# Novodur® HD M203FC

Acrylonitrile Butadiene Styrene INEOS Styrolution

## **Technical Data**

## Product Description

Novodur® HD M203FC is an injection molding grade especially suitable for medical applications providing high flowability.

#### FEATURES

- HD service package
- High flowability
- Sterlizable

#### APPLICATIONS

- · Medical appliances
- · Inhaler housings
- Insuline pens

#### General

General			
Material Status	Commercial: Active		
Literature <sup>1</sup>	<ul> <li>Technical Datasheet (Englished)</li> </ul>	lish)	
Search for UL Yellow Card	<ul> <li>INEOS Styrolution</li> <li>Novodur®</li> </ul>		
Availability	<ul><li> Africa &amp; Middle East</li><li> Asia Pacific</li></ul>	<ul><li>Europe</li><li>Latin America</li></ul>	North America
Features	<ul> <li>Good Sterilizability</li> </ul>	High Flow	
Uses	Housings	<ul> <li>Medical/Healthcare Applications</li> </ul>	
Forms	Pellets		
Processing Method	<ul> <li>Injection Molding</li> </ul>		

Tensile Modulus         2400 MPa         ISO 527-2           Tensile Stress (Yield, 23°C)         46.0 MPa         ISO 527-2           Tensile Strain         ISO 527-2           Yield, 23°C         2.6 %           Break, 23°C         > 15 %           Flexural Modulus (23°C)         2400 MPa         ISO 178           Flexural Modulus (23°C)         2400 MPa         ISO 178           Flexural Stress (23°C)         70.0 MPa         ISO 178           mpact         Nominal Value Unit         Test Method           Charpy Notched Impact Strength         ISO 179/1eA         -30°C           -30°C         7.0 kJ/m²         -23°C           23°C         110 kJ/m²         -100 kJ/m²           Notched Izod Impact Strength         ISO 180/A           -30°C         7.0 kJ/m²         -23°C           23°C         110 kJ/m²         -23°C           23°C         110 kJ/m²         -23°C           30°C         7.0 kJ/m²         -23°C           23°C         16 kJ/m²         -23°C	Physical	Nominal Value Unit	Test Method
Molding Shrinkage         0.40 to 0.70 %         ISO 294-4           Water Absorption (Saturation, 23°C)         0.95 %         ISO 62           Alechanical         Nominal Value Unit         Test Method           Tensile Modulus         2400 MPa         ISO 527-2           Tensile Stress (Yield, 23°C)         46.0 MPa         ISO 527-2           Tensile Strain         ISO 527-2         ISO 527-2           Flexural Modulus (23°C)         2.6 %         ISO 527-2           Flexural Modulus (23°C)         2400 MPa         ISO 178           Flexural Stress (23°C)         70.0 MPa         ISO 178           Flexural Stress (23°C)         70.0 MPa         ISO 178           Charpy Notched Impact Strength         ISO 179/1eA         -30°C           -30°C         90 kJ/m²         ISO 179/1eU           -30°C         90 kJ/m²         ISO 180/A           23°C         110 kJ/m²         ISO 180/A           -30°C         7.0 kJ/m²         ISO 180/A <tr< td=""><td>Density</td><td>1.05 g/cm<sup>3</sup></td><td>ISO 1183</td></tr<>	Density	1.05 g/cm <sup>3</sup>	ISO 1183
Water Absorption (Saturation, 23°C)0.95 %ISO 62AechanicalNominal Value UnitTest MethodTensile Modulus2400 MPaISO 527-2Tensile Stress (Yield, 23°C)46.0 MPaISO 527-2Tensile StrainISO 527-2ISO 527-2Yield, 23°C2.6 %ISO 527-2Break, 23°C> 15 %FFlexural Modulus (23°C)2400 MPaISO 178Flexural Stress (23°C)70.0 MPaISO 178Flexural Stress (23°C)70.0 MPaISO 178MappedNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C30°C90 kJ/m²23°C10 kJ/m²ISO 180/A-30°C7.0 kJ/m²ISO 180/A-30°C7.0 kJ/m²ISO 180/A-30°C7.0 kJ/m²ISO 180/A-30°C7.0 kJ/m²ISO 180/A-30°C16 kJ/m²<	Melt Volume-Flow Rate (MVR) (220°C/10.0 kg)	31 cm <sup>3</sup> /10min	ISO 1133
