# InnoPlus HD8100MB

### High Density Polyethylene

PTT Global Chemical Public Company Limited

#### Message:

InnoPlus HD8100MB is a black compounded-high density polyethylene pipe grade which is certified as PE100.

Both are bimodal resins exhibit excellent creep resistance and chemical resistance properties. They are suitable for high quality pressure pipes, produced by conventional pipe extrusion process.

RoHS Compliance         RoHS Compliant           Appearance         Black           Forms         Pellets           Processing Method         Pipe Extrusion           Physical         Nominal Value         Unit         Test Method           Density         0.962         g/to min         ISO 1183           Melt Mass-Flow Rate (MFR) (190°C/5.0 kg)         0.25         g/10 min         ISO 133           Environmental Stress-Cracking Resistance (25% Igepal, F50)         > 2000         hr         ASTM D1693B           Carbon Black Content         > 2.0         %         ISO 6964           Oxidation Induction Time (200°C)         > 50         min         ISO 11357-6           Hardness         Nominal Value         Unit         Test Method           Durometer Hardness (Shore D)         64         Test Method         Test Method           Mechanical         Nominal Value         Unit         Test Method           Tensile Stress         ISO 527-2         Yield         24.0         MPa           Break         36.0         MPa         ISO 527-2           Yield         24.0         MPa         ISO 527-2           Yield         25.0         MPa         ASTM D747	General Information			
	Additive	Carbon Black (2%)		
Uses	Features	Food Contact Acceptable		
Uses         Piping           Agency Ratings         FDA 21 CFR 177.1520           ISO 12162 PE 100         FDA 21 CFR 177.1520           ROHS Compliance         ROHS Compliant           Appearance         Black           Forms         Pellets           Processing Method         Pipe Extrusion           Physical         Nominal Value         Unit         Test Method           Density         0.962         g/cm³         150 1183           Environmental Stress-Cracking Resistance         2.95         g/10 min         150 1133           Environmental Stress-Cracking Resistance         2.900         hr         ASTM D16938           Carbon Black Content         > 2.00         %         150 6964           Oxidation Induction Time (200°C)         > 50         min         150 11357-6           Hardness         Nominal Value         Unit         Test Method           Durometer Hardness (Shore D)         64         ASTM D2240           Mechanical         Nominal Value         Unit         Test Method           Tensile Stress         I So 527-2         Viold         42.0         MPa           Break         36.0         MPa         150 527-2		Good Chemical Resistance		
### Repair of Part of		Good Creep Resistance		
### Repair of Part of				
ROHS Compliance   ROHS Compliant	Uses	Piping		
RoHS Compliance           Appearance         Black           Forms         Pellets           Processing Method         Pipe Extrusion           Physical         Nominal Value         Unit         Test Method           Density         0.962         g/cm³         ISO 1183           Melt Mass-Flow Rate (MFR) (190°C/5.0 kg)         0.25         g/10 min         ISO 1133           Environmental Stress-Cracking Resistance (25% Igepal, F50)         > 2000         hr         ASTM D16938           Carbon Black Content         > 2.0         %         ISO 6964           Oxidation Induction Time (200°C)         > 50         min         ISO 11357-6           Hardness         Nominal Value         Unit         Test Method           Durometer Hardness (Shore D)         64         ASTM D2240           Mechanical         Nominal Value         Unit         Test Method           Tensile Stress         ISO 527-2         Yield         24.0         MPa           Break         36.0         MPa         ISO 527-2           Yield         24.0         MPa         ASTM D747           Flexural Modulus         130         MPa         ASTM D747           Flexural Modulus         Nominal Value </td <td>Agency Ratings</td> <td>FDA 21 CFR 177.1520</td> <td></td> <td></td>	Agency Ratings	FDA 21 CFR 177.1520		
