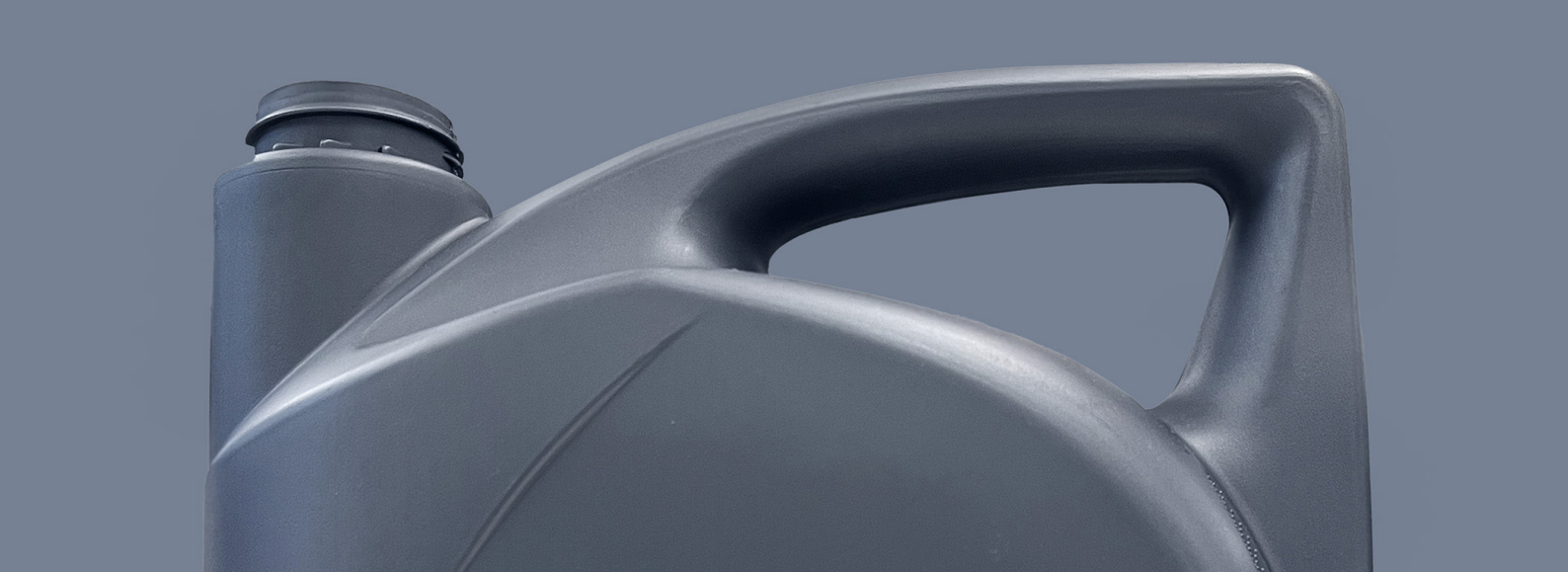




Co-Extrusion Technology

Multilayer: safety, shelf life and sustainability.

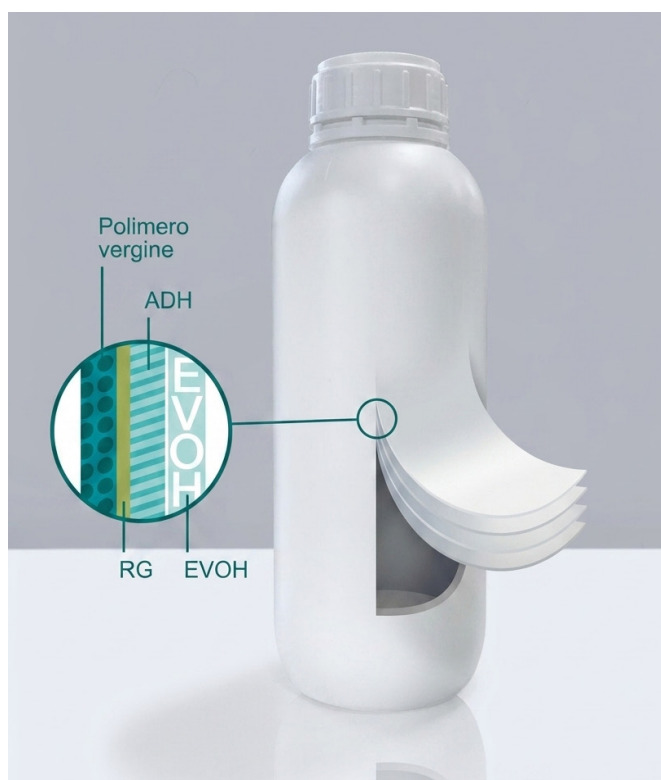


Co-Extrusion | Multilayer packaging

Safety, shelf life & sustainability.

As market demands grow ever more stringent, plastic containers and bottles must guarantee ever higher standards in terms of **protection, shelf life** and **production efficiency**.

