INEOS

Olefins & Polymers Europe

INEOS is one of the world's largest chemical companies. Founded in 1998, the company employs 15,000 people and has turnover of around 47 billion US Dollars.

www.ineos.com

INEOS Olefins & Polymers Europe is a business leading European producer of olefins and polyolefins.

www.ineospolyolefins.com

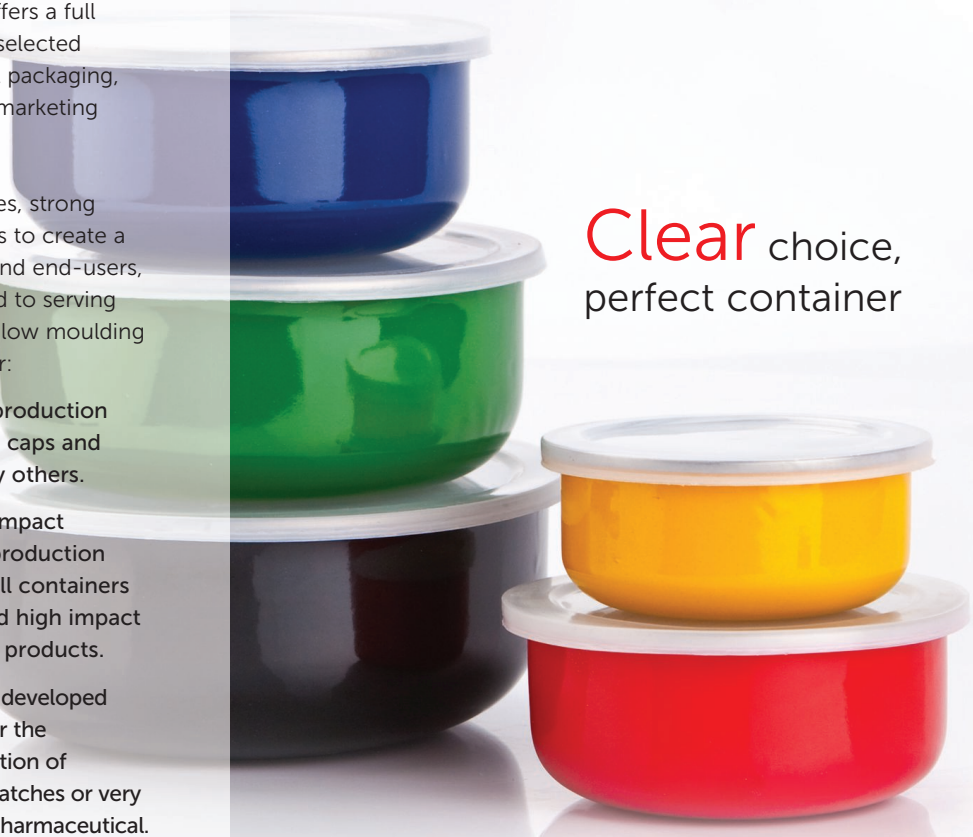
Your partner in

ADVANCED PACKAGING APPLICATIONS

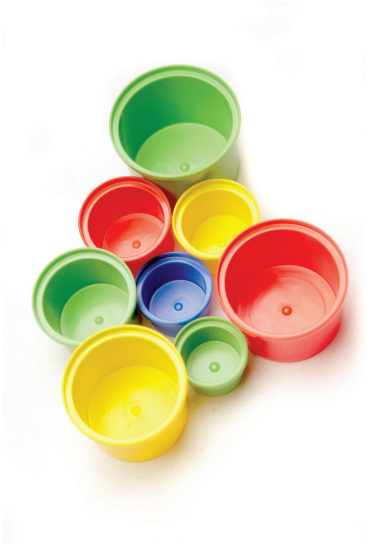
INEOS Olefins & Polymers Europe offers a full range of highly valued polyolefin solutions for selected market applications such as food and industrial packaging, pipe and automotive through dedicated sales, marketing and technical teams.

Building on our leading production technologies, strong product development capability and willingness to create a valued and close relationship with customers and end-users, INEOS Olefins & Polymers Europe is committed to serving the current and future needs of the extrusion blow moulding and injection moulding markets where we offer:

- High density Polyethylene resins for the production of small and large containers and bottles, caps and closures, crates, pails, dust bins and many others.
- Homopolymer, Random copolymer and Impact copolymer Polypropylene resins for the production of high clarity, high stiffness and/or hot fill containers and bottles, high stiffness, high clarity and high impact resistance at cold temperatures moulded products.
- INEOS Olefins & Polymers Europe has also developed Low density Polyethylene resins suitable for the injection moulding process, for the production of colour concentrates and additive master-batches or very specific applications such as medical and pharmaceutical.



