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TORIBIO RODRÍGUEZ DE MENDOZA DE AMAZONAS



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FACULTAD DE INGENIERÍA Y CIENCIAS AGRARIAS

**ESCUELA ACADÉMICO PROFESIONAL
DE INGENIERÍA AGROINDUSTRIAL**

**“EFECTO DE DIFERENTES COMBINACIONES DE PARÁMETROS DE
TAMAÑO Y FORMA EN EL PORCENTAJE DE ERROS DE LA
CLASIFICACIÓN DE ELEMENTOS ESTRUCTURALES EN TEJIDOS
VEGETALES, UTILIZANDO REDES NEURONALES PROBABILÍSTICAS”**

**Tesis para obtener el título profesional de:
INGENIERO AGROINDUSTRIAL**

**Presentada por:
Bach. JOSÉ MARCELO VÁSQUEZ RUBIO**

**Asesor:
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Msc. Lic. ELÍAS ALBERTO TORRES ARMAS**

**Amazonas - Perú
2012**

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DEDICATORIA

A Dios en primer lugar que me brindó la oportunidad de vivir, por ser mi guía espiritual, con un inmenso respeto y amor a mis padres, a mis hermanos por estar conmigo y apoyarme siempre, y a todas aquellas personas que me apoyaron en cada paso en mi carrera profesional por su dedicación y apoyo incondicional hicieron que culmine este gran sueño.

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A mis asesores Ing. Wilson Manuel Castro Silupu y Msc. Lic. Elías Alberto Torres Armas mi más sincero agradecimiento y reconocimiento por guiarme y asesorarme en el desarrollo de la presente tesis; quien además han impartido en mí, conocimientos científicos y tecnológicos para mi formación profesional.

A todo el personal docente y técnicos de los diferentes laboratorios de la UNTRM-A, por su apoyo y paciencia, durante la parte experimental y análisis realizados en la presente investigación.

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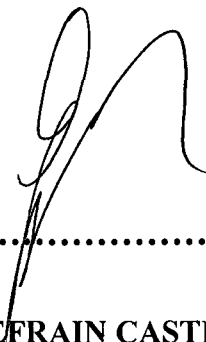
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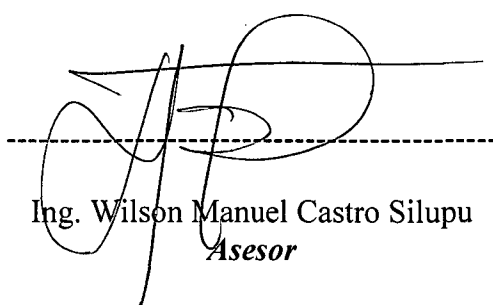


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Yo, Ing. Wilson Manuel CASTRO SILUPU, identificado con DNI N° 40322327 Docente Asociado a Dedicación Exclusiva de la Escuela Académico Profesional de Ingeniería Agroindustrial, asesor de la tesis titulada **“EFECTO DE DIFERENTES COMBINACIONES DE PARÁMETROS DE TAMAÑO Y FORMA EN EL PORCENTAJE DE ERROR DE LA CLASIFICACIÓN DE ELEMENTOS ESTRUCTURALES EN TEJIDOS VEGETALES, UTILIZANDO REDES NEURONALES PROBABILÍSTICAS”** presentado por el Bach. **JOSÉ MARCELO VÁSQUEZ RUBIO**, egresado de la Escuela Académico Profesional de Ingeniería Agroindustrial.

Por lo indicado doy testimonio y visto bueno, que el Bach. **JOSÉ MARCELO VÁSQUEZ RUBIO**, ha ejecutado la tesis mencionada, por lo que en fé a la verdad firmo la presente.



Ing. Wilson Manuel Castro Silupu
Asesor

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RESUMEN

En esta tesis se procedió a determinar la combinación óptima de parámetros de tamaño y forma a fin de obtener la clasificación de elementos estructurales con el menor porcentaje de error. Para este efecto se procedió a utilizar las secuencias lógicas provistas por Castro y col. (2011) y una serie de micrografías de tejido de calabaza (*Cucurbita pepo L.*) a partir de las cuales se determinaron y clasificaron manualmente los elementos estructurales en tres diferentes clases (células, espacios intercelulares y elementos no reconocibles). De cada elemento se determinaron ocho parámetros de tamaño y forma (Área, Diámetro equivalente, Longitud eje mayor, Longitud eje menor, Perímetro, Redondez, Elongación, Compactación), se elaboró una secuencia lógica para determinar la combinación de parámetros que generaba el menor error en la clasificación de los elementos micro estructurales, mediante comparación con la clasificación manual y se determinó mediante este proceso que el mínimo porcentaje de error fue 12.7 %, mediante el uso de los parámetros de eje mayor, eje menor, perímetro, redondez

ABSTRACT

In this thesis we proceeded to determine the optimal combination of size and shape parameters to obtain the classification of structural elements with the lowest percentage of error. To this effect was used, the logical sequences provided by Castro et al. (2011) and a series of micrographs of tissue squash (*Cucurbitapepo* L.) from which are determined manually and classified in three different structural classes (cells, intercellular spaces and elements not recognizable). Of each element identified eight parameters of size and shape (area, diameter equivalent length major axis, minor axis length, perimeter, roundness, elongation, compaction), was developed in a logical sequence to determine the combination of parameters that generated the least error in the classification of microstructural elements, by comparison with the manual sorting and this process was determined by the minimum error rate was 12.7%, using the parameters of the major axis, minor axis, perimeter, roundness

INTRODUCCIÓN

1.1. MARCO TEÓRICO

1.1.1. Relaciones estructura – propiedad – proceso

En la actualidad la apertura del mercado y las cada vez mayores facilidades en los métodos de comercialización hacen más exigentes las demandas de los consumidores con respecto a las características de calidad y las propiedades que de estos se desean. Esto requiere de la ciencia de los alimentos la capacidad de desarrollar alimentos a medida, partiendo de los ladrillos básicos que los conforman, su organización y los efectos que esta genera sobre sus propiedades. Por tanto las relaciones entre la estructura de un alimento, sus propiedades y funcionalidad son de fundamental interés en la Ingeniería de Alimentos; debido a que, además de los componentes presentes en un alimento, los niveles de organización, determinan las propiedades y atributos que demandan los consumidores (Fennema, Damodaran, y Parkin 2008; Acevedo et al. 2008; Fito et al. 2007; J Aguilera y Stanley 1999)

Dicha organización responde a varios niveles de complejidad y crecientes niveles de funcionalidad; siendo frecuentemente resultado de la reorganización de estructuras previas menos complejas durante los procesos de transformación. Esto debido a que durante estos procesos tienen lugar, de forma simultánea, fenómenos de transferencia de calor y materia en sistemas multifarios, así como cambios físicos, químicos, micro estructurales y macro estructurales (Fito 2011; Seguí, Fito, y Fito 2009; Fito et al. 2007; José Aguilera 2006; Nieto et al. 2004). Es así que las propiedades finales de los alimentos son el resultado de los cambios sucesivos en la materia prima

(composicionales y estructurales), producido como resultado de los fenómenos físicos y químicos acontecidos a lo largo del proceso de transformación (deformaciones y relajaciones de estructura, reacciones enzimáticas, transiciones de fase, etc.).

En concordancia con lo antes comentado, para un adecuado diseño de productos y procesos alimentarios, es necesario conocer y estar en la capacidad de predecir (modelar) los cambios en la estructura de un alimento a lo largo del proceso de transformación y sus relación con las propiedades del mismo. Sin embargo, los existentes modelos de alimentos son poco realistas, prestándole poca importancia a la estructura y los cambios estructurales (P. Fito et al. 2007); debido, principalmente, a la alta complejidad y heterogeneidad de su organización en sus diferentes niveles (nano, micro, meso y macro) (Seguí, Fito, y Fito 2009; Castro Silupu 2010).

Aun a pesar de estas dificultades, como mencionara para realizar el modelado de las relaciones estructura- propiedad-proceso es necesario clarificar que componentes e interacciones son importantes en estos sistemas de estructuras complejas, a fin de extrapolar resultados en otras condiciones de procesamiento (José Aguilera 2006); pues a la fecha, estas relaciones no son bien entendidas y hace que los modelos basados en dichas relaciones tengan un limitado rango de aplicación (Mebatsion et al. 2008).

En el estudio de los diferentes niveles de complejidad uno de los niveles de mayor influencia y tal vez uno de los menos entendidos es el microestructura. A nivel microestructural se debería considerar a la estructura y química de las paredes celulares, presión de turgencia y naturaleza de adhesión; en cuanto a niveles más altos, la

estructura del tejido (orientación celular, cantidad de poros y espacios intercelulares) y tipos de tejidos u órganos (Mayor, Cunha, y Sereno 2007).

Diversos investigadores como Barat, Fito, y Chiralt (2001); Mavroudis, Dejmeck, y Sjöholm (2004); Mayor, Cunha, y Sereno (2007); Mayor, Pissarra, y Sereno (2008); Castello et al. (2009) han estudiado las relaciones a estructura-propiedad-proceso en materiales sometidos a deshidratación osmótica y deshidratación por convección. Dichos autores, estudiando los cambios generados en las propiedades mecánicas debidos a los cambios de densidad y alteración del tejido (ruptura celular, formación de cavidades de aire), demostraron que la estructura (antes, durante y después del proceso) afecta la transferencia de materia, las propiedades mecánicas y sus propiedades texturales.

Todo lo anterior lleva a que uno de los principales retos que existe actualmente en Ciencia e Ingeniería de los Alimentos sea la caracterización y predicción de los cambios estructurales que sufre un alimento durante su procesamiento y el efecto de estos cambios en las propiedades del alimento, es decir, las relaciones estructura-propiedad-proceso (Fito 2011; Fito et al. 2007). Por tanto es necesario desarrollar y/o aplicar metodologías de análisis de la estructura a diferentes niveles y enlazar estas al desarrollo de modelos de mayor realismo.

1.1.2. Análisis de la estructura en tejidos vegetales

A fin de realizar el estudio de la estructura, forma en que se organiza la materia y la energía, como párrafos arriba fue descrita se hace uso de análisis microestructurales, generalmente, a partir de micrografías. En dichas micrografías, obtenidas mediante técnicas de microscopía óptica y/o electrónica, se identifican las entidades microestructurales presentes y se analizan estas de forma cualitativa (p.ej., roturas celulares) y/o cuantitativa (p.ej. mediante la obtención de parámetros de tamaño y forma).

análisis de las estructuras en tejidos vegetales, pasa por la caracterización de los elementos estructurales del El tejido (células y espacios intercelulares). En este punto se encuentra que los alimentos naturales y procesados pueden parecer uniformes cuando se escala macroscópica examinan a o con el ojo desnudo, así, las medidas de propiedades físicas se asume que son intrínsecamente correspondientes a un material “homogéneo”. Sin embargo, la mayoría de las propiedades macroscópicas dependen de las características microscópicas y a esta escala los alimentos pueden lucir algo heterogéneos y anisotrópicos(José Aguilera 2006; Mebatsion et al. 2009), lo cual complica el proceso de análisis y su aplicabilidad en la tecnología de alimentos.

Recientes investigaciones han tratado acerca de la caracterización de los tejidos vegetales ya frescos como procesados Seguí, Fito, y Fito 2009; Mayor, Pissarra, y Sereno 2008; Mayor, Cunha, y Sereno 2007; Nieto et al. 2004; Ramos, Brandao, y Silva 2003; Albors 2002; Barat, Fito, y Chiralt 2001. Los trabajos antes mencionados han basado sus análisis en la caracterización de la microestructura mediante reconocimiento visual de las estructuras y determinación de los parámetros de tamaño y forma.

Así es obvio que el uso de microscopios, acoplados a software para análisis de imágenes, deben ser usados para obtener imágenes de la estructura celular (José Aguilera 2005; Zdunek et al. 2007), los cuales a posterior permitan a los ingenieros trabajar con modelos físicos y relaciones matemáticas usando información cuantitativa y datos numéricos procedentes de las imágenes (micrografías).

En contraposición a la transcendencia de la tecnología de microestructura en alimentos, su total adopción en la academia ha sido lenta. Las razones para esta gradual adopción pueden ser el alto costo de la instrumentación, la necesidad de aproximaciones multidisciplinarias y la idea que las imágenes solo proveen información subjetiva (José Aguilera 2005). Es así que imágenes de la microestructura (micrografías) son usualmente usadas solo como soporte para una descripción cualitativa de la microestructura y complementa la data generada por rigurosos protocolos de muestreo y preparación (Ramírez, Germain, y Aguilera 2009).

Ante esto hacen su aparición las técnicas de visión por computadora, las cuales incluyen captura, procesamiento y análisis de imágenes, cuyo potencial en la industria alimentaria, especialmente para aplicaciones de inspección de la calidad, encontrando estándares de calidad e incrementando el valor de mercado, ha sido ampliamente reconocido y le ha llevado a listar a esta industria entre las 10 top que usan esta tecnología (Omid, Khojastehnazhand, y Tabatabaeefar 2010; Acevedo et al. 2008; Brosnan y Sun 2004). En efecto estas técnicas han mostrado gran efectividad como herramienta para medir características externas tales como intensidad de color, homogeneidad de color, tamaño, forma y demás atributos físicos de frutas y objetos de forma irregular (Omid, Khojastehnazhand, y Tabatabaeefar 2010).

Estas operaciones de análisis de imágenes demandan una gran cantidad de recursos, al requerir un operador entrenado capaz de discriminar entre los elementos que componen la imagen y de los cuales se extrae su información morfológica (características de tamaño y forma) y su dificultad se incrementa a medida que aumenta la complejidad de las estructuras a analizar; siendo claro que para aquellos elementos aislados, sin contacto, es fácilmente realizado. Sin embargo, los objetos que están en contacto y/o solapándose presentan problemas únicos en el momento de ser evaluados (Ni y Guansekarán 2004). Es así que en los sistemas convencionales de análisis de microestructura aún se requiere de un operador entrenado que discrimine entre los elementos existentes en la microestructura.

1.1.3. Desarrollo y aplicación de sistemas inteligentes

En este punto se puede considerar el uso de sistemas inteligentes, cuyo esquema general se aprecia en la figura 1, usadas exitosamente en clasificación, de acuerdo a los parámetros de madurez, de frutales (Du y Sun 2006). Estos sistemas, debido a su capacidad de auto aprendizaje, podrían aplicarse al reconocimiento de los elementos constituyentes en tejidos vegetales (Células y espacios intercelulares).

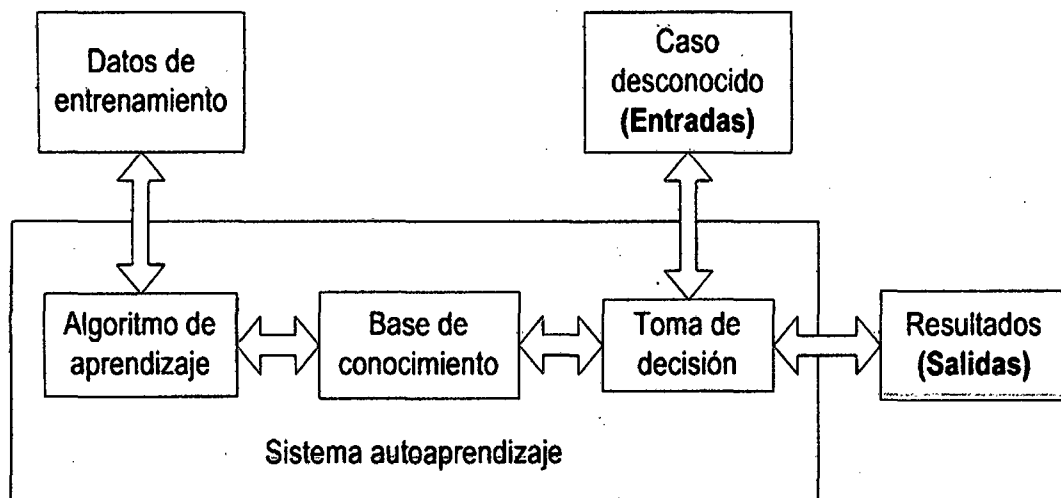


Figura 1. Esquema de sistemas inteligentes
 Fuente: Cheng-Jin y Da-Wen (2006)

En estos sistemas las imágenes son caracterizadas cuantitativamente de acuerdo a características morfológicas, parámetros de color, entre otras; estas se usan para representar al alimento y entrenar al sistema. A partir de estos datos se obtiene el algoritmo de entrenamiento, extrayendo el conocimiento base necesario para hacer decisiones en casos desconocidos. La decisión tomada, con base en este conocimiento, se convierte en una salida y alimenta la base de datos al mismo tiempo, generalizando la forma que un usuario entrenado usa para completar su labor (Cheng-Jin y Da-Wen 2004; Cheng-Jin y Da-Wen 2006; ChoTse 2004)

Estas decisiones, basadas en patrones de forma, tamaño, color, etc., se han usado exitosamente en la clasificación de frutas, predicción del periodo de cosecha, análisis de textura de músculos, distribución de tamaño de semillas e identificación de hojas, evaluación de alimentos extruidos y análisis de estructura de plantas (Ni y Guansekarán 2004; Omid, Khojastehnazhand, y Tabatabaeefar 2010).

Aunque los avances actuales en informática y capacidad de computo permiten construir sofisticadas máquinas para sustituir la acción humana aún existe un gran vacío en las actividades que requieran simular los cinco sentidos, sobre todo cuando se tiene como finalidad el reconocimiento de patrones (ChoTse 2004), base de los sistemas de clasificación y predicción.

En este contexto los clasificadores artificiales, generados por computadora, intentan imitar las decisiones usando tanto redes neuronales como discriminantes Bayesianos (Omid, Khojastehnazhand, y Tabatabaeefar 2010), interactuando con una base de datos a todos los niveles del proceso para mayor precisión en la decisión y logrando mayor efectividad de la decisión inteligente al aumentar la información proporcionada en la base de datos (Brosnan y Sun 2004).

Las redes neuronales, inicialmente inspiradas por el sistema nervioso, combinan la complejidad de algunas de las técnicas estadísticas con el auto aprendizaje, imitando el proceso cognoscitivo humano. La figura 2 ilustra una topología general de la estructura de redes neuronales, la red completa representa un muy complejo conjunto de interdependencias y pueden incorporar algún grado de no linealidad en la teoría. (Cheng-Jin y Da-Wen 2004).

