# SureSpec HD50-10

### High Density (HMW) Polyethylene

#### **Genesis Polymers**

#### Message:

HD50-10 is a High Molecular Weight polyethylene copolymer certified prime grade developed for blow molding and thermoforming of high performance large size industrial parts. HD50-10 features good processability, good melt strength and rigidity, excellent combination of low temperature Impact strength and chemical resistance. HD50-10 recommended processing temperature is 190 to 210°C. HD50-10 complies with FDA regulation 21CFR 177.1520(c) 3.1a + 3.2a (conditions of use B through H) and with most international regulations concerning the use of Polyethylene in contact with food articles.

High densityGood melt strength Low temperature impact resistance Good chenical resistanceGood chenical resistance Compliance of Food Exposure Medium hardnessUsesIndustrial componentsAgency RatingsFDA 21 CFR 177.1520(r) 3.1a & 3.2 a, B through HFormsParticleProcessing MethodBlow molding ThermoformingPhysicalNominal ValueUnitPhysical0.948g/cm <sup>3</sup> Astim D1505Wet Mass-Flow Rate (MFR) (190°C/2.16 sg)< 0.10> 600hrASTM D1505Wet Mass-Flow Rate (MFR) (190°C/2.16 sg)< 0.10> 600hrASTM D1503MetanicalNominal ValueUnitTest MethodNominal ValueInvig Ingel, FS0)< 0.10%10> 600hrASTM D1503MetanicalNominal ValueUnitTestsle Ingel 1 <sup>°</sup> (Yield)248MPaResise Ingel 2 <sup>°</sup> (Greak)100%20120MPaASTM D1638Flexural Modulus1210MPaResise Ingerst Strength <sup>1</sup> (Yield)252k//m <sup>2</sup> Tensine Ingerst Strength <sup>1</sup> (Yield)252k//m <sup>2</sup> Resise Ingerst Strength <sup>1</sup> (NethodNominal ValueUnitTest MethodNominal ValueUnitTest MethodNominal ValueNominal ValueTest MethodNominal ValueNominal ValueTest MethodNominal ValueNominal ValueTest MethodNominal ValueNominal Value	General Information				
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Workability.goodGood mett strengthLow temperature impact resistanceGood chemical resistanceCompliance of Food ExposureMedium hardnessVariance of Food ExposureAgency RatingsPhatciaProcessing MethodBow moldingThermoformingPhysicaPhysicaNominal ValueUnitTeense for Water (MFR) (190°C/2.16)StatustionRight-Fibre (MER) (190°C/2.16)Statustion <td rowspan="6"></td> <td colspan="4">High density</td>		High density			
Good met strength   Low temperature impact resistance     Coord hemical resistance   Coord hemical resistance     Compliance of Food Exposure   Medium hardness     Vises   Industrial components     Agency Ratings   FDA 21 CFR 177.1520(c) 3.1.8 & 3.2.8 B through H     Forms   Particle     Processing Method   Blow molding     Thermoforming   Thermoforming     Physical   Nominal Value   Unit     Method   Jonan   ASTM D1505     Physical   Nominal Value   gron <sup>3</sup> C   ASTM D1505     Physical   Colo   gron <sup>3</sup> C   ASTM D1633     Environmental Stress-Cracking Resistance   Folo   hr   ASTM D1633     Environmental Stress-Cracking Resistance   Folo   Nominal Value   Unit   Test Method     Environmental Stress-Cracking Resistance   Folo   Nominal Value   ASTM D1633   ASTM D1633     Environmental Stress-Cracking Resistance   Folo   Nominal Value   ASTM D1633   ASTM D1633     Environmental Stress-Cracking Resistance   Folo   Nominal Value   ASTM D1633   ASTM D1633     Environmental Stress-Cracking Resistance		Copolymer			