CONTENT



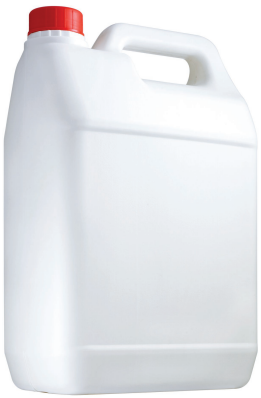
CUSTOMER ENQUIRIES

t +49 221 3555-1421 *f* +49 221 3555-1724
e IneosPofCSC@ineos.com

High density Polyethylene resins

INEOS Olefins & Polymers Europe operates leading and proprietary slurry and gas production technologies (INNOVENE™ S and INNOVENE™ G) associated with a range of catalyst systems to produce grades tailored for a wide range of end use applications.

- Medium molecular weight homopolymer grades with high rigidity for the packaging of liquid food and non-aggressive liquids and creams.
- Medium molecular weight copolymer grades with various levels of environmental stress cracking resistance (ESCR) to meet requirements of industrial and household applications.
- High molecular weight copolymer grades with optimized impact and environmental stress cracking resistance for the production of larger tanks and containers for chemicals.
- Narrow molecular weight distribution grades with medium to high melt indexes for industrial and food packaging applications requiring good impact, stiffness and environmental stress cracking resistance (ESCR).
- Broader molecular weight distribution grades with low to medium melt indexes for specific food packaging applications requiring high environmental stress cracking resistance (ESCR).



Injection Moulding range

Grade	MFR *190°C/2.16kg g/10min*	Density *annealed kg/m³*	Tensile Modulus *23°C MPa*	Charpy impact *23°C kJ/m²*	Application
	ISO 1133	ISO 1872	ISO 527 1&2(1B)	ISO 179	
RIGIDEX® HD5130EA	2.4	952	1200	8	Narrow molecular weight distribution grade with moderate flow index for applications requiring high ESCR, caps & closures, bins, technical parts
RIGIDEX® HD5050EA	4	950	1100	5.5	Narrow molecular weight distribution grade with medium flow index for applications requiring high ESCR, caps & closures, bins, crates, boxes
RIGIDEX® HD5050UA	4	950	1100	5.5	UV stabilised
RIGIDEX® HD6070EA	7.6	960	1500	4	Narrow molecular weight distribution grade with medium flow index for applications requiring high stiffness, caps & closures, cartridges, pallets
RIGIDEX® HD6070UA	7.6	960	1500	4	UV stabilised
RIGIDEX® HD5211EA	11	951	1100	3.5	Narrow molecular weight distribution grade with higher flow index for applications requiring easy processing and low warpage
RIGIDEX® HD5218EA	18	952	1200	3	Narrow molecular weight distribution grade with high flow index for thin wall applications, housewares, caps & closures, pails
RIGIDEX® HD5226EA	26	953	1150	2.5	Narrow molecular weight distribution grade with very high flow index for fast cycling thin wall applications: housewares, caps & closures
RIGIDEX® HD5226EA-E	26	953	1150	2.5	Narrow molecular weight distribution grade with very high flow index for fast cycling thin wall applications: housewares, caps & closures

High molecular weight range

Grade	MFR *190°C/21.6kg g/10min*	Density *annealed kg/m³*	Flexural Modulus *23°C MPa*	ESCR BTT *50°C/100% h*	Application
	ISO 1133	ISO 1872	ISO 178	ASTM 1693-97a	
RIGIDEX® HM4560UA	6	948	900	> 1000	Exceptional level of impact and ESCR, UV stabilised. IBC and large tank production.
RIGIDEX® HM5060XA	6	950	1000	> 1000	Very high level of impact and ESCR. Tailored for 25L container production.
RIGIDEX® HM5411EA	10	952	1100	> 1000	General purpose grade with high impact and ESCR. Ideal for 1 to 25L container production.