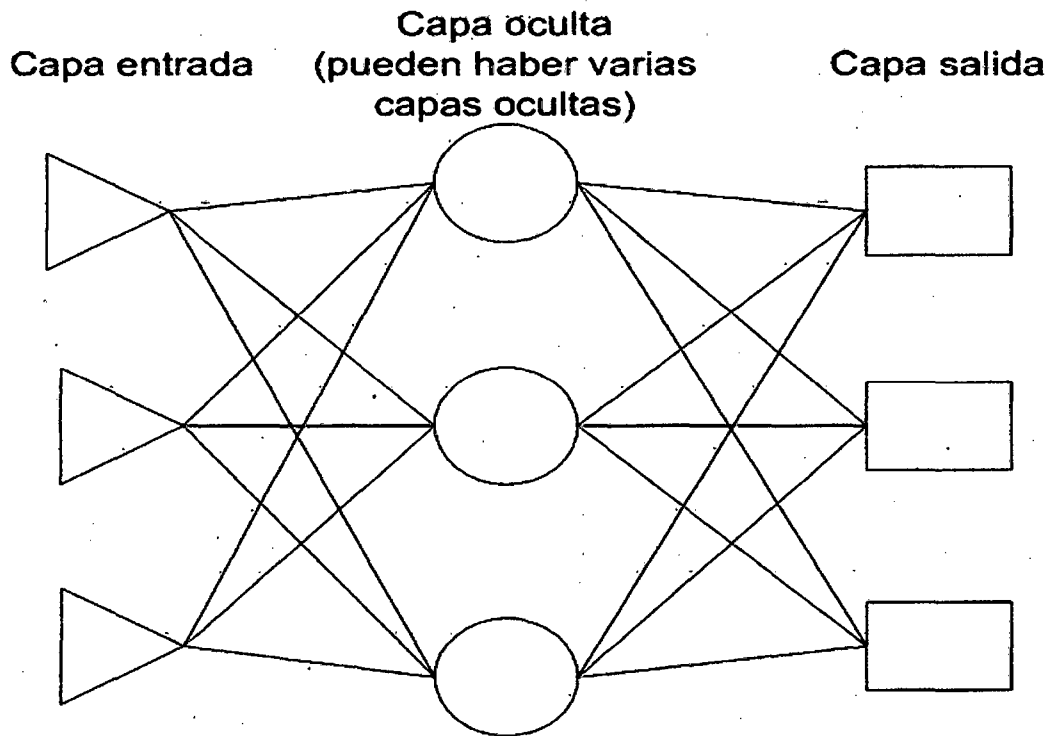


Figura 2. Topología general de la estructura de redes neuronales
Fuente: Cheng-Jin y Da-Wen (2004)

En general las redes neuronales han mostrado una capacidad clasificatoria igual o superior que las técnicas estadísticas, con la ventaja de poderse utilizar independientemente del cumplimiento de los supuestos teóricos relativos a estas técnicas (Pitarque, Ruiz, y Roy 2000).

En este sentido la tecnología de redes neuronales permite extender las tecnologías de visión por computadora a la inspección de color, contenido, forma y textura a niveles de aproximación cercanos a los humanos y puede proveer capacidad de realizar clasificación exitosamente en tareas de inspección (Cheng-Jin y Da-Wen 2006).

El problema surge cuando encontramos resultados contradictorios a la hora de determinar qué modelos son más eficientes en la solución de problemas concretos de

predicción/clasificación. Así mientras algunos trabajos empíricos no encuentran diferencias entre los resultados hallados por unos y otros modelos (Croall y Mason, 1992; Michie y col, 1994; Ripley, 1993; Thrun, Mitchell y Cheng, 1991), otros resultados tienden a apoyar una ligera superioridad de las redes neuronales sobre las técnicas estadísticas (Garson, 1991; Huang y Lippman, 1987; White, 1994).

Los estadísticos explican estas discrepancias empíricas aduciendo una incorrecta aplicación de las técnicas estadísticas: análisis inadecuado de los supuestos teóricos en los que se basan (homogeneidad de la matriz de covarianzas, normalidad, etc), utilización de matrices datos sesgadas, ausencia de pre-procesamiento de los datos (outliers, missing data, etc) y transformación de variables, etc. Por su parte los expertos en redes aducen que pese a que las redes neuronales a priori son capaces de asociar cualquier patrón de entrada con cualquier patrón de salida, su rendimiento depende del ajuste heurístico de numerosos parámetros (número de unidades de entrada, salida y ocultas, si procede; funciones de activación: lineal, sigmoideal, tangencial; regla de aprendizaje: Hebb, delta, retropropagación; coeficientes de aprendizaje y momentum, etc.), ajuste que no siempre garantiza la solución deseada, dada además la estructura de "caja negra" (Cherkassky, Friedman y Wechler, 1994) de este tipo de modelos.

Las características de autoaprendizaje de las redes neuronales y la necesidad de cuantificar la información microestructural a partir de micrografías, mediante visión por computadora, hacen necesario considerar la implementación de sistemas de análisis de microestructuras vegetales, basados en estas dos técnicas. Sin embargo, para esto se requiere conocer apropiadamente las variables o patrones a ingresar a la red neuronal

(parámetros de tamaño y forma) y las interacciones tanto entre variables o patrones de ingreso y entre estas y la variable(s) respuesta(s).

Por tanto el objetivo de este trabajo es estudiar el efecto de diferentes combinación de parámetros de tamaño y forma en el porcentaje de error de la clasificación de elementos estructurales, utilizando redes neuronales probabilísticas. Para este fin se han utilizado micrografías de tejido parenquimático de calabaza, y se han aplicado técnicas de análisis de imagen e inteligencia artificial, concretamente redes neuronales, aplicando diferentes combinaciones de parámetros de entrada y analizando los resultados de la clasificación en una matriz de confusión.

I. MATERIALES Y MÉTODOS

2.1 MATERIALES

A. Muestras

Se emplearon micrografías de calabaza (*Cucúrbita pepo* L.) provistas por el Dr. Luis Mayor López, investigador del Instituto Universitario de Ingeniería de Alimentos para el Desarrollo (IUIAD) de la Universidad Politécnica de Valencia (UPV).

Dichas micrografías se obtuvieron a partir de muestras de calabaza, adquiridas a un productor de la localidad. Se obtuvieron cilindros de tejido parenquimático de la zona intermedia del mesocarpio, paralelos al eje mayor del fruto y fueron tratados de acuerdo al procedimiento de Mayor, Pissarra, y Sereno (2008).

Estas micrografías fueron caracterizadas obteniendo sus elementos constituyentes, según la metodología propuesta por Castro et al. (2011); de cada tipo de elemento se obtuvieron parámetros de tamaño y forma, según la figura 3. Los resultados obtenidos de muestran en el anexo A.

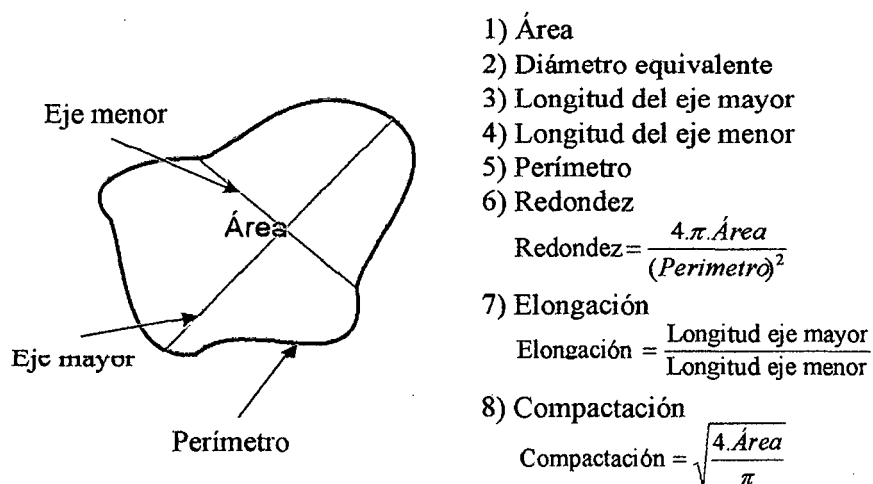


Figura 3. Parámetros de tamaño y forma

Fuente: Castro et al. (2011)

B. Equipos

- Computadora Core i5 inside, 2.27 GHz, memoria: 4.0 GB
- Memoria USB – 8 GB

C. Otros

- Artículos de revistas especializadas
- Software matemático Matlab 2010^a

2.2 MÉTODOS

La metodología empleada para lograr los objetivos planteados en la presente investigación se desarrolla a continuación: a) Aplicación de diferentes combinaciones de parámetros de tamaño y forma a la clasificación de elementos estructurales, utilizando redes neuronales probabilísticas. b) Evaluación del porcentaje de error en la clasificación de elementos estructurales, utilizando redes neuronales probabilísticas. c) Determinación de la combinación de parámetros de tamaño y forma que genera la optima clasificación de elementos estructurales, basada esta en el porcentaje de error.

A continuación se brindan mayores detalles de cada una de las etapas antes mencionadas:

- A. Aplicación de diferentes combinaciones de parámetros de tamaño y forma a la clasificación de elementos estructurales.

El programa utilizado para el análisis de la microestructura en tejidos vegetales fue facilitado por el ingeniero Wilson Castro Silupu, quien lo desarrollo e implemento en el software matemático Matlab v.2010a. Este

programa fue presentados en el VIII Congreso Iberoamericano de Ciencia e Ingeniería de los Alimentos (VIII CIBIA) y sus resultados publicados en el libro resumen del mismo con el título “Aplicación de redes neuronales a la clasificación de elementos estructurales en micrografías de tejido vegetal”.

Este programa requiere sean especificados los parámetros de tamaño y forma de los elementos estructurales ya comentados en el apartado 2.1 de este informe y que alimentan a la red neuronal artificial. En el trabajo de Castro et al. (2011) se usaron los parámetros redondez, elongación y compactación; sin embargo, no menciona que hayan realizado un proceso de optimización para la selección de los parámetros antes mencionados.

i) Detalles del programa de análisis y clasificación de elementos

Algunos detalles del programa, descripción de las distintas interfaces de usuario que lo componen, se muestra a continuación:

- Interface de pre-tratamiento. Esta interface, denominada genéricamente *guide* en el software Matlab, permite al usuario cargar la micrografía en formato JPEG¹, transformándola en matriz tridimensional, y procediendo a las operaciones de realce y mejoramiento de la imagen, mediante operaciones matriciales.

¹Estándar de compresión y codificación digital de imágenes. Fue creado por el JointPhotographicExpertsGroup (Grupo Conjunto de Expertos en Fotografía o JPEG)

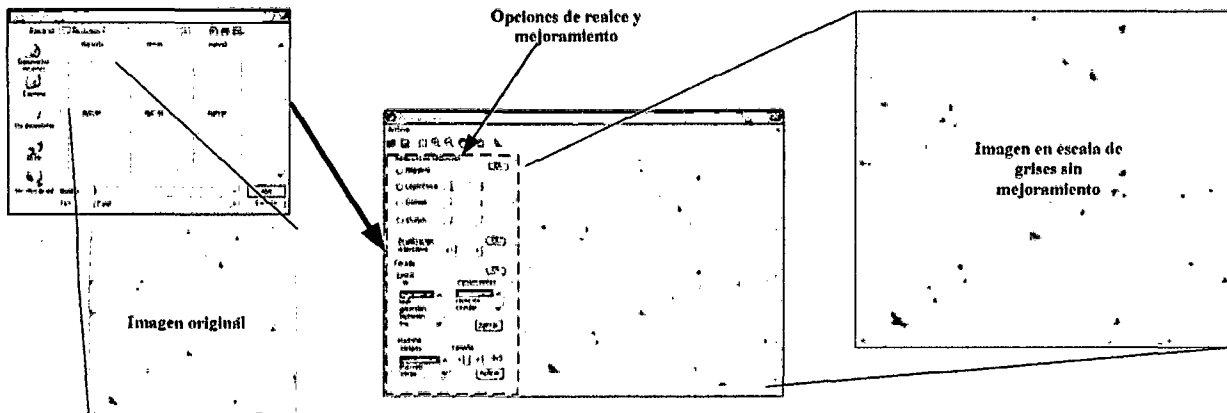
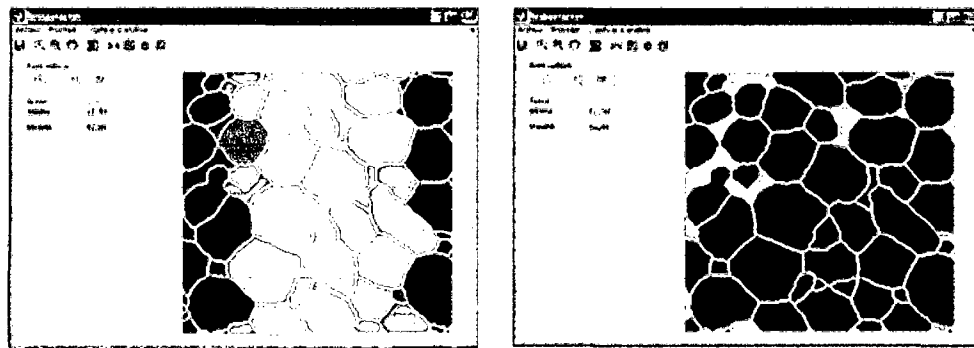


Figura 4. Cargado de micrografías
 Fuente: Castro et al. (2011)

- Interface de restauración y clasificación. En esta el usuario tiene la posibilidad de realizar operaciones de restauración (eliminación de espacios, esqueletizado, entre otros.). Culinada la restauración se procede a la segmentación (separación de elementos que conforman al tejido coloreando a cada elemento de distinto color), lo cual genera una imagen denominada matriz L figura 5a. Asimismo, en esta interface se realiza la clasificación automática de los elementos en células, espacios intercelulares y elementos no reconocibles figura 5b, generando la imagen imgetiq.



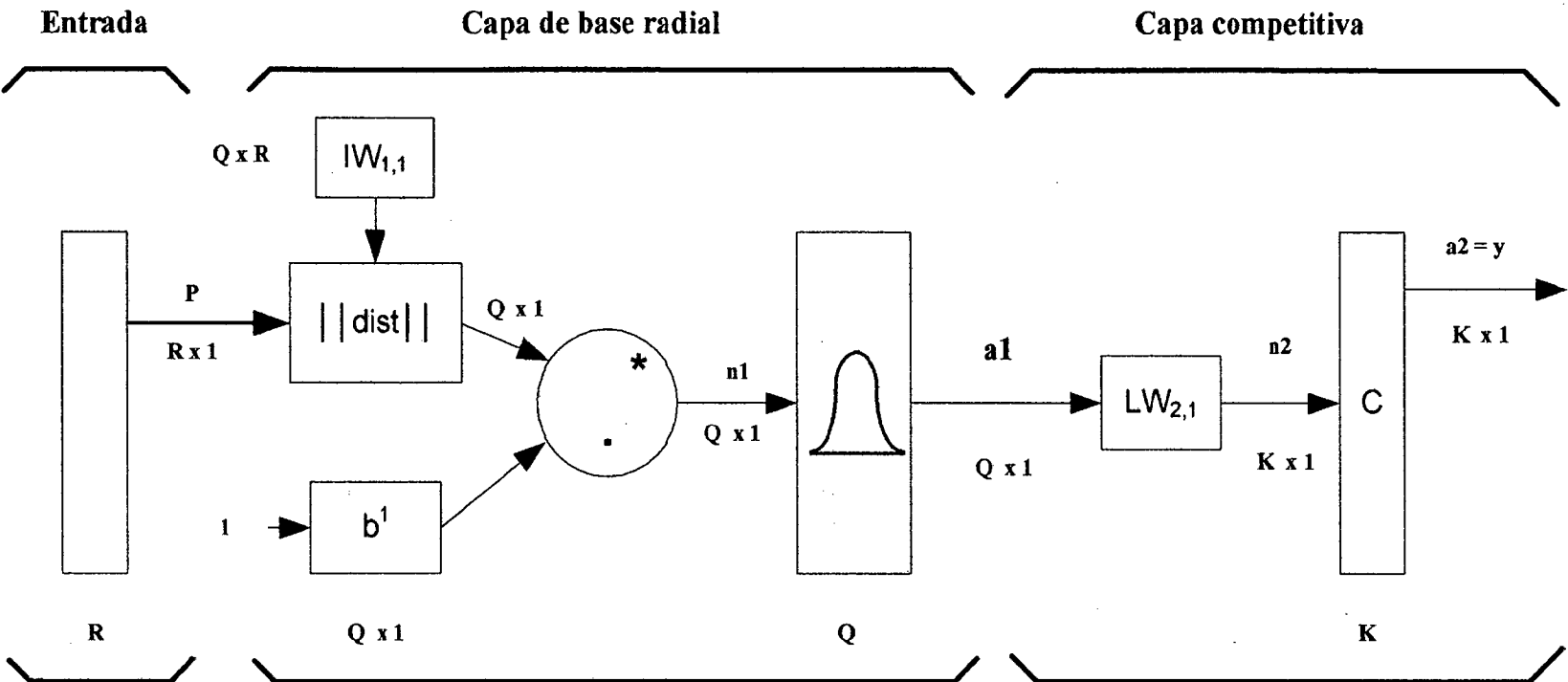
a) Representación matriz L

b) Representación imgetiq

Figura 5. Imagen antes y después de la clasificación.

Fuente: Castro et al. (2011)

El sistema se basa en una red neuronal artificial del tipo probabilístico, denominada newppn por el software matlab. La arquitectura de la misma se muestra en la figura 6 y las entradas y salidas en la tabla 1.



$$a_i1 = \text{radbas}(| | i | | IW_{1,1} - p | | bi^1)$$

$$a2 = \text{compet}(LW_{21a1})$$

a_i1 es el i -ésimo elemento de $a1$ donde $iIW_{1,1}$ es un vector hecho de la i -ésima fila de $IW_{1,1}$

Q = numero de pares entradas/objetivos = numero de neuronas en capa 1

K = numero de clases de datos de entrada = numero de neuronas en capa 2

R = numero de elementos en el vector de entrada

Figura 6. Arquitectura de la red neuronal probabilística
Fuente: Castro et al. (2011)

Las entradas se obtienen dividiendo el valor de los parámetros de tamaño y forma entre constantes de normalización (matriz de normalización²), las cuales se calcularon según se muestra en el anexo c y cuya síntesis se presenta en la tabla 1.

