

Standard Glossary of Packaging Inks and Coatings Terms

Acrylic binder	Non-reactive Styrene-acrylate-copolymers or pure acrylate polymers as a resin solution in water or as a dispersion of polymer particles stabilized in water. Both forms are used for the formulation of water based overprint varnishes and flexo inks. Acrylic binders are also used as a co-binder in solvent based inks and in heat-seal coatings.
Additive	An ink additive is a substance used in small quantities, which optimises the technical properties of the printing ink, primer and/or overprint varnish in their manufacture or in the printing process as well as the technical properties of the printed product.
Basecoat	A white or coloured coating applied to the substrate prior to the application of inks and or overprint varnish
Binder/ Vehicle	<p>Binders (natural or synthetic resins) are the film-forming components of a vehicle, in which the colouring material is finely dispersed or dissolved. The vehicle is important for the transfer of the ink from the duct to the substrate. After the drying of the print, the binder serves to bind the colorant to the printed surface.</p> <p>Vehicles for offset inks:</p> <ul style="list-style-type: none"> - Vehicles based on solutions or dispersions of hard resins in oxidative drying or non-drying vegetable oils and/or fatty acid esters, and alkyd resins manufactured from vegetable oil fatty acids - Vehicles based on solutions or dispersions of hard resins in hydrocarbon solvents. - Combination of these two types of vehicles <p>Vehicles for gravure and flexographic inks:</p> <p>These vehicles consist of low viscous solutions of resins in volatile solvents which are evaporated during drying</p> <ul style="list-style-type: none"> - vehicles for packaging gravure inks primarily contain alcohols and esters, but also other solvents, if necessary - vehicles for flexographic inks contain as solvent primarily alcohols/esters and/or water <p>Special vehicles for UV/EB inks and varnishes:</p> <p>These vehicles are based on reactive acrylate derivatives. They dry during an immediate polymerisation process under the influence of UV/EB radiation</p>
Colorant	Colouring materials (colorant) is a generic term including pigments , which are insoluble in the medium (the vehicle or the binder), or dyes , which are soluble in the medium. The colouring effect is due to “chromophore groups” being part of the structure of these substances. Chromophore groups absorb specific wave length areas of the visible light spectrum.
Conventional offset ink	A sheetfed offset ink which is drying by oxidation and/or drying by absorption, as opposed to an energy curing offset ink.
Drier Siccative	Driers are metal salts of organic acids which are soluble in oils. They are used as ingredients of or added to oxidative drying

	offset printing inks in very small amounts, acting as catalysts by transferring the oxygen from the air to the drying oil and in this way accelerating the oxidation and polymerisation of the oil to yield a dry ink film.
Dye	see Colorant
Energy curing	Energy curable inks and coatings dry by curing through ultraviolet light (UV) or electron beam (EB) induced polymerisation. UV systems need photoinitiators.
Food packaging ink or coating	Any packaging ink or coating designed for the printing of food packaging. Food packaging inks and coatings must be formulated and manufactured according to the EuPIA Guideline and EuPIA-GMP.
Functional barrier	A functional barrier is a barrier consisting of one or more layers of any type of material which shall ensure that the migration of authorised substances into the packed foodstuff does not exceed the overall migration limit or the substance specific migration limits, and which prevents the transfer of non-evaluated substances above detectable levels.
Lacquering Coating Varnishing	In printing, lacquering, coating or varnishing refer to the application of a liquid or paste, unpigmented ink like product, which after drying is mostly transparent. Thereby, certain surface properties are obtained, as for example protection against mechanical damage, gloss or matt surface effects, and/or specific slip or adhesion properties.
Low migration ink	An ink or coating designed for use on food packaging which is formulated using selected components that should ensure that migration from the resultant printing ink film will be within accepted migration limits, provided that the packaging structure is suitable and the packaging ink or coating is applied under Good Manufacturing Practices in accordance with guidance given by the ink/coating supplier for the intended application. The use of such inks should be supported by indicative analytical testing and/or relevant worst case calculations. As a result - assuming correct application and appropriate packaging type - any migration from the printed packaging should be within currently accepted limits. In sheetfed offset (conventional and UV), the term is used as a synonym for "food packaging ink/coating", as opposed to a "standard" offset ink/coating.
Migration	Migration is a partition and diffusion controlled transfer process of small molecules (below a molecular weight of 1000 g/mol) from the food contact material or article into food or food simulant. The transfer of packaging ink components can take place either by migration through the substrate, by set-off to the reverse side and subsequent migration into food, or by gas phase transfer.
Migration modelling	The assessment of compliance with specific migration limits may be made with the application of generally recognised diffusion models based on scientific evidence. Only migration testing of the foodstuff counts as complete verification.