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Appearance         Black           Forms         Pellets           Processing Method         Pipe Extrusion           Physical         Nominal Value         Unit         Test Method           Density         0.962         g/cm³         ISO 1183           Melt Mass-Flow Rate (MFR) (190°C/5.0 kg)         0.25         g/10 min         ISO 1183           Environmental Stress-Cracking Resistance (25% Igepal, F50)         > 2000         hr         ASTM D1693B           Carbon Black Content         > 2.0         %         ISO 6964           Oxidation Induction Time (200°C)         > 50         min         ISO 11357-6           Hardness         Nominal Value         Unit         Test Method           Durometer Hardness (Shore D)         64         Unit         Test Method           Mechanical         Nominal Value         Unit         Test Method           Tensile Stress         24.0         MPa         MPa           Break         36.0         MPa         ISO 527-2           Yield         28.0         %         ISO 527-2           Apparent Bending Modulus         785         MPa         ASTM D790           Impact         Nominal Value         Unit         Test Method				
Forms         Pellets           Processing Method         Pipe Extrusion           Physical         Nominal Value         Unit         Test Method           Density         0.962         g/cm³         ISO 1183           Melt Mass-Flow Rate (MFR) (190°C/S.0 kg)         0.25         g/10 min         ISO 1133           Environmental Stress-Cracking Resistance (25% lgepal, F50)         > 2000         hr         ASTM D1693B           Carbon Black Content         > 2.0         %         ISO 6964           Oxidation Induction Time (200°C)         > 50         min         ISO 11357-6           Hardness         Nominal Value         Unit         Test Method           Durometer Hardness (Shore D)         64         STM D2240           Mechanical         Nominal Value         Unit         Test Method           Tensile Stress         ISO 527-2         Yield         24.0         MPa           Break         36.0         MPa         ISO 527-2           Yield         24.0         MPa         ASTM D747           Flexural Modulus         785         MPa         ASTM D747           Flexural Modulus         1130         MPa         ASTM D790           Impact         Nominal Value         Unit </td <td>RoHS Compliance</td> <td>RoHS Compliant</td> <td></td> <td></td>	RoHS Compliance	RoHS Compliant		
Processing Method         Pipe Extrusion           Physical         Nominal Value         Unit         Test Method           Density         0.962         g/cm³         ISO 1183           Melt Mass-Flow Rate (MFR) (190°C/5.0 kg)         0.25         g/10 min         ISO 1133           Environmental Stress-Cracking Resistance (25% lgepal, F50)         > 2000         hr         ASTM D1693B           Carbon Black Content         > 2.0         %         ISO 6964           Oxidation Induction Time (200°C)         > 50         min         ISO 11357-6           Hardness         Nominal Value         Unit         Test Method           Durometer Hardness (Shore D)         64         —         ASTM D2240           Mechanical         Nominal Value         Unit         Test Method           Tensile Stress         —         ISO 527-2           Yield         24.0         MPa           Break         36.0         MPa           Tensile Strain (Break)         780         %         ISO 527-2           Apparent Bending Modulus         785         MPa         ASTM D747           Flexural Modulus         1130         MPa         ASTM D790           Impact         Nominal Value         Unit         <	Appearance	Black		