AcchanicalNominal Value UnitTest MethodTensile Modulus2400 MPaISO 527-2Tensile Stress (Yield, 23°C)46.0 MPaISO 527-2Tensile StrainISO 527-2Yield, 23°C2.6 %Break, 23°C> 15%Flexural Modulus (23°C)2400 MPaISO 178Flexural Modulus (23°C)70.0 MPaISO 178Flexural Stress (23°C)70.0 MPaISO 178MethodNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C7.0 kJ/m²ISO 179/1eU-30°C90 kJ/m²ISO 179/1eU-30°C110 kJ/m²ISO 180/A-30°C7.0 kJ/m²ISO 180/A-30°C16	Molding Shrinkage	0.40 to 0.70 %	ISO 294-4
Tensile Modulus         2400 MPa         ISO 527-2           Tensile Stress (Yield, 23°C)         46.0 MPa         ISO 527-2           Tensile Strain         ISO 527-2           Yield, 23°C         2.6 %           Break, 23°C         > 15 %           Flexural Modulus (23°C)         2400 MPa         ISO 178           Flexural Modulus (23°C)         70.0 MPa         ISO 178           Flexural Stress (23°C)         70.0 MPa         ISO 178           mpact         Nominal Value Unit         Test Method           Charpy Notched Impact Strength         ISO 179/1eA         1SO 179/1eA           -30°C         7.0 kJ/m²         23°C         1SO 179/1eU           -30°C         90 kJ/m²         1SO 179/1eU         1SO 180/A           -30°C         7.0 kJ/m²         1SO 180/A         1SO 180/A           -30°C         7.0 kJ/m²         1SO 180/A         1SO 180/A           -30°C         7.0 kJ/m²         1SO 180/A         1SO 180/A           -30°C         1	Water Absorption (Saturation, 23°C)	0.95 %	ISO 62
Tensile Mittal         It of all all all all all all all all all al	Mechanical	Nominal Value Unit	Test Method
Tensile Strain         ISO 527-2           Yield, 23°C         2.6 %           Break, 23°C         > 15 %           Flexural Modulus (23°C)         2400 MPa         ISO 178           Flexural Stress (23°C)         70.0 MPa         ISO 178           mpact         Nominal Value Unit         Test Method           Charpy Notched Impact Strength         ISO 179/1eA         -30°C           -30°C         7.0 kJ/m²         -30°C           23°C         16 kJ/m²         -30°C           23°C         10 kJ/m²         -4000000000000000000000000000000000000	Tensile Modulus	2400 MPa	ISO 527-2
Yield, 23°C     2.6 %       Break, 23°C     > 15 %       Flexural Modulus (23°C)     2400 MPa     ISO 178       Flexural Stress (23°C)     70.0 MPa     ISO 178       mpact     Nominal Value Unit     Test Method       Charpy Notched Impact Strength     ISO 179/1eA       -30°C     7.0 kJ/m²       23°C     16 kJ/m²       Charpy Unnotched Impact Strength     ISO 179/1eU       -30°C     90 kJ/m²       23°C     110 kJ/m²       Notched Izod Impact Strength     ISO 180/A       -30°C     7.0 kJ/m²       23°C     110 kJ/m²       Notched Izod Impact Strength     ISO 180/A       -30°C     7.0 kJ/m²       23°C     16 kJ/m²       Notched Izod Impact Strength     ISO 180/A       -30°C     7.0 kJ/m²       23°C     110 kJ/m²	Tensile Stress (Yield, 23°C)	46.0 MPa	ISO 527-2
Break, 23°C> 15 %Flexural Modulus (23°C)2400 MPaISO 178Flexural Stress (23°C)70.0 MPaISO 178mpactNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C7.0 kJ/m²23°C16 kJ/m²Charpy Unnotched Impact StrengthISO 179/1eU-30°C90 kJ/m²23°C110 kJ/m²Notched Izod Impact StrengthISO 179/1eU-30°C90 kJ/m²23°C110 kJ/m²Notched Izod Impact StrengthISO 180/A-30°C7.0 kJ/m²23°C16 kJ/m²Notched Izod Impact StrengthISO 180/A-30°C7.0 kJ/m²23°C16 kJ/m²	Tensile Strain		ISO 527-2