Medium molecular weight range

Grade	MFR *190°C/2.16kg g/10min*	Density *annealed kg/m³*	Flexural Modulus *23°C MPa*	ESCR BTT *50°C/100% h*	Application
	ISO 1133	ISO 1872	ISO 178	ASTM D1693	
RIGIDEX® HD5502S	0.2	955	1050	50	General purpose grade with exceptional level of impact resistance
RIGIDEX® HD6007S	0.6	962	1700	20	High rigidity homopolymer grade for fresh milk and non-aggressive chemicals
RIGIDEX® HD4820EA	2.5	952	950	35	Specially formulated grade for exceptional level of gloss

Low density Polyethylene resins

INEOS Olefins & Polymers Europe has developed a range of low density Polyethylene resins produced on state-of-the-art autoclave technology. These resins are free of any additive and are specifically suitable for the production of injection moulded products or colour concentrates and additive master-batches for the moulding industry. In addition, new Metallocene linear low density grades are also available to moulders.

Low density Polyethylene resins

Grade	MFR *190°C/2.16kg* *g/10min*	Density *kg/m³*	Melting point *10°C/min* *°C*	Vicat *10N* *°C*	Application
	ISO 1133	ISO 1183	INEOS DSC	ISO 306/A	
23L430	4.1	924	112	96	Additive free grade suitable for the moulding of flexible products
19N430	7.5	920	108	88	Additive free grade suitable for the moulding of flexible products
20P430	8.8	920.5	108	87	Additive free grade suitable for the moulding of flexible products
18R430	15	919	107	78	Additive free grade suitable for the moulding of flexible products
23T930	22	923	111	92	Additive free grade suitable for the moulding of flexible products and the production of colour concentrates or additive master-batches
23W930	36	924	112	90	Additive free grade suitable for the moulding of flexible products and the production of colour concentrates or additive master-batches
23X930	70	924	112	89	Additive free grade suitable for the moulding of flexible products and the production of colour concentrates or additive master-batches

Linear Low density Metallocene Polyethylene resins

Grade	MFR *190°C/2.16kg* *g/10min*	Density *kg/m³*	Melting point *10°C/min* *°C*	Flexural Modulus *23°C* *MPa*	Application
	ISO 1133	ISO 1183	INEOS DSC	ISO 178	
PF1315AA	15	914	114	245	Grade with anti-oxidants only, suitable for the moulding of flexible products
PF1320AA	20	913	114	243	Grade with anti-oxidants only, suitable for the moulding of flexible products

Polypropylene resins

INEOS O&P Europe operates four proprietary or non-proprietary gas and bulk production technologies (INNOVENE™ PP and others) to produce a broad pallet of polypropylene resins for the blow moulding and injection moulding markets.

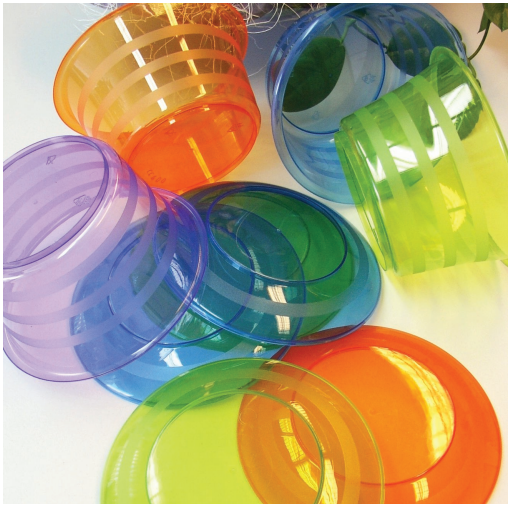
- Homopolymer grades for optimum stiffness, excellent hot fill characteristics, good contact clarity and gloss.
- Random copolymer non-clarified and clarified grades for very good to exceptional clarity and gloss, all with very good stiffness and room or fridge temperature impact resistance.
- Impact copolymer grades with excellent stiffness, cold temperature impact resistance and chemical resistance.

