**Property Data** 



Print Date: 2024-12-10

## Akulon<sup>®</sup> K222–KGV4

## PA6-GF20 FR(30)

20% Glass Reinforced, Heat Stabilized, Flame Retardant (halogen-phosphorous-free)

InternationInternationInternationRHEOLOGICAL PROPERTIESDRY / CONDMolding shrinkage (parallel) $0.6 / \cdot$ %Molding shrinkage (normal) $1 / \cdot$ %ISO 294-4MECHANICAL PROPERTIESDRY / CONDTensile modulus $6000 / 2500$ MPaISO 527-1/-2Stress at break $85 / 45$ MPaISO 527-1/-2Strain at break $3.6 / 15$ %ISO 527-1/-2Strain at break $3.6 / 15$ %ISO 527-1/-2Flexural modulus $5700 / 2500$ MPaISO 178Flexural strength $140 / 65$ MPaISO 178Charpy impact strength (+23°C) $45 / 110$ kJ/m²KJ/m²ISO 179/1eUOharpy notched impact strength (+23°C) $3.5 / 7$ kJ/m²KJ/m²ISO 179/1eACharpy notched impact strength (-30°C) $3 / 3$ kJ/m²THERMAL PROPERTIESDRY / CONDMeting temperature (10°C/min) $220 / \cdot$ °CIso 175-1/-2Temp. of deflection under load (1.80 MPa) $140 / \cdot$ °CIso 75-1/-2Eurning Behav. at 1.5 mm nom. thickn. $V-2 / \cdot$ classIEC 60695-11-10Thickness tested $15 / \cdot$ mmIEC 60695-11-10Thickness tested $3 / \cdot$ mmIso 60695-11-10Burning Behav. at 0.75 mm nom. thickn. $V-2 / \cdot$ classIEC 60695-11-10S/ +mmIEC 60695-11-10	PROPERTIES	TYPICAL DATA	UNIT	TEST METHOD
Molding shrinkage (parallel) 0.6 /· % ISO 294-4   Molding shrinkage (normal) $1/^{\circ}$ % ISO 294-4   MECHANICAL PROPERTIES DRY / COND   Tensile modulus $6000 / 2500$ MPa ISO 527-1/-2   Stress at break $85 / 45$ MPa ISO 527-1/-2   Stress at break $85 / 45$ MPa ISO 527-1/-2   Strain at break $3.6 / 15$ % ISO 527-1/-2   Flexural modulus $5700 / 2500$ MPa ISO 527-1/-2   Flexural strength $140 / 65$ MPa ISO 178   Flexural strength $140 / 65$ MPa ISO 179/1eU   Charpy impact strength (+23°C) $35 / 35$ kJ/m² ISO 179/1eU   Charpy notched impact strength (+23°C) $3.5 / 7$ kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) $3 / 3$ kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) $3 / 3$ kJ/m² ISO 11357-1/-3   Trep, of deflection under load (1.80 MPa) $140 / ^{\circ}$ °C ISO 75-1/-2   Temp, of deflection under load (0.45 MPa) $210 / ^{\circ}$ °C	FNOFLNILS	TIPIOAL DATA	UNIT	
Molding shrinkage (normal)   1 / *   %   ISO 294-4     Melding shrinkage (normal)   1 / *   %   ISO 294-4     MECHANICAL PROPERTIES   DRY / COND   Iso 527-1/-2     Stress at break   85 / 45   MPa   Iso 527-1/-2     Stress at break   85 / 45   MPa   Iso 527-1/-2     Strain at break   3.6 / 15   %   Iso 527-1/-2     Flexural modulus   5700 / 2500   MPa   Iso 527-1/-2     Flexural strength   140 / 65   MPa   Iso 178     Flexural strength   140 / 65   MPa   Iso 179/1eU     Charpy impact strength (+23°C)   45 / 110   kJ/m²   Iso 179/1eU     Charpy inpact strength (-30°C)   35 / 35   kJ/m²   Iso 179/1eU     Charpy notohed impact strength (+23°C)   3.5 / 7   kJ/m²   Iso 179/1eA     Charpy notohed impact strength (-30°C)   3 / 3   kJ/m²   Iso 179/1eA     Charpy notohed impact strength (-30°C)   3 / 3   kJ/m²   Iso 179/1eA     THERMAL PROPERTIES   DRY / COND   Melting temperature (10°C/min)   220 / *	RHEOLOGICAL PROPERTIES	DRY / COND		