Flexural Modulus (23°C)2400 MPaISO 178Flexural Stress (23°C)70.0 MPaISO 178mpactNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C7.0 kJ/m²23°C16 kJ/m²Charpy Unnotched Impact StrengthISO 179/1eU-30°C90 kJ/m²23°C110 kJ/m²Notched Izod Impact StrengthISO 180/A-30°C7.0 kJ/m²23°C110 kJ/m²Notched Izod Impact StrengthISO 180/A-30°C7.0 kJ/m²23°C16 kJ/m²ArdnessNominal Value UnitTest Method	Yield, 23°C	2.6 %	
Flexural Stress (23°C)70.0 MPaISO 178mpactNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C7.0 kJ/m²23°C16 kJ/m²Charpy Unnotched Impact StrengthISO 179/1eU-30°C90 kJ/m²23°C110 kJ/m²Notched Izod Impact StrengthISO 180/A-30°C7.0 kJ/m²23°C16 kJ/m²Notched Izod Impact StrengthISO 180/A-30°C7.0 kJ/m²23°C16 kJ/m²HardnessNominal Value UnitTest Method	Break, 23°C	> 15 %	
mpactNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C7.0 kJ/m²23°C16 kJ/m²Charpy Unnotched Impact StrengthISO 179/1eU-30°C90 kJ/m²23°C110 kJ/m²Notched Izod Impact StrengthISO 180/A-30°C7.0 kJ/m²23°C16 kJ/m²Notched Izod Impact StrengthISO 180/A-30°C7.0 kJ/m²23°C16 kJ/m²HardnessNominal Value UnitTest Method	Flexural Modulus (23°C)	2400 MPa	ISO 178
Charpy Notched Impact StrengthISO 179/1eA-30°C7.0 kJ/m²23°C16 kJ/m²Charpy Unnotched Impact StrengthISO 179/1eU-30°C90 kJ/m²23°C110 kJ/m²Notched Izod Impact StrengthISO 180/A-30°C7.0 kJ/m²23°C16 kJ/m²Notched Izod Impact StrengthISO 180/A-30°C7.0 kJ/m²-30°C16 kJ/m²-30°C7.0 kJ/m²-30°C7.0 kJ/m²-30°C7.0 kJ/m²-30°C7.0 kJ/m²-30°C7.0 kJ/m²-30°C16 kJ/m²-30°C16 kJ/m²	Flexural Stress (23°C)	70.0 MPa	ISO 178
-30°C7.0 kJ/m²23°C16 kJ/m²Charpy Unnotched Impact StrengthISO 179/1eU-30°C90 kJ/m²23°C110 kJ/m²Notched Izod Impact StrengthISO 180/A-30°C7.0 kJ/m²23°C16 kJ/m²HardnessNominal Value UnitTest Method	Impact	Nominal Value Unit	Test Method
23°C16 kJ/m²Charpy Unnotched Impact StrengthISO 179/1eU-30°C90 kJ/m²23°C110 kJ/m²Notched Izod Impact StrengthISO 180/A-30°C7.0 kJ/m²23°C16 kJ/m²4ardnessNominal Value UnitTest Method	Charpy Notched Impact Strength		ISO 179/1eA
Charpy Unnotched Impact StrengthISO 179/1eU-30°C90 kJ/m²23°C110 kJ/m²Notched Izod Impact StrengthISO 180/A-30°C7.0 kJ/m²23°C16 kJ/m²HardnessNominal Value UnitTest Method	-30°C	7.0 kJ/m <sup>2</sup>	
-30°C     90 kJ/m²       23°C     110 kJ/m²       Notched Izod Impact Strength     ISO 180/A       -30°C     7.0 kJ/m²       23°C     16 kJ/m²       Hardness     Nominal Value Unit     Test Method	23°C	16 kJ/m²	
23°C     110 kJ/m²       Notched Izod Impact Strength     ISO 180/A       -30°C     7.0 kJ/m²       23°C     16 kJ/m²       Hardness     Nominal Value Unit     Test Method	Charpy Unnotched Impact Strength		ISO 179/1eU
Notched Izod Impact Strength     ISO 180/A       -30°C     7.0 kJ/m²       23°C     16 kJ/m²       Hardness     Nominal Value Unit     Test Method	-30°C	90 kJ/m <sup>2</sup>	
-30°C     7.0 kJ/m²       23°C     16 kJ/m²       Hardness     Nominal Value Unit     Test Method	23°C	110 kJ/m <sup>2</sup>	
23°C     16 kJ/m²       Hardness     Nominal Value Unit     Test Method	Notched Izod Impact Strength		ISO 180/A
Hardness Nominal Value Unit Test Method	-30°C	7.0 kJ/m <sup>2</sup>	
	23°C	16 kJ/m²	
Ball Indentation Hardness105 MPaISO 2039-1	Hardness	Nominal Value Unit	Test Method
	Ball Indentation Hardness	105 MPa	ISO 2039-1



