

# Ultramid® HFX 33

## Polyamide 6

### Product Description

Ultramid HFX 33 is a polyamide specialty extrusion resin combining high flexibility, excellent burst performance and outstanding chemical resistance. It offers high melt strength and enhanced heat stability.

### Applications

Ultramid HFX 33 is recommended for tubing applications requiring an outstanding balance of flexibility, chemical and heat resistance and burst performance.

PHYSICAL	ISO Test Method	Property Value	
Density, g/cm	1183	1.04	
MECHANICAL	ISO Test Method	Dry	Conditioned
Tensile Modulus, MPa	527		
23C		430	-
Tensile stress at break, MPa	527		
23C		40	-
Nominal strain at break, %	527		
23C		300	-
Flexural Modulus, MPa	178		
23C		400	-
IMPACT	ISO Test Method	Dry	Conditioned
Izod Notched Impact, kJ/m <sup>2</sup>	180		
23C		90	-
Charpy Notched, kJ/m <sup>2</sup>	179		
23C		115	-
THERMAL	ISO Test Method	Dry	Conditioned
Melting Point, C	3146	220	-
HDT A, C	75	40	-



Middle 225-250 degC (437-482 degF)  
Front 225-245 degC (437-473 degF)

Head 230-245 degC (446-473 degF)  
Flange 230-245 degC (446-473 degF)  
Die 230-245 degC (446-473 degF)

## Screw Parameters

Metering Section	40%
Transition Section	3 to 4 flights
Feed Section	balance of screw length
Compression Ratio	3.5:1 to 4.0:1
L/D Ratio	20:1 to 24:1

## Tooling & Sizing

Die to Finished Tube dia. 1.5-2.0:1

Selection of pin and die size will be dependent on the material viscosity. In general, the ratio of die size to finished tube diameter is about 1.5-2.0:1. The mandrel (pin) size is determined the same way in relation to the inner tube diameter.

Free (open tank) extrusion is recommended when producing tube diameters 9.5mm and below. For larger diameters, a differential pressure vacuum tank is recommended.

Tooling draw ratio is generally higher with free extrusion versus sizing, but will depend on melt viscosity. The vacuum sizer entrance should be about 3-9% larger than the finished tube outer diameter. Selection will depend on melt viscosity and die swell of the extrudate.

## Quenching

For diameters less than or equal to 9.5mm (.37") O.D., open tank quenching with normal tap water is suggested. Depending upon line speed, quenching distance can vary from 7.5 to 12 meters (24.6 -39.4 feet). A short air gap (die to quench water) is recommended for both tubing and cable jacketing for best flexibility.

## Note

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