Tensar International Corporation
2500 Northwinds Parkway, Suite 500
Alpharetta, Georgia 30009-2247
Phone: 800-TENSAR-1
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Product Specification – TPG45D Geogrid

Tensar International Corporation reserves the right to change its product specifications at any time. It is the responsibility of the person specifying the use of this product and of the purchaser to ensure that product specifications relied upon for design or procurement purposes are current and that the product is suitable for its intended use in each instance.

Product Type: **High Tenacity Polyester Geogrid**
Polymer: **Polyester**
Recommended Applications: **Segmental Block Walls, Welded Wire Walls, Reinforced Soil Slopes**

TPG45D geogrid is comprised of high tenacity polyester yarn and coated with PVC coating. TPG45D geogrid is resistant to naturally encountered chemical, biological and ultra-violet exposure.

Product Properties

Index Properties	Test Method	Units	MD Values[1]
▪ Ultimate Tensile Strength (MD Direction)	ASTM D6637	kN/m (lb/ft)	52.5 (3,600)
▪ Tensile Strength at 5% strain (MD Direction)	ASTM D6637	kN/m (lb/ft)	20.4 (1,400)
▪ Creep Reduced Strength	ASTM D5262& ASTM D6992	kN/m (lb/ft)	34.8 (2,384)
Load Capacity			
▪ Maximum Allowable (Design) Strength[2]	GRI-GG4(b)	kN/m (lb/ft)	30.1 (2,064)
Recommended Allowable Strength Reduction Factors[2]			
▪ Minimum Reduction Factor for Installation Damage (RF_{ID})[3]	ASTM D5818		1.05
▪ Reduction Factor for Creep (RF_{CR})[4]	ASTM D5262 & ASTM D6992		1.51
▪ Minimum Reduction Factor for Durability (RF_D)	--		1.10
Physical Properties			
▪ Maximum Carboxyl End Group (CEG) Count	GRI-GG7	mmol/Kg	30
▪ Minimum Molecular Weight	GRI-GG8	Mn	25,000
▪ Grid Aperture Size (machine direction)	--	mm (in)	20 (0.79)
▪ Grid Aperture Size (cross machine direction)	--	mm (in)	25.4 (1.0)
▪ Roll Dimensions (width x length)	--	m x m (ft x ft)	1.8 or 3.6 x 46 (6 or 12 x 150)

Notes:
1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D4759-02. Brief descriptions of test procedures are given in the following note.
2. Reduction factors are used to calculate the geogrid strength available for resisting force in long-term load bearing applications. Allowable Strength (T_{allow}) is determined by reducing the ultimate tensile strength (T_{ult}) by reduction factors for installation damage (RF_{ID}), creep (RF_{CR}) and chemical/biological durability ($RF_D = RF_{CD}*RF_{BD}$) per GRI-GG4-05 ($Tallow = T_{ult}/(RF_{ID}*RF_{CR}*RF_D)$). Recommended minimum reduction factors are based on product specific testing. Project specifications, standard public agency specifications and/or design code requirements may require higher reduction factors. Design of the structure in which the geogrid is used, including the selection of appropriate reduction factors and design life, is the responsibility of the outside licensed professional engineer providing the sealed drawings for the project.
3. Minimum value is based on Installation Damage Testing in Sand, Silt and Clay soils. Coarser soils require increased RF_{ID} values.
4. Reduction factor for Creep at 75-yr determined in-soil temperature of 20-degree C using standard extrapolation techniques to creep rupture data following the test procedure in ASTM D5262 and ASTM D6992.

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Product Specification – TPG60D Geogrid

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Product Type: **High Tenacity Polyester Geogrid**
Polymer: **Polyester**
Recommended Applications: **Segmental Block Walls, Welded Wire Walls, Reinforced Soil Slopes**

TPG60D geogrid is comprised of high tenacity polyester yarn and coated with PVC coating. TPG60D geogrid is resistant to naturally encountered chemical, biological and ultra-violet exposure.

