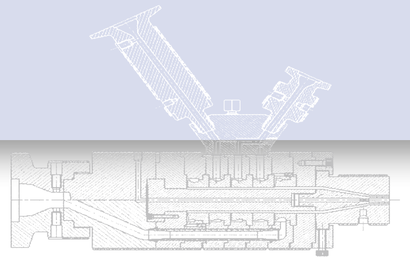
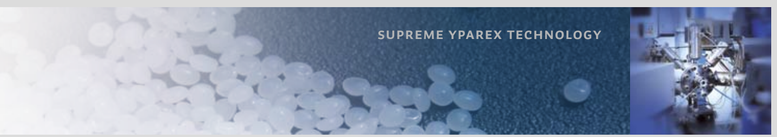
INDUSTRIAL APPLICATIONS

PROPERTIES	8702 ES	87102 ES	8802 ES	8403 S 8603 S	9403 M	8102	9403	8104 E	8125	TEST METHOD
BASE POLYMER	LLDPE	LLDPE	LLDPE	LLDPE	LLDPE	LLDPE	LLDPE	LLDPE	LLDPE	
DENSITY kg/m³	920	915	908	926	928	923	928	923	929	ISO 1183
MELT FLOW RATE dg/min	2.1	1.6	2.3	2.8	3.0	2.3	3.0	4.6	24	ISO 1133 (190 °C and 2.16 kg)
VICAT SOFTENING TEMPERATURE	93 °C	88 °C	75 °C	100 °C	100 °C	102 °C	100 °C	100 °C	103 °C	ISO 306 (50 °C / h 10N)
MELTING TEMPERATURE	125 °C	124 °C	126 °C	124 °C	124 °C	124 °C	124 °C	124 °C	124 °C	ISO 11357-1/-3 (10 °C / min)
DVGW	PASSED	PASSED	PASSED	PASSED	N/A	N/A	N/A	N/A	N/A	ISO 2578 (70 °C / 50 years)
ADHESION AGAINST	PE	PE	PE	PE	PE	PE	PE	PE	PE	
	Al	Al	Al	Al	Cu/Al	Al	Al	Al	FILLERS	
	EVOH	EVOH	EVOH	EVOH	EVOH	EVOH	EVOH	EVOH	EVOH	
	PA	PA	PA	PA	PA	PA	PA	PA	PA	





YPAREX, RESINS WITH REASON

WORKING TOGETHER

Since April 2011, Yparex BV has been a subsidiary of RESIN (Products & Technology) BV, based in Enschede, The Netherlands. RESIN is a specialist in custom-compounding of thermoplastics to:

- Improve mechanical properties
- Increase flame-retardant properties
- Enhance barrier properties
- Increase aesthetics via colorants and special-effects packages

As a custom compounder with broad experience in toll manufacturing, RESIN can produce a product to specifications, or use its extensive knowledge to develop new or tailor-made formulations. The company is large enough to offer full service, and small enough to move fast and take care of each individual customer. Its plastics compounding know-how stretches back for more than 25 years.

As one of the leading suppliers of adhesive resins, backed by extensive materials and application knowledge, Yparex BV is the perfect partner for unlocking hidden value in your end products and processes by offering:

- Continuous innovation, customer-focused R&D, and application development
- Knowledgeable and proactive application support
- Excellent customer service and logistics throughout every stage of the supply chain

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YPAREX
EXTRUDABLE ADHESIVE RESINS

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Yparex®

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RESINS WITH REASON

HIGH-TECH APPLICATIONS

YPAREX® ADHESIVE RESINS ARE EXTRUDABLE MALEIC ANHYDRIDE MODIFIED AND FUNCTIONALISED POLYOLEFIN COMPOUNDS

- **Yparex® provides adhesion between polyolefins and a variety of substrates such as polyamide (PA), ethylene vinyl alcohol (EVOH), and metals.**
- **Yparex® is an easy-to-process polyolefin based material which runs on commonly available extrusion equipment.**
- **Yparex® has a broad processing window up to 290°C.**
- **The broad variety in melt flow properties makes Yparex® highly suitable for various processes, such as pipe extrusion, metal coating, rotational moulding and other processes and can act as a compatibiliser for fillers and pigments.**

In industrial applications, it is quite often desirable to be able to bond to metals. Yparex® provides reliable and high-quality bond strength over time and under varying temperature conditions to various metal substrates including aluminium, steel, and copper.

FEATURED ADVANTAGES

- Consistent adhesion quality
- High productivity
- Reliable processability (flow and melt stability)
- Outstanding adhesion retained even at elevated temperatures
- Excellent long-term thermal stability (heat aging)
- Capable of being processed under a variety of (co-) extrusion conditions.

MULTIPLE APPLICATION AREAS

ADHESIVE RESINS FOR BROAD INDUSTRIAL APPLICATION

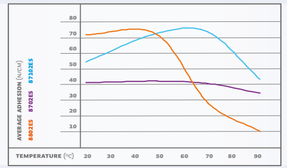
- Sanitary and heating pipes
- Floor and wall heating or cooling
- Copper & steel pipe coating
- Cable sheathing
- Cladding panels

SANITARY AND HEATING PIPES

Combinations of PE or cross-linked PE with aluminium are often used in multi-layer composite pipes for sanitary hot and cold water supply, or radiator heating systems. Yparex® makes it possible to combine the benefits of metals and polymers in such structures by providing excellent bonding over a wide temperature range.
As an adhesive layer, Yparex® provides the following benefits in these applications:

- High mechanical performance
- Excellent thermalcycle-resistance (heat-aging performance)
- Long-term thermal stability

The graph on the right shows the latest new development (Yparex® 8802 ES) in the continuous quest for higher performance required in multi-layer pipe products.



FLOOR AND WALL HEATING OR COOLING

Combinations of polyethylene (PE) with aluminium or PE with EVOH provide the right oxygen-barrier properties and mechanical strength in floor heating pipes. As a bonding material, Yparex® provides excellent adhesion and long-life durability under continuously changing temperatures.

COPPER & STEEL PIPE COATING

New developments in the copperpipe market asked for a specially designed adhesive resin that maintains its initial good adhesive strength over time and under elevated temperature conditions. The three layer structure of Copper / Yparex® 9403 / PE offers significant cost and weight reduction compared to traditional copper pipes in applications like sanitary hot and cold water applications.

Steel pipes for oil and gas transportation require optimal corrosion protection. Three layer systems of an Epoxy base coat (FBE) / Yparex® 9403 / Polyolefin top coat show a high degree of corrosion protection out in the field.

CABLE SHEATHING

Today's high- and medium-voltage cables consist of combinations of different materials including metals, polymers, and fillers. Modern cables require optimum protection against water penetration. In order to adhere the cable sheaths of aluminium to the outside PE-coating, reliable bonding is crucial. Use of Yparex® demonstrates ideal performance even under the severe testing conditions such cables must withstand.

CLADDING PANELS

In modern architecture, the use of aluminium is continuously growing. Increasingly, modern buildings are designed and equipped with lightweight sandwich panels consisting of a five-layer structure of Aluminium / Yparex® / filled PE / Yparex® / Aluminium. Such structures offer high quality, lightweight, durable, and good-looking siding solutions.

DRINKING WATER COMPLIANCE

Drinking water regulations are organised on a national level. Yparex BV supports its customers in their request to obtain drinking-water approvals at the various national institutes. Yparex passes the drinking water certification for all pipe grades in all major European countries.
Please contact your customer-service assistant for specific requests concerning drinking-water compliance.

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