Physical         Nominal Value         Unit         Test Method           Density         0.962         g/cm³         ISO 1183           Melt Mass-Flow Rate (MFR) (190°C/5.0 kg)         0.25         g/10 min         ISO 1133           Environmental Stress-Cracking Resistance (25% Igepal, F50)         > 2000         hr         ASTM D1693B           Carbon Black Content         > 2.0         %         ISO 6964           Oxidation Induction Time (200°C)         > 50         min         ISO 11357-6           Hardness         Nominal Value         Unit         Test Method           Durometer Hardness (Shore D)         64         XSTM D2240           Mechanical         Nominal Value         Unit         Test Method           Tensile Stress         Yeld         24.0         MPa           Break         36.0         MPa         ISO 527-2           Yield         24.0         MPa         ISO 527-2           Apparent Bending Modulus         785         MPa         ASTM D747           Flexural Modulus         1130         MPa         ASTM D790           Impact         Nominal Value         Unit         Test Method           Nominal Value         Unit         Test Method	Forms	Pellets		
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Melt Mass-Flow Rate (MFR) (190°C/5.0 kg)         0.25         g/10 min         ISO 1133           Environmental Stress-Cracking Resistance (25% Igepal, F50)         > 2000         hr         ASTM D1693B           Carbon Black Content         > 2.0         %         ISO 6964           Oxidation Induction Time (200°C)         > 50         min         ISO 11357-6           Hardness         Nominal Value         Unit         Test Method           Durometer Hardness (Shore D)         64         ASTM D2240           Mechanical         Nominal Value         Unit         Test Method           Tensile Stress         Jiso 527-2         ISO 527-2           Yield         24.0         MPa           Break         36.0         MPa           Tensile Strain (Break)         780         %         ISO 527-2           Apparent Bending Modulus         785         MPa         ASTM D747           Flexural Modulus         1130         MPa         ASTM D790           Impact         Nominal Value         Unit         Test Method           Nothed Izod Impact <sup>1</sup> 490         J/m         ASTM D256	Physical	Nominal Value	Unit	Test Method
Environmental Stress-Cracking Resistance (25% Igepal, F50)   > 2000   hr   ASTM D1693B	Density	0.962	g/cm³	ISO 1183
(25% Igepal, F50)         > 2000         hr         ASTM D1693B           Carbon Black Content         > 2.0         %         ISO 6964           Oxidation Induction Time (200°C)         > 50         min         ISO 11357-6           Hardness         Nominal Value         Unit         Test Method           Durometer Hardness (Shore D)         64         ASTM D2240           Mechanical         Nominal Value         Unit         Test Method           Tensile Stress         ISO 527-2         Yield         24.0         MPa           Break         36.0         MPa         ISO 527-2           Apparent Bending Modulus         785         MPa         ASTM D747           Flexural Modulus         1130         MPa         ASTM D790           Impact         Nominal Value         Unit         Test Method           Notched Izod Impact <sup>1</sup> 490         J/m         ASTM D256	Melt Mass-Flow Rate (MFR) (190°C/5.0 kg)	0.25	g/10 min	ISO 1133
Carbon Black Content         > 2.0         %         ISO 6964           Oxidation Induction Time (200°C)         > 50         min         ISO 11357-6           Hardness         Nominal Value         Unit         Test Method           Durometer Hardness (Shore D)         64         Unit         Test Method           Mechanical         Nominal Value         Unit         Test Method           Tensile Stress         ISO 527-2         ISO 527-2           Yield         24.0         MPa           Break         36.0         MPa           Tensile Strain (Break)         780         %         ISO 527-2           Apparent Bending Modulus         785         MPa         ASTM D747           Flexural Modulus         1130         MPa         ASTM D790           Impact         Nominal Value         Unit         Test Method           Notched Izod Impact 1         490         J/m         ASTM D256		2000		ACTIA D1002D
