

# Aggregate Image Measurement System (AIMS)



## Fast Take

- Objective Aggregate Shape Characterization
- Coarse Aggregate Angularity, Sphericity, Texture, and 3D Form ratios
- Fine Aggregate Angularity and 2D Form

## Aggregate Shape Characterization

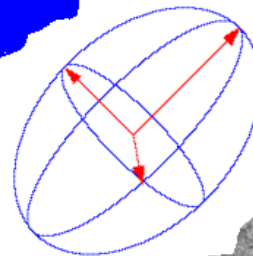
The AIMS image based particle analysis provides an objective characterization of particle angularity, form, and surface texture. Save time and gain valuable new insights about your aggregates. Simply load the tray with the material sample, place into the AIMS system. The system then automatically acquires the images of each particle and analyzes the shape characteristics.

## Eliminate Bias

Traditional shape analysis methods, such as number of fractured faces are time consuming and subjective. The AIMS image based analysis removes operator influence from the characterization while improving productivity and precision.



*Angularity*



*Form*

*Texture*



## Coarse and Fine Aggregate

The AFA2 AIMS System provides aggregate characterizations for Superpave sieve sizes from 0.075mm (#200) to 25.0mm (1") retained. Each sample is analyzed by individual sieve size on specially sized trays. Multiple trays can be scanned to achieve the desired particle counts. Stockpile and stockpile blend characterization algorithms are provided.

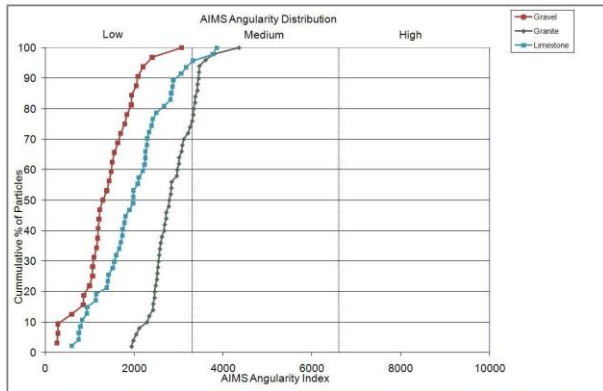
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## Particle Distribution Plots

The number of images processed can be varied to provide the desired statistically significant number of individual particles included in the characterization. The results for all of the particles are presented as cumulative percentage distribution plots.

## Angularity

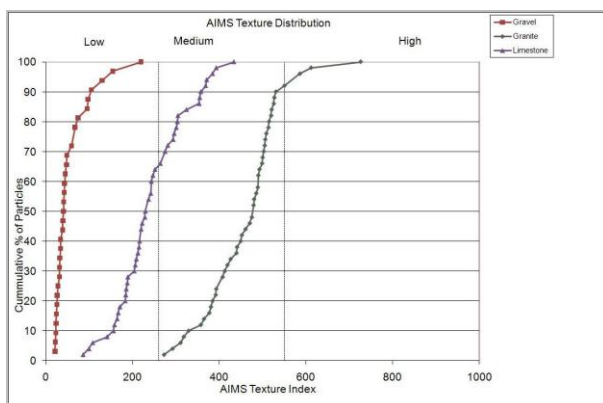
The AIMS angularity chart provide objective characterization of the material edge characteristics. AIMS angularity characterizes the particle edge sharpness characteristics on a scale of 0-10000. The sample chart below reveals the angularity distribution characteristics of a river gravel sample to that of a limestone and crushed granite.



1.1 AIMS Angularity Chart

## Micro-Texture

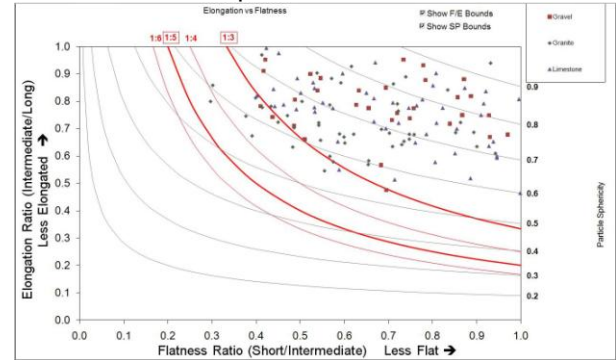
The AIMS also characterizes surface texture on a scale of 0-1000. The sample texture chart below reveals the smoother texture of a river gravel surface as compared to that of a limestone and crushed granite material.



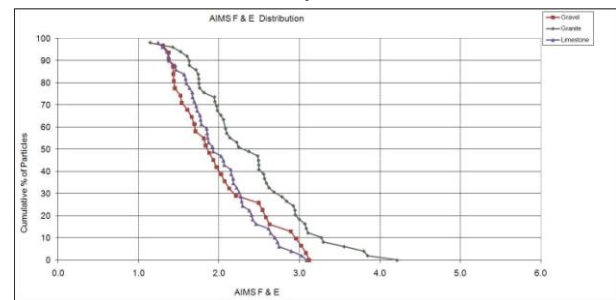
1.2 AIMS Texture Chart

## Particle Shape (Flat and Elongated)

Existing manual methods for "flat and elongated" analysis can be tedious, labor intensive, and group to a specific range. The AIMS system captures coarse particle 3D shape data and presents the information in multiple formats.



1.3 AIMS 3D Shape Ratio Chart



1.4 AIMS F & E Distribution Chart

## Aggregate Degradation

The AIMS system is also used to characterize aggregate materials performance in degradation tests, such as the Micro-Deval. The change in the properties from before to after degradation testing reveals information regarding the ability of the aggregate source to retain skid resistance in the field.

## FHWA Highways for Life

The Aggregate Image Measurement System was awarded a U.S. Department of Transportation Federal Highway Administration technology development grant. The purpose of the Highways for LIFE (HfL) program is to accelerate the adoption of innovations and new technologies, thereby improving safety and highway quality while reducing congestion caused by construction. Progress on the development of this and other HfL technologies can be viewed at <http://www.fhwa.dot.gov/hfl/>