



INEOS

Olefins & Polymers Europe

Your partner in

**HEXENE (C6)
LLDPE FILM**

Delivering more
from LLDPE

INEOS

We offer a complete
range of high quality
C6 LLDPE resins for
film applications.

INEOS Olefins & Polymers Europe

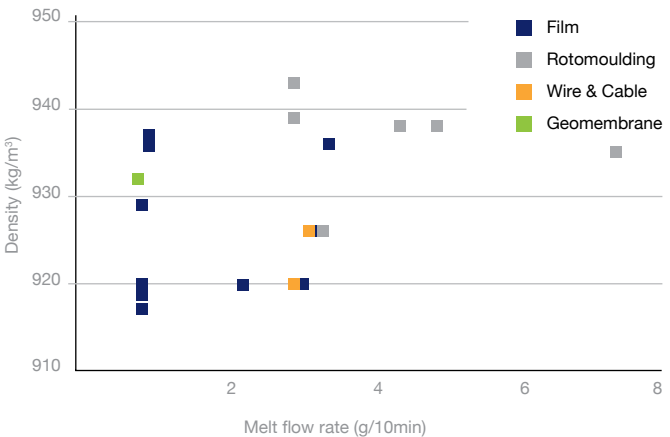


LLDPE-C6 Film

INEOS O&P LLDPE-C6 products are manufactured on a fully integrated oil and petrochemical complex in Grangemouth, UK. The site is directly linked to North Sea oil production. INEOS continues to invest in Grangemouth in order to develop a long term advantaged Olefin & Polymer business demonstrating its commitment to the European polymer market.

LLDPE products are produced on Innovene 4 using INEOS proprietary process and catalyst technologies with the enhanced high productivity polymerisation process. With a nameplate capacity of 320kt/a, the plant produces grades with densities ranging from 918 to 940kg/m³ with melt flow rates up to 7.5g/10min. Innovene 4 has considerable flexibility and has the proven capability to produce at melt flow rates of 30g/10min. and densities as high as 960kg/m³. Whilst the main markets served are blown and cast films, it also produces low-medium voltage wire and cable grades and an extensive range of superior rotomoulding grades.

INEOS LLDPE-C6 product portfolio



LLDPE-C6 Film Portfolio

Distinctive and Unique advantages produced on fully integrated site

Processing properties

- / High melt strength for improved bubble stability
- / Easy processing (no processing aid)
- / Lower neck-in with cast film applications



Optical properties

- / Good gloss and haze
- / Very low gel level (certified on certain grades)

Mechanical properties

- / Very good impact resistance and toughness
- / Exceptional tear resistance particularly at lower densities

Grade	MFR (g/10min) ISO 1133	Density (kg/m ³) ISO 1872	Slip/ AB	Typical Applications
LL6208AF	0.9	920		Heavy duty sacks
LL6208LJ	0.9	920	Yes	Food packaging
LL8109AA	0.9	918		Silage, refuse sacks
LL8109KB	0.9	919	Yes	Silage, refuse sacks
LL6608AF	0.9	928		Carrier bags, refuse sacks
LL6608LJ	0.9	929	Yes	Collation shrink, bread bags
LL6910AA	1.0	936		Food packaging
LL6910LA	1.0	936		Lamination
LL6910KJ	1.0	937	Yes	Overwrap, shrink film
LL6808AA	0.9	932		Geomembranes, collation shrink
LL6120AA	2.3	920		Cast stretch film
LL6130AA	3.1	920		Cast stretch film
LL6220AA	2.0	921		Cast stretch film
LL6430AA	3.3	926		Cast stretch film (anticking)
LL6930AA	3.5	936		Cast stretch film (anticking)