<p>Mineral oil</p>	<p>Mineral oil hydrocarbons (MOH) are hydrocarbon substances containing 10 to about 50 carbon atoms. Crude mineral oil is by far the predominant source of the MOH considered, but equivalent products can be synthesised from coal, natural gas or biomass. Chemically MOH consist of three major classes of compounds: paraffins (comprising linear and branched alkanes), naphthenes (comprising alkyl-substituted cyclo-alkanes), and aromatics (including polyaromatic hydrocarbons (PAHs), which are generally alkyl-substituted and only contain minor amounts of non-alkylated PAHs). MOH may also include minor impurities of nitrogen- and sulphur-containing compounds. Within these classes there are almost infinite numbers of individual components.</p> <p>EFSA have divided MOH into two main types, mineral oil saturated hydrocarbons (MOSH) and mineral oil aromatic hydrocarbons (MOAH). Migration concerns are mainly related to the MOAH component. Note that some highly refined MOH fractions are permitted Food Contact Materials. Based on the definition according to EFSA – CONTAM Panel</p>
<p>Mixture</p>	<p>The term “mixture”, as used in the CLP Regulation (EC) No 1272/2008, means any preparation or solution composed of two or more chemical substances.</p>
<p>Nanomaterial</p>	<p>A natural, incidental or manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for 50 % or more of the particles in the number size distribution, one or more external dimensions is in the size range 1 nm - 100 nm. Based on the definition in Commission Recommendation 2011/696/EU on Nanomaterial</p>
<p>Overall migration</p>	<p>“Overall migration” (OM) means the sum of the amount of non volatile substances released from a material or article into food or food simulant. The Overall Migration Limit (OML) means the maximum permitted amount and is defined in the Plastics Regulation (EU) No 10/2011.</p>
<p>Overprint varnish (OPV)</p>	<p>Transparent, film-forming preparation applied by various processes on to the print, and intended to add certain surface properties to the ink film such as increased gloss or protection (see also: Lacquering, Varnishing).</p>
<p>Packaging ink or coating</p>	<p>Packaging inks are designed for the printing of packaging. They are preparations (mixtures) manufactured from colorants (pigment, dyes), binders, plasticisers, solvents, driers and other additives. They are solvent-based, water-borne, oleo-resinous or energy curing (UV or electron beam) systems. They are applied by a printing and/or coating process, such as flexography, gravure, letterpress, offset, screen, non-impact printing or roller coating.</p>
<p>Packaging ink layer</p>	<p>Packaging ink layers, in their finished state, are thin dried or</p>

	cured films of packaging ink on the non-food contact surface of substrates. In practice the coverage is less than 100% and the printed image is not a continuous layer.
Pigment	see Colorant
Photoinitiator	An additive, having a technical function exclusively in UV curing inks or coatings. It induces the polymerization (drying) of the ink or coating via absorption of UV light.
Plasticiser	A non-volatile liquid or resinous substance used in solvent based liquid inks to confer to the printed ink film flexibility and improved adhesion to the substrate. ..
Preparation	"Preparation" means any mixture or solution composed of two or more substances (components). See "mixture".
Primer or size coat	A continuous coating applied to the base substrate to provide good adhesion and printability of inks and coatings
QM value	"QM" as defined in the Plastics Regulation (EU) No 10/2011 means the maximum permitted concentration of a specific substance present in the material or article
Raw material	Raw materials used in the manufacture of packaging inks are substances and mixtures as defined in the CLP Regulation (EC) No 1272/2008.
Set-off	Set-off is the transfer of substances from one side of a material or article to the other side, through direct contact between these different sides caused by the stacking or reeling of the materials. Set-off may be visible or invisible (see: migration). Visible set-off is regarded a quality issue.
Solvent	Solvents are liquids, which have the capability to dissolve other substances without changing chemically the dissolved substance or itself. The components in a solution cannot be separated mechanically from each other (for example by filtration or centrifugation). The original components of a solution can be isolated from each other in their original form by physical methods (for example evaporation, distillation, and adsorption). Solvents may be volatile (such as those used in "solvent based" liquid inks for flexible packaging), or non-volatile (such as vegetable oil in sheetfed inks).
Specific migration	"Specific migration" (SM) means the amount of a specific substance released from a material or article into food or food simulant. The Specific Migration Limit (SML) means the maximum permitted migrated amount of a substance and is defined in the Plastics Regulation (EU) No 10/2011.
Standard offset ink or coating	Any offset printing ink or coating which is not designed to be used as a food packaging ink, as opposed to a "low migration" or "food packaging" sheetfed offset ink or coating. Example: inks/coatings designed for non-food packaging or for publication printing.
Substance	"Substances" means chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the products and any impurity derived from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.

Substrate	<p>The base material on the surface of which a mixture or substance may be deposited for varying purposes such as printing, lacquering, coating, etc. Examples of substrates for printing are: paper, carton, board, corrugated board, plastic films, metal foils, tin plates.</p> <p>Also tubes, glass and some cast materials can be printed by means of special printing processes.</p> <p>Based on a definition according to “Terminology of Printing Ink Technology”, CEPE 1990</p>
Worst Case Calculation	<p>A form of assessment which does not refer to measured migration levels of substances from a food packaging structure, but gives the calculated maximum theoretical migration of each potential migrant substance known to be present in the structure.</p>