Oxidation Induction Time (200°C) > 50 min ISO 11357-6 Hardness Nominal Value Unit Test Method Durometer Hardness (Shore D) 64 ASTM D2240 Mechanical Nominal Value Unit Test Method Tensile Stress ISO 527-2 Yield 24.0 MPa Break 36.0 MPa Tensile Strain (Break) 780 % ISO 527-2 Apparent Bending Modulus 785 MPa Flexural Modulus 1130 MPa Impact Nominal Value Unit Test Method Notched Izod Impact 1 490 J/m ASTM D256				
HardnessNominal ValueUnitTest MethodDurometer Hardness (Shore D)64ASTM D2240MechanicalNominal ValueUnitTest MethodTensile StressISO 527-2Yield24.0MPaBreak36.0MPaTensile Strain (Break)780%ISO 527-2Apparent Bending Modulus785MPaASTM D747Flexural Modulus1130MPaASTM D790ImpactNominal ValueUnitTest MethodNotched Izod Impact 1490J/mASTM D256				
Durometer Hardness (Shore D) 64  Mechanical Nominal Value Unit Test Method  Tensile Stress ISO 527-2  Yield 24.0 MPa  Break 36.0 MPa  Tensile Strain (Break) 780 % ISO 527-2  Apparent Bending Modulus 785 MPa  Flexural Modulus 1130 MPa  Impact Nominal Value Unit Test Method  Notched Izod Impact 1 490 J/m ASTM D256				
MechanicalNominal ValueUnitTest MethodTensile StressISO 527-2Yield24.0MPaBreak36.0MPaTensile Strain (Break)780%ISO 527-2Apparent Bending Modulus785MPaASTM D747Flexural Modulus1130MPaASTM D790ImpactNominal ValueUnitTest MethodNotched Izod Impact 1490J/mASTM D256			Unit	
Tensile Stress         Yield       24.0       MPa         Break       36.0       MPa         Tensile Strain (Break)       780       %       ISO 527-2         Apparent Bending Modulus       785       MPa       ASTM D747         Flexural Modulus       1130       MPa       ASTM D790         Impact       Nominal Value       Unit       Test Method         Notched Izod Impact 1       490       J/m       ASTM D256				
Yield24.0MPaBreak36.0MPaTensile Strain (Break)780%ISO 527-2Apparent Bending Modulus785MPaASTM D747Flexural Modulus1130MPaASTM D790ImpactNominal ValueUnitTest MethodNotched Izod Impact 1490J/mASTM D256	Mechanical	Nominal Value	Unit	
Break36.0MPaTensile Strain (Break)780%ISO 527-2Apparent Bending Modulus785MPaASTM D747Flexural Modulus1130MPaASTM D790ImpactNominal ValueUnitTest MethodNotched Izod Impact 1490J/mASTM D256				ISO 527-2
Tensile Strain (Break)780%ISO 527-2Apparent Bending Modulus785MPaASTM D747Flexural Modulus1130MPaASTM D790ImpactNominal ValueUnitTest MethodNotched Izod Impact 1490J/mASTM D256	Yield		MPa	
Apparent Bending Modulus 785 MPa ASTM D747  Flexural Modulus 1130 MPa ASTM D790  Impact Nominal Value Unit Test Method  Notched Izod Impact 1 490 J/m ASTM D256	Break	36.0	MPa	
Flexural Modulus 1130 MPa ASTM D790 Impact Nominal Value Unit Test Method Notched Izod Impact 1 490 J/m ASTM D256	Tensile Strain (Break)	780	%	ISO 527-2
ImpactNominal ValueUnitTest MethodNotched Izod Impact 1490J/mASTM D256	Apparent Bending Modulus	785	MPa	ASTM D747
Notched Izod Impact <sup>1</sup> 490 J/m ASTM D256	Flexural Modulus	1130	MPa	ASTM D790
		Nominal Value	Unit	Test Method
Thermal Nominal Value Unit Test Method	Notched Izod Impact <sup>1</sup>	490	J/m	ASTM D256
	Thermal	Nominal Value	Unit	Test Method

Vicat Softening Temperature	124	°C	ASTM D1525 <sup>2</sup>	
Melting Temperature	128	°C	ASTM D3418	
Extrusion	Nominal Value	Unit		
Cylinder Zone 1 Temp.	180 to 200	°C		
Cylinder Zone 2 Temp.	180 to 200	°C		
Cylinder Zone 3 Temp.	180 to 200	°C		
Cylinder Zone 4 Temp.	180 to 200	°C		
Cylinder Zone 5 Temp.	180 to 200	°C		
Die Temperature	190 to 220	°C		
NOTE				
1.	Non break			
2.	Rate A (50°C/h), Loading 1 (10 N)	Rate A (50°C/h), Loading 1 (10 N)		

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