Tabla 1. Constantes de normalización

| Parámetro | Unidad | Valor |
|----------------------|-----------------|----------|
| Área | μm^2 | 32747.13 |
| Diámetro equivalente | μm | 198.46 |
| Eje mayor | μm | 389.31 |
| Eje menor | μm | 169.92 |
| Perímetro | μm | 1261.20 |
| Redondez | -- | 1.20 |
| Elongación | -- | 13.10 |
| Compactación | -- | 0.97 |

Fuente: Elaboración propia

La activación o no de una neurona de salida, codifica tres identificadores de clase (expresados en código binario) tabla 2, finalizando así el proceso de clasificación.

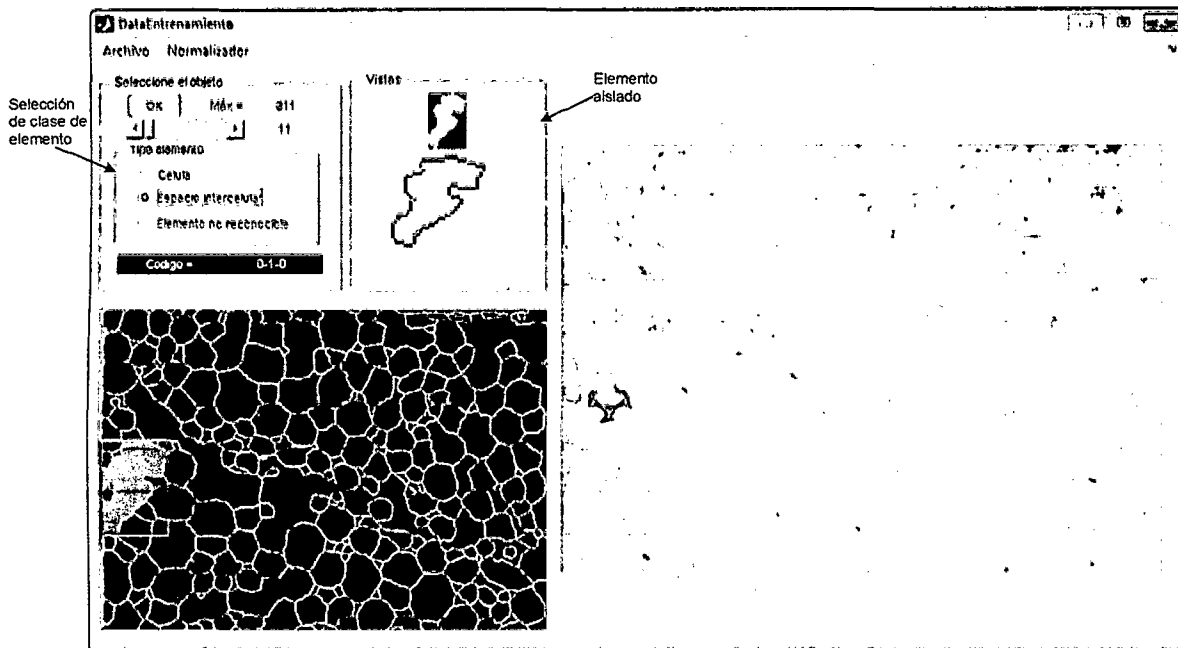
² La matriz de normalización se conforma por aquellos valores que hacen alcanzar la distribución acumulada de los parámetros de tamaño y forma al 95%. Estos parámetros se obtuvieron mediante el comando regionprops y una secuencia de comandos implementada en script de Matlab.

Tabla 2. Características de entradas y salidas de la red neuronal

| Parámetro | | Rango |
|-----------------------|--------------|--------------|
| Entradas* (inputs) | E1 | [0 - 100] |
| | E2 | [0 - 100] |
| | ... | ... |
| | En | [0 - 100] |
| Salidas (outputs) | Valor lógico | [0 - 1] |
| | Valor lógico | [0 - 1] |
| | Valor lógico | [0 - 1] |

Fuente: Adaptado a partir de Castro et al. (2011)

- Interface de entrenamiento. Esta interface fue especialmente diseñada para que un usuario entrenado discrimine entre los distintos elementos estructurales, mediante una secuencia lógica y guide especialmente desarrollados para este propósito figura 7. Con este guide se obtuvo la base de datos de elementos clasificados y que sirvió para alimentar a la red neuronal.



Figura

7. Guide para obtención de datos de entrenamiento

- ii) Selección y aplicación de parámetros de forma en sistema de reconocimiento

Los parámetros de entrada, comentados anteriormente, se listan y numeran en la tabla 3. Estos fueron obtenidos para cada una de las micrografías y su valor numérico se puede apreciar en el anexo A.

Tabla 3. Características de entradas y salidas de la red neuronal

| Parámetro | Numero |
|----------------------|--------|
| Área | 1 |
| Diámetro equivalente | 2 |
| Eje mayor | 3 |
| Eje menor | 4 |
| Perímetro | 5 |
| Redondez | 6 |
| Elongación | 7 |
| Compactación | 8 |

Fuente: Elaboración propia

A fin de determinar cómo influyen diferentes combinaciones, en la eficacia del proceso de calcificación mediante una red neuronal del tipo probabilístico, se determinaron todas las combinaciones de los parámetros de manera que estos no se repitan e importando el orden de los mismo. Estas se muestran en la tabla 4.

Tabla 4. Combinaciones de los parámetros de tamaño y forma usados en la investigación.

| Numero de parámetros | Combinaciones posibles |
|----------------------|------------------------|
| 2 | 28 |
| 3 | 56 |
| 4 | 70 |
| 5 | 56 |
| 6 | 28 |
| 7 | 8 |
| Total | 246 |

Fuente: Elaboración propia

Las combinaciones de parámetros son usadas como información de entrada, para el proceso de clasificación, en la red neuronal artificial. En la figura 8 se muestra la secuencia lógica para el proceso de selección y uso de las combinaciones de parámetros en el sistema de clasificación inteligente.

La clasificación de elementos se realizó sobre un total de 322 elementos, de los cuales 169 fueron células, 99 espacios intercelulares y 54 elementos no reconocibles.

B. Evaluación del porcentaje de error en la clasificación de elementos estructurales.

Los resultados de la clasificación, almacenados estos en hojas Excel, fueron posteriormente comparados con los resultados de una clasificación manual realizadas por un operador entrenado.

La eficiencia de clasificación de la red neuronal, tanto por clase de elemento como global, se presenta como una matriz de confusión. Dicha matriz es una herramienta de visualización que se emplea en aprendizaje supervisado. Cada columna de la matriz representa el número de predicciones de cada clase, mientras que cada fila representa a las instancias en la clase real.

Con base en lo indicado en el párrafo anterior la matriz de confusión para este trabajo se muestra en la figura 9.

| Instancias en la clase real | Predicción con red neuronal | | |
|-----------------------------|-----------------------------|-----------------|-----------------|
| | Clase 1 | Clase 2 | Clase 3 |
| Clase 1 | Clase 1=Clase 1 | Clase 1=Clase 2 | Clase 1=Clase 3 |
| Clase 2 | Clase 2=Clase 1 | Clase 2=Clase 2 | Clase 2=Clase 3 |
| Clase 3 | Clase 3=Clase 1 | Clase 3=Clase 2 | Clase 3=Clase 3 |

Figura 9. Matriz de confusión³

Fuente: Elaboración propia

³ Las celdas coloreadas en gris claro son clasificaciones coincidentes entre la red neuronal y el observador entrenado; la celda en gris oscuro es la eficiencia ponderada de clasificación.

- C. **Determinación de la combinación de parámetros de tamaño y forma que genera la óptima clasificación.**

Para determinar la combinación de parámetros que genera la óptima clasificación se procedió a determinar cuál es la combinación que presenta la máxima eficacia ponderada en clasificación. Asimismo se toma en cuenta la eficiencia en la clasificación en las células y espacios intercelulares.

III.-RESULTADOS

3.1 Aplicación de diferentes combinaciones de parámetros de tamaño y forma

a) Determinación de combinaciones de los parámetros de tamaño y forma. El número de combinaciones de los parámetros de tamaño y forma utilizados en esta investigación, codificados en la tabla 3, se muestran en la tabla 5. Asimismo, mayores detalles de la combinación de estos parámetros se puede apreciar en la tabla A11 de los anexos.

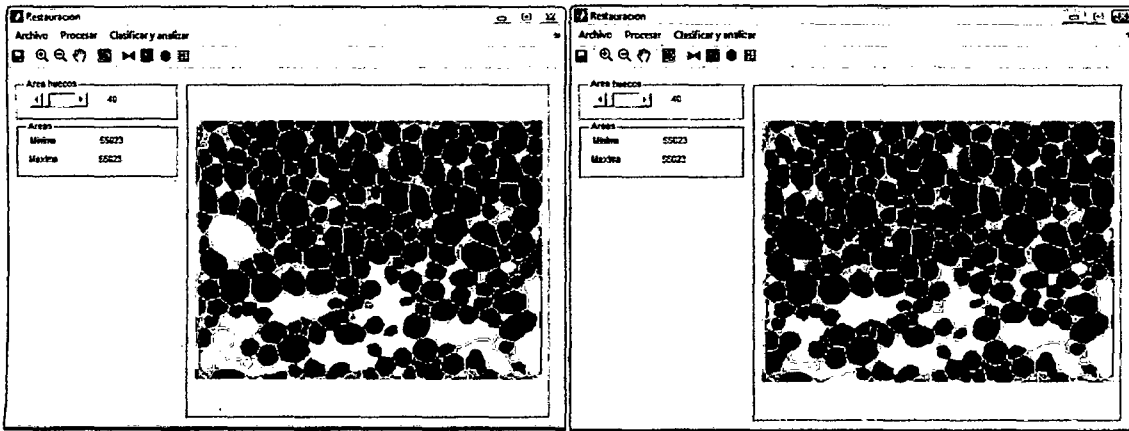
Tabla 5. Numero de combinaciones posibles

| Numero de parámetros | Numero de combinaciones |
|----------------------|-------------------------|
| 2 | 28 |
| 3 | 56 |
| 4 | 70 |
| 5 | 56 |
| 6 | 28 |
| 7 | 8 |

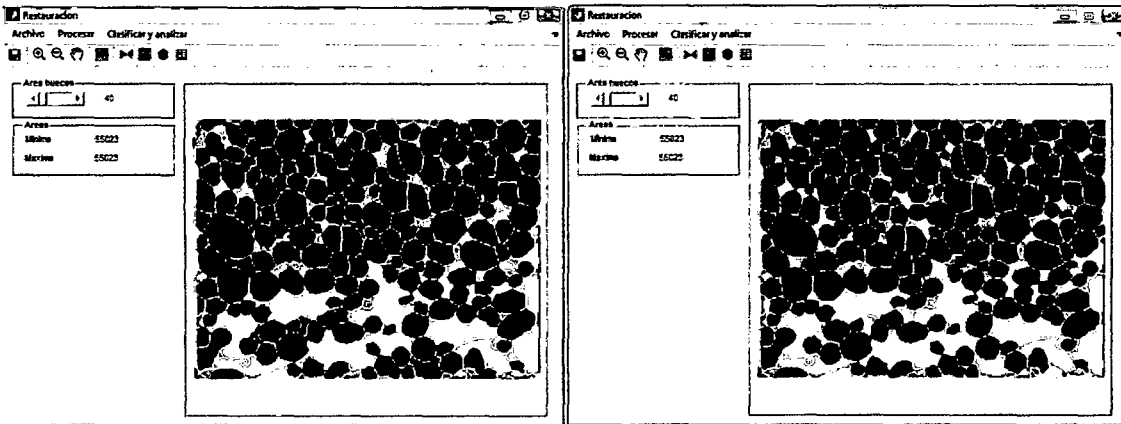
Fuente: Elaboración propia

b) Implementación y aplicación del código fuente. El código fuente, desarrollado en base a la figura 8, para la aplicación de las distintas combinaciones de parámetros se implemento, en lenguaje script de Matlab, para el Guide restauración del programa provisto por Castro y col. (2011); el código fuente ya mencionado se encuentra disponible en el Anexo F.

En la siguiente figura se aprecia la aplicación de diferentes combinaciones de parámetros de tamaño y forma en una micrografía.

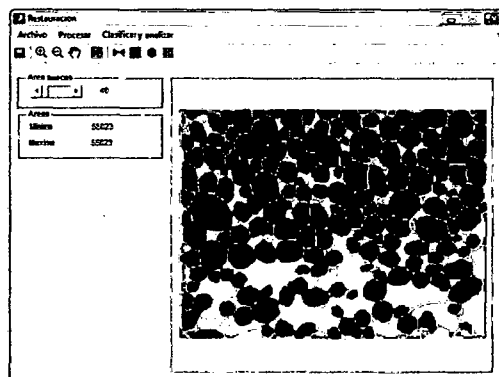


(parámetros 2 y 3) (parámetros 2, 3, 4)



(parámetros 2,3,4,5)

(parámetros 2,3,4,5,6)



(parámetros 2,3,4,5,6,7)

Figura 10. Resultado de la clasificación al aplicar algunas combinaciones de parámetros de tamaño y forma.

3.2 Evaluación del porcentaje de error

Los errores obtenidos para cada una de las combinaciones aplicadas en el proceso de clasificación utilizando redes neuronales se muestran en el anexo D. Asimismo, a efecto comparativo se muestra los porcentajes de error, para cada combinación, distribuidos en cuartiles mediante una grafica de cajas y bigotes.

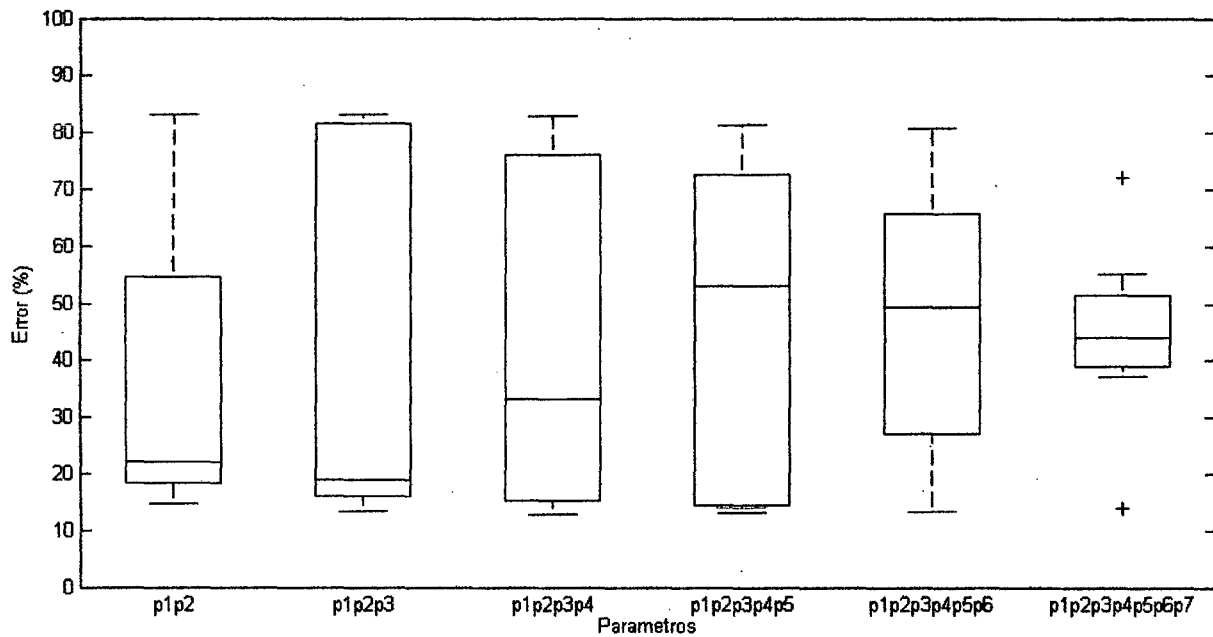


Figura 11. Grafica de cajas y bigotes de los porcentajes de error por combinación

El diagrama de cajas y bigotes nos muestra, para cada combinación de parámetros, el porcentaje mínimo de error en el bigote inferior. También se aprecia que el 50 % de los datos ocupan, en la mayoría de las combinaciones, una gran extensión del rango intercuartilico.

3.3 Determinación de la combinación óptima

La determinación de la combinación óptima se realizó determinando el error mínimo y su correspondiente combinación de parámetros en cada caso, esto se observa en la figura 12.

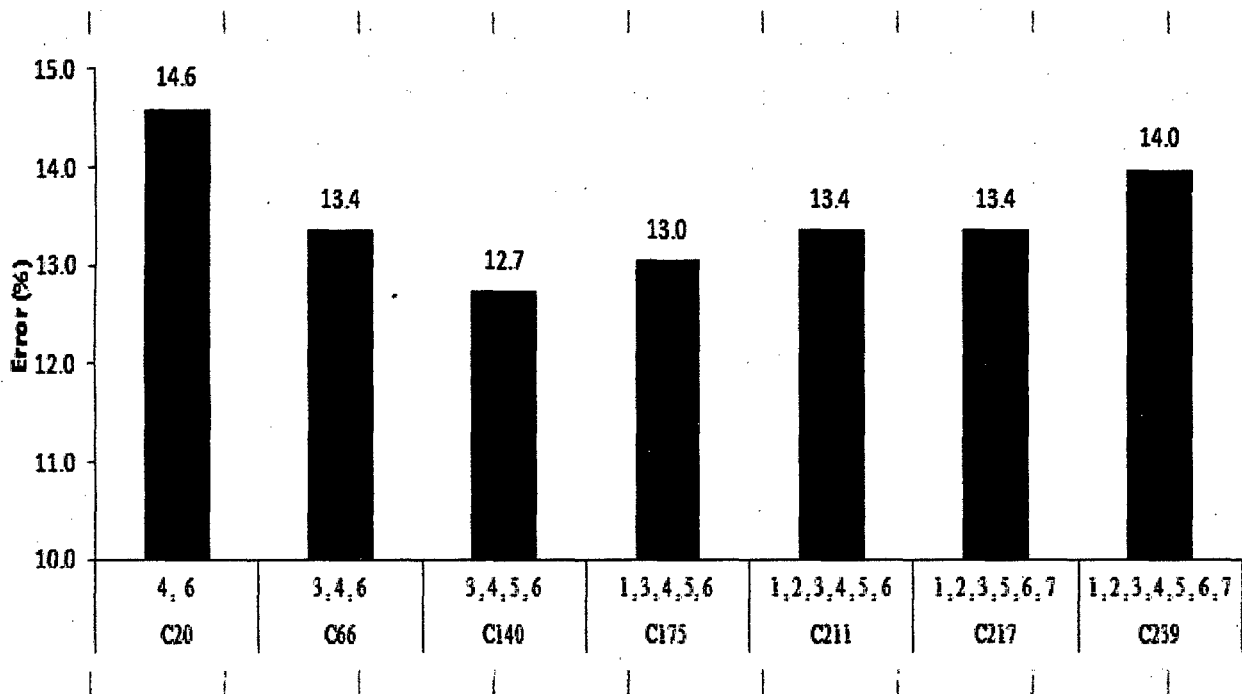


Figura 12. Errores mínimos en las diferentes combinaciones

IV.- DISCUSIÓN

De la tabla 5 y figura 10, en la cual se muestra que diferentes combinaciones de parámetros de entrada generan diferentes resultados en la clasificación de los elementos estructurales en tejidos vegetales y las referencias recolectadas por Su y Da-Wen (2006) se puede inferir que las redes neuronales son adecuadas para los procesos de clasificación; sin embargo, y en gran medida debido a su tipología como modelo de caja negra, existen un gran margen para el diseño de estos modelos en base a la topología a que este modelo puede ajustarse. En nuestro caso la topología fue ajustada mediante el uso de diferentes combinaciones de parámetros de entrada.