Homopolymer range

Grade	MFR *230°C/2.16kg* *g/10min*	Flexural Modulus *23°C* *MPa*	Izod impact *23°C* *kJ/m²*	HDT *@ 0.45MPa* *°C*	Application
	ISO 1133	ISO 178	ISO 180/1A	ISO 75/B	
100-GA01	0.9	1550	4.5	98	With very high rigidity and high melt strength, this grade is particularly suitable for the production of large containers
100-GA02	2	1450	4	95	General purpose grade for the moulding of food containers and technical parts
150-GA02	2	1450	4	93	General purpose grade for the moulding of food containers and technical parts
100-GA03	3	1450	4	93	General purpose grade for the moulding of food containers and technical parts
150-GA03	3	1450	4	92	General purpose grade for the moulding of food containers and technical parts
100-NB03	3	1800	3	126	High stiffness and very good clarity grade for thermoforming. No anti-static agent
102-CA03	3	1800	3	126	High stiffness and very good clarity grade for thermoforming Low level of anti-static agent
100-GA04	4	1400	3	86	Grade suitable for the moulding of caps & closures and technical parts
100-GB06	6	1450	4	86	Grade suitable for the moulding of food containers and technical parts
101-CA06	6	1750	3	119	Nucleated grade with anti-static agent for the moulding of caps & closures
100-GA09	9	1500	3	104	Genaral purpose grade for the moulding of containers, caps & closures, small pots
101-SA09	9	1450	3.4	103	Grade containing a slip agent suitable for the moulding of caps & closures
100-GA12	12	1400	3	90	Grade suitable for the moulding of caps & closures, thin wall containers
100-GB25	25	1200	2.4	102	General purpose grade for the moulding of thin wall food containers and garden furniture
100-CB25	25	1500	3	110	Nucleated grade for the moulding of media packaging, thin wall containers and technical parts. Short cycle time.
100-HR25	25	1800	3.3	126	High stiffness nucleated grade for the moulding of appliances, technical parts and thin wall containers
194-NA25	25	1750	3	116	Clarified grade for the moulding of transparent food containers
100-GA35	35	1350	3.3	78	General purpose high melt flow grade for the moulding of technical parts and thin wall containers
100-CA50	50	1550	3	115	Nucleated grade for the moulding of media packaging, thin wall containers and technical parts. Short cycle time.

Random copolymer Injection Moulding range

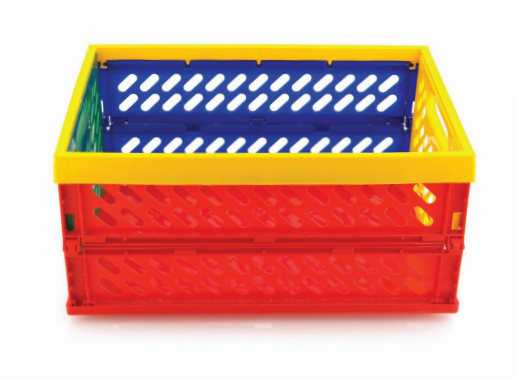
Grade	MFR *230°C/2.16kg* *g/10min*	Flexural Modulus *23°C* *MPa*	Izod impact *23°C* *kJ/m²*	Clarified	Application
	ISO 1133	ISO 178	ISO 180/1A		
200-CA13	13	1100	6	yes	Grade with anti-static agent for the moulding of caps & closures, transparent food packaging and housewares
ELTEX® P CAP912	13	1000	7	yes	Grade with excellent and guaranteed organoleptic properties, especially developed for caps and closures in direct contact with very sensitive beverages
240-CA12	13	850	8	yes	Very high clarity grade offering high gloss and better impact resistance
200-CA25	25	1000	5.5	yes	Grade with anti-static agent for the moulding of caps & closures, transparent food packaging and housewares
201-CA25	25	1000	5.5	yes	Grade with moderate level of anti-static agent for the moulding of caps & closures, transparent food packaging and housewares
ELTEX® P 202-OR25	25	1000	5.5	yes	High flow grade with excellent and guaranteed organoleptic properties, especially developed for housewares and food containers in direct contact with very sensitive foodstuffs
200-CA40	40	1100	5	yes	Very high flow grade with anti-static agent for the moulding of caps & closures, transparent food packaging and housewares
201-CA40	40	1100	5	yes	Very high flow grade with anti-static agent for the moulding of caps & closures, transparent food packaging and housewares. Formulated with latest generation clarifying agent
222-CC50	50	1100	5.5	yes	Very high flow grade with anti-static agent for the moulding of appliances, durable articles and thin wall containers. Short ycle time



