



SKAPS INDUSTRIES

TECHNICAL NOTE:
MINIMUM AVERAGE ROLL VALUE
(M.A.R.V.)



Minimum Average Roll Value (M.A.R.V.) - ASTM D4759

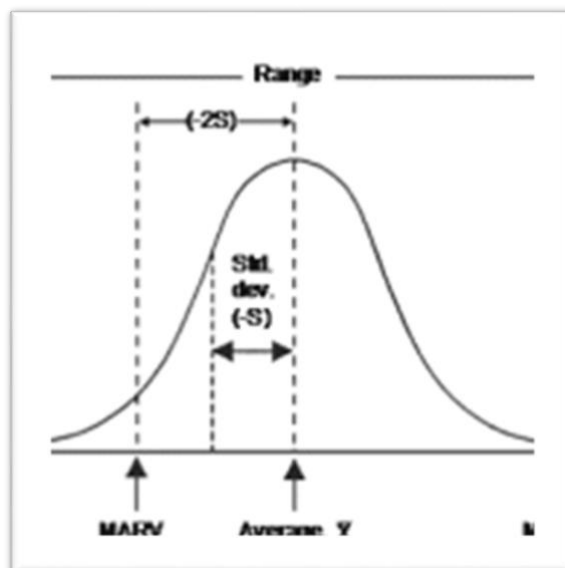
Standard Practice for Determining the Specifications Conformance of Geosynthetics

“Minimum average roll value” is the middle ground for results between the absolute minimum value and typical value (also known as the average) according to respective specifications. MARV is derived statistically as the average value minus two standard deviations.

A standard deviation is a measure of variance from the average or mean. The variance considers all possible values.

The importance of MARV assures that the specified product, or geotextile, will comply at a 97.5% confidence level with required specifications once it leaves SKAPS Industries.

Many geotextile producers provide products with test values that are not based on the MARV concept, but based on a calculated average value. As a result, when the product arrives on site for its intended use, its certificate of analysis does not meet the required MARV specifications.



$$\text{MARV} = \text{Average} - (2 \times \text{Standard Deviation})$$



MARV'S ROLE FOR GEOTEXTILE MANUFACTURERS:

The total number of rolls produced in a specific time frame, such as 12 months, can be referred to as a lot. The reliable statistics gathered from the lot data, such as the mean and standard deviations, can be used to measure MARV. MARV geotextile properties appear often on the manufacturer's websites and within product literature. A geotextile manufacturer with a relatively large statistical variation in product test values can and should provide these MARV values.

MARV'S ROLE FOR FIELD INSPECTOR ACCEPTANCE:

Once MARV is established by the manufacturer, the issues of field conformance of the supplied geotextiles rolls are compared with the project or site's required specification. In general, a field inspector uses a shortcut by cutting samples from a representative number of rolls from the overall shipment to the jobsite.

These samples are sent to a third-party laboratory for conformance testing based on the project's requirements. The measured values of these specimens from each roll sample are averaged. By observation of the test results, the lowest average test value for the total number of rolls tested is perceived to be the MARV for the set from the entire lot.

If the lowest average test value for the set of rolls meets or exceeds the regulatory, designer's, or manufacturer's specified MARV value, then the complete shipment or lot is accepted for use on the project site. If any of minimum average roll values do not meet the specified value, then resampling of a second set of rolls from the lot is allowed. If by chance the second set of rolls meets the specified value, then only the second set of rolls from the lot shipment is accepted. However, if the second sequence of tests has one or more averages which do not meet the specified MARV value, the entire lot shipment is rejected.

It is important to note that this procedure is not recommended for geomembranes, geogrids, geonets, composites, GCLs, and etc. These products must be tested per the project's specific plans and/or specifications.