Low temperature impact resistance God chemical resistance Compliance of Food Exposure Medium hardnessUsesIndustrial componentsAgency RatingsFDA 21 CFR 177.1520(c) 3.1a & 3.2a. B through HFormsParticleProcessing MethodBow molding ThermoformingPhysicalNominal ValueDensity0.9480.948g/cm³Methanser-Flow Rate (MFR) (190°C/2.16) (190°L/2.16)6.00hrConsinal ValueJoineMethanser-Flow Rate (MFR) (190°C/2.16) (190°L/2.16)6.00hrConsinal ValueJoineMethanser-Flow Rate (MFR) (190°C/2.16) (190°L/2.16)6.00hrConsinal ValueJoineMethanser-Flow Rate (MFR) (190°C/2.16) (190°L/2.16)6.00hrConsinal ValueJoineMethanser-Flow Rate (MFR) (190°C/2.16) (190°L/2.16)6.00hrConsinal ValueJoineConsinal ValueJoineMethanicalNominal ValueInvinal ValueJoineTensile Elongtion <sup>1</sup> (Yield)210MethanicalJoineInstruct Tensile MondulusJoineTensile Interpation <sup>1</sup> (2s°C)52JoineJoineTensile Interpation <sup>1</sup> (2s°C)52JoineJoineTensile Interpation <sup>1</sup> (2s°C)JoineJoine HartJoineTensile Interpation <sup>1</sup> (2s°C)52JoineJoineTensile Interpation <sup>1</sup> (2s°C)52Joine <t< td=""><td colspan="4">Workability, good</td></t<>		Workability, good			
Good chemical resistance   Compliance of Food Exposure     Medium hardness   Medium hardness     Uses   Industrial components     Agency Ratings   FDA 21 CFR 177.1520(c) 3.1a & 3.2 a. B through H     Forms   Particle     Processing Method   Blow molding     Thermoforming   Thermoforming     Physical   Nominal Value   Unit   Test Method     Meth Mass-Flow Rate (MFR) (190°C/2.16)   < 0.10		Good melt strength			
Compliance of Food Exposure Medium hardness     Uses   Industrial components     Agency Ratings   FDA 21 CFR 177.1520(c) 3.1a & 3.2. B through H     Forms   Particle     Processing Method   Blow molding Thermoforming     Physical   Nominal Value   Unit     Physical   Nominal Value   g/m³     Physical   0.48   g/min     Methysical   o.10   g/10 min     Methysical   o.10   g/10 min     Methysical   o.10   minal Value     Methysical   o.10   g/10 min     Methysical   o.10   g/10 min     Methysical   o.10   g/10 min     Methysical   o.10   Minal Value     Methysical   o.10   Minal Value     Methysical   o.10   Magence     Minal Value   Unit   Test Method     Tensile Elongation <sup>2</sup> (Break)   0.0   Magence     Metury 1 (Yield)   2.10   Magence   ASTM D1638     Flexural Modulus   101   Test Method   Magence     Flexural Modulus   101   StM D638   M		Low temperature impact resistance			
Medium hardness     Uses   Industrial components     Agency Ratings   FDA 21 CFR 177.1520(c) 3.1a & 3.2 ± Hrough H     Forms   PATICLE     Forms   Particle     Processing Method   Blow molding Thermoforming     Physical   Nominal Value   Unit   Test Method     Density   0.948   g/cm³   ASTM D1505     Regionental Stress-Foracking Resistance (10% lgepal F50)   -010   g/cm³   ASTM D1505     Forigonental Stress-Cracking Resistance (10% lgepal F50)   -600   Inti   Test Method     Forsing Leiongation <sup>2</sup> (Areak)   Nominal Value   Unit   Test Method     Forsing Leiongation <sup>2</sup> (Areak)   -010   Natinal Stress-Cracking Resistance (10% lgepal F50)   -600   Inti   Test Method     Forsing Leiongation <sup>2</sup> (Yreld)   -210   MPa   ASTM D1638   ASTM D1638     Forsing Leiongation <sup>2</sup> (Stresk)   101   Test Method   Method   Method     Forsing Leiongation <sup>2</sup> (Stresk)   252   K/m²   ASTM D1632   ASTM D1632     Forsing Leiongation <sup>2</sup> (Stresk)   252   K/m²   ASTM D1632   ASTM D1632     Forsing Leiongation <sup>2</sup> (St		Good chemical resistance			
Uses   Industrial components     Agency Ratings   FDA 21 CFR 177.1520(c) 3.1a & 3.2     Forms   Particle     Processing Method   Blow molding     Thermoforming   Thermoforming     Physical   Nominal Value   Unit   Test Method     Density   0.948   g/cm³   ASTM D1505     Method   j/lomin   ASTM D1505     Physical   <0.10		Compliance of Food Exposure			