MECHANICAL PROPERTIES   DRY / COND     Tensile modulus $6000 / 2500$ MPa   ISO $527 - 1/ - 2$ Stress at break $85 / 45$ MPa   ISO $527 - 1/ - 2$ Strain at break $36 / 15$ %   ISO $527 - 1/ - 2$ Flexural modulus $5700 / 2500$ MPa   ISO $527 - 1/ - 2$ Flexural modulus $5700 / 2500$ MPa   ISO $178$ Flexural strength   140 / $65$ MPa   ISO $179$ Charpy impact strength (+23°C) $45 / 110$ kJ/m²   ISO $179 / 1eU$ Charpy impact strength (-30°C) $35 / 35$ kJ/m²   ISO $179 / 1eU$ Charpy notched impact strength (-30°C) $3 / 3$ kJ/m²   ISO $179 / 1eA$ Charpy notched impact strength (-30°C) $3 / 3$ kJ/m²   ISO $179 / 1eA$ THERMAL PROPERTIES   DRY / COND   Melting temperature (10°C/min) $220 / \cdot$ °C   ISO $11357 - 1/ - 3$ Temp. of deflection under load (0.45 MPa) $140 / \cdot$ °C   ISO $75 - 1/ - 2$ Emp. of deflection under load (0.45 MPa) $210 / \cdot$ °C   ISO $75 - 1/ - 2$	Molding shrinkage (parallel)	0.6 / *	%	ISO 294-4
Tensile modulus 6000 / 2500 MPa ISO 527-1/-2   Stress at break 85 / 45 MPa ISO 527-1/-2   Strain at break 3.6 / 15 % ISO 527-1/-2   Flexural modulus 5700 / 2500 MPa ISO 527-1/-2   Flexural modulus 5700 / 2500 MPa ISO 527-1/-2   Flexural strength 140 / 65 MPa ISO 178   Charpy impact strength (+23°C) 45 / 110 kJ/m² ISO 179/1eU   Charpy impact strength (-30°C) 35 / 35 kJ/m² ISO 179/1eU   Charpy notched impact strength (-30°C) 3.5 / 7 kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) 3.5 / 7 kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) 3.7 3 kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) 3 / 3 kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) 3 / 3 kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) 3 / ° °C ISO 11357-1/-3   Temp. of deflection under load (180 MPa) 140 / ° °C ISO 157-1/-2   Burning Be	Molding shrinkage (normal)	1/*	%	ISO 294-4
Tensile modulus 6000 / 2500 MPa ISO 527-1/-2   Stress at break 85 / 45 MPa ISO 527-1/-2   Strain at break 3.6 / 15 % ISO 527-1/-2   Flexural modulus 5700 / 2500 MPa ISO 527-1/-2   Flexural modulus 5700 / 2500 MPa ISO 527-1/-2   Flexural strength 140 / 65 MPa ISO 178   Charpy impact strength (+23°C) 45 / 110 kJ/m² ISO 179/1eU   Charpy impact strength (-30°C) 35 / 35 kJ/m² ISO 179/1eU   Charpy notched impact strength (-30°C) 3.5 / 7 kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) 3.5 / 7 kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) 3.7 3 kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) 3 / 3 kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) 3 / 3 kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) 3 / ° °C ISO 11357-1/-3   Temp. of deflection under load (180 MPa) 140 / ° °C ISO 157-1/-2   Burning Be				