Product Properties

Index Properties	Test Method	Units	MD Values[1]
▪ Ultimate Tensile Strength (MD Direction)	ASTM D6637	kN/m (lb/ft)	73.0 (5,000)
▪ Tensile Strength at 5% strain (MD Direction)	ASTM D6637	kN/m (lb/ft)	27.7 (1,900)
▪ Creep Reduced Strength	ASTM D5262& ASTM D6992	kN/m (lb/ft)	48.3 (3,311)
Load Capacity			
▪ Maximum Allowable (Design) Strength[2]	GRI-GG4(b)	kN/m (lb/ft)	41.9 (2,867)
Recommended Allowable Strength Reduction Factors[2]			
▪ Minimum Reduction Factor for Installation Damage (RF_{ID})[3]	ASTM D5818		1.05
▪ Reduction Factor for Creep (RF_{CR})[4]	ASTM D5262 & ASTM D6992		1.51
▪ Minimum Reduction Factor for Durability (RF_D)	--		1.10
Physical Properties			
▪ Maximum Carboxyl End Group (CEG) Count	GRI-GG7	mmol/Kg	30
▪ Minimum Molecular Weight	GRI-GG8	Mn	25,000
▪ Grid Aperture Size (machine direction)	--	mm (in)	20 (0.79)
▪ Grid Aperture Size (cross machine direction)	--	mm (in)	25.4 (1.0)
▪ Roll Dimensions (width x length)	--	m x m (ft x ft)	1.8 or 3.6 x 46 (6 or 12 x 150)

Notes:
1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D4759-02. Brief descriptions of test procedures are given in the following note.
2. Reduction factors are used to calculate the geogrid strength available for resisting force in long-term load bearing applications. Allowable Strength (T_{allow}) is determined by reducing the ultimate tensile strength (T_{ult}) by reduction factors for installation damage (RF_{ID}), creep (RF_{CR}) and chemical/biological durability ($RF_D = RF_{CD}*RF_{BD}$) per GRI-GG4-05 ($Tallow = T_{ult}/(RF_{ID}*RF_{CR}*RF_D)$). Recommended minimum reduction factors are based on product specific testing. Project specifications, standard public agency specifications and/or design code requirements may require higher reduction factors. Design of the structure in which the geogrid is used, including the selection of appropriate reduction factors and design life, is the responsibility of the outside licensed professional engineer providing the sealed drawings for the project.
3. Minimum value is based on Installation Damage Testing in Sand, Silt and Clay soils. Coarser soils require increased RF_{ID} values.
4. Reduction factor for Creep at 75-yr determined in-soil temperature of 20-degree C using standard extrapolation techniques to creep rupture data following the test procedure in ASTM D5262 and ASTM D6992.

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Product Specification – TPG80D Geogrid

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Product Type: **High Tenacity Polyester Geogrid**
Polymer: **Polyester**
Recommended Applications: **Segmental Block Walls, Welded Wire Walls, Reinforced Soil Slopes**

TPG80D geogrid is comprised of high tenacity polyester yarn and coated with PVC coating. TPG80D geogrid is resistant to naturally encountered chemical, biological and ultra-violet exposure.

Product Properties

Index Properties	Test Method	Units	MD Values[1]
▪ Ultimate Tensile Strength (MD Direction)	ASTM D6637	kN/m (lb/ft)	90.5 (6,200)
▪ Tensile Strength at 5% strain (MD Direction)	ASTM D6637	kN/m (lb/ft)	23.5 (1,612)
▪ Creep Reduced Strength	ASTM D5262& ASTM D6992	kN/m (lb/ft)	59.9 (4,106)
Load Capacity			
▪ Maximum Allowable (Design) Strength[2]	GRI-GG4(b)	kN/m (lb/ft)	51.9 (3,556)
Recommended Allowable Strength Reduction Factors[2]			
▪ Minimum Reduction Factor for Installation Damage (RF_{ID})[3]	ASTM D5818		1.05
▪ Reduction Factor for Creep (RF_{CR})[4]	ASTM D5262 & ASTM D6992		1.51
▪ Minimum Reduction Factor for Durability (RF_D)	--		1.10
Physical Properties			
▪ Maximum Carboxyl End Group (CEG) Count	GRI-GG7	mmol/Kg	30
▪ Minimum Molecular Weight	GRI-GG8	Mn	25,000
▪ Grid Aperture Size (machine direction)	--	mm (in)	20 (0.79)
▪ Grid Aperture Size (cross machine direction)	--	mm (in)	25.4 (1.0)
▪ Roll Dimensions (width x length)	--	m x m (ft x ft)	1.8 or 3.6 x 46 (6 or 12 x 150)