Agency Ratings   FDA 21 CFR 177.1520(c) 3.1a & 3.2a, B through H     Forms   Particle     Processing Method   Blow molding Thermoforming     Physical   Nominal Value   Unit   Test Method     Density   0.948   g/r0 <sup>n3</sup> ASTM D1505     Method   y010 min   ASTM D1505     Environmental Stress-Cracking Resistance (10% Igepal, F50)   > 600   Int   Test Method     Mechanical   Nominal Value   Unit   Test Method     If Ninial Value   Unit   Test Method     If Ninial Value   Minial Value   ASTM D1638     Flexural Modulus   1210   Mean   ASTM D638     Flexural Modulus   1210   Mean   ASTM D1632     If Past Method   Sec   Sec   ASTM D1632     If Past Method   Moninal Value   Unit   Test Method     If Past Method   Sec   Sec   ASTM D1822     If Past Method   Sec   Sec   Sec		Medium hardness			
Agency Ratings   FDA 21 CFR 177.1520(c) 3.1a & 3.2a, B through H     Forms   Particle     Processing Method   Blow molding Thermoforming     Physical   Nominal Value   Unit   Test Method     Density   0.948   g/r0 <sup>n3</sup> ASTM D1505     Method   y010 min   ASTM D1505     Environmental Stress-Cracking Resistance (10% Igepal, F50)   > 600   Int   Test Method     Mechanical   Nominal Value   Unit   Test Method     If Ninial Value   Unit   Test Method     If Ninial Value   Minial Value   ASTM D1638     Flexural Modulus   1210   Mean   ASTM D638     Flexural Modulus   1210   Mean   ASTM D1632     If Past Method   Sec   Sec   ASTM D1632     If Past Method   Moninal Value   Unit   Test Method     If Past Method   Sec   Sec   ASTM D1822     If Past Method   Sec   Sec   Sec					
Particle     Processing Method   Blow molding Thermoforming     Physical   Nominal Value   Unit   Test Method     Density   0.948   g/cm³   ASTM D1505     Meth Mass-Flow Rate (MFR) (190°C/2.16 kg)   <0.10   g/10 min   ASTM D1238     Environmental Stress-Cracking Resistance (10% Igepal, F50)   >600   hr   ASTM D1693B     Mechanical   Nominal Value   Unit   Test Method     Fersile Elongation <sup>2</sup> (Break)   700   %a   ASTM D638     Flexural Modulus   1210   MPa   ASTM D638     Flexural Modulus   1210   MPa   ASTM D790     Impact   Nominal Value   Unit   Test Method     Fersile Impact Strength <sup>3</sup> (23°C)   252   Kl/m²   ASTM D1822     Effection Temperature Under Load (0.45   Vertical   Test Method	Uses	Industrial components			
Processing Method   Blow molding Thermoforming     Physical   Nominal Value   Unit   Test Method     Density   0.948   g/cm³   ASTM D1505     Melt Mass-Flow Rate (MFR) (190°C/2.16 kg)   <0.10	Agency Ratings	FDA 21 CFR 177.1520(c) 3.1a & 3.2a, B through H			
Thermoforming     Physical   Nominal Value   Unit   Test Method     Density   0.948   g/cm³   ASTM D1505     Meth Mass-Flow Rate (MFR) (190°C/2.16 kg)   <0.10	Forms	Particle			
Physical   Nominal Value   Unit   Test Method     Density   0.948   g/cm³   ASTM D1505     Melt Mass-Flow Rate (MFR) (190°C/2.16 kg)   < 0.10	Processing Method	Blow molding			
Density0.948g/cm³ASTM D1505Melt Mass-Flow Rate (MFR) (190°C/2.16 kg)< 0.10		Thermoforming			
Density0.948g/cm³ASTM D1505Melt Mass-Flow Rate (MFR) (190°C/2.16 kg)< 0.10					
Melt Mass-Flow Rate (MFR) (190°C/2.16   < 0.10	Physical	Nominal Value	Unit	Test Method	