Stress at break 85 / 45 MPa ISO 527-1/-2   Strain at break 3.6 / 15 % ISO 527-1/-2   Flexural modulus 5700 / 2500 MPa ISO 178   Flexural modulus 5700 / 2500 MPa ISO 178   Flexural strength 140 / 65 MPa ISO 178   Charpy impact strength (+23°C) 45 / 110 kJ/m² ISO 179/1eU   Charpy impact strength (-30°C) 35 / 35 kJ/m² ISO 179/1eU   Charpy notched impact strength (+23°C) 3.5 / 7 kJ/m² ISO 179/1eU   Charpy notched impact strength (-30°C) 3 / 3 kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) 3 / 3 kJ/m² ISO 179/1eA   THERMAL PROPERTIES DRY / COND ISO 11357-1/-3 Temp. of deflection under load (1.80 MPa) 140 / * °C ISO 11357-1/-2   Temp. of deflection under load (0.45 MPa) 210 / * °C ISO 75-1/-2 Eurning Behav. at 1.5 mm nom. thickn. V-2 / * class IEC 60695-11-10   Thickness tested 1.5 / * mm IEC 60695-11-10 Eurning Behav. at 3.0 mm nom. thickn. V-2 / * class IEC 60	MECHANICAL PROPERTIES	DRY / COND		
Strain at break $3.6 / 15$ % ISO 527-1/-2   Flexural modulus 5700 / 2500 MPa ISO 178   Flexural strength 140 / 65 MPa ISO 178   Charpy impact strength (+23°C) 45 / 110 kJ/m² ISO 179/1eU   Charpy impact strength (-30°C) 35 / 35 kJ/m² ISO 179/1eU   Charpy notched impact strength (+23°C) $35 / 7$ kJ/m² ISO 179/1eU   Charpy notched impact strength (-30°C) $3.5 / 7$ kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) $3 / 3$ kJ/m² ISO 179/1eA   Charpy notched impact strength (-30°C) $3 / 3$ kJ/m² ISO 179/1eA   THERMAL PROPERTIES DRY / COND ISO 11357-1/-3   Melting temperature (10°C/min) 220 / * °C ISO 11357-1/-2   Temp. of deflection under load (1.80 MPa) 140 / * °C ISO 75-1/-2   Burning Behav. at 1.5 mm nom. thickn. V-2 / * class IEC 60695-11-10   Thickness tested 15 / * mm IEC 60695-11-10   Burning Behav. at 3.0 mm nom. thickn. V-2 / * class IEC 60695-11-10 <t< td=""><td>Tensile modulus</td><td>6000 / 2500</td><td>MPa</td><td>ISO 527-1/-2</td></t<>	Tensile modulus	6000 / 2500	MPa	ISO 527-1/-2
Flexural modulus $5700 / 2500$ MPaISO 178Flexural strength140 / 65MPaISO 178Charpy impact strength (+23°C)45 / 110kJ/m²ISO 179/1eUCharpy impact strength (-30°C)35 / 35kJ/m²ISO 179/1eUCharpy notched impact strength (+23°C)3.5 / 7kJ/m²ISO 179/1eACharpy notched impact strength (-30°C)3 / 3kJ/m²ISO 179/1eACharpy notched impact strength (-30°C)3 / 3kJ/m²ISO 179/1eACharpy notched impact strength (-30°C)3 / 3kJ/m²ISO 179/1eATHERMAL PROPERTIESDRY / CONDMelting temperature (10°C/min)220 / *°CISO 11357-1/-3Temp. of deflection under load (1.80 MPa)140 / *°CISO 75-1/-2Temp. of deflection under load (0.45 MPa)210 / *°CISO 75-1/-2Burning Behav. at 1.5 mm nom. thickn.V-2 / *classIEC 60695-11-10Thickness tested1.5 / *mmIEC 60695-11-10Burning Behav. at 3.0 mm nom. thickn.V-2 / *classIEC 60695-11-10Thickness tested3 / *mmIEC 60695-11-10	Stress at break	85 / 45	MPa	ISO 527-1/-2
Flexural strength140 / 65MPaISO 178Charpy impact strength (+23°C)45 / 110kJ/m²ISO 179/1eUCharpy impact strength (-30°C)35 / 35kJ/m²ISO 179/1eUCharpy notched impact strength (+23°C)3.5 / 7kJ/m²ISO 179/1eACharpy notched impact strength (-30°C)3 / 3kJ/m²ISO 179/1eACharpy notched impact strength (-30°C)3 / 3kJ/m²ISO 179/1eAMelting temperature (10°C/min)220 / *°CISO 11357-1/-3Temp. of deflection under load (1.80 MPa)140 / *°CISO 75-1/-2Temp. of deflection under load (0.45 MPa)210 / *°CISO 75-1/-2Burning Behav. at 1.5 mm nom. thickn.V-2 / *classIEC 60695-11-10Thickness tested1.5 / *mmIEC 60695-11-10Burning Behav. at 3.0 mm nom. thickn.V-2 / *classIEC 60695-11-10Thickness tested3 / *mmIEC 60695-11-10	Strain at break	3.6 / 15	%	ISO 527-1/-2