Notes:
1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D4759-02. Brief descriptions of test procedures are given in the following note.
2. Reduction factors are used to calculate the geogrid strength available for resisting force in long-term load bearing applications. Allowable Strength (T_{allow}) is determined by reducing the ultimate tensile strength (T_{ult}) by reduction factors for installation damage (RF_{ID}), creep (RF_{CR}) and chemical/biological durability ($RF_D = RF_{CD}*RF_{BD}$) per GRI-GG4-05 ($Tallow = T_{ult}/(RF_{ID}*RF_{CR}*RF_D)$). Recommended minimum reduction factors are based on product specific testing. Project specifications, standard public agency specifications and/or design code requirements may require higher reduction factors. Design of the structure in which the geogrid is used, including the selection of appropriate reduction factors and design life, is the responsibility of the outside licensed professional engineer providing the sealed drawings for the project.
3. Minimum value is based on Installation Damage Testing in Sand, Silt and Clay soils. Coarser soils require increased RF_{ID} values.
4. Reduction factor for Creep at 75-yr determined in-soil temperature of 20-degree C using standard extrapolation techniques to creep rupture data following the test procedure in ASTM D5262 and ASTM D6992.

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Product Specification – TPG100D Geogrid

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Product Type: **High Tenacity Polyester Geogrid**
Polymer: **Polyester**
Recommended Applications: **Segmental Block Walls, Welded Wire Walls, Reinforced Soil Slopes**

TPG100D geogrid is comprised of high tenacity polyester yarn and coated with PVC coating. TPG100D geogrid is resistant to naturally encountered chemical, biological and ultra-violet exposure.

Product Properties

Index Properties	Test Method	Units	MD Values[1]
▪ Ultimate Tensile Strength (MD Direction)	ASTM D6637	kN/m (lb/ft)	110.2 (7,550)
▪ Tensile Strength at 5% strain (MD Direction)	ASTM D6637	kN/m (lb/ft)	28.3 (1,937)
▪ Creep Reduced Strength	ASTM D5262& ASTM D6992	kN/m (lb/ft)	73.0 (5,000)
Load Capacity			
▪ Maximum Allowable (Design) Strength[2]	GRI-GG4(b)	kN/m (lb/ft)	63.2 (4,329)
Recommended Allowable Strength Reduction Factors[2]			
▪ Minimum Reduction Factor for Installation Damage (RF_{ID})[3]	ASTM D5818		1.05
▪ Reduction Factor for Creep (RF_{CR})[4]	ASTM D5262 & ASTM D6992		1.51
▪ Minimum Reduction Factor for Durability (RF_D)	--		1.10
Physical Properties			
▪ Maximum Carboxyl End Group (CEG) Count	GRI-GG7	mmol/Kg	30
▪ Minimum Molecular Weight	GRI-GG8	Mn	25,000
▪ Grid Aperture Size (machine direction)	--	mm (in)	20 (0.79)
▪ Grid Aperture Size (cross machine direction)	--	mm (in)	25.4 (1.0)
▪ Roll Dimensions (width x length)	--	m x m (ft x ft)	1.8 or 3.6 x 46 (6 or 12 x 150)