De la figura 11 se aprecia que distintas combinaciones de parámetros de tamaño y forma generan diferentes resultados en el proceso de clasificación; estos parámetros han sido utilizados ya en otros trabajos de investigación como los de Mayor y col., 2008; Ramírez y col. 2009, Bustos, 2005. En la recopilación de casos que presenta Cheng (2006) se puede observar que en el caso del sector alimentario la inteligencia artificial y concretamente las redes neuronales se han usado en la clasificación de alimentos ya sea en estado fresco como procesado. Sin embargo, también encontró en los resultados experimentales de varios investigadores como Nakano (1997) que el mayor problema de la clasificación son los desiguales gradientes de color en manzanas debido al efecto de su geometría esférica, entre otras.

De la figura 11 se aprecia que el porcentaje de de error es elevado en las diferentes combinaciones y solo en algunos casos se logra un, relativamente, bajo error en la clasificación al comparar estos con proceso manuales. Sin embargo, también Cheng (2006) ha encontrado que diversos investigadores encuentran valores de errores elevados,

de entre 7.5 a 25 %, para clasificación de calidad en manzanas del 5 % para clasificación de especies de pescado, 11.5 % en clasificación de calidad de zanahorias frescas y así en casos similares.

De la figura 12 se desprende que este sistema de análisis basado en redes neuronales, flexible y esencialmente del tipo caja negra, es suficiente para clasificar con buena aproximación elementos estructurales u otras especies de estructuras u elementos. Es de ahí la razón de haber sido ampliamente utilizadas, como lo comentan Du y Da-Wen (2006), en la clasificación y predicción de de varios tipos de alimentos, usando sistemas de visión por computador.

IV.- CONCLUSIONES Y RECOMENDACIONES

4.1 Conclusiones

- Diferentes combinaciones de parámetros de entrada (inputs) en una red neuronal probabilística, usada para la clasificación de elementos estructurales en tejidos vegetales, generan diferentes niveles de error.
- El análisis exploratorio de datos reporta que la combinación con mínimo porcentaje de error se encuentra al combinar cuatro parámetros de entrada.
- La combinación de los parámetros tamaño y forma que genero el mínimo porcentaje de error, 12.7 %, fue: eje mayor, eje menor, perímetro, redondez.

4.2 Recomendaciones

- Realizar un estudio comparativo para evaluar la eficiencia del algoritmo de redes neuronales y un análisis estadístico clásico.
- Aplicar sistemas inteligentes a la clasificación en otros casos a fin de incrementar el conocimiento acerca de su utilidad en el campo agroalimentario.

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ANEXOS

Anexo A. Análisis de micrografías para obtención de la base de datos de entrenamiento. A continuación se muestran las micrografías utilizadas para generar la base de datos para entrenamiento de la red neuronal.

Código: 9D-11a

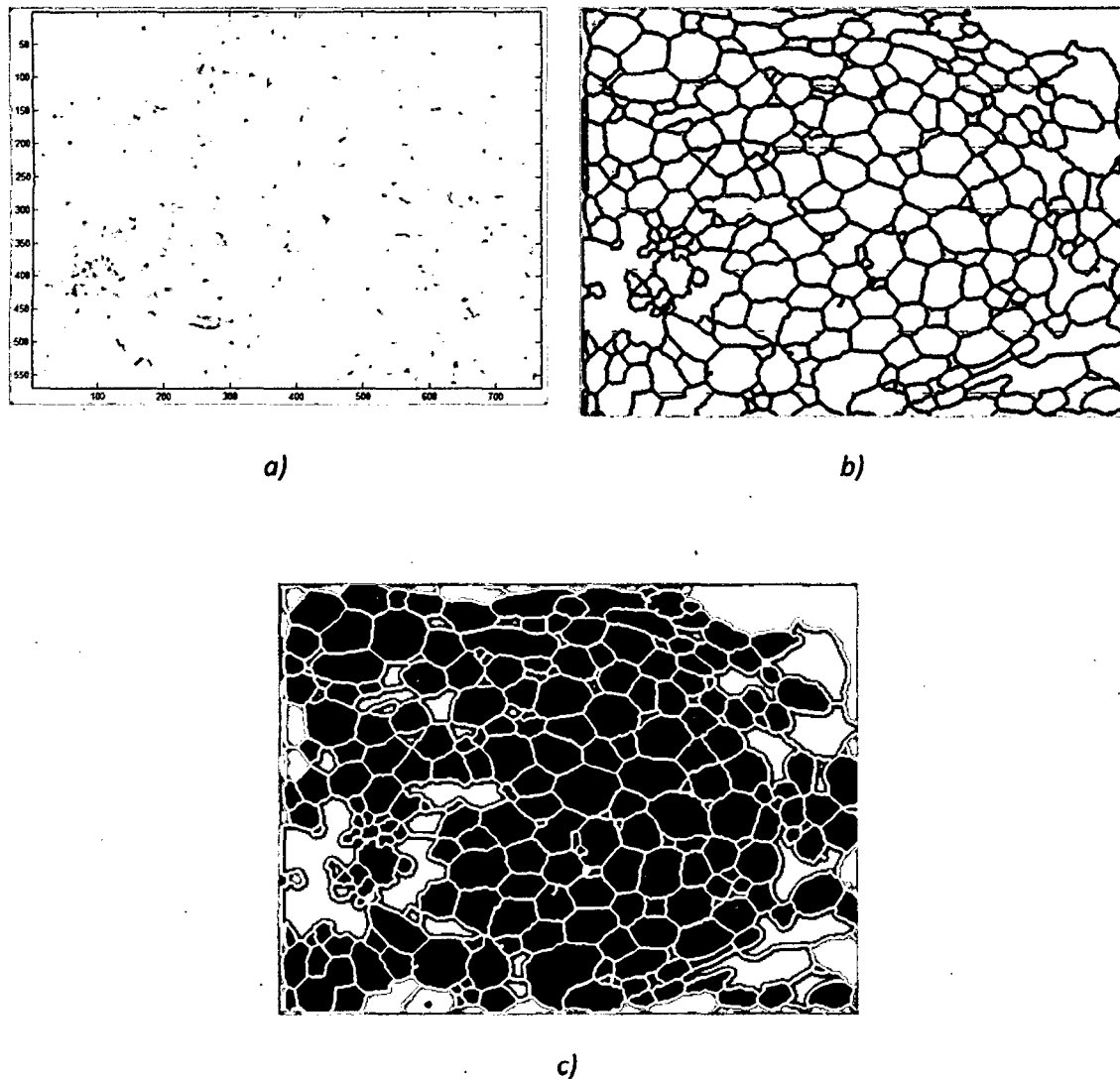


Figura A1. a) Imagen Original b) Imagen procesada c) Imagen segmentada y clasificada

Tabla A1. Parámetros de tamaño y forma y clasificación de elementos en micrografía 9D-11a

| Núm. | Área | Deq | Ejemay | Ejemen | Per | Red | Elg | Comp | Célula | Espint | Elem No Rec |
|------|----------|--------|--------|--------|---------|------|-------|------|--------|--------|-------------|
| 1 | 2971.42 | 61.51 | 262.32 | 22.38 | 593.23 | 0.11 | 11.72 | 0.23 | 0 | 0 | 1 |
| 2 | 1412.21 | 42.40 | 178.56 | 19.18 | 330.59 | 0.16 | 9.31 | 0.24 | 0 | 0 | 1 |
| 3 | 409.49 | 22.83 | 31.17 | 18.46 | 83.60 | 0.74 | 1.69 | 0.73 | 0 | 0 | 1 |
| 4 | 57.75 | 8.57 | 23.43 | 4.20 | 38.56 | 0.49 | 5.58 | 0.37 | 0 | 0 | 1 |
| 5 | 257.24 | 18.10 | 70.78 | 9.14 | 134.00 | 0.18 | 7.74 | 0.26 | 0 | 0 | 1 |
| 6 | 136.50 | 13.18 | 59.90 | 4.02 | 98.13 | 0.18 | 14.89 | 0.22 | 0 | 0 | 1 |
| 7 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | 0.69 | 0 | 0 | 1 |
| 8 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | 0.69 | 0 | 0 | 1 |
| 9 | 105.00 | 11.56 | 22.05 | 7.48 | 45.04 | 0.65 | 2.95 | 0.52 | 0 | 0 | 1 |
| 10 | 162.75 | 14.39 | 67.22 | 4.04 | 121.04 | 0.14 | 16.64 | 0.21 | 0 | 0 | 1 |
| 11 | 64951.34 | 287.57 | 462.77 | 266.49 | 2023.20 | 0.20 | 1.74 | 0.62 | 0 | 1 | 0 |
| 12 | 183.75 | 15.30 | 30.62 | 9.18 | 66.61 | 0.52 | 3.33 | 0.50 | 0 | 0 | 1 |
| 13 | 57.75 | 8.57 | 13.54 | 7.27 | 28.05 | 0.92 | 1.86 | 0.63 | 0 | 0 | 1 |
| 14 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | 0.69 | 0 | 0 | 1 |
| 15 | 7097.82 | 95.06 | 139.02 | 66.74 | 351.80 | 0.72 | 2.08 | 0.68 | 1 | 0 | 0 |
| 16 | 2488.44 | 56.29 | 78.61 | 43.02 | 211.22 | 0.70 | 1.83 | 0.72 | 1 | 0 | 0 |
| 17 | 2488.44 | 56.29 | 74.11 | 48.11 | 216.36 | 0.67 | 1.54 | 0.76 | 0 | 0 | 1 |
| 18 | 2362.44 | 54.84 | 60.72 | 52.11 | 187.19 | 0.85 | 1.17 | 0.90 | 1 | 0 | 0 |
| 19 | 1039.47 | 36.38 | 56.77 | 24.59 | 139.47 | 0.67 | 2.31 | 0.64 | 0 | 1 | 0 |
| 20 | 1328.22 | 41.12 | 65.41 | 27.42 | 162.38 | 0.63 | 2.39 | 0.63 | 1 | 0 | 0 |
| 21 | 6824.83 | 93.22 | 99.82 | 88.69 | 319.95 | 0.84 | 1.13 | 0.93 | 1 | 0 | 0 |
| 22 | 5927.10 | 86.87 | 93.25 | 83.26 | 309.12 | 0.78 | 1.12 | 0.93 | 1 | 0 | 0 |
| 23 | 5990.10 | 87.33 | 134.59 | 58.74 | 330.36 | 0.69 | 2.29 | 0.65 | 0 | 0 | 1 |
| 24 | 4388.89 | 74.75 | 95.95 | 63.00 | 271.12 | 0.75 | 1.52 | 0.78 | 0 | 0 | 1 |
| 25 | 4919.12 | 79.14 | 87.56 | 73.26 | 272.46 | 0.83 | 1.20 | 0.90 | 1 | 0 | 0 |
| 26 | 908.23 | 34.01 | 41.15 | 30.04 | 115.44 | 0.86 | 1.37 | 0.83 | 0 | 0 | 1 |
| 27 | 12988.17 | 128.60 | 156.82 | 108.05 | 457.62 | 0.78 | 1.45 | 0.82 | 1 | 0 | 0 |
| 28 | 6914.07 | 93.83 | 100.43 | 89.13 | 325.41 | 0.82 | 1.13 | 0.93 | 1 | 0 | 0 |
| 29 | 15329.61 | 139.71 | 220.62 | 102.29 | 583.93 | 0.56 | 2.16 | 0.63 | 1 | 0 | 0 |
| 30 | 2388.69 | 55.15 | 62.33 | 51.75 | 193.21 | 0.80 | 1.20 | 0.88 | 1 | 0 | 0 |
| 31 | 1695.71 | 46.47 | 134.58 | 20.54 | 272.36 | 0.29 | 6.55 | 0.35 | 0 | 0 | 1 |
| 32 | 141.75 | 13.43 | 21.12 | 9.13 | 45.04 | 0.88 | 2.31 | 0.64 | 0 | 1 | 0 |

| | | | | | | | | | | | |
|----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 33 | 603.73 | 27.73 | 83.48 | 13.24 | 159.24 | 0.30 | 6.31 | | 0 | 1 | 0 |
| | | | | | | | | 0.33 | | | |
| 34 | 16747.07 | 146.02 | 159.11 | 136.44 | 516.31 | 0.79 | 1.17 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 35 | 698.23 | 29.82 | 37.42 | 26.89 | 108.73 | 0.74 | 1.39 | | 0 | 1 | 0 |
| | | | | | | | | 0.80 | | | |
| 36 | 3884.90 | 70.33 | 90.34 | 56.41 | 250.89 | 0.78 | 1.60 | | 1 | 0 | 0 |
| | | | | | | | | 0.78 | | | |
| 37 | 944.98 | 34.69 | 48.71 | 26.01 | 121.93 | 0.80 | 1.87 | | 0 | 1 | 0 |
| | | | | | | | | 0.71 | | | |
| 38 | 3428.16 | 66.07 | 74.07 | 64.23 | 245.52 | 0.71 | 1.15 | | 0 | 1 | 0 |
| | | | | | | | | 0.89 | | | |
| 39 | 15471.35 | 140.35 | 221.47 | 91.01 | 542.46 | 0.66 | 2.43 | | 1 | 0 | 0 |
| | | | | | | | | 0.63 | | | |
| 40 | 293.99 | 19.35 | 29.70 | 14.29 | 69.06 | 0.77 | 2.08 | | 0 | 1 | 0 |
| | | | | | | | | 0.65 | | | |
| 41 | 671.98 | 29.25 | 45.37 | 21.31 | 111.42 | 0.68 | 2.13 | | 0 | 1 | 0 |
| | | | | | | | | 0.64 | | | |
| 42 | 1774.45 | 47.53 | 57.99 | 40.30 | 167.29 | 0.80 | 1.44 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 43 | 14122.14 | 134.09 | 164.76 | 112.39 | 468.26 | 0.81 | 1.47 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 44 | 3816.65 | 69.71 | 85.95 | 58.38 | 246.86 | 0.79 | 1.47 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 45 | 4483.39 | 75.55 | 98.41 | 60.51 | 273.01 | 0.76 | 1.63 | | 1 | 0 | 0 |
| | | | | | | | | 0.77 | | | |
| 46 | 1212.72 | 39.29 | 52.73 | 34.35 | 150.30 | 0.67 | 1.54 | | 0 | 1 | 0 |
| | | | | | | | | 0.75 | | | |
| 47 | 9549.51 | 110.27 | 128.18 | 95.37 | 374.48 | 0.86 | 1.34 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 48 | 1795.45 | 47.81 | 67.21 | 38.11 | 183.40 | 0.67 | 1.76 | | 0 | 1 | 0 |
| | | | | | | | | 0.71 | | | |
| 49 | 4152.64 | 72.71 | 93.47 | 59.24 | 269.77 | 0.72 | 1.58 | | 1 | 0 | 0 |
| | | | | | | | | 0.78 | | | |
| 50 | 5381.11 | 82.77 | 91.92 | 76.95 | 292.36 | 0.79 | 1.19 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 51 | 776.98 | 31.45 | 37.52 | 28.82 | 108.73 | 0.83 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 52 | 9444.51 | 109.66 | 143.50 | 86.21 | 396.28 | 0.76 | 1.66 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 53 | 902.98 | 33.91 | 67.02 | 21.33 | 148.08 | 0.52 | 3.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.51 | | | |
| 54 | 1506.71 | 43.80 | 50.85 | 38.63 | 148.63 | 0.86 | 1.32 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 55 | 2068.45 | 51.32 | 58.74 | 49.11 | 183.49 | 0.77 | 1.20 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 56 | 11402.71 | 120.49 | 163.80 | 92.78 | 447.57 | 0.72 | 1.77 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 57 | 724.48 | 30.37 | 37.80 | 25.63 | 103.04 | 0.86 | 1.47 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 58 | 6651.58 | 92.03 | 218.36 | 46.18 | 475.62 | 0.37 | 4.73 | | 0 | 1 | 0 |
| | | | | | | | | 0.42 | | | |
| 59 | 7754.05 | 99.36 | 109.24 | 92.36 | 350.69 | 0.79 | 1.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 60 | 288.74 | 19.17 | 22.00 | 17.94 | 61.24 | 0.97 | 1.23 | | 0 | 1 | 0 |
| | | | | | | | | 0.87 | | | |
| 61 | 1506.71 | 43.80 | 58.85 | 34.27 | 156.23 | 0.78 | 1.72 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 62 | 1490.96 | 43.57 | 68.31 | 28.92 | 163.72 | 0.70 | 2.36 | | 1 | 0 | 0 |
| | | | | | | | | 0.64 | | | |
| 63 | 9596.75 | 110.54 | 133.44 | 98.60 | 439.75 | 0.62 | 1.35 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 64 | 1312.47 | 40.88 | 51.97 | 33.12 | 141.60 | 0.82 | 1.57 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 65 | 9376.26 | 109.26 | 140.26 | 88.25 | 404.75 | 0.72 | 1.59 | | 1 | 0 | 0 |
| | | | | | | | | 0.78 | | | |
| 66 | 8851.27 | 106.16 | 127.34 | 90.30 | 368.33 | 0.82 | 1.41 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 67 | 719.23 | 30.26 | 40.28 | 24.32 | 103.60 | 0.84 | 1.66 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 68 | 8956.27 | 106.79 | 181.73 | 70.26 | 458.54 | 0.54 | 2.59 | | 0 | 0 | 1 |
| | | | | | | | | 0.59 | | | |
| 69 | 2262.69 | 53.67 | 71.89 | 42.89 | 202.15 | 0.70 | 1.68 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 70 | 13282.16 | 130.04 | 196.41 | 88.84 | 500.30 | 0.67 | 2.21 | | 1 | 0 | 0 |
| | | | | | | | | 0.66 | | | |