Charpy impact strength (+23°C)45 / 110kJ/m²ISO 179/1eUCharpy impact strength (-30°C)35 / 35kJ/m²ISO 179/1eUCharpy notched impact strength (+23°C) $3.5 / 7$ kJ/m²ISO 179/1eACharpy notched impact strength (-30°C) $3 / 3$ kJ/m²ISO 179/1eACharpy notched impact strength (-30°C) $3 / 3$ kJ/m²ISO 179/1eACharpy notched impact strength (-30°C) $3 / 3$ kJ/m²ISO 179/1eATHERMAL PROPERTIESDRY / CONDMelting temperature (10°C/min) $220 / *$ °CISO 11357-1/-3Temp. of deflection under load (1.80 MPa) $140 / *$ °CISO 75-1/-2Temp. of deflection under load (0.45 MPa) $210 / *$ °CISO 75-1/-2Burning Behav. at 1.5 mm nom. thickn. $V-2 / *$ classIEC 60695-11-10Thickness tested $15 / *$ mmIEC 60695-11-10Burning Behav. at 3.0 mm nom. thickn. $V-2 / *$ classIEC 60695-11-10Thickness tested $3 / *$ mmIEC 60695-11-10	Flexural modulus	5700 / 2500	MPa	ISO 178
Charpy impact strength (-30°C) $35/35$ kJ/m²ISO 179/1eUCharpy notched impact strength (+23°C) $3.5/7$ kJ/m²ISO 179/1eACharpy notched impact strength (-30°C) $3/3$ kJ/m²ISO 179/1eATHERMAL PROPERTIESMelting temperature (10°C/min) $220/*$ °CISO 11357-1/-3Temp. of deflection under load (1.80 MPa) $140/*$ °CISO 75-1/-2Temp. of deflection under load (0.45 MPa) $210/*$ °CISO 75-1/-2Burning Behav. at 1.5 mm nom. thickn. $V-2/*$ classIEC 60695-11-10Thickness tested $1.5/*$ mmIEC 60695-11-10Burning Behav. at 3.0 mm nom. thickn. $V-2/*$ classIEC 60695-11-10Thickness tested $3/*$ mmIEC 60695-11-10	Flexural strength	140 / 65	MPa	ISO 178
Charpy notched impact strength (+23°C) $3.5 / 7$ $kJ/m^2$ ISO 179/1eACharpy notched impact strength (-30°C) $3 / 3$ $kJ/m^2$ ISO 179/1eATHERMAL PROPERTIESDRY / CONDMelting temperature (10°C/min) $220 / *$ °CISO 11357-1/-3Temp. of deflection under load (1.80 MPa) $140 / *$ °CISO 75-1/-2Temp. of deflection under load (0.45 MPa) $210 / *$ °CISO 75-1/-2Burning Behav. at 1.5 mm nom. thickn. $V-2 / *$ classIEC 60695-11-10Thickness tested $1.5 / *$ mmIEC 60695-11-10Burning Behav. at 3.0 mm nom. thickn. $V-2 / *$ classIEC 60695-11-10Thickness tested $3 / *$ mmIEC 60695-11-10	Charpy impact strength (+23°C)	45 / 110	kJ/m²	ISO 179/1eU
Charpy notched impact strength (-30°C) $3/3$ kJ/m²ISO 179/1eATHERMAL PROPERTIESDRY / CONDMelting temperature (10°C/min) $220/*$ °CISO 11357-1/-3Temp. of deflection under load (1.80 MPa) $140/*$ °CISO 75-1/-2Temp. of deflection under load (0.45 MPa) $210/*$ °CISO 75-1/-2Burning Behav. at 1.5 mm nom. thickn. $V-2/*$ classIEC 60695-11-10Thickness tested $1.5/*$ mmIEC 60695-11-10Burning Behav. at 3.0 mm nom. thickn. $V-2/*$ classIEC 60695-11-10Thickness tested $3/*$ mmIEC 60695-11-10	Charpy impact strength (-30°C)	35 / 35	kJ/m²	ISO 179/1eU