Courtesy by Windsor KT, Hanau

Impact copolymer Injection Moulding range

Grade	MFR *230°C/2.16kg* *g/10min*	Flexural Modulus *23°C* *MPa*	Izod impact *-20°C* *kJ/m²*	Nucleated	Application
	ISO 1133	ISO 178	ISO 180/1A		
400-NA01	1.5	1300	7.5	yes	High impact grade for the moulding of thick wall products such as pallets, crates and large containers
400-GA03	2.5	1250	7	no	High impact grade for the moulding of thick wall products such as pallets, crates and large containers
400-GA05	5	1200	6.5	no	High impact grade for the moulding of appliances, luggages, technical parts and returnable transport packaging
300-CA06	6	1500	5	yes	Medium flow grade with anti-static agent offering good impact resistance and high stiffness
401-NA06	6	1200	3	yes	Medium flow grade suitable for the moulding of toys, large pails and crates
RIGIDEX® P CAP906	6	1500	5.5	yes	Medium flow grade for the moulding of bi-component screw caps for carbonated drinks
400-CB08	8	1200	6	yes	Medium flow grade with anti-static agent offering superior balance of stiffness and impact resistance. Returnable transport packaging
402-CB12	12	1350	6	yes	Medium flow grade with anti-static agent offering superior balance of stiffness and impact resistance. Returnable transport packaging
400-CA16	16	1600	4.7	yes	Higher flow grade with anti-static agent offering high stiffness, good impact resistance and low warpage. Returnable transport packaging
500-GA20	20	1000	6	no	Higher flow grade with very good cold temperature impact resistance suitable for the moulding of toys, appliances and containers
500-NA20	20	1250	6	yes	Higher flow grade with very good cold temperature impact resistance suitable for the moulding of luggages, large containers and crates
RIGIDEX® P 451-HP40	40	1350	4.5	yes	High flow grade with anti-static agent especially desinged for ultra-fast moulding of large food and industrial containers
401-CB50	50	1300	4.2	yes	General purpose high flow grade with anti-static agent suitable for the moulding of thin wall containers and technical parts
401-CA55	55	1100	4	yes	High flow grade with anti-static agent suitable for the moulding of thin wall parts and containers requiring low warpage
RIGIDEX® P 450-HP60	60	1400	4.2	yes	Very high flow grade with anti-static agent offering a unique combination of high stiffness, good impact resistance and very low warpage
400-CA70	70	1150	4	yes	Very high flow grade with anti-static agent suitable for the moulding of thin wall packaging, yellow fat containers and caps & closures
RIGIDEX® P 450-HP90	90	1350	4.2	yes	Very high flow grade with anti-static agent offering a unique combination of high stiffness, good impact resistance and very low warpage



Random copolymer Blow Moulding and Extrusion range

Grade	MFR *230°C/2.16kg g/10min*	Flexural Modulus *23°C MPa*	Izod impact *23°C kJ/m²*	Clarified	Application
	ISO 1133	ISO 178	ISO 180/1A		
240-NA02	1.5	850	20	yes	Outstanding clarity and impact resistance, ideal for the production of small to medium size bottles and containers
200-CA02	1.7	1000	10	yes	Containing anti-static agent for the production of small to medium size bottles and containers, plain sheet
203-NA02	1.9	1100	7	yes	Combining high heat resistance and very good clarity, ideal for the production of hot filled bottles and containers
200-GA02	2	950	10	no	General porpose grade with good balance of processing and mechanical properties, suitable for the production of small size bottles
200-NA02	2	1000	10	yes	Offering excellent clarity, ideal for the production of small to medium size bottles and containers, plain sheet

Impact copolymer Blow Moulding & Extrusion range

Grade	MFR *230°C/2.16kg g/10min*	Flexural Modulus *23°C MPa*	Izod impact *-20°C kJ/m²*	Nucleated	Application
	ISO 1133	ISO 178	ISO 180/1A		
ELTEX® TUB 433-NA00	0.3	1500	7	yes	With high stiffness, very good cold impact resistance and excellent melt strength. Ideal for medium to large bottles and containers
ELTEX® TUB 350-HM00	0.3	1850	6	yes	With very high stiffness, good cold impact resistance and excellent melt strength. Ideal for medium to large bottles and containers
ELTEX® P RF110	0.8	1300	5	no	Good cold impact resistance and stiffness, suitable for small to medium size bottles and containers
401-NA01	1.2	1300	7.5	yes	Excellent cold impact resistance and good stiffness, ideal for small to medium size bottles and containers, synthetic cardboard
400-NA01	1.5	1300	7.5	yes	Excellent cold impact resistance and good stiffness, ideal for small to medium size bottles and containers, synthetic cardboard
400-GA03	2.5	1250	7	no	General purpose grade with excellent processing stability