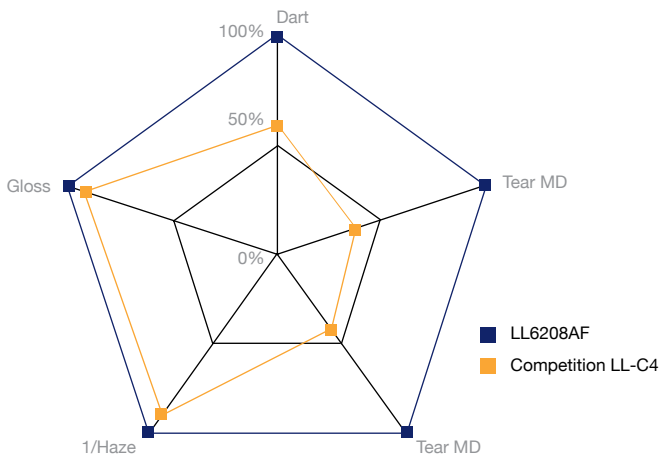
Regular blown Film Grades

INEOS' regular blown film grades offer excellent impact resistance, toughness and tear resistance. These properties, coupled with excellent processing characteristics, make them ideal for applications such as industrial packaging, heavy duty sacks, liners and food packaging. Their low gel level also makes them an attractive proposition for many thin film applications.

LL6208 is supplied both with and without slip / antiblock.

Grade	MFR (g/10min) ISO 1133	Density (kg/m ³) ISO 1872	Slip/ AB
LL6208AF	0.9	920	
LL6208LJ	0.9	920	Yes

INEOS' enhanced levels of toughness and tear resistance can allow for significant down-gauging compared to LLDPE-C4 materials in numerous applications.



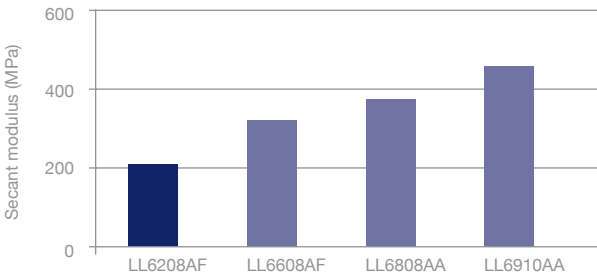
Higher Stiffness blown Film Grades

INEOS LLDPE-C6 grade slate offers a range of options for applications where higher levels of stiffness or increased creep resistance are required.

Grade	MFR (g/10min) ISO 1133	Density (kg/m ³) ISO 1872	Slip/ AB
LL6608AF	0.9	928	
LL6608LJ	0.9	929	Yes
LL6808AA	0.9	932	
LL6910AA	1.0	936	
LL6910KJ	1.0	937	Yes

Typical applications for these grades are:

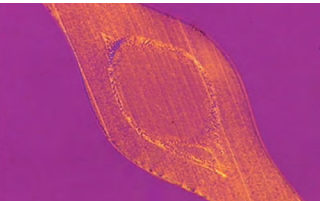
- / Bread and produce bags
- / Carrier bags
- / Counter bags
- / Refuse sacks
- / Collation shrink



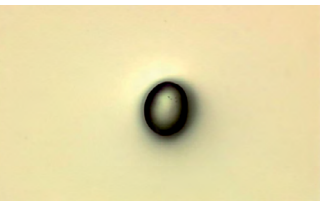
LL6910LA

Extensive catalyst and process refinement over a number of years has led to a significant reduction in gel level. This, coupled with continuous monitoring and a batch selection process, has led to the introduction of LL6910LA which is a certified low gel level grade suitable for the most demanding lamination applications.

In a comparatively short time LL6910LA has become the new reference in the market. LL6910LA is also used extensively in hygiene and temporary surface protection applications and can be ideal for films used in highly decorated print applications. LL6910LA's excellent processing characteristics and mechanical properties have resulted in its substitution of LLDPE-C8 products in lamination and surface protection applications.

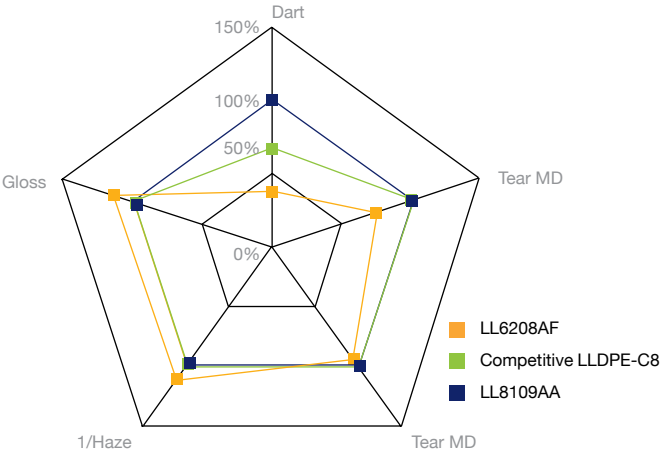


120 μm diameter "fish eye" gel in a 25 μm film



Super Hexene Grades

LL8109AA (A/O only) and LL8109KB (A/O + Slip/AB) are lower density grades which exhibit superior toughness and tear resistance compared with standard LLDPE-C6. The enhancements in properties are such that the grades are an economic alternative to LLDPE-C8 in numerous applications.



