



**ADHESIVE RESINS FOR INDUSTRIAL APPLICATIONS**



*Let's progress together*



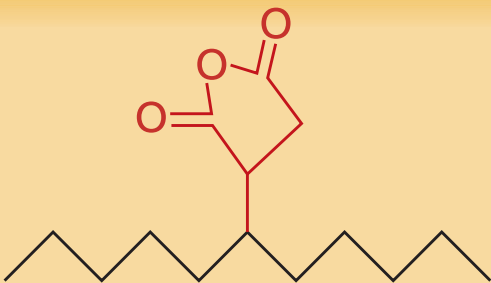
# GRAFTED OREVAC®

## Adhesive Resins for industrial applications

**GRAFTED OREVAC® adhesive resins are functionalised polyolefins designed to be used as:**

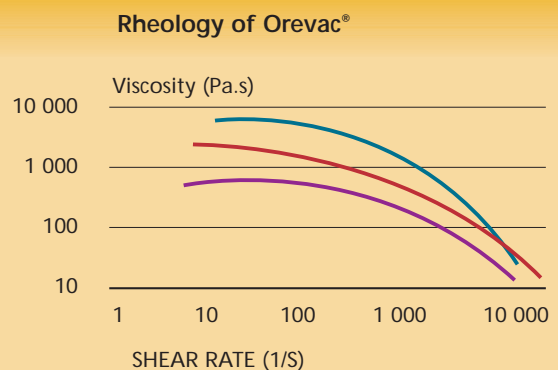
- tie layers in multilayer structures, providing outstanding adhesion between polyolefins and polar materials such as EVOH, polyamides, epoxy, or aluminium...
- coupling agents for reinforced thermoplastics (mineral filler, glass fiber, flame retardant,...)

### Chemical nature



- Orevac® adhesive resins are anhydride grafted polyolefins based on PE, EVA, EMA or PP. Anhydride provides polarity and reactivity which gives high adhesion levels on various substrates such as: polyamides, EVOH, PET, aluminium, ....

### Processing



- All Orevac® adhesive resins are suitable for use on coextrusion equipment designed for polyolefin processing. The rheology of each grade is adapted to the processing technology: blown film, cast film, sheet, blow moulding, extrusion coating, ...

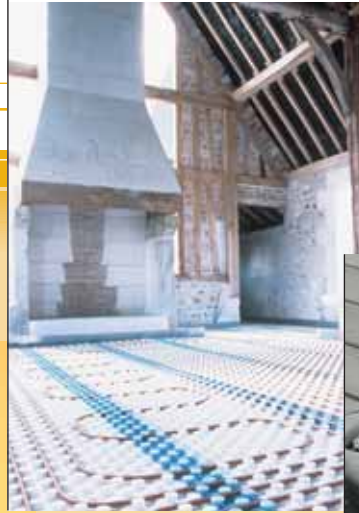
# GRAFTED OREVAC®

Industrial applications

Multilayer tubes



Flooring heating tube



HFFR Compounds for cable



External pipe coating



Wood / Polymer Composite,  
PP glass fiber compounds,...

Automotive Fuel tank

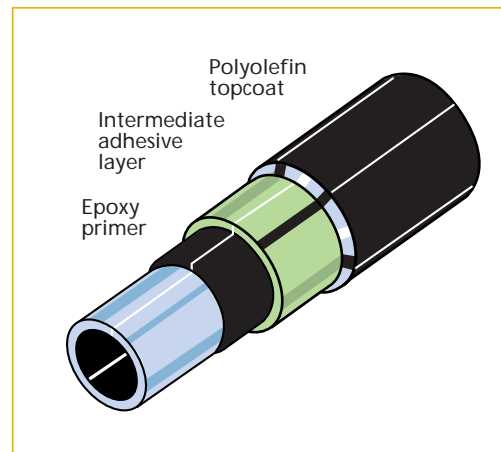


# GRAFTED OREVAC®

## Pipes — Tubes

### External corrosion protection of steel pipes for gas or oil transportation

- The three layer pipe coating systems Epoxy / Adhesive / PE or PP show the highest efficiency in corrosion protection of steel pipe.
- Arkema is a leader in this field with adhesives and top coats used by the main coaters all over the world. Our products are on the approved list of main gas and oil companies.