THERMAL PROPERTIESDRY / CONDMelting temperature (10°C/min) $220/*$ °CISO 11357-1/-3Temp. of deflection under load (1.80 MPa) $140/*$ °CISO 75-1/-2Temp. of deflection under load (0.45 MPa) $210/*$ °CISO 75-1/-2Burning Behav. at 1.5 mm nom. thickn. $V-2/*$ classIEC 60695-11-10Thickness tested $1.5/*$ mmIEC 60695-11-10Burning Behav. at 3.0 mm nom. thickn. $V-2/*$ classIEC 60695-11-10Thickness tested $3/*$ mmIEC 60695-11-10	Charpy notched impact strength (+23°C)	3.5 / 7	kJ/m²	ISO 179/1eA
Melting temperature (10°C/min) $220 / *$ °CISO 11357-1/-3Temp. of deflection under load (1.80 MPa)140 / *°CISO 75-1/-2Temp. of deflection under load (0.45 MPa) $210 / *$ °CISO 75-1/-2Burning Behav. at 1.5 mm nom. thickn. $V-2 / *$ classIEC 60695-11-10Thickness tested $1.5 / *$ mmIEC 60695-11-10Burning Behav. at 3.0 mm nom. thickn. $V-2 / *$ classIEC 60695-11-10Thickness tested $3 / *$ mmIEC 60695-11-10	Charpy notched impact strength $(-30^\circ\text{C})$	3/3	kJ/m²	ISO 179/1eA
Melting temperature (10°C/min) $220 / *$ °CISO 11357-1/-3Temp. of deflection under load (1.80 MPa)140 / *°CISO 75-1/-2Temp. of deflection under load (0.45 MPa) $210 / *$ °CISO 75-1/-2Burning Behav. at 1.5 mm nom. thickn. $V-2 / *$ classIEC 60695-11-10Thickness tested $1.5 / *$ mmIEC 60695-11-10Burning Behav. at 3.0 mm nom. thickn. $V-2 / *$ classIEC 60695-11-10Thickness tested $3 / *$ mmIEC 60695-11-10				
Temp. of deflection under load (1.80 MPa) 140 /* °C ISO 75-1/-2   Temp. of deflection under load (0.45 MPa) 210 /* °C ISO 75-1/-2   Burning Behav. at 1.5 mm nom. thickn. V-2 /* class IEC 60695-11-10   Thickness tested 1.5 /* mm IEC 60695-11-10   Burning Behav. at 3.0 mm nom. thickn. V-2 /* class IEC 60695-11-10   Thickness tested 3 /* mm IEC 60695-11-10	THERMAL PROPERTIES	DRY / COND		
Temp. of deflection under load (0.45 MPa) 210 /* °C ISO 75-1/-2   Burning Behav. at 1.5 mm nom. thickn. V-2 /* class IEC 60695-11-10   Thickness tested 1.5 /* mm IEC 60695-11-10   Burning Behav. at 3.0 mm nom. thickn. V-2 /* class IEC 60695-11-10   Thickness tested 3 /* mm IEC 60695-11-10	Melting temperature (10°C/min)	220 / *	°C	ISO 11357-1/-3
Burning Behav. at 1.5 mm nom. thickn.   V-2 / *   class   IEC 60695-11-10     Thickness tested   1.5 / *   mm   IEC 60695-11-10     Burning Behav. at 3.0 mm nom. thickn.   V-2 / *   class   IEC 60695-11-10     Thickness tested   3 / *   mm   IEC 60695-11-10	Temp. of deflection under load (1.80 MPa)	140 / *	°C	ISO 75-1/-2
Thickness tested   1.5 / *   mm   IEC 60695-11-10     Burning Behav. at 3.0 mm nom. thickn.   V-2 / *   class   IEC 60695-11-10     Thickness tested   3 / *   mm   IEC 60695-11-10	Temp. of deflection under load (0.45 MPa)	210 / *	°C	ISO 75-1/-2
Burning Behav. at 3.0 mm nom. thickn.   V-2 / *   class   IEC 60695-11-10     Thickness tested   3 / *   mm   IEC 60695-11-10	Burning Behav. at 1.5 mm nom. thickn.	V-2 / *	class	IEC 60695-11-10
Thickness tested   3 / *   mm   IEC 60695-11-10	Thickness tested	1.5 / *	mm	IEC 60695-11-10
	Burning Behav. at 3.0 mm nom. thickn.	V-2 / *	class	IEC 60695-11-10
Burning Behav. at 0.75 mm nom. thickn.   V-2 / *   class   IEC 60695-11-10	Thickness tested	3 / *	mm	IEC 60695-11-10
	Burning Behav. at 0.75 mm nom. thickn.	V-2 / *	class	IEC 60695-11-10