Co-extrusion technology enables the production of **multilayer containers** with precisely calibrated barrier properties, offering packaging solutions that combine optimal performance with cost efficiency.



Coex: 3 key advantages

◆ Protection and shelf life

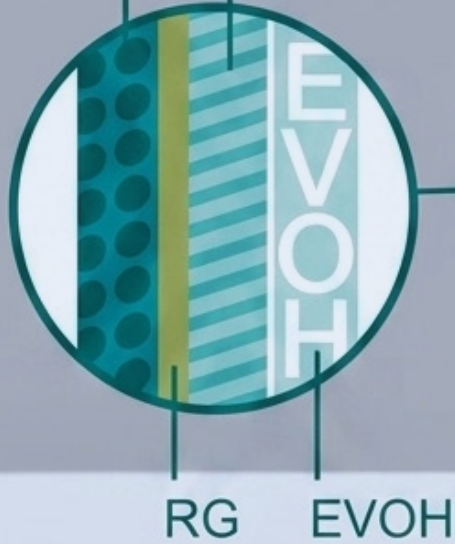
Multilayer technology is essential for sensitive and acidic products, combining **UV** and **oxygen barriers** (EVOH) to preserve product properties and extend shelf life.

◆ High chemical resistance

Adding a nylon (**polyamide**) barrier layer on the inner side of the container, in contact with the liquid, **prevents chemical migration** through polyethylene, helping to avoid environmental dispersion.

◆ Sustainability

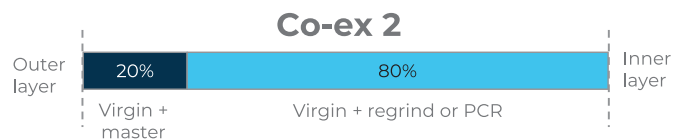
Multilayer production up to COEX-6 using recycled plastic from production waste (parisons and sprues) or up to **100% PCR**.



Multilayer solutions, specific performance.

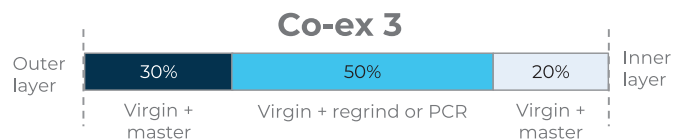
◆ Co-ex 2

Allows the combination of **soft-touch finishes** on the outer layer and virgin plastic on the inner layer; it is often used in the cosmetics sector. Alternatively, the inner layer may contain **regrind plastic** or **PCR**, a solution frequently used for cost saving purpose.



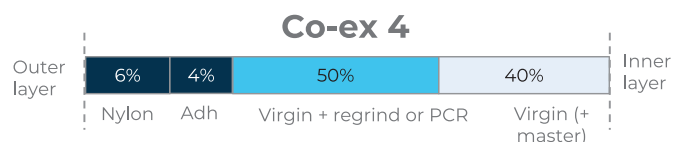
◆ Co-ex 3

Enables the use of regrind or post-consumer recycled plastic (**PCR**) in the middle layer of containers, commonly used for home care products and lubricants. Also used for long shelf life dairy products, with a barrier to UV.



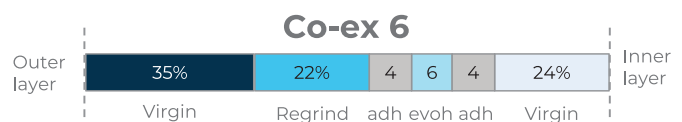
◆ Co-ex 4

Integrates nylon (**polyamide**) barrier layer to prevent chemical migration through polyethylene and thus avoid environmental dispersion used in the chemical and agrochemical sectors.



◆ Co-ex 6

Is ideal for sensitive foods and pharmaceuticals, combining **UV** and **oxygen barriers** to preserve product properties and **shelf life**.



Our Experience

More than 350 Co-Extrusion Heads



Mono vs Co-ex 3 | Color Saving Comparison



Masterbatch Cost Savings

In a **monolayer** configuration, the color masterbatch accounts for around **3%** of the total thickness of the bottle.

Using a **co-ex 3** configuration allows to substantially decrease the quantity of masterbatch, since it is used exclusively in the outer layer (25% of the total thickness).

If we look into the quantity of material used in a year, for both configurations, the difference is drastically significant.

Bottle volume 1 L		
Number of parisons per head	unit	4
Expected Cycle Time	sec.	14
Production per year (50 weeks)	b/year	14.070
Number of colour change	n/year	50

MONOLAYER				
Cost of masterbatch	€/year	219.400		
Plastic not sellable from colour change	Kg	389		
% of plastic reused (dark colour bottles)	%	15%	30%	50%

CO-EX 3		
Cost of masterbatch	€/year	54.850
Plastic not sellable from colour change	Kg	389
% of plastic reused (mid and internal layer)	%	75%
Saving per year in masterbatch cost	€/year	164.550

Converting from monolayer to coex-3
pays back in approximately 2 years.

TECHNE®

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