LL8109AA and LL8109KB's superior toughness' are particularly valuable in the following applications:

- / Silage and general agricultural film
- / Blown stretch film for hand and power wrapping

LL8109AA and LL8109KB are also used as “toughness enhancing” blend components in numerous applications. They can be particularly beneficial when blended into recycled material for use in refuse sacks.



Cast Film Grades

INEOS LLDPE-C6 cast film products offer an excellent balance of mechanical and processing characteristics. Densities range from 920 to 936kg/m³ with the higher density grades not only giving enhanced stiffness but also excellent anti cling characteristics.

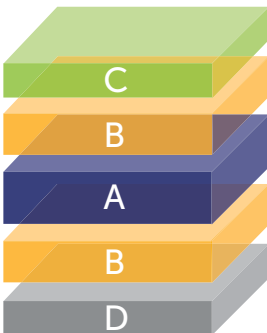
Grade	MFR (g/10min) ISO 1133	Density (kg/m ³) ISO 1872	Layer
LL6120AA	2.3	920	Core
LL6130AA	3.1	920	Core
LL6220AA	2.0	921	Core
LL6430AA	3.3	926	Non-cling
LL6930AA	3.5	936	Non-cling



In comparison with LLDP-C4 resins, INEOS' LLDPE-C6 grades possess superior toughness and reduced neck-in and generally better stretchability.

Their low gel level makes them particularly suited for lamination and high quality printed films.

An example of improved power or hand stretch film using INEOS LLDPE-C6 grades. 5-layer cast stretch with symmetrical structure (overall thickness 17µm).



- A: 35 % of thickness – LL6120AA
- B: 17.5 % of thickness – LL6130AA
- C: 15 % of thickness – LL6430AA
- D: 15 % of thickness – LL6130AA + cling agent

Geomembranes

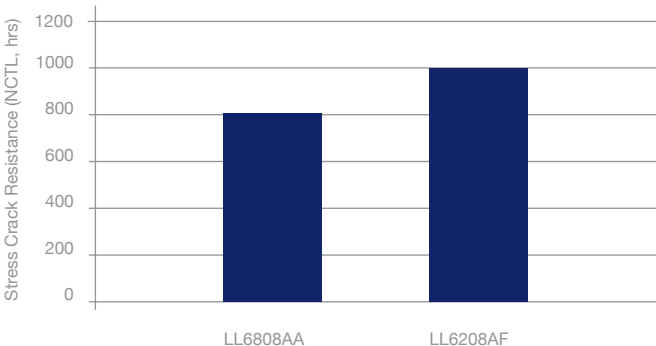
INEOS LLDPE-C6 geomembrane products offer an excellent balance of mechanical, processing and stress crack characteristics.

LL6808AA's high density/rigidity, coupled with excellent stress crack resistance, makes it ideal for a wide range of applications. LL6208AA's excellent flexibility and superior stress crack resistance makes it particularly suited to applications such as mining.



LDPE lined reservoir

Grade	MFR - 2.16kg (g/10min) ISO 1133	MFR - 5.00kg (g/10min) ISO 1133	Density (kg/m ³) ISO 1872
LL6208AF	0.9	2.6	920
LL6808AA	0.9	2.5	932



About us

INEOS is one of the world's largest chemical companies, founded in 1998. INEOS Olefins & Polymers Europe is a leading producer of olefins and polyolefins.

INEOS Olefins & Polymers Europe offers a full range of high value polyolefins solutions for market applications such as food and industrial packaging, pipe and automotive through dedicated sales, and technical service teams.

INEOS is a safe and environmentally responsible company. We are engaged in developing our sustainable agenda to improve our operations and to implement sustainable solutions for our customers. This includes products that offer lightweighting, energy efficiency, durability (extended lifetime) or conservation of resources. We care.



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