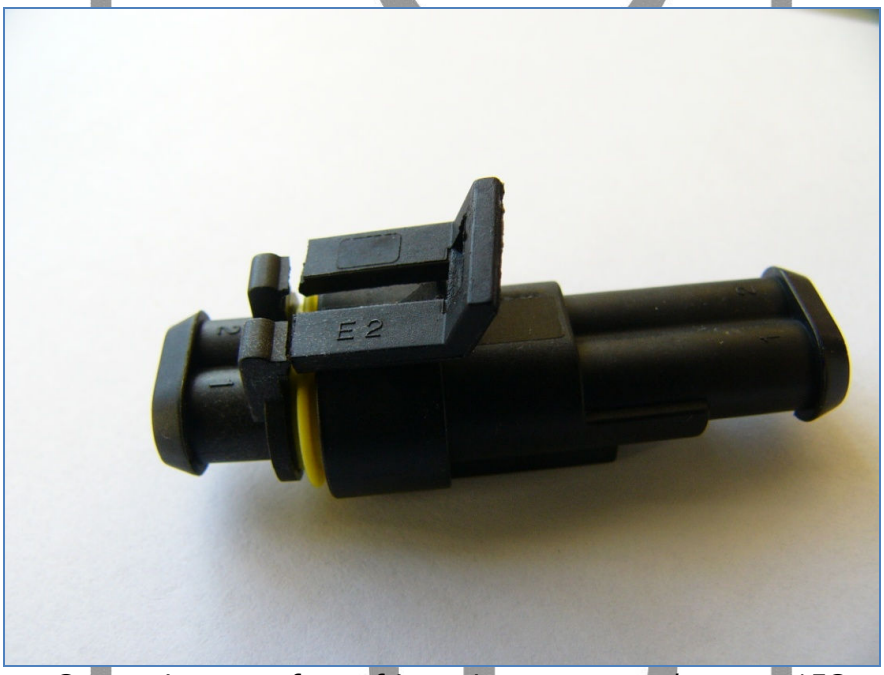
Quality problems connected with low material rate

The main quality problems found in automotive connectors are the material quality problems.
Too low glass fibre admixture or no glass fibre admixture at all may cause connectors cracking in lower temperatures.

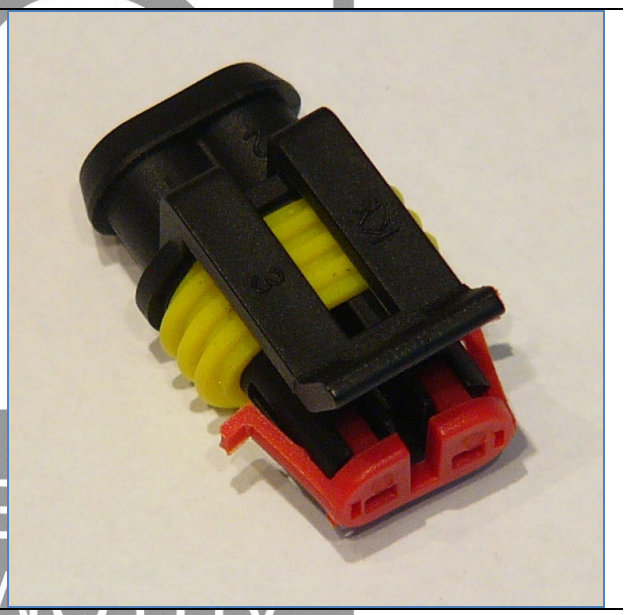


Connecting test after refrigerating connector down to -15C

Another common problem is low nylon rate (PA66) application while making glass fibre (GF) admixture. As an effect there is a visibly lower rate of surface structure and unpredictable electromechanical parameters.

Among Far Eastern products compilation of many potential problems can be found:

Low rate of details implementation (in the photo locking elements)



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Manufacturer signature falsification (in the photo Asian product with renown producer signature)

Low material rate where the high elasticity level is required (in the photo – broken 2p connector)

Low glass fibre (GF) admixture rate causing material parameters unpredictability (in the photo heterogeneity with GF20% admixture)

Materials quality is crucial when connectors work in extreme conditions.

To cost down many producers reduce content of glass fibre (GF) added to the nylon (PA66). Commonly on the market there are connectors with GF admixture at the level of 8,5%. Information about that are put on the data sheets on polish distributors' websites.

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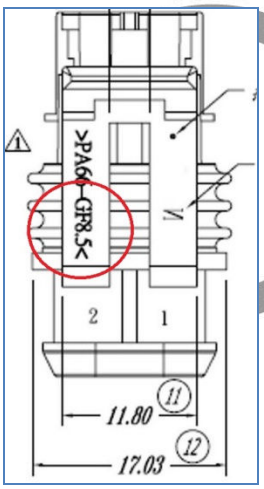

Data sheet extract regarding a connector of low GF content.

Our company pays close attention to quality issues. Our products are secure and tested by the biggest automotive brand producers in Asia, Poland and other European countries.

Regarding nylon (PA66) our connectors are made of materials with glass fibre (GF) admixture at the level of from 15% to 30% depending on connector type.

Connectors of the biggest quality requirements are made of Du Pont materials, Zytel series - PA66+GF30% or PA66-I (Ultramid by BASF Plastics)

DuPont™ Zytel®

nylon resin

Zytel® 70G30HSLR BK099

Zytel® 70G30HSLR BK099 is a 30% glass fiber reinforced, heat stabilized, hydrolysis resistant polyamide 66 resin for injection molding.

Property	Test Method	Units	Value DAM	Value 50%RH
Identification				
Resin Identification	ISO 1043		PA66-GF30	
Part Marking Code	ISO 11469		>PA66-GF30<	
Mechanical				
Stress at Break	ISO 527	MPa (kpsi)	195 (28.3)	130 (18.9)
Strain at Break	ISO 527	%	3	5
Tensile Modulus	ISO 527	MPa (kpsi)	10000 (1450)	7200 (1045)
Notched Charpy Impact Strength	ISO 179/1eA	kJ/m²	12	14
Unnotched Charpy Impact Strength	ISO 179/1eU	kJ/m²	75	90
Thermal				
Deflection Temperature 1.80MPa	ISO 75f	°C (°F)	253 (487)	
Melting Temperature 10°C/min	ISO 11357-1/-3	°C (°F)	262 (504)	
Electrical				
CTI 3.0mm	UL 746A	V	400	

DuPont™ Zytel®

nylon resin

Zytel® MT409AHS BK010

Zytel® MT409AHS BK010 is a Medium Toughened, high performance, heat stabilized, black polyamide 66 resin having good stiffness and improved knit line strength with superior toughness and processability.

Property	Test Method	Units	Value DAM	Value 50%RH
Identification				
Resin Identification	ISO 1043		PA66-I	
Part Marking Code	ISO 11469		>PA66-I<	
Mechanical				
Yield Stress	ISO 527	MPa (kpsi)	60 (8.7)	42 (6.1)
Yield Strain	ISO 527	%	6	27
Nominal Strain at Break	ISO 527	%	29	>50
Tensile Modulus	ISO 527	MPa (kpsi)	2400 (348)	1075 (156)
Tensile Stress @ 50% Strain	ISO 527	MPa (kpsi)	61 (8.8)	43 (6.2)
Flexural Modulus	ISO 178	MPa (kpsi)	2200 (319)	1075 (156)
Notched Charpy Impact Strength -40°C (-40°F)	ISO 179/1eA	kJ/m²	12	
23°C (73°F)			19	

Source: http://plastics.dupont.com/