme power shot that determines the main shape of the cell. During a secondary low powered after treatment, the laser beam closes and hardens the ceramic surface making the surface smooth and shining like a mirror!

Picture 1: LASER WAVES PER LASER TECHNOLOGY

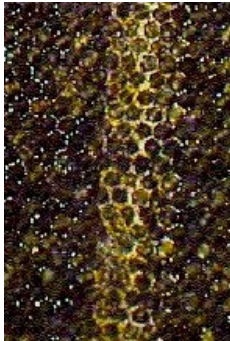


During the primary phase, the very high-energy laser-pulse of the ULTRA MELT™ technology, vaporises 100% of the ceramic, ensuring a perfectly geometric and open shape of cell, in a similar manner to YAG engraving. However YAG engraving stops here, resulting in relative porous cells and thin walls. APEX in the other hand, continues with the unique ULTRA MELT™ post-treatment which melts the surface of the ceramic and makes the cells internally smoother and the walls harder and more resilient to wear.

THE ADVANTAGES IN DETAIL

Less score-lines

Many flexo printers, particularly those using fine screen engravings have been inconvenienced by score lines. Score lines are scratches on the anilox roll caused by particle contamination in the ink being trapped between doctor blade and anilox roll. When severe contamination occurs, the scratching on the anilox can run deep, resulting in visible stripes in the printed substrate.



Rollers with a YAG engraving are more sensitive to score lines, due to the softer and more brittle walls of the cells. If a roller produced with the ULTRA MELT™ technology is in use and a stripe occurs in the printed matter, the machine can be stopped and the pollution removed easily before any irreparable damage to the anilox roll happens. With YAG engraved anilox rolls however, there is a good chance the printer is too late already!

Picture 2: SCORE LINES AT A YAG ENGRAVED ANILOX ROLL

Improved control over print result

The ULTRA MELT™ treatment makes the inside of the cells very smooth, resulting in a high surface tension of the anilox surface. The use of a sealer, as commonly used by many producers is totally unnecessary. The high surface tension of the APEX rollers is consistent and permanent over the full width of the roll. A constant ink release is guaranteed, even after wear and tear of the anilox roll.

Self cleaning characteristics

The very high surface tension gives the roll special ink repulsive self cleaning characteristics. After each rotation of the anilox roll, any ink not released to the plate is completely replaced with fresh ink. In a YAG engraved anilox roll, a high percentage of the ink remains behind in each cell. This remaining ink can penetrate into the pores of the ceramic and dry out. Apex anilox rolls which had the ULTRA MELT™ after treatment do not have this problem. The time consuming cleaning of the rollers goes faster and can be postponed for a longer time. Longer machine runs are possible.

Picture 3: DIFFERENCES IN INK REFRESHMENT

YAG ENGRAVED ANILOX ROLL



10% of ink remains in cell after each rotation

APEX ANILOX ROLL WITH ULTRA MELT™ AFTER TREATMENT

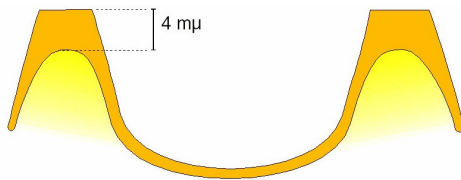


Complete refreshment of the ink after each rotation

Longer life time

Extensive testing in many demanding print applications, has demonstrated that the ULTRA MELT™ technology has a positive consequence on the life-time of the rollers. Contributing to the wear resistance is the thickness of the hardened layer on the surface of the cell formed by the ULTRA MELT™ process. At the most critical point, at the top of the walls, the layer is 4 µm thick. This means that even after complete wear and tear, the advantages of the melted layer are still in effect.

Picture 4: THICKNESS OF HARDENED LAYER AFTER ULTRA MELT™ TREATMENT



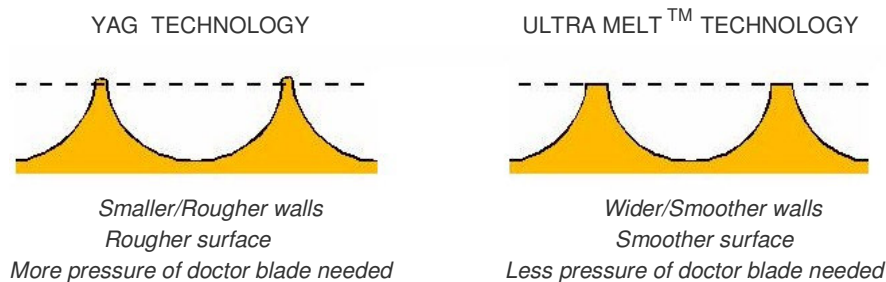
The hardened layer makes the cell walls more stable and prevents breaking out of cell walls when the chambered doctor blade system has too much pressure or new doctor blade are installed too tight.

Aggressive inks and cleaning liquids do not reduce the qualities of the surface (during normal use). The advantages of this technology remain for the complete life time of the anilox roll.

Less wear and tear of doctor blades

The ULTRA MELT™ treatment thickens the top of the walls by one or two microns. The wider walls enlarge the contact surface between anilox roll and doctor blade. Less pressure therefore is needed per cm², which decreases wear and tear of the doctor blades.

Picture 5: DIFFERENCES IN SURFACE OFF CELLS



Improved ink release

Due to the after-treatment the surface of the anilox rolls is much smoother. The dots of the plate find more support at the top of the wider walls of the cells. The unique cell shape combined with the smooth surface around the cells, formed during by ULTRAMELT process, offers perfect support for the printed dots on the plate, ensuring optimum ink transfer and printability.



Picture 6: CELLS OF ANILOX ROLL, ENGRAVED WITH ULTRA MELT™ TECHNOLOGY

APEX PRODUCT NAMES REMAIN UNCHANGED

The introduction of the ULTRA MELT™ technology has no consequences for the product names and specification of the Apex anilox roll range. The specifications of CO2, *UltraCell* and *UltraCell Plus* laser engraved anilox rolls can continue to be ordered, however each is now complimented by the ULTRA MELT™ treatment, resulting in the advantages described above.

CONCLUSION

The development of the ULTRA MELT™ technology has been in response to reports, both directly from printers and in publications, describing score lines as a big problem for flexo printers. In particular, the increased use of YAG laser engraving technology by many anilox roll suppliers, had drastically increased the reports of scoring being a major issue. Apex's own investigations found out that a high percentage of anilox rolls being returned for renovation from the flexible packaging market were as a result of score-lines, rather than normal wear and tear.

The R&D department of Apex has good reason to be proud at the ULTRA MELT™ technology. This unique treatment makes anilox rolls much more resistant for score lines and mechanical damage as well as bringing many other advantages.

APEX carries a wide production programme to serve the flexo and gravure coating industry. Well-known are the laser engraved ceramic anilox rolls and sleeves and the mechanically engraved anilox and glue rolls. APEX's range of *BioClean* solutions for daily and periodically cleaning of anilox rolls and the *BioJet* cleaning equipment and contract service for "deep" cleaning of anilox rolls, complete the package of products to serve busy Flexo printers who need fast and efficient solutions.

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