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|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 71 | 220.49 | 16.76 | 31.70 | 14.26 | 76.89 | 0.47 | 2.22 | | 0 | 1 | 0 |
| | | | | | | | | 0.53 | | | |
| 72 | 20127.99 | 160.09 | 168.41 | 153.46 | 547.37 | 0.84 | 1.10 | | 1 | 0 | 0 |
| | | | | | | | | 0.95 | | | |
| 73 | 1553.96 | 44.48 | 75.87 | 28.49 | 182.61 | 0.59 | 2.66 | | 0 | 1 | 0 |
| | | | | | | | | 0.59 | | | |
| 74 | 650.98 | 28.79 | 52.99 | 17.15 | 119.24 | 0.58 | 3.09 | | 0 | 1 | 0 |
| | | | | | | | | 0.54 | | | |
| 75 | 1007.97 | 35.82 | 50.06 | 29.35 | 134.33 | 0.70 | 1.71 | | 0 | 1 | 0 |
| | | | | | | | | 0.72 | | | |
| 76 | 23482.65 | 172.91 | 272.59 | 154.18 | 976.05 | 0.31 | 1.77 | | 0 | 1 | 0 |
| | | | | | | | | 0.63 | | | |
| 77 | 1286.22 | 40.47 | 53.65 | 31.58 | 144.05 | 0.78 | 1.70 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 78 | 3932.15 | 70.76 | 89.93 | 62.90 | 285.65 | 0.61 | 1.43 | | 0 | 1 | 0 |
| | | | | | | | | 0.79 | | | |
| 79 | 5522.86 | 83.86 | 103.91 | 70.75 | 300.28 | 0.77 | 1.47 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 80 | 1837.45 | 48.37 | 165.17 | 17.93 | 334.62 | 0.21 | 9.21 | | 0 | 0 | 1 |
| | | | | | | | | 0.29 | | | |
| 81 | 2099.95 | 51.71 | 56.73 | 49.36 | 180.16 | 0.81 | 1.15 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 82 | 4583.13 | 76.39 | 93.51 | 66.03 | 284.40 | 0.71 | 1.42 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 83 | 7376.06 | 96.91 | 113.30 | 85.12 | 342.08 | 0.79 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 84 | 971.23 | 35.17 | 41.86 | 32.67 | 129.52 | 0.73 | 1.28 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 85 | 7008.57 | 94.46 | 107.37 | 88.81 | 342.40 | 0.75 | 1.21 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 86 | 1606.46 | 45.23 | 75.99 | 38.32 | 212.88 | 0.45 | 1.98 | | 0 | 1 | 0 |
| | | | | | | | | 0.60 | | | |
| 87 | 1307.22 | 40.80 | 42.99 | 39.26 | 133.54 | 0.92 | 1.09 | | 1 | 0 | 0 |
| | | | | | | | | 0.95 | | | |
| 88 | 8961.52 | 106.82 | 127.15 | 90.60 | 372.58 | 0.81 | 1.40 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 89 | 17356.06 | 148.66 | 311.24 | 80.58 | 780.48 | 0.36 | 3.86 | | 0 | 1 | 0 |
| | | | | | | | | 0.48 | | | |
| 90 | 6299.84 | 89.56 | 120.53 | 69.95 | 335.04 | 0.71 | 1.72 | | 0 | 1 | 0 |
| | | | | | | | | 0.74 | | | |
| 91 | 8205.54 | 102.21 | 153.55 | 71.85 | 394.06 | 0.66 | 2.14 | | 0 | 0 | 1 |
| | | | | | | | | 0.67 | | | |
| 92 | 1191.72 | 38.95 | 46.03 | 34.36 | 133.54 | 0.84 | 1.34 | | 0 | 1 | 0 |
| | | | | | | | | 0.85 | | | |
| 93 | 5428.36 | 83.14 | 112.51 | 63.02 | 299.40 | 0.76 | 1.79 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 94 | 377.99 | 21.94 | 49.43 | 13.48 | 108.73 | 0.40 | 3.67 | | 0 | 1 | 0 |
| | | | | | | | | 0.44 | | | |
| 95 | 19666.00 | 158.24 | 170.21 | 148.77 | 571.39 | 0.76 | 1.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 96 | 7974.55 | 100.76 | 113.00 | 92.65 | 356.15 | 0.79 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 97 | 6961.32 | 94.15 | 111.56 | 92.04 | 364.43 | 0.66 | 1.21 | | 0 | 1 | 0 |
| | | | | | | | | 0.84 | | | |
| 98 | 8636.03 | 104.86 | 116.42 | 96.55 | 371.70 | 0.79 | 1.21 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 99 | 7213.32 | 95.83 | 179.13 | 56.28 | 432.38 | 0.48 | 3.18 | | 0 | 1 | 0 |
| | | | | | | | | 0.53 | | | |
| 100 | 435.74 | 23.55 | 27.80 | 21.16 | 78.23 | 0.89 | 1.31 | | 0 | 1 | 0 |
| | | | | | | | | 0.85 | | | |
| 101 | 9675.50 | 110.99 | 116.82 | 107.03 | 382.30 | 0.83 | 1.09 | | 1 | 0 | 0 |
| | | | | | | | | 0.95 | | | |
| 102 | 1916.20 | 49.39 | 78.93 | 33.94 | 197.70 | 0.62 | 2.33 | | 0 | 1 | 0 |
| | | | | | | | | 0.63 | | | |
| 103 | 4126.39 | 72.48 | 82.21 | 65.62 | 253.90 | 0.80 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 104 | 6929.82 | 93.93 | 116.03 | 86.12 | 360.41 | 0.67 | 1.35 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 105 | 7549.31 | 98.04 | 209.06 | 48.48 | 470.06 | 0.43 | 4.31 | | 0 | 0 | 1 |
| | | | | | | | | 0.47 | | | |
| 106 | 6966.57 | 94.18 | 131.46 | 69.16 | 353.70 | 0.70 | 1.90 | | 1 | 0 | 0 |
| | | | | | | | | 0.72 | | | |
| 107 | 10405.23 | 115.10 | 159.43 | 85.71 | 435.40 | 0.69 | 1.86 | | 1 | 0 | 0 |
| | | | | | | | | 0.72 | | | |
| 108 | 8053.29 | 101.26 | 115.78 | 90.84 | 354.02 | 0.81 | 1.27 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |

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|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 109 | 614.23 | 27.97 | 57.54 | 14.87 | 121.69 | 0.52 | 3.87 | | 0 | 1 | 0 |
| | | | | | | | | 0.49 | | | |
| 110 | 2399.19 | 55.27 | 84.60 | 42.56 | 228.20 | 0.58 | 1.99 | | 0 | 1 | 0 |
| | | | | | | | | 0.65 | | | |
| 111 | 16794.32 | 146.23 | 185.04 | 118.31 | 531.72 | 0.75 | 1.56 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 112 | 467.24 | 24.39 | 28.01 | 22.26 | 78.78 | 0.95 | 1.26 | | 0 | 1 | 0 |
| | | | | | | | | 0.87 | | | |
| 113 | 913.48 | 34.10 | 92.14 | 14.76 | 205.75 | 0.27 | 6.24 | | 0 | 0 | 1 |
| | | | | | | | | 0.37 | | | |
| 114 | 14279.63 | 134.84 | 164.47 | 111.84 | 473.40 | 0.80 | 1.47 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 115 | 11759.70 | 122.36 | 136.48 | 118.03 | 459.42 | 0.70 | 1.16 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 116 | 1475.21 | 43.34 | 53.14 | 37.50 | 158.91 | 0.73 | 1.42 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 117 | 388.49 | 22.24 | 29.10 | 18.93 | 76.33 | 0.84 | 1.54 | | 0 | 1 | 0 |
| | | | | | | | | 0.76 | | | |
| 118 | 5223.62 | 81.55 | 111.19 | 63.25 | 308.10 | 0.69 | 1.76 | | 1 | 0 | 0 |
| | | | | | | | | 0.73 | | | |
| 119 | 593.23 | 27.48 | 31.17 | 25.68 | 91.19 | 0.90 | 1.21 | | 0 | 1 | 0 |
| | | | | | | | | 0.88 | | | |
| 120 | 17881.04 | 150.89 | 302.31 | 77.72 | 708.31 | 0.45 | 3.89 | | 1 | 0 | 0 |
| | | | | | | | | 0.50 | | | |
| 121 | 1496.21 | 43.65 | 46.96 | 41.71 | 146.18 | 0.88 | 1.13 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 122 | 5186.87 | 81.27 | 99.07 | 68.56 | 290.00 | 0.78 | 1.44 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 123 | 1196.97 | 39.04 | 55.60 | 32.32 | 152.43 | 0.65 | 1.72 | | 1 | 0 | 0 |
| | | | | | | | | 0.70 | | | |
| 124 | 12342.43 | 125.36 | 138.73 | 116.96 | 453.26 | 0.75 | 1.19 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 125 | 1049.97 | 36.56 | 47.84 | 30.98 | 134.10 | 0.73 | 1.54 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 126 | 467.24 | 24.39 | 29.49 | 22.41 | 83.37 | 0.84 | 1.32 | | 0 | 1 | 0 |
| | | | | | | | | 0.83 | | | |
| 127 | 545.99 | 26.37 | 35.98 | 24.48 | 103.04 | 0.65 | 1.47 | | 0 | 1 | 0 |
| | | | | | | | | 0.73 | | | |
| 128 | 13623.40 | 131.70 | 158.48 | 113.47 | 487.57 | 0.72 | 1.40 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 129 | 5396.86 | 82.89 | 99.54 | 69.96 | 286.53 | 0.83 | 1.42 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 130 | 556.49 | 26.62 | 38.36 | 19.68 | 93.64 | 0.80 | 1.95 | | 0 | 1 | 0 |
| | | | | | | | | 0.69 | | | |
| 131 | 14925.37 | 137.85 | 144.44 | 139.88 | 495.85 | 0.76 | 1.03 | | 1 | 0 | 0 |
| | | | | | | | | 0.95 | | | |
| 132 | 3407.16 | 65.86 | 90.01 | 50.08 | 236.58 | 0.76 | 1.80 | | 1 | 0 | 0 |
| | | | | | | | | 0.73 | | | |
| 133 | 7591.31 | 98.31 | 109.00 | 89.70 | 335.92 | 0.85 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 134 | 11539.20 | 121.21 | 152.18 | 99.35 | 444.79 | 0.73 | 1.53 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 135 | 12284.69 | 125.07 | 231.29 | 73.82 | 591.20 | 0.44 | 3.13 | | 1 | 0 | 0 |
| | | | | | | | | 0.54 | | | |
| 136 | 2414.94 | 55.45 | 68.98 | 49.83 | 222.28 | 0.61 | 1.38 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 137 | 1396.46 | 42.17 | 75.30 | 26.12 | 184.18 | 0.52 | 2.88 | | 0 | 1 | 0 |
| | | | | | | | | 0.56 | | | |
| 138 | 7769.80 | 99.46 | 140.45 | 71.66 | 359.06 | 0.76 | 1.96 | | 1 | 0 | 0 |
| | | | | | | | | 0.71 | | | |
| 139 | 1091.97 | 37.29 | 58.91 | 24.87 | 140.58 | 0.69 | 2.37 | | 0 | 1 | 0 |
| | | | | | | | | 0.63 | | | |
| 140 | 2777.18 | 59.46 | 79.29 | 48.51 | 218.25 | 0.73 | 1.63 | | 0 | 1 | 0 |
| | | | | | | | | 0.75 | | | |
| 141 | 1653.71 | 45.89 | 112.74 | 20.16 | 234.59 | 0.38 | 5.59 | | 0 | 0 | 1 |
| | | | | | | | | 0.41 | | | |
| 142 | 1207.47 | 39.21 | 46.42 | 34.85 | 137.90 | 0.80 | 1.33 | | 0 | 1 | 0 |
| | | | | | | | | 0.84 | | | |
| 143 | 6294.59 | 89.52 | 98.44 | 86.11 | 318.84 | 0.78 | 1.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 144 | 8972.02 | 106.88 | 120.19 | 96.73 | 377.39 | 0.79 | 1.24 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 145 | 2798.18 | 59.69 | 118.09 | 36.86 | 312.59 | 0.36 | 3.20 | | 0 | 0 | 1 |
| | | | | | | | | 0.51 | | | |
| 146 | 3050.17 | 62.32 | 91.64 | 50.22 | 256.26 | 0.58 | 1.82 | | 0 | 1 | 0 |
| | | | | | | | | 0.68 | | | |

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|-----|----------|--------|--------|--------|--------|------|-------|------|---|---|---|
| 147 | 7691.05 | 98.96 | 123.84 | 80.68 | 351.57 | 0.78 | 1.53 | 0.80 | 1 | 0 | 0 |
| 148 | 3428.16 | 66.07 | 90.32 | 52.65 | 263.85 | 0.62 | 1.72 | 0.73 | 1 | 0 | 0 |
| 149 | 7103.07 | 95.10 | 134.52 | 70.10 | 352.91 | 0.72 | 1.92 | 0.71 | 1 | 0 | 0 |
| 150 | 561.74 | 26.74 | 46.57 | 17.40 | 104.15 | 0.65 | 2.68 | 0.57 | 0 | 1 | 0 |
| 151 | 8557.28 | 104.38 | 134.22 | 82.35 | 376.28 | 0.76 | 1.63 | 0.78 | 1 | 0 | 0 |
| 152 | 2320.44 | 54.36 | 74.31 | 41.33 | 191.45 | 0.80 | 1.80 | 0.73 | 1 | 0 | 0 |
| 153 | 2325.69 | 54.42 | 82.05 | 36.97 | 200.94 | 0.72 | 2.22 | 0.66 | 1 | 0 | 0 |
| 154 | 892.48 | 33.71 | 75.13 | 18.68 | 156.46 | 0.46 | 4.02 | 0.45 | 0 | 1 | 0 |
| 155 | 28092.03 | 189.12 | 245.30 | 155.55 | 737.57 | 0.65 | 1.58 | 0.77 | 1 | 0 | 0 |
| 156 | 12725.67 | 127.29 | 157.15 | 105.70 | 452.15 | 0.78 | 1.49 | 0.81 | 1 | 0 | 0 |
| 157 | 11455.21 | 120.77 | 159.38 | 98.93 | 472.71 | 0.64 | 1.61 | 0.76 | 1 | 0 | 0 |
| 158 | 16111.84 | 143.23 | 169.64 | 123.32 | 504.46 | 0.80 | 1.38 | 0.84 | 1 | 0 | 0 |
| 159 | 225.74 | 16.95 | 25.15 | 12.46 | 57.44 | 0.86 | 2.02 | 0.67 | 0 | 1 | 0 |
| 160 | 8489.03 | 103.96 | 112.33 | 101.45 | 426.00 | 0.59 | 1.11 | 0.93 | 1 | 0 | 0 |
| 161 | 168.00 | 14.63 | 84.66 | 2.65 | 142.06 | 0.10 | 32.00 | 0.17 | 0 | 0 | 1 |
| 162 | 8704.28 | 105.27 | 119.67 | 93.57 | 362.86 | 0.83 | 1.28 | 0.88 | 1 | 0 | 0 |
| 163 | 8504.78 | 104.06 | 148.16 | 78.09 | 395.49 | 0.68 | 1.90 | 0.70 | 1 | 0 | 0 |
| 164 | 2530.44 | 56.76 | 67.03 | 50.48 | 194.78 | 0.84 | 1.33 | 0.85 | 1 | 0 | 0 |
| 165 | 456.74 | 24.12 | 30.95 | 20.32 | 82.81 | 0.84 | 1.52 | 0.78 | 0 | 1 | 0 |
| 166 | 8798.78 | 105.84 | 129.27 | 88.15 | 378.51 | 0.77 | 1.47 | 0.82 | 1 | 0 | 0 |
| 167 | 20757.97 | 162.57 | 188.90 | 142.73 | 583.34 | 0.77 | 1.32 | 0.86 | 1 | 0 | 0 |
| 168 | 335.99 | 20.68 | 52.26 | 13.47 | 108.73 | 0.36 | 3.88 | 0.40 | 0 | 1 | 0 |
| 169 | 3816.65 | 69.71 | 90.81 | 54.25 | 244.41 | 0.80 | 1.67 | 0.77 | 1 | 0 | 0 |
| 170 | 7895.80 | 100.27 | 129.78 | 78.49 | 355.82 | 0.78 | 1.65 | 0.77 | 1 | 0 | 0 |
| 171 | 11365.96 | 120.30 | 181.26 | 82.38 | 479.32 | 0.62 | 2.20 | 0.66 | 1 | 0 | 0 |
| 172 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | 0.69 | 0 | 0 | 1 |
| 173 | 12473.68 | 126.02 | 162.41 | 99.41 | 441.55 | 0.80 | 1.63 | 0.78 | 1 | 0 | 0 |
| 174 | 9455.01 | 109.72 | 135.23 | 90.43 | 389.01 | 0.79 | 1.50 | 0.81 | 1 | 0 | 0 |
| 175 | 84.00 | 10.34 | 29.12 | 4.64 | 52.31 | 0.39 | 6.27 | 0.36 | 0 | 0 | 1 |
| 176 | 645.73 | 28.67 | 50.47 | 18.10 | 120.03 | 0.56 | 2.79 | 0.57 | 0 | 0 | 1 |
| 177 | 635.23 | 28.44 | 49.94 | 17.33 | 112.99 | 0.63 | 2.88 | 0.57 | 0 | 1 | 0 |
| 178 | 10347.49 | 114.78 | 204.98 | 77.74 | 559.45 | 0.42 | 2.64 | 0.56 | 1 | 0 | 0 |
| 179 | 351.74 | 21.16 | 23.56 | 20.90 | 69.06 | 0.93 | 1.13 | 0.90 | 0 | 1 | 0 |
| 180 | 12536.68 | 126.34 | 149.92 | 112.16 | 475.39 | 0.70 | 1.34 | 0.84 | 1 | 0 | 0 |
| 181 | 7628.05 | 98.55 | 122.04 | 83.14 | 352.91 | 0.77 | 1.47 | 0.81 | 1 | 0 | 0 |
| 182 | 16138.09 | 143.34 | 158.10 | 131.36 | 500.20 | 0.81 | 1.20 | 0.91 | 1 | 0 | 0 |
| 183 | 1039.47 | 36.38 | 51.39 | 28.51 | 144.61 | 0.62 | 1.80 | 0.71 | 0 | 1 | 0 |
| 184 | 524.99 | 25.85 | 41.48 | 17.62 | 97.90 | 0.69 | 2.35 | 0.62 | 0 | 1 | 0 |

