

SYNTAC® ECCOLITE® ULTRA

A tough and robust syntactic material for thermoforming

Introduction

AEM product group pioneered the development and introduction of the first syntactic foam thermoforming material in 1981 and through a process of continuous investment and product development are recognised as leaders in the field.

Eccolite® Ultra is a new generation syntactic foam plug assist material, a new thermoplastic compound developed in response to the needs of the thermoforming industry. Eccolite® is tough and robust, but also maintains the unique features and benefits of the other products in the Syntac® family. It is manufactured from a specially formulated thermoplastic resin and hollow glass microspheres. Unlike nylon-based materials Eccolite® Ultra boasts an exceptionally high temperature characteristic, maintaining its profile over extended operation cycle terms in service temperatures up to 392°F/200°C.



Features & Benefits

Eccolite® Ultra is engineered to address problems inherent in traditional thermoforming tooling, such as sticking, deformation and failure.

- **Simple and fast plug preparation**
Eccolite® can be easily machined using standard tooling equipment. Recommended for high precision detail.
- **Virtually dust free**
When machined, a ribbon is produced, making machining operator friendly.
- **Smooth surface**
Machines to a polished finish.
Extra slip for high definition/clarity.
- **Robust and tough**
High impact strength.
Greater throughput and efficiency.
Reduced downtime.
Extended product life.
- **Low thermal conductivity and Specific Heat**
Reduced warm up times and elimination of plug sticking or fouling.
- **Excellent Dimensional Stability and Temperature Resistance**
Maintain shape at elevated temperatures.
Consistent performance.
Long plug life, proven by long service history in application.
- **High clarity**
Elimination of swirl and chill marks.
Improvement in gloss and haze.
- **Lightweight**
Reduces wear and tear on moving machinery parts.
- **Variety of rods, sheet and block available**
Customised plugs can also be moulded.

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Applications

Syntac® Eccolite® Ultra is used to form a wide range of polymer sheet materials and works well with polyolefins, APET and CPET.

It is ideal for thermoforming on a wide range of inline and sheet systems, such as component manufacture within the food and medical packaging, aerospace and automotive industries.

Eccolite® Ultra can be used as a direct replacement for Hytac®-B1X.

Safety

This material is safe to handle and there are no special requirements to be observed with the exception of those recommendations referenced in the machining process.

Machining

There are no special tools required to machine this material, however we do recommend the use of carbide tools.

Recommended speeds and feeds for optimum performance when turning Eccolite® Ultra are as follows:

Speeds 3,000-3,500 rpm.

Cut Size 0.25 inches (6mm) maximum.

Feed 30-35 inches (762-889mm) per min.

Tooling Carbide or high speed steel.
Maintain sharp edge with slight chip breaker.

Flutes 2-3 to minimise breakout.

Major cost saving benefits

- Simple and fast plug preparation
- No plug heaters
- Reduced warm up time
- Consistent performance
- Long plug life

Typical properties

Syntac® Eccolite® Ultra	IMPERIAL	METRIC
Color	White	White
Density	46lb/ft ³	736kg/m ³
Service temperature	392°F	200°C
Thermal conductivity	0.09 BTU/hr-ft ² °F	0.16W/m ² K
Specific heat	0.35 BTU/lb°F	1480 J/kg°C
Coefficient of thermal expansion	17x10 ⁻⁶ in/in/°F	31x10 ⁻⁶ cm/cm/°C
Compressive strength	10,000psi	69MPa
Compressive modulus	343,000psi	2365MPa
Shore D hardness	74°D@428°F	74°D@220°C
Izod impact (unnotched)	1.35ft-lb/in	72J/m



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