# 지오그리드 접점강도와 감소계수 분석

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# Analysis of Junction Strength and Reduction Factor of Geogrids

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## 1. Instruction

The good interaction characteristic of geogrids is induced by the network structure, so called grid effect and the horizontal tensile force induced in soil mass is transferred to the geogrids. The first values of single-junction strength and junction efficiency are obtained directly from the test results. In this method junction strength is calculated by a conversion equation that is recommended in GRI GG-2. However, the current trend in the assessment of the tensile strength of geosynthetics is to recommend tensile strength tests on a specimen as wide as possible. In this study, the multi-junction test method was suggested for the reduction factor by installation damage of geogrids by junction strength.

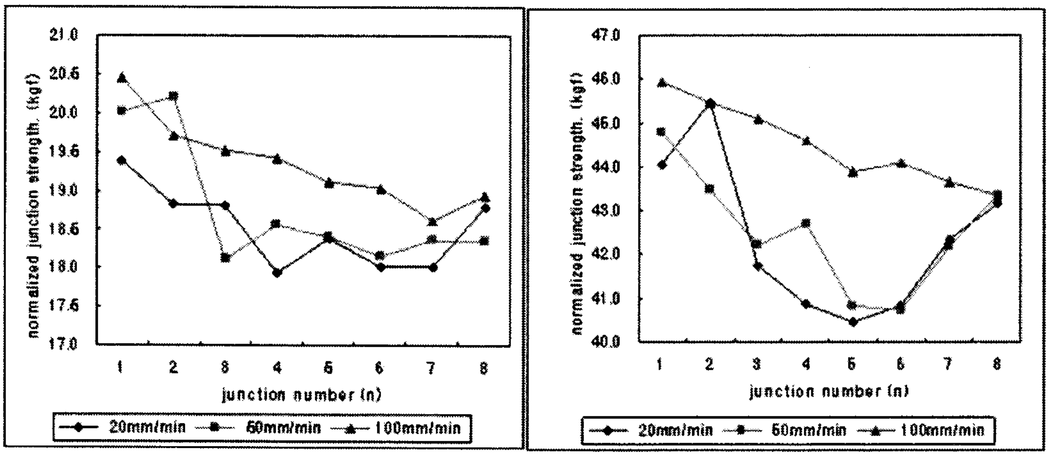
## 2. Experimental

Geogrids used in this study were 2 types of flexible geogrids, e.g. warp-knitted and woven type PVC coated geogrids of high strength polyester filaments. esign strength of these geogrids is 10 ton/m and GRI GG-2 test was used for junction strength test with 20, 50, 100mm/min test speed.

## 3. Results and Discussion

Firstly, geogrids which have 1-8 juncions were tested and curves of junction strength to number of junction were plotted. Secondly, the linear regression analysis was done. From the regression analyses results, equivalent values were calculated for each samples. *Figure 1* shows the results of regression analysis of number of junctions versus junction strength and the relationship between the number of junctions versus normalized junction strength with strain rate for geogrids, respectively. From this review, it is seen that the normalization of junction strength is more reasonable with increasing of numbers of junctions. The accuracy of geogrid's junction strength is strongly dependent on the numbers of junctions. However, it is very difficult to fix the numbers of junctions and reasonable to suggest the multi-junction clamping test equipment instead of single junction strength test method. *Table 1* shows the installation damage reduction factors calculated from the retained tensile and junction strength after installation. For both of woven and warp knitted type, reduction factor in junction strength test showed lower value than that in tensile strength test. Especially in woven type the value of junction strength reduction factor is negligible because of pull-out mechanism.

The slightly difference between initial and after installation was caused by failure coating materials.




**(a) woven type** **(b) knitted type**

**Figure 1. Regression analysis of number of junctions versus normalized junction strength with strain rate for geogrids**

**Table 1. Reduction factor by installation damage of geogrids**

| Geogrid | Reduction Factor | |
|---|---|---|
| | Tensile Strength | Junction Strength |
| Warp-Knitted Type | 1.25 | 1.11 |
| Woven Type | 1.21 | 1.08 |

## 4. Conclusion

Geogrid junction strength from multi-junction test values is smaller than that from single junction test due to scale effect of specimen. The total trend of multi-junction strength of geogrid decreased with the number of junction. It is appropriate to evaluate the geogrids junction strength used the geogrids multi-junction strength test method.

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## References


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