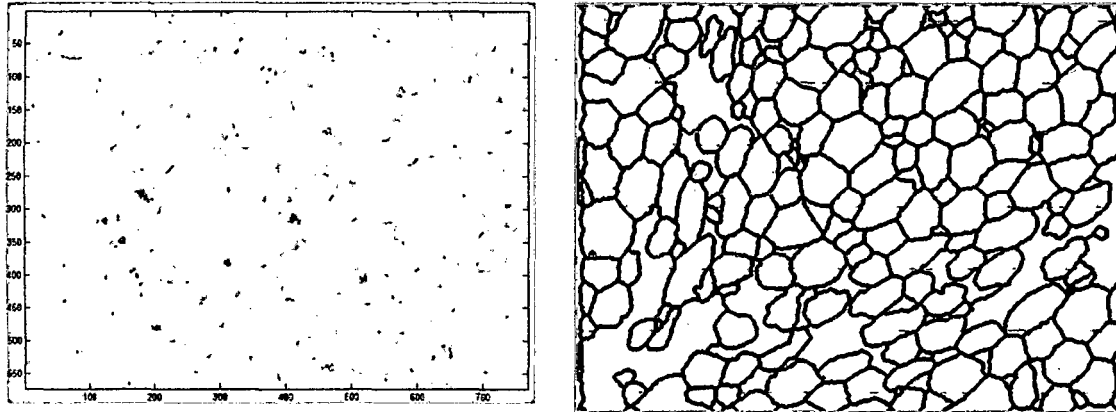
| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 185 | 3501.66 | 66.77 | 75.79 | 60.64 | 231.54 | 0.82 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 186 | 1847.95 | 48.51 | 64.25 | 39.01 | 174.79 | 0.76 | 1.65 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 187 | 42.00 | 7.31 | 20.36 | 4.11 | 32.63 | 0.50 | 4.96 | | 0 | 1 | 0 |
| | | | | | | | | 0.36 | | | |
| 188 | 7087.32 | 94.99 | 107.43 | 86.73 | 333.56 | 0.80 | 1.24 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 189 | 8200.29 | 102.18 | 118.65 | 89.44 | 358.28 | 0.80 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 190 | 278.24 | 18.82 | 25.67 | 16.11 | 67.17 | 0.78 | 1.59 | | 0 | 1 | 0 |
| | | | | | | | | 0.73 | | | |
| 191 | 341.24 | 20.84 | 33.14 | 15.06 | 76.33 | 0.74 | 2.20 | | 0 | 1 | 0 |
| | | | | | | | | 0.63 | | | |
| 192 | 11843.70 | 122.80 | 155.24 | 99.16 | 443.31 | 0.76 | 1.57 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 193 | 11775.45 | 122.45 | 138.39 | 111.33 | 423.55 | 0.82 | 1.24 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 194 | 9665.00 | 110.93 | 230.47 | 58.86 | 517.65 | 0.45 | 3.92 | | 1 | 0 | 0 |
| | | | | | | | | 0.48 | | | |
| 195 | 929.23 | 34.40 | 91.52 | 14.87 | 208.44 | 0.27 | 6.15 | | 0 | 0 | 1 |
| | | | | | | | | 0.38 | | | |
| 196 | 6410.09 | 90.34 | 109.59 | 78.38 | 321.85 | 0.78 | 1.40 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 197 | 6809.08 | 93.11 | 100.47 | 89.72 | 326.43 | 0.80 | 1.12 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 198 | 3890.15 | 70.38 | 75.43 | 70.08 | 254.13 | 0.76 | 1.08 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 199 | 314.99 | 20.03 | 24.63 | 18.32 | 69.85 | 0.81 | 1.34 | | 0 | 1 | 0 |
| | | | | | | | | 0.81 | | | |
| 200 | 9197.76 | 108.22 | 169.44 | 69.98 | 418.64 | 0.66 | 2.42 | | 1 | 0 | 0 |
| | | | | | | | | 0.64 | | | |
| 201 | 215.24 | 16.55 | 22.82 | 13.70 | 57.44 | 0.82 | 1.67 | | 0 | 1 | 0 |
| | | | | | | | | 0.73 | | | |
| 202 | 17870.54 | 150.84 | 202.28 | 114.69 | 553.62 | 0.73 | 1.76 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 203 | 1007.97 | 35.82 | 77.69 | 21.95 | 179.60 | 0.39 | 3.54 | | 0 | 0 | 1 |
| | | | | | | | | 0.46 | | | |
| 204 | 10237.24 | 114.17 | 122.03 | 109.15 | 396.28 | 0.82 | 1.12 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 205 | 2766.68 | 59.35 | 77.15 | 48.25 | 221.72 | 0.71 | 1.60 | | 1 | 0 | 0 |
| | | | | | | | | 0.77 | | | |
| 206 | 6247.34 | 89.19 | 106.93 | 76.88 | 312.13 | 0.81 | 1.39 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 207 | 10142.74 | 113.64 | 142.64 | 91.18 | 393.60 | 0.82 | 1.56 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 208 | 1816.45 | 48.09 | 70.97 | 36.02 | 186.96 | 0.65 | 1.97 | | 1 | 0 | 0 |
| | | | | | | | | 0.68 | | | |
| 209 | 15723.35 | 141.49 | 161.03 | 125.44 | 489.92 | 0.82 | 1.28 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 210 | 15130.11 | 138.80 | 162.45 | 120.93 | 485.25 | 0.81 | 1.34 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 211 | 6777.58 | 92.89 | 106.06 | 83.66 | 325.64 | 0.80 | 1.27 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 212 | 824.23 | 32.40 | 71.80 | 22.98 | 174.00 | 0.34 | 3.13 | | 0 | 1 | 0 |
| | | | | | | | | 0.45 | | | |
| 213 | 656.23 | 28.91 | 43.51 | 22.64 | 121.14 | 0.56 | 1.92 | | 0 | 1 | 0 |
| | | | | | | | | 0.66 | | | |
| 214 | 2378.19 | 55.03 | 63.31 | 52.24 | 212.23 | 0.66 | 1.21 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 215 | 955.48 | 34.88 | 48.15 | 34.03 | 155.11 | 0.50 | 1.41 | | 0 | 1 | 0 |
| | | | | | | | | 0.72 | | | |
| 216 | 5769.60 | 85.71 | 104.96 | 75.75 | 359.06 | 0.56 | 1.39 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 217 | 18941.52 | 155.30 | 188.11 | 130.73 | 563.80 | 0.75 | 1.44 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 218 | 7738.30 | 99.26 | 211.01 | 51.84 | 479.23 | 0.42 | 4.07 | | 0 | 0 | 1 |
| | | | | | | | | 0.47 | | | |
| 219 | 881.98 | 33.51 | 101.30 | 12.91 | 199.27 | 0.28 | 7.84 | | 0 | 0 | 1 |
| | | | | | | | | 0.33 | | | |
| 220 | 692.98 | 29.70 | 49.64 | 19.51 | 122.48 | 0.58 | 2.54 | | 0 | 1 | 0 |
| | | | | | | | | 0.60 | | | |
| 221 | 3291.67 | 64.74 | 98.06 | 44.01 | 242.51 | 0.70 | 2.23 | | 1 | 0 | 0 |
| | | | | | | | | 0.66 | | | |
| 222 | 6882.57 | 93.61 | 109.24 | 81.82 | 318.28 | 0.85 | 1.34 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|---------|------|-------|------|---|---|---|
| 223 | 3884.90 | 70.33 | 99.03 | 50.75 | 255.80 | 0.75 | 1.95 | 0.71 | 1 | 0 | 0 |
| 224 | 624.73 | 28.20 | 39.14 | 24.35 | 107.07 | 0.68 | 1.61 | 0.72 | 0 | 1 | 0 |
| 225 | 11927.70 | 123.23 | 140.61 | 109.12 | 429.47 | 0.81 | 1.29 | 0.88 | 1 | 0 | 0 |
| 226 | 498.74 | 25.20 | 44.47 | 20.30 | 114.66 | 0.48 | 2.19 | 0.57 | 0 | 1 | 0 |
| 227 | 2630.18 | 57.87 | 76.19 | 44.74 | 201.50 | 0.81 | 1.70 | 0.76 | 1 | 0 | 0 |
| 228 | 3443.91 | 66.22 | 110.18 | 42.85 | 274.36 | 0.57 | 2.57 | 0.60 | 1 | 0 | 0 |
| 229 | 4467.64 | 75.42 | 100.66 | 58.07 | 270.88 | 0.77 | 1.73 | 0.75 | 1 | 0 | 0 |
| 230 | 13192.91 | 129.61 | 173.58 | 98.68 | 476.73 | 0.73 | 1.76 | 0.75 | 1 | 0 | 0 |
| 231 | 2582.93 | 57.35 | 93.62 | 37.52 | 231.45 | 0.61 | 2.50 | 0.61 | 1 | 0 | 0 |
| 232 | 1690.46 | 46.39 | 93.43 | 27.64 | 216.59 | 0.45 | 3.38 | 0.50 | 0 | 1 | 0 |
| 233 | 6677.83 | 92.21 | 107.71 | 85.06 | 346.75 | 0.70 | 1.27 | 0.86 | 1 | 0 | 0 |
| 234 | 3774.65 | 69.33 | 110.27 | 45.34 | 269.22 | 0.65 | 2.43 | 0.63 | 1 | 0 | 0 |
| 235 | 6021.60 | 87.56 | 98.69 | 81.38 | 311.67 | 0.78 | 1.21 | 0.89 | 1 | 0 | 0 |
| 236 | 540.74 | 26.24 | 33.73 | 23.89 | 93.32 | 0.78 | 1.41 | 0.78 | 0 | 1 | 0 |
| 237 | 6704.08 | 92.39 | 103.72 | 84.41 | 316.94 | 0.84 | 1.23 | 0.89 | 1 | 0 | 0 |
| 238 | 1133.97 | 38.00 | 48.01 | 30.88 | 125.72 | 0.90 | 1.55 | 0.79 | 1 | 0 | 0 |
| 239 | 26196.83 | 182.63 | 371.08 | 109.52 | 1073.40 | 0.29 | 3.39 | 0.49 | 0 | 1 | 0 |
| 240 | 69035.73 | 296.48 | 614.20 | 276.35 | 1876.03 | 0.25 | 2.22 | 0.48 | 0 | 0 | 1 |
| 241 | 4010.90 | 71.46 | 137.95 | 43.97 | 345.55 | 0.42 | 3.14 | 0.52 | 1 | 0 | 0 |
| 242 | 519.74 | 25.72 | 31.89 | 24.28 | 99.24 | 0.66 | 1.31 | 0.81 | 0 | 1 | 0 |
| 243 | 9313.26 | 108.89 | 117.64 | 103.03 | 387.67 | 0.78 | 1.14 | 0.93 | 1 | 0 | 0 |
| 244 | 2073.70 | 51.38 | 171.48 | 20.93 | 334.02 | 0.23 | 8.19 | 0.30 | 0 | 1 | 0 |
| 245 | 4714.38 | 77.48 | 108.20 | 56.93 | 282.50 | 0.74 | 1.90 | 0.72 | 1 | 0 | 0 |
| 246 | 4210.39 | 73.22 | 82.85 | 66.60 | 251.77 | 0.83 | 1.24 | 0.88 | 1 | 0 | 0 |
| 247 | 8368.29 | 103.22 | 112.15 | 96.83 | 359.95 | 0.81 | 1.16 | 0.92 | 1 | 0 | 0 |
| 248 | 299.24 | 19.52 | 25.33 | 19.09 | 71.75 | 0.73 | 1.33 | 0.77 | 0 | 1 | 0 |
| 249 | 7523.06 | 97.87 | 102.61 | 95.92 | 342.63 | 0.81 | 1.07 | 0.95 | 1 | 0 | 0 |
| 250 | 7355.06 | 96.77 | 138.08 | 70.67 | 366.10 | 0.69 | 1.95 | 0.70 | 1 | 0 | 0 |
| 251 | 472.49 | 24.53 | 30.43 | 21.29 | 82.26 | 0.88 | 1.43 | 0.81 | 0 | 1 | 0 |
| 252 | 3281.17 | 64.64 | 70.56 | 60.34 | 218.02 | 0.87 | 1.17 | 0.92 | 1 | 0 | 0 |
| 253 | 16237.83 | 143.79 | 154.90 | 134.95 | 500.43 | 0.81 | 1.15 | 0.93 | 1 | 0 | 0 |
| 254 | 8762.03 | 105.62 | 121.79 | 93.34 | 366.20 | 0.82 | 1.30 | 0.87 | 1 | 0 | 0 |
| 255 | 9848.75 | 111.98 | 200.12 | 82.08 | 572.51 | 0.38 | 2.44 | 0.56 | 0 | 1 | 0 |
| 256 | 241.49 | 17.54 | 26.31 | 16.02 | 71.75 | 0.59 | 1.64 | 0.67 | 0 | 1 | 0 |
| 257 | 1270.47 | 40.22 | 191.38 | 15.17 | 329.81 | 0.15 | 12.61 | 0.21 | 0 | 0 | 1 |
| 258 | 157.50 | 14.16 | 25.45 | 9.43 | 54.76 | 0.66 | 2.70 | 0.56 | 0 | 1 | 0 |
| 259 | 4625.13 | 76.74 | 121.32 | 49.81 | 292.36 | 0.68 | 2.44 | 0.63 | 1 | 0 | 0 |
| 260 | 1112.97 | 37.64 | 48.36 | 31.62 | 136.00 | 0.76 | 1.53 | 0.78 | 1 | 0 | 0 |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|-------|------|---|---|---|
| 261 | 10945.97 | 118.05 | 120.92 | 118.47 | 422.76 | 0.77 | 1.02 | 0.98 | 1 | 0 | 0 |
| 262 | 5239.37 | 81.68 | 99.48 | 69.19 | 284.08 | 0.82 | 1.44 | 0.82 | 1 | 0 | 0 |
| 263 | 356.99 | 21.32 | 47.10 | 20.05 | 124.61 | 0.29 | 2.35 | 0.45 | 0 | 1 | 0 |
| 264 | 4593.63 | 76.48 | 93.24 | 64.88 | 270.33 | 0.79 | 1.44 | 0.82 | 1 | 0 | 0 |
| 265 | 1443.71 | 42.87 | 49.11 | 38.01 | 141.92 | 0.90 | 1.29 | 0.87 | 1 | 0 | 0 |
| 266 | 2845.43 | 60.19 | 86.57 | 42.53 | 218.02 | 0.75 | 2.04 | 0.70 | 1 | 0 | 0 |
| 267 | 11533.96 | 121.18 | 125.00 | 118.30 | 405.77 | 0.88 | 1.06 | 0.97 | 1 | 0 | 0 |
| 268 | 698.23 | 29.82 | 46.70 | 20.86 | 111.97 | 0.70 | 2.24 | 0.64 | 0 | 1 | 0 |
| 269 | 13597.15 | 131.58 | 195.98 | 112.36 | 624.26 | 0.44 | 1.74 | 0.67 | 0 | 1 | 0 |
| 270 | 21765.94 | 166.47 | 345.50 | 104.71 | 960.41 | 0.30 | 3.30 | 0.48 | 0 | 1 | 0 |
| 271 | 3470.16 | 66.47 | 79.13 | 56.97 | 229.09 | 0.83 | 1.39 | 0.84 | 1 | 0 | 0 |
| 272 | 4572.63 | 76.30 | 86.54 | 70.32 | 273.57 | 0.77 | 1.23 | 0.88 | 1 | 0 | 0 |
| 273 | 7050.57 | 94.75 | 132.94 | 72.04 | 368.23 | 0.65 | 1.85 | 0.71 | 1 | 0 | 0 |
| 274 | 5580.61 | 84.29 | 109.55 | 67.77 | 303.75 | 0.76 | 1.62 | 0.77 | 1 | 0 | 0 |
| 275 | 1979.20 | 50.20 | 56.46 | 45.83 | 169.19 | 0.87 | 1.23 | 0.89 | 1 | 0 | 0 |
| 276 | 708.73 | 30.04 | 42.30 | 23.08 | 109.52 | 0.74 | 1.83 | 0.71 | 1 | 0 | 0 |
| 277 | 4630.38 | 76.78 | 98.71 | 60.40 | 267.64 | 0.81 | 1.63 | 0.78 | 1 | 0 | 0 |
| 278 | 1779.70 | 47.60 | 55.88 | 41.11 | 159.14 | 0.88 | 1.36 | 0.85 | 1 | 0 | 0 |
| 279 | 4409.89 | 74.93 | 87.40 | 65.25 | 256.81 | 0.84 | 1.34 | 0.86 | 1 | 0 | 0 |
| 280 | 28958.26 | 192.02 | 238.70 | 179.89 | 877.04 | 0.47 | 1.33 | 0.80 | 0 | 1 | 0 |
| 281 | 687.73 | 29.59 | 36.61 | 26.77 | 104.94 | 0.78 | 1.37 | 0.81 | 0 | 1 | 0 |
| 282 | 2966.17 | 61.45 | 68.08 | 59.65 | 218.81 | 0.78 | 1.14 | 0.90 | 1 | 0 | 0 |
| 283 | 17860.04 | 150.80 | 246.47 | 176.67 | 966.98 | 0.24 | 1.40 | 0.61 | 0 | 1 | 0 |
| 284 | 2435.94 | 55.69 | 71.29 | 45.34 | 208.53 | 0.70 | 1.57 | 0.78 | 1 | 0 | 0 |
| 285 | 11213.71 | 119.49 | 166.55 | 87.38 | 436.18 | 0.74 | 1.91 | 0.72 | 1 | 0 | 0 |
| 286 | 4604.13 | 76.56 | 89.10 | 67.68 | 265.42 | 0.82 | 1.32 | 0.86 | 1 | 0 | 0 |
| 287 | 1401.71 | 42.25 | 173.13 | 14.94 | 310.36 | 0.18 | 11.59 | 0.24 | 0 | 0 | 1 |
| 288 | 22017.94 | 167.43 | 202.65 | 149.35 | 701.93 | 0.56 | 1.36 | 0.83 | 0 | 1 | 0 |
| 289 | 1160.22 | 38.43 | 44.19 | 34.11 | 128.41 | 0.88 | 1.30 | 0.87 | 1 | 0 | 0 |
| 290 | 7029.57 | 94.61 | 124.16 | 75.34 | 346.10 | 0.74 | 1.65 | 0.76 | 1 | 0 | 0 |
| 291 | 6404.84 | 90.30 | 163.62 | 71.26 | 489.92 | 0.34 | 2.30 | 0.55 | 0 | 1 | 0 |
| 292 | 12484.18 | 126.08 | 156.28 | 102.23 | 442.99 | 0.80 | 1.53 | 0.81 | 1 | 0 | 0 |
| 293 | 5559.61 | 84.14 | 98.05 | 73.70 | 290.88 | 0.83 | 1.33 | 0.86 | 1 | 0 | 0 |
| 294 | 524.99 | 25.85 | 33.70 | 21.20 | 88.51 | 0.84 | 1.59 | 0.77 | 0 | 1 | 0 |
| 295 | 6788.08 | 92.97 | 99.44 | 90.66 | 322.73 | 0.82 | 1.10 | 0.93 | 1 | 0 | 0 |
| 296 | 7129.32 | 95.28 | 130.08 | 72.00 | 352.03 | 0.72 | 1.81 | 0.73 | 1 | 0 | 0 |
| 297 | 12846.42 | 127.89 | 156.23 | 118.65 | 498.21 | 0.65 | 1.32 | 0.82 | 0 | 0 | 1 |
| 298 | 2845.43 | 60.19 | 122.16 | 37.60 | 291.02 | 0.42 | 3.25 | 0.49 | 0 | 1 | 0 |