Notes:
1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D4759-02. Brief descriptions of test procedures are given in the following note.
2. Reduction factors are used to calculate the geogrid strength available for resisting force in long-term load bearing applications. Allowable Strength (T_{allow}) is determined by reducing the ultimate tensile strength (T_{ult}) by reduction factors for installation damage (RF_{ID}), creep (RF_{CR}) and chemical/biological durability ($RF_D = RF_{CD}*RF_{BD}$) per GRI-GG4-05 ($Tallow = T_{ult}/(RF_{ID}*RF_{CR}*RF_D)$). Recommended minimum reduction factors are based on product specific testing. Project specifications, standard public agency specifications and/or design code requirements may require higher reduction factors. Design of the structure in which the geogrid is used, including the selection of appropriate reduction factors and design life, is the responsibility of the outside licensed professional engineer providing the sealed drawings for the project.
3. Minimum value is based on Installation Damage Testing in Sand, Silt and Clay soils. Coarser soils require increased RF_{ID} values.
4. Reduction factor for Creep at 75-yr determined in-soil temperature of 20-degree C using standard extrapolation techniques to creep rupture data following the test procedure in ASTM D5262 and ASTM D6992.

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Product Specification – TPG130D Geogrid

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Product Type: **High Tenacity Polyester Geogrid**
Polymer: **Polyester**
Recommended Applications: **Segmental Block Walls, Welded Wire Walls, Reinforced Soil Slopes**

TPG130D geogrid is comprised of high tenacity polyester yarn and coated with PVC coating. TPG130D geogrid is resistant to naturally encountered chemical, biological and ultra-violet exposure.

Product Properties

Index Properties	Test Method	Units	MD Values[1]
▪ Ultimate Tensile Strength (MD Direction)	ASTM D6637	kN/m (lb/ft)	150.3 (10,300)
▪ Tensile Strength at 5% strain (MD Direction)	ASTM D6637	kN/m (lb/ft)	39.6 (2,716)
▪ Creep Reduced Strength	ASTM D5262& ASTM D6992	kN/m (lb/ft)	99.5 (6,821)
Load Capacity			
▪ Maximum Allowable (Design) Strength[2]	GRI-GG4(b)	kN/m (lb/ft)	86.2 (5,906)
Recommended Allowable Strength Reduction Factors[2]			
▪ Minimum Reduction Factor for Installation Damage (RF_{ID})[3]	ASTM D5818		1.05
▪ Reduction Factor for Creep (RF_{CR})[4]	ASTM D5262 & ASTM D6992		1.51
▪ Minimum Reduction Factor for Durability (RF_D)	--		1.10
Physical Properties			
▪ Maximum Carboxyl End Group (CEG) Count	GRI-GG7	mmol/Kg	30
▪ Minimum Molecular Weight	GRI-GG8	Mn	25,000
▪ Grid Aperture Size (machine direction)	--	mm (in)	16 (0.63)
▪ Grid Aperture Size (cross machine direction)	--	mm (in)	25.4 (1.0)
▪ Roll Dimensions (width x length)	--	m x m (ft x ft)	1.8 or 3.6 x 46 (6 or 12 x 150)

Notes:
1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D4759-02. Brief descriptions of test procedures are given in the following note.
2. Reduction factors are used to calculate the geogrid strength available for resisting force in long-term load bearing applications. Allowable Strength (T_{allow}) is determined by reducing the ultimate tensile strength (T_{ult}) by reduction factors for installation damage (RF_{ID}), creep (RF_{CR}) and chemical/biological durability ($RF_D = RF_{CD}*RF_{BD}$) per GRI-GG4-05 ($Tallow = T_{ult}/(RF_{ID}*RF_{CR}*RF_D)$). Recommended minimum reduction factors are based on product specific testing. Project specifications, standard public agency specifications and/or design code requirements may require higher reduction factors. Design of the structure in which the geogrid is used, including the selection of appropriate reduction factors and design life, is the responsibility of the outside licensed professional engineer providing the sealed drawings for the project.
3. Minimum value is based on Installation Damage Testing in Sand, Silt and Clay soils. Coarser soils require increased RF_{ID} values.
4. Reduction factor for Creep at 75-yr determined in-soil temperature of 20-degree C using standard extrapolation techniques to creep rupture data following the test procedure in ASTM D5262 and ASTM D6992.