Seller represents and warrants exclusively that on the date of delivery by Seller the product shall be in conformity with the specifications agreed upon. Seller makes no other representations or

Seller represents and warrants exclusively that on the date of densery by guster the product share or integrate the products and in the product share to product share to product the product share to pr

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## **Property Data** Akulon<sup>®</sup> K222-KGV4

## Print Date: 2024-12-10

PROPERTIES	TYPICAL DATA	UNIT	TEST METHOD
Thickness tested	0.75 / *	mm	IEC 60695-11-10
Glow Wire Flammability Index GWFI	960 / -	°C	IEC 60695-2-12
GWFI (Thickness (1) tested)	1.6 / -	mm	IEC 60695-2-12
Glow Wire Flammability Index GWFI	960 / -	°C	IEC 60695-2-12
GWFI (Thickness (2) tested)	1/-	mm	IEC 60695-2-12
ELECTRICAL PROPERTIES	DRY / COND		
Relative permittivity (100Hz)	4.3 / 10	_	IEC 62631-2-1
Relative permittivity (1 MHz)	3.8 / 3.9	_	IEC 62631-2-1
Dissipation factor (100 Hz)	130 / 3000	E-4	IEC 62631-2-1
Dissipation factor (1 MHz)	210 / 1000	E-4	IEC 62631-2-1
Volume resistivity	1E13 / 1E11	Ohm*m	IEC 62631-3-1
Surface resistivity	- / 1E14	Ohm	IEC 62631-3-2
Electric strength	30 / 25	kV/mm	IEC 60243-1
Comparative tracking index	575 / *	V	IEC 60112
OTHER PROPERTIES	DRY / COND		
Water absorption	6.5 / *	%	Sim. to ISO 62
Humidity absorption	2 / *	%	Sim. to ISO 62
Density	1340 / -	kg/m³	ISO 1183

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