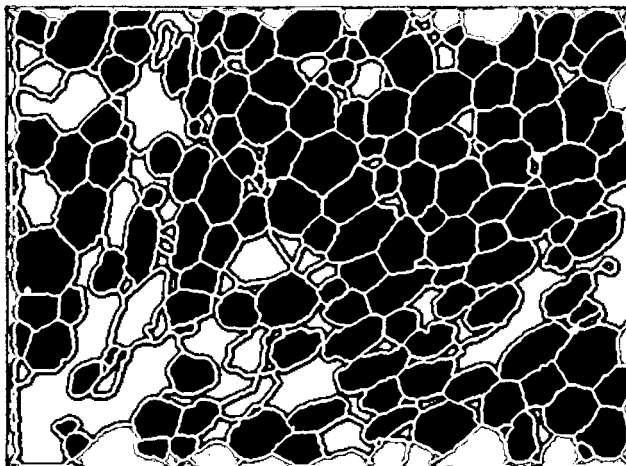
| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 299 | 304.49 | 19.69 | 35.14 | 12.71 | 79.57 | 0.60 | 2.76 | 0.56 | 0 | 1 | 0 |
| 300 | 8804.02 | 105.88 | 112.74 | 102.22 | 361.29 | 0.85 | 1.10 | 0.94 | 1 | 0 | 0 |
| 301 | 11182.21 | 119.32 | 155.32 | 93.77 | 418.08 | 0.80 | 1.66 | 0.77 | 1 | 0 | 0 |
| 302 | 3963.65 | 71.04 | 88.43 | 61.03 | 269.22 | 0.69 | 1.45 | 0.80 | 1 | 0 | 0 |
| 303 | 4698.63 | 77.35 | 122.65 | 54.83 | 356.84 | 0.46 | 2.24 | 0.63 | 0 | 0 | 1 |
| 304 | 377.99 | 21.94 | 38.98 | 14.31 | 91.98 | 0.56 | 2.72 | 0.56 | 0 | 0 | 1 |
| 305 | 230.99 | 17.15 | 23.55 | 16.92 | 67.17 | 0.64 | 1.39 | 0.73 | 0 | 1 | 0 |
| 306 | 267.74 | 18.46 | 33.58 | 10.66 | 69.85 | 0.69 | 3.15 | 0.55 | 0 | 1 | 0 |
| 307 | 1280.97 | 40.39 | 64.95 | 27.69 | 159.14 | 0.64 | 2.35 | 0.62 | 0 | 0 | 1 |
| 308 | 566.99 | 26.87 | 60.37 | 13.56 | 129.98 | 0.42 | 4.45 | 0.45 | 0 | 0 | 1 |
| 309 | 115.50 | 12.13 | 22.89 | 7.25 | 46.38 | 0.67 | 3.16 | 0.53 | 0 | 0 | 1 |

Código: E9-11



a)

b)



c)

Figura A2. a) Imagen Original b) Imagen procesada c) Imagen segmentada y clasificada

Tabla A2. Parámetros de tamaño y forma y clasificación de elementos en micrografía E9-11a

| Núm. | Área | Deq | Ejemay | Ejemen | Per | Red | Elg | Comp | Célula | Espint | Elem No Rec |
|------|-----------|--------|--------|--------|---------|------|-------|------|--------|--------|----------------|
| 1 | 472.49 | 24.53 | 106.81 | 9.63 | 180.94 | 0.18 | 11.09 | | 0 | 0 | 1 |
| | | | | | | | | 0.23 | | | |
| 2 | 126.00 | 12.67 | 45.75 | 4.53 | 84.38 | 0.22 | 10.11 | | 0 | 0 | 1 |
| | | | | | | | | 0.28 | | | |
| 3 | 829.48 | 32.50 | 88.35 | 14.35 | 201.17 | 0.26 | 6.16 | | 0 | 0 | 1 |
| | | | | | | | | 0.37 | | | |
| 4 | 971.23 | 35.17 | 100.26 | 14.63 | 224.08 | 0.24 | 6.85 | | 0 | 0 | 1 |
| | | | | | | | | 0.35 | | | |
| 5 | 409.49 | 22.83 | 55.37 | 11.42 | 122.16 | 0.34 | 4.85 | | 0 | 0 | 1 |
| | | | | | | | | 0.41 | | | |
| 6 | 21.00 | 5.17 | 10.58 | 2.65 | 13.75 | 1.40 | 4.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.49 | | | |
| 7 | 267.74 | 18.46 | 50.04 | 8.73 | 103.83 | 0.31 | 5.73 | | 0 | 0 | 1 |
| | | | | | | | | 0.37 | | | |
| 8 | 78.75 | 10.01 | 39.69 | 2.65 | 64.16 | 0.24 | 15.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.25 | | | |
| 9 | 477.74 | 24.66 | 131.33 | 8.15 | 234.03 | 0.11 | 16.11 | | 0 | 0 | 1 |
| | | | | | | | | 0.19 | | | |
| 10 | 1170.72 | 38.61 | 180.45 | 13.56 | 402.01 | 0.09 | 13.30 | | 0 | 0 | 1 |
| | | | | | | | | 0.21 | | | |
| 11 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.69 | | | |
| 12 | 94.50 | 10.97 | 19.78 | 7.21 | 40.46 | 0.73 | 2.74 | | 0 | 0 | 1 |
| | | | | | | | | 0.55 | | | |
| 13 | 42.00 | 7.31 | 21.17 | 2.65 | 32.08 | 0.51 | 8.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.35 | | | |
| 14 | 131.25 | 12.93 | 37.63 | 6.54 | 72.53 | 0.31 | 5.75 | | 0 | 0 | 1 |
| | | | | | | | | 0.34 | | | |
| 15 | 21.00 | 5.17 | 10.58 | 2.65 | 13.75 | 1.40 | 4.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.49 | | | |
| 16 | 26.25 | 5.78 | 13.23 | 2.65 | 18.33 | 0.98 | 5.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.44 | | | |
| 17 | 724.48 | 30.37 | 103.06 | 12.40 | 198.49 | 0.23 | 8.31 | | 0 | 0 | 1 |
| | | | | | | | | 0.29 | | | |
| 18 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.69 | | | |
| 19 | 21.00 | 5.17 | 10.58 | 2.65 | 13.75 | 1.40 | 4.00 | | 1 | 0 | 0 |
| | | | | | | | | 0.49 | | | |
| 20 | 955.48 | 34.88 | 78.92 | 16.94 | 165.85 | 0.44 | 4.66 | | 0 | 1 | 0 |
| | | | | | | | | 0.44 | | | |
| 21 | 125681.79 | 400.03 | 648.32 | 385.88 | 2632.00 | 0.23 | 1.68 | | 0 | 1 | 0 |
| | | | | | | | | 0.62 | | | |
| 22 | 15.75 | 4.48 | 7.94 | 2.65 | 9.17 | 2.36 | 3.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.56 | | | |
| 23 | 4714.38 | 77.48 | 87.73 | 77.64 | 301.62 | 0.65 | 1.13 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 24 | 25776.84 | 181.16 | 266.19 | 150.21 | 801.82 | 0.50 | 1.77 | | 0 | 1 | 0 |
| | | | | | | | | 0.68 | | | |
| 25 | 12547.18 | 126.39 | 149.24 | 108.97 | 454.51 | 0.76 | 1.37 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 26 | 1616.96 | 45.37 | 86.23 | 27.42 | 199.60 | 0.51 | 3.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.53 | | | |
| 27 | 25666.59 | 180.78 | 195.86 | 169.58 | 623.14 | 0.83 | 1.15 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 28 | 2992.42 | 61.73 | 113.97 | 36.90 | 265.42 | 0.53 | 3.09 | | 1 | 0 | 0 |
| | | | | | | | | 0.54 | | | |
| 29 | 1968.70 | 50.07 | 65.93 | 40.39 | 179.93 | 0.76 | 1.63 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 30 | 6252.59 | 89.22 | 101.10 | 81.99 | 315.60 | 0.79 | 1.23 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |

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|----|----------|--------|--------|--------|---------|------|------|------|---|---|---|
| 31 | 14641.88 | 136.54 | 173.48 | 111.88 | 533.07 | 0.65 | 1.55 | 0.79 | 1 | 0 | 0 |
| 32 | 8993.02 | 107.01 | 115.40 | 101.91 | 373.60 | 0.81 | 1.13 | 0.93 | 1 | 0 | 0 |
| 33 | 8678.03 | 105.12 | 118.33 | 96.61 | 369.90 | 0.80 | 1.22 | 0.89 | 1 | 0 | 0 |
| 34 | 13723.15 | 132.18 | 155.38 | 113.55 | 461.32 | 0.81 | 1.37 | 0.85 | 1 | 0 | 0 |
| 35 | 68.25 | 9.32 | 18.66 | 5.15 | 33.98 | 0.74 | 3.62 | 0.50 | 0 | 0 | 1 |
| 36 | 21886.69 | 166.93 | 205.24 | 138.91 | 595.65 | 0.78 | 1.48 | 0.81 | 1 | 0 | 0 |
| 37 | 14673.37 | 136.68 | 170.59 | 111.65 | 484.56 | 0.79 | 1.53 | 0.80 | 1 | 0 | 0 |
| 38 | 1107.72 | 37.56 | 55.15 | 26.74 | 132.99 | 0.79 | 2.06 | 0.68 | 0 | 0 | 1 |
| 39 | 971.23 | 35.17 | 60.60 | 21.47 | 137.01 | 0.65 | 2.82 | 0.58 | 0 | 1 | 0 |
| 40 | 1900.45 | 49.19 | 60.22 | 42.73 | 176.45 | 0.77 | 1.41 | 0.82 | 1 | 0 | 0 |
| 41 | 20007.24 | 159.61 | 193.66 | 133.43 | 570.93 | 0.77 | 1.45 | 0.82 | 1 | 0 | 0 |
| 42 | 5517.61 | 83.82 | 107.02 | 66.55 | 297.82 | 0.78 | 1.61 | 0.78 | 1 | 0 | 0 |
| 43 | 3328.41 | 65.10 | 72.88 | 60.61 | 223.72 | 0.84 | 1.20 | 0.89 | 1 | 0 | 0 |
| 44 | 619.48 | 28.08 | 40.44 | 20.76 | 100.59 | 0.77 | 1.95 | 0.69 | 0 | 1 | 0 |
| 45 | 241.49 | 17.54 | 34.47 | 10.05 | 74.43 | 0.55 | 3.43 | 0.51 | 0 | 0 | 1 |
| 46 | 13691.65 | 132.03 | 178.43 | 103.06 | 498.76 | 0.69 | 1.73 | 0.74 | 1 | 0 | 0 |
| 47 | 8772.53 | 105.69 | 125.78 | 90.66 | 366.20 | 0.82 | 1.39 | 0.84 | 1 | 0 | 0 |
| 48 | 11969.69 | 123.45 | 152.27 | 101.66 | 432.71 | 0.80 | 1.50 | 0.81 | 1 | 0 | 0 |
| 49 | 10132.24 | 113.58 | 157.70 | 105.78 | 540.66 | 0.44 | 1.49 | 0.72 | 0 | 1 | 0 |
| 50 | 887.23 | 33.61 | 40.01 | 29.49 | 109.52 | 0.93 | 1.36 | 0.84 | 0 | 1 | 0 |
| 51 | 1721.96 | 46.82 | 87.13 | 26.40 | 198.03 | 0.55 | 3.30 | 0.54 | 1 | 0 | 0 |
| 52 | 12211.19 | 124.69 | 218.20 | 76.83 | 572.97 | 0.47 | 2.84 | 0.57 | 1 | 0 | 0 |
| 53 | 876.73 | 33.41 | 41.81 | 27.90 | 112.76 | 0.87 | 1.50 | 0.80 | 0 | 1 | 0 |
| 54 | 19298.51 | 156.75 | 261.69 | 96.50 | 669.29 | 0.54 | 2.71 | 0.60 | 1 | 0 | 0 |
| 55 | 15.75 | 4.48 | 7.94 | 2.65 | 9.17 | 2.36 | 3.00 | 0.56 | 0 | 0 | 1 |
| 56 | 4493.89 | 75.64 | 116.59 | 50.57 | 285.88 | 0.69 | 2.31 | 0.65 | 1 | 0 | 0 |
| 57 | 582.74 | 27.24 | 36.39 | 23.75 | 100.91 | 0.72 | 1.53 | 0.75 | 0 | 1 | 0 |
| 58 | 8205.54 | 102.21 | 109.18 | 97.27 | 346.66 | 0.86 | 1.12 | 0.94 | 1 | 0 | 0 |
| 59 | 776.98 | 31.45 | 36.80 | 27.66 | 101.14 | 0.95 | 1.33 | 0.85 | 0 | 1 | 0 |
| 60 | 36460.32 | 215.46 | 307.77 | 215.36 | 1615.03 | 0.18 | 1.43 | 0.70 | 0 | 1 | 0 |
| 61 | 1170.72 | 38.61 | 48.29 | 33.58 | 138.91 | 0.76 | 1.44 | 0.80 | 0 | 1 | 0 |
| 62 | 897.73 | 33.81 | 40.05 | 29.37 | 114.10 | 0.87 | 1.36 | 0.84 | 0 | 1 | 0 |
| 63 | 11654.70 | 121.82 | 263.36 | 89.03 | 760.71 | 0.25 | 2.96 | 0.46 | 0 | 1 | 0 |
| 64 | 14930.62 | 137.88 | 221.53 | 86.77 | 556.76 | 0.61 | 2.55 | 0.62 | 1 | 0 | 0 |
| 65 | 11549.70 | 121.27 | 138.15 | 107.67 | 418.18 | 0.83 | 1.28 | 0.88 | 1 | 0 | 0 |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|---------|------|------|------|---|---|---|
| 66 | 603.73 | 27.73 | 100.87 | 14.50 | 196.59 | 0.20 | 6.96 | 0.27 | 0 | 0 | 1 |
| 67 | 383.24 | 22.09 | 31.34 | 17.79 | 79.01 | 0.77 | 1.76 | 0.70 | 0 | 1 | 0 |
| 68 | 3186.67 | 63.70 | 94.00 | 55.98 | 284.31 | 0.50 | 1.68 | 0.68 | 1 | 0 | 0 |
| 69 | 2252.19 | 53.55 | 60.69 | 48.34 | 178.81 | 0.89 | 1.26 | 0.88 | 1 | 0 | 0 |
| 70 | 698.23 | 29.82 | 38.25 | 24.10 | 98.46 | 0.91 | 1.59 | 0.78 | 1 | 0 | 0 |
| 71 | 8888.02 | 106.38 | 227.23 | 119.24 | 808.67 | 0.17 | 1.91 | 0.47 | 0 | 1 | 0 |
| 72 | 3323.17 | 65.05 | 99.37 | 47.84 | 266.53 | 0.59 | 2.08 | 0.65 | 1 | 0 | 0 |
| 73 | 493.49 | 25.07 | 31.35 | 20.38 | 78.78 | 1.00 | 1.54 | 0.80 | 1 | 0 | 0 |
| 74 | 7664.80 | 98.79 | 110.71 | 88.51 | 328.33 | 0.89 | 1.25 | 0.89 | 1 | 0 | 0 |
| 75 | 3764.15 | 69.23 | 146.62 | 52.55 | 382.76 | 0.32 | 2.79 | 0.47 | 0 | 1 | 0 |
| 76 | 3795.65 | 69.52 | 124.39 | 42.97 | 299.72 | 0.53 | 2.89 | 0.56 | 1 | 0 | 0 |
| 77 | 3396.66 | 65.76 | 88.43 | 51.60 | 239.82 | 0.74 | 1.71 | 0.74 | 1 | 0 | 0 |
| 78 | 27598.54 | 187.46 | 318.98 | 215.30 | 1380.94 | 0.18 | 1.48 | 0.59 | 0 | 1 | 0 |
| 79 | 8142.54 | 101.82 | 167.91 | 65.33 | 418.08 | 0.59 | 2.57 | 0.61 | 1 | 0 | 0 |
| 80 | 9764.75 | 111.50 | 135.60 | 94.56 | 397.85 | 0.78 | 1.43 | 0.82 | 1 | 0 | 0 |
| 81 | 934.48 | 34.49 | 54.49 | 25.23 | 132.99 | 0.66 | 2.16 | 0.63 | 0 | 0 | 1 |
| 82 | 656.23 | 28.91 | 46.25 | 19.95 | 107.39 | 0.72 | 2.32 | 0.63 | 0 | 1 | 0 |
| 83 | 10872.47 | 117.66 | 130.48 | 108.43 | 407.90 | 0.82 | 1.20 | 0.90 | 1 | 0 | 0 |
| 84 | 1354.47 | 41.53 | 71.37 | 25.70 | 168.31 | 0.60 | 2.78 | 0.58 | 1 | 0 | 0 |
| 85 | 3396.66 | 65.76 | 74.46 | 59.13 | 226.08 | 0.84 | 1.26 | 0.88 | 1 | 0 | 0 |
| 86 | 11229.46 | 119.57 | 168.25 | 85.85 | 446.23 | 0.71 | 1.96 | 0.71 | 1 | 0 | 0 |
| 87 | 13255.91 | 129.92 | 202.96 | 88.53 | 525.80 | 0.60 | 2.29 | 0.64 | 1 | 0 | 0 |
| 88 | 13303.16 | 130.15 | 150.95 | 120.48 | 550.28 | 0.55 | 1.25 | 0.86 | 0 | 1 | 0 |
| 89 | 6835.33 | 93.29 | 110.65 | 82.77 | 333.93 | 0.77 | 1.34 | 0.84 | 1 | 0 | 0 |
| 90 | 6063.59 | 87.87 | 119.47 | 65.87 | 323.19 | 0.73 | 1.81 | 0.74 | 1 | 0 | 0 |
| 91 | 451.49 | 23.98 | 36.49 | 17.63 | 88.74 | 0.72 | 2.07 | 0.66 | 0 | 1 | 0 |
| 92 | 147.00 | 13.68 | 18.32 | 12.55 | 46.94 | 0.84 | 1.46 | 0.75 | 0 | 0 | 1 |
| 93 | 530.24 | 25.98 | 51.07 | 20.51 | 121.37 | 0.45 | 2.49 | 0.51 | 0 | 0 | 1 |
| 94 | 524.99 | 25.85 | 28.67 | 23.93 | 80.91 | 1.01 | 1.20 | 0.90 | 0 | 1 | 0 |
| 95 | 519.74 | 25.72 | 32.64 | 24.90 | 95.22 | 0.72 | 1.31 | 0.79 | 0 | 1 | 0 |
| 96 | 908.23 | 34.01 | 46.47 | 26.85 | 120.03 | 0.79 | 1.73 | 0.73 | 0 | 1 | 0 |
| 97 | 6011.10 | 87.48 | 133.23 | 62.01 | 335.60 | 0.67 | 2.15 | 0.66 | 1 | 0 | 0 |
| 98 | 5643.61 | 84.77 | 115.71 | 63.31 | 306.20 | 0.76 | 1.83 | 0.73 | 1 | 0 | 0 |
| 99 | 3953.15 | 70.95 | 92.68 | 55.35 | 252.23 | 0.78 | 1.67 | 0.77 | 1 | 0 | 0 |
| 100 | 15082.86 | 138.58 | 180.31 | 108.44 | 506.68 | 0.74 | 1.66 | 0.77 | 1 | 0 | 0 |