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Thermal	Nominal Value Unit	Test Method
Heat Deflection Temperature <sup>3</sup>		
0.45 MPa, Annealed	98.0 °C	ISO 75-2/B
1.8 MPa, Annealed	94.0 °C	ISO 75-2/A
Vicat Softening Temperature		
	101 °C	ISO 306/B120
	99.0 °C	ISO 306/B50
	102 °C	ISO 306/A50
CLTE - Flow	9.0E-5 cm/cm/°C	ISO 11359-2
Electrical	Nominal Value Unit	Test Method
Surface Resistivity	> 1.0E+15 ohms	IEC 60093
Volume Resistivity	> 1.0E+15 ohms∙cm	IEC 60093
Electric Strength (1.50 mm)	35 kV/mm	IEC 60243-1
Relative Permittivity		IEC 60250
100 Hz	3.00	
1 MHz	2.90	
Dissipation Factor		IEC 60250
100 Hz	5.0E-3	
1 MHz	9.0E-3	
Comparative Tracking Index	600 V	IEC 60112
Flammability	Nominal Value Unit	Test Method
Flame Rating (1.5 mm)	HB	IEC 60695-11-10
Injection	Nominal Value Unit	
Drving Temperature	80 °C	

njecton	Norminal value offic	
Drying Temperature	80 °C	
Drying Time	2.0 to 4.0 hr	
Processing (Melt) Temp	230 to 260 °C	
Mold Temperature	60 to 80 °C	
Injection Velocity	14 m/min	

### Notes

<sup>1</sup> These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

<sup>2</sup> Typical properties: these are not to be construed as specifications.

<sup>3</sup> 4h/80°C



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Acrylonitrile Butadiene Styrene INEOS Styrolution

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### Where to Buy

#### Supplier

INEOS Styrolution Frankfurt, Germany Telephone: +49 69 5095501200 Web: http://www.ineos-styrolution.com

## Distributor

ALBIS Plastic ALBIS Plastic is a global distribution and compounding company. Contact ALBIS Plastic for availability of individual products per country. Telephone: +49-40-78105-0

Web: http://www.albis.com/

Availability: Algeria, Austria, Belgium, Bulgaria, China, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hong Kong, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tunisia, Turkey, United Kingdom

#### **Amco Polymers**

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#### M. Holland Canada Company Telephone: 905-665-1168 Web: http://www.mholland.com/

Availability: Canada

M. Holland Company Telephone: 855-497-1403 Web: http://www.mholland.com/ Availability: Mexico, United States

PolyOne Distribution

PolyOne Distribution is a global distribution company. Contact PolyOne Distribution for availability of individual products by country. Telephone: 440-930-3004 Web: http://polyonedistribution.com/ Availability: Global

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