- Arkema offers a full range of coating products from Orevac® adhesive resins (PE and PP type) and PE top coat to Orevac® based powder for field repair joints and fittings. Reference list and specific documentation can be sent upon request.



### Flooring heating tubes

- The structures PEX / Aluminium or EVOH are suitable for floor heating tubes which prevent the oxidation of heating equipment.
- The main requirements are high thermal resistance and a long heating tube life.



- Specific Orevac® adhesive resins have been designed to reach high adhesion levels between PEX and EVOH or aluminium and are suitable for the tube extrusion process.



- For these applications, the Orevac® adhesive resins have been optimised for long term thermal ageing.

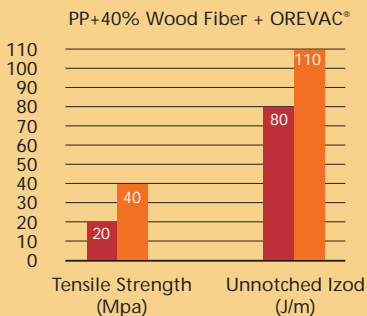
# GRAFTED OREVAC®

## Coumpound additives — Fuel Tanks

### Coupling agent for PP compounds

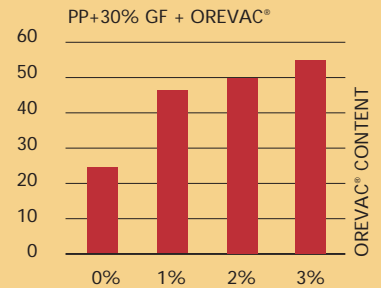
— Addition of fillers to PP can improve the mechanical strength (Modulus), thermal properties (HDT, Vicat) but also reduce the impact strength or the tensile properties.

#### PP Wood composite

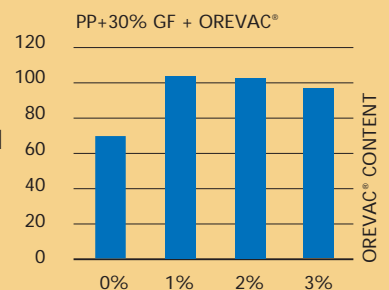


— This drawback can be overcome by using specific Orevac® grades. Orevac® grades are maleic anhydride functionalised PP suitable for PP modification. These Orevac® grades show an appropriate range of properties such as high reactivity and low viscosity useful for chemical coupling in glass fiber reinforced PP compounds, mineral filled PP compounds, PP filled with wood fibers or natural fibers, HFFR compounds and PP based alloys.

#### Unnotched Charpy Impact (KJ/m²)



#### Tensile Strength at break (MPa)



## HFFR compounds for cable

— Polyolefin based compounds with specific halogen free flame retardant additives such as  $Mg(OH)_2$  and  $Al(OH)_3$  are used in the cable industry to avoid toxic smoke in case of fire.

— The required high content of additive (60 to 70%) induces low mechanical performance for such compounds. This drawback can be overcome by using specific Orevac® grades based on LLDPE as a coupling agent between the polyolefin and filler.



## Automotive application

— Blow moulding coextrusion process allows us to produce multilayer plastic fuel tanks.

— The desired performance for the structure in automotive applications is high barrier to hydrocarbons and high mechanical resistance.

— The Orevac® adhesive resins developed for this application, have suitable rheology for the blow moulding process, providing outstanding adhesion between HDPE and EVOH.

#### Comparison of fuel barrier with EVOH or PA Fuel Tank 40 l. - Thick. 5mm - Temp. 40° C

g/24h	SP 95	SP95+15% Alcohol.
pure HDPE	10	12
PA barrier	0,2	3,5
EVOH barrier	0,1	0,4



HDPE
REGRIND
OREVAC®
EVOH
OREVAC®
HDPE

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