kg) < 0.10 g/10 min ASTM D1238 Environmental Stress-Cracking Resistance (10% Igepal, F50) > 600 hr AsTM D1693B Mechanical Nominal Value Unit Test Method Tensile Strength <sup>1</sup> (Yield) 24.8 MPa ASTM D638 Tensile Elongation <sup>2</sup> (Break) 700 % ASTM D638 Flexural Modulus 1210 MPa ASTM D638 Flexural Modulus 1210 MPa ASTM D638 Impact Mominal Value Unit Test Method Tensile Impact Strength <sup>3</sup> (23°C) 252 kJ/m <sup>2</sup> ASTM D1822 Deflection Temperature Under Load (0.45	Density	0.948	g/cm³	ASTM D1505	
Environmental Stress-Cracking Resistance (10% Igepal, F50)   > 600   hr   ASTM D1693B     Mechanical   Nominal Value   Unit   Test Method     Tensile Strength <sup>1</sup> (Yield)   24.8   MPa   ASTM D638     Tensile Elongation <sup>2</sup> (Break)   700   %   ASTM D638     Flexural Modulus   1210   MPa   ASTM D790     Impact   Nominal Value   Unit   Test Method     Tensile Impact Strength <sup>3</sup> (23°C)   252   kJ/m²   ASTM D1822     Deflection Temperature Under Load (0.45   Vominal Value   Unit   Test Method	Melt Mass-Flow Rate (MFR) (190°C/2.16				
Index (10% Igepal, F50)> 600hrASTM D1693BMechanicalNominal ValueUnitTest MethodTensile Strength <sup>1</sup> (Yield)24.8MPaASTM D638Tensile Elongation <sup>2</sup> (Break)700%ASTM D638Flexural Modulus1210MPaASTM D790ImpactNominal ValueUnitTest MethodTensile Impact Strength <sup>3</sup> (23°C)252kJ/m²ASTM D1822Deflection Temperature Under Load (0.45UnitTest Method	kg)	< 0.10	g/10 min	ASTM D1238	
MechanicalNominal ValueUnitTest MethodTensile Strength <sup>1</sup> (Yield)24.8MPaASTM D638Tensile Elongation <sup>2</sup> (Break)700%ASTM D638Flexural Modulus1210MPaASTM D790ImpactNominal ValueUnitTest MethodTensile Impact Strength <sup>3</sup> (23°C)252kJ/m²ASTM D1822Deflection Temperature Under Load (0.45UnitTest Method		> 600	hr	ASTM D1693B	
Tensile Elongation <sup>2</sup> (Break)   700   %   ASTM D638     Flexural Modulus   1210   MPa   ASTM D790     Impact   Nominal Value   Unit   Test Method     Tensile Impact Strength <sup>3</sup> (23°C)   252   kJ/m²   ASTM D1822     Thermal   Nominal Value   Unit   Test Method     Deflection Temperature Under Load (0.45   V   V	Mechanical		Unit	Test Method	
Tensile Elongation <sup>2</sup> (Break)   700   %   ASTM D638     Flexural Modulus   1210   MPa   ASTM D790     Impact   Nominal Value   Unit   Test Method     Tensile Impact Strength <sup>3</sup> (23°C)   252   kJ/m²   ASTM D1822     Thermal   Nominal Value   Unit   Test Method     Deflection Temperature Under Load (0.45   V   V	Tensile Strength <sup>1</sup> (Yield)	24.8	MPa	ASTM D638	
Flexural Modulus   1210   MPa   ASTM D790     Impact   Nominal Value   Unit   Test Method     Tensile Impact Strength <sup>3</sup> (23°C)   252   kJ/m²   ASTM D1822     Thermal   Nominal Value   Unit   Test Method     Deflection Temperature Under Load (0.45   V   V   V	-	700	%	ASTM D638	
ImpactNominal ValueUnitTest MethodTensile Impact Strength <sup>3</sup> (23°C)252kJ/m²ASTM D1822ThermalNominal ValueUnitTest MethodDeflection Temperature Under Load (0.45VVV	Flexural Modulus	1210	MPa	ASTM D790	
Tensile Impact Strength <sup>3</sup> (23°C) 252 kJ/m <sup>2</sup> ASTM D1822   Thermal Nominal Value Unit Test Method	Impact				
Thermal Nominal Value Unit Test Method   Deflection Temperature Under Load (0.45			kJ/m²	ASTM D1822	
	Thermal	Nominal Value	Unit		
	Deflection Temperature Under Load (0.45				
	MPa, Unannealed)	78.0	°C	ASTM D648	

Additional Information	Nominal Value	Unit		
Processing Temperature	190 - 210	°C		
Test Made on injection molded Type 1 tension test specimen according to ASTM D2146				
NOTE				
1.	50 mm/min			
2.	50 mm/min			
3.	50 mm/min			

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