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|-----|----------|--------|--------|--------|---------|------|------|------|---|---|---|
| 101 | 9087.52 | 107.57 | 132.84 | 88.25 | 382.30 | 0.78 | 1.51 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 102 | 9339.51 | 109.05 | 130.09 | 92.58 | 380.40 | 0.81 | 1.41 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 103 | 6740.83 | 92.64 | 110.73 | 79.18 | 326.99 | 0.79 | 1.40 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 104 | 892.48 | 33.71 | 57.62 | 23.51 | 146.51 | 0.52 | 2.45 | | 0 | 1 | 0 |
| | | | | | | | | 0.59 | | | |
| 105 | 1191.72 | 38.95 | 78.72 | 22.51 | 179.70 | 0.46 | 3.50 | | 0 | 1 | 0 |
| | | | | | | | | 0.49 | | | |
| 106 | 2435.94 | 55.69 | 67.36 | 48.94 | 196.13 | 0.80 | 1.38 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 107 | 372.74 | 21.79 | 31.36 | 17.49 | 79.01 | 0.75 | 1.79 | | 0 | 1 | 0 |
| | | | | | | | | 0.69 | | | |
| 108 | 9885.50 | 112.19 | 116.99 | 109.47 | 380.08 | 0.86 | 1.07 | | 1 | 0 | 0 |
| | | | | | | | | 0.96 | | | |
| 109 | 8672.78 | 105.08 | 205.65 | 60.88 | 474.05 | 0.48 | 3.38 | | 1 | 0 | 0 |
| | | | | | | | | 0.51 | | | |
| 110 | 8420.78 | 103.55 | 121.75 | 88.86 | 353.14 | 0.85 | 1.37 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 111 | 230.99 | 17.15 | 20.36 | 15.26 | 53.42 | 1.02 | 1.33 | | 0 | 1 | 0 |
| | | | | | | | | 0.84 | | | |
| 112 | 5249.87 | 81.76 | 87.61 | 78.72 | 296.81 | 0.75 | 1.11 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 113 | 1858.45 | 48.64 | 63.97 | 39.10 | 176.13 | 0.75 | 1.64 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 114 | 10237.24 | 114.17 | 157.35 | 91.47 | 458.08 | 0.61 | 1.72 | | 1 | 0 | 0 |
| | | | | | | | | 0.73 | | | |
| 115 | 603.73 | 27.73 | 50.52 | 16.63 | 109.19 | 0.64 | 3.04 | | 0 | 1 | 0 |
| | | | | | | | | 0.55 | | | |
| 116 | 17508.30 | 149.31 | 167.14 | 139.43 | 549.04 | 0.73 | 1.20 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 117 | 17513.55 | 149.33 | 175.26 | 129.24 | 531.26 | 0.78 | 1.36 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 118 | 21.00 | 5.17 | 10.58 | 2.65 | 13.75 | 1.40 | 4.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.49 | | | |
| 119 | 8452.28 | 103.74 | 124.98 | 88.46 | 372.03 | 0.77 | 1.41 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 120 | 14557.88 | 136.15 | 145.98 | 130.78 | 479.42 | 0.80 | 1.12 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 121 | 1517.21 | 43.95 | 81.20 | 31.13 | 202.84 | 0.46 | 2.61 | | 0 | 1 | 0 |
| | | | | | | | | 0.54 | | | |
| 122 | 330.74 | 20.52 | 38.37 | 12.02 | 82.26 | 0.61 | 3.19 | | 0 | 0 | 1 |
| | | | | | | | | 0.53 | | | |
| 123 | 1637.96 | 45.67 | 86.43 | 35.14 | 215.01 | 0.45 | 2.46 | | 0 | 1 | 0 |
| | | | | | | | | 0.53 | | | |
| 124 | 1601.21 | 45.15 | 51.78 | 48.68 | 178.58 | 0.63 | 1.06 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 125 | 7197.57 | 95.73 | 133.55 | 71.19 | 359.62 | 0.70 | 1.88 | | 1 | 0 | 0 |
| | | | | | | | | 0.72 | | | |
| 126 | 451.49 | 23.98 | 41.51 | 15.26 | 93.87 | 0.64 | 2.72 | | 0 | 1 | 0 |
| | | | | | | | | 0.58 | | | |
| 127 | 89.25 | 10.66 | 12.99 | 9.36 | 29.39 | 1.30 | 1.39 | | 0 | 1 | 0 |
| | | | | | | | | 0.82 | | | |
| 128 | 147.00 | 13.68 | 32.31 | 6.66 | 63.37 | 0.46 | 4.85 | | 0 | 0 | 1 |
| | | | | | | | | 0.42 | | | |
| 129 | 14631.38 | 136.49 | 145.57 | 131.71 | 486.22 | 0.78 | 1.11 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 130 | 2346.69 | 54.66 | 95.54 | 37.45 | 242.28 | 0.50 | 2.55 | | 0 | 1 | 0 |
| | | | | | | | | 0.57 | | | |
| 131 | 446.24 | 23.84 | 29.69 | 19.96 | 77.12 | 0.94 | 1.49 | | 0 | 0 | 1 |
| | | | | | | | | 0.80 | | | |
| 132 | 19540.00 | 157.73 | 176.82 | 142.09 | 550.93 | 0.81 | 1.24 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 133 | 3076.42 | 62.59 | 85.19 | 50.91 | 247.65 | 0.63 | 1.67 | | 1 | 0 | 0 |
| | | | | | | | | 0.73 | | | |
| 134 | 55874.32 | 266.72 | 385.00 | 217.17 | 1675.07 | 0.25 | 1.77 | | 0 | 1 | 0 |
| | | | | | | | | 0.69 | | | |
| 135 | 10021.99 | 112.96 | 153.99 | 84.44 | 418.73 | 0.72 | 1.82 | | 1 | 0 | 0 |
| | | | | | | | | 0.73 | | | |

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|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 136 | 18101.54 | 151.81 | 157.10 | 150.42 | 532.51 | 0.80 | 1.04 | | 1 | 0 | 0 |
| | | | | | | | | 0.97 | | | |
| 137 | 1055.22 | 36.65 | 57.89 | 25.11 | 139.70 | 0.68 | 2.31 | | 0 | 0 | 1 |
| | | | | | | | | 0.63 | | | |
| 138 | 4131.64 | 72.53 | 101.17 | 61.87 | 292.46 | 0.61 | 1.64 | | 1 | 0 | 0 |
| | | | | | | | | 0.72 | | | |
| 139 | 10242.49 | 114.20 | 151.75 | 87.94 | 426.56 | 0.71 | 1.73 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 140 | 8861.77 | 106.22 | 127.42 | 90.23 | 367.44 | 0.82 | 1.41 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 141 | 19839.24 | 158.93 | 201.25 | 127.26 | 569.40 | 0.77 | 1.58 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 142 | 5522.86 | 83.86 | 129.66 | 89.71 | 471.36 | 0.31 | 1.45 | | 0 | 1 | 0 |
| | | | | | | | | 0.65 | | | |
| 143 | 14930.62 | 137.88 | 153.41 | 126.08 | 477.52 | 0.82 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 144 | 23199.16 | 171.87 | 195.06 | 153.49 | 610.37 | 0.78 | 1.27 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 145 | 4173.64 | 72.90 | 94.78 | 64.37 | 283.06 | 0.65 | 1.47 | | 1 | 0 | 0 |
| | | | | | | | | 0.77 | | | |
| 146 | 4929.62 | 79.22 | 91.65 | 72.40 | 288.66 | 0.74 | 1.27 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 147 | 6641.08 | 91.95 | 102.32 | 84.49 | 317.59 | 0.83 | 1.21 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 148 | 4194.64 | 73.08 | 99.17 | 55.85 | 266.30 | 0.74 | 1.78 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 149 | 147.00 | 13.68 | 32.57 | 8.71 | 69.85 | 0.38 | 3.74 | | 0 | 0 | 1 |
| | | | | | | | | 0.42 | | | |
| 150 | 1044.72 | 36.47 | 43.04 | 33.22 | 128.41 | 0.80 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 151 | 3627.66 | 67.96 | 88.27 | 53.83 | 246.07 | 0.75 | 1.64 | | 1 | 0 | 0 |
| | | | | | | | | 0.77 | | | |
| 152 | 477.74 | 24.66 | 27.91 | 22.90 | 78.78 | 0.97 | 1.22 | | 0 | 1 | 0 |
| | | | | | | | | 0.88 | | | |
| 153 | 14815.12 | 137.34 | 186.16 | 105.74 | 515.62 | 0.70 | 1.76 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 154 | 8767.28 | 105.65 | 126.91 | 90.47 | 375.59 | 0.78 | 1.40 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 155 | 13003.92 | 128.67 | 190.49 | 89.21 | 496.18 | 0.66 | 2.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.68 | | | |
| 156 | 2425.44 | 55.57 | 80.36 | 40.80 | 210.43 | 0.69 | 1.97 | | 1 | 0 | 0 |
| | | | | | | | | 0.69 | | | |
| 157 | 18379.78 | 152.98 | 228.08 | 103.60 | 592.50 | 0.66 | 2.20 | | 1 | 0 | 0 |
| | | | | | | | | 0.67 | | | |
| 158 | 2210.19 | 53.05 | 83.77 | 46.93 | 247.65 | 0.45 | 1.78 | | 0 | 1 | 0 |
| | | | | | | | | 0.63 | | | |
| 159 | 3023.92 | 62.05 | 115.72 | 35.32 | 259.73 | 0.56 | 3.28 | | 0 | 0 | 1 |
| | | | | | | | | 0.54 | | | |
| 160 | 4173.64 | 72.90 | 76.51 | 71.22 | 253.57 | 0.82 | 1.07 | | 1 | 0 | 0 |
| | | | | | | | | 0.95 | | | |
| 161 | 7538.81 | 97.97 | 122.29 | 82.82 | 350.69 | 0.77 | 1.48 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 162 | 14379.38 | 135.31 | 221.90 | 84.46 | 551.95 | 0.59 | 2.63 | | 1 | 0 | 0 |
| | | | | | | | | 0.61 | | | |
| 163 | 9491.76 | 109.93 | 130.46 | 94.65 | 388.78 | 0.79 | 1.38 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 164 | 813.73 | 32.19 | 53.62 | 25.76 | 138.36 | 0.53 | 2.08 | | 0 | 1 | 0 |
| | | | | | | | | 0.60 | | | |
| 165 | 2861.18 | 60.36 | 81.34 | 49.86 | 223.62 | 0.72 | 1.63 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 166 | 2467.44 | 56.05 | 66.04 | 49.24 | 193.44 | 0.83 | 1.34 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 167 | 8342.04 | 103.06 | 122.32 | 89.83 | 374.94 | 0.75 | 1.36 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 168 | 12631.18 | 126.82 | 153.28 | 106.43 | 441.65 | 0.81 | 1.44 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 169 | 11066.72 | 118.70 | 182.10 | 89.41 | 484.23 | 0.59 | 2.04 | | 1 | 0 | 0 |
| | | | | | | | | 0.65 | | | |
| 170 | 1270.47 | 40.22 | 56.06 | 32.28 | 149.98 | 0.71 | 1.74 | | 0 | 1 | 0 |
| | | | | | | | | 0.72 | | | |

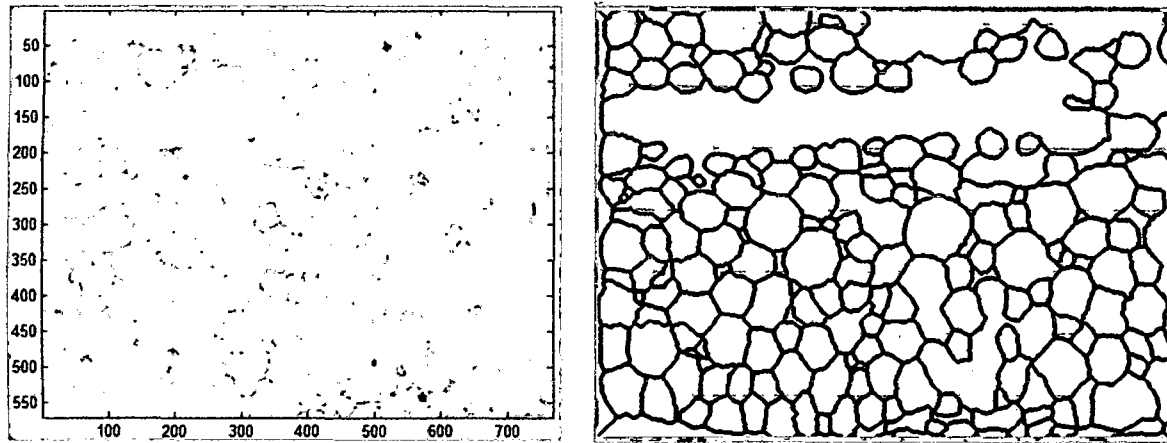
| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 171 | 2945.17 | 61.24 | 119.87 | 37.98 | 313.24 | 0.38 | 3.16 | | 0 | 1 | 0 |
| | | | | | | | | 0.51 | | | |
| 172 | 7617.56 | 98.48 | 119.32 | 84.16 | 356.38 | 0.75 | 1.42 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 173 | 498.74 | 25.20 | 34.22 | 19.99 | 86.84 | 0.83 | 1.71 | | 0 | 1 | 0 |
| | | | | | | | | 0.74 | | | |
| 174 | 7764.55 | 99.43 | 177.54 | 57.62 | 420.07 | 0.55 | 3.08 | | 1 | 0 | 0 |
| | | | | | | | | 0.56 | | | |
| 175 | 13770.40 | 132.41 | 152.75 | 116.79 | 458.54 | 0.82 | 1.31 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 176 | 14599.88 | 136.34 | 214.16 | 90.20 | 557.65 | 0.59 | 2.37 | | 1 | 0 | 0 |
| | | | | | | | | 0.64 | | | |
| 177 | 31.50 | 6.33 | 9.17 | 5.07 | 15.65 | 1.62 | 1.81 | | 0 | 0 | 1 |
| | | | | | | | | 0.69 | | | |
| 178 | 5832.60 | 86.18 | 109.78 | 70.08 | 305.88 | 0.78 | 1.57 | | 1 | 0 | 0 |
| | | | | | | | | 0.78 | | | |
| 179 | 409.49 | 22.83 | 43.03 | 13.65 | 91.19 | 0.62 | 3.15 | | 0 | 1 | 0 |
| | | | | | | | | 0.53 | | | |
| 180 | 4635.63 | 76.83 | 88.08 | 68.46 | 273.24 | 0.78 | 1.29 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 181 | 829.48 | 32.50 | 49.04 | 24.52 | 125.72 | 0.66 | 2.00 | | 0 | 1 | 0 |
| | | | | | | | | 0.66 | | | |
| 182 | 2808.68 | 59.80 | 91.44 | 55.55 | 267.32 | 0.49 | 1.65 | | 0 | 1 | 0 |
| | | | | | | | | 0.65 | | | |
| 183 | 241.49 | 17.54 | 20.83 | 15.04 | 51.52 | 1.14 | 1.39 | | 0 | 1 | 0 |
| | | | | | | | | 0.84 | | | |
| 184 | 551.24 | 26.49 | 36.35 | 21.65 | 94.43 | 0.78 | 1.68 | | 0 | 1 | 0 |
| | | | | | | | | 0.73 | | | |
| 185 | 14678.62 | 136.71 | 163.28 | 116.34 | 486.45 | 0.78 | 1.40 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 186 | 346.49 | 21.00 | 30.11 | 19.18 | 80.91 | 0.67 | 1.57 | | 0 | 1 | 0 |
| | | | | | | | | 0.70 | | | |
| 187 | 787.48 | 31.66 | 46.86 | 23.89 | 119.47 | 0.69 | 1.96 | | 0 | 1 | 0 |
| | | | | | | | | 0.68 | | | |
| 188 | 6168.59 | 88.62 | 102.28 | 77.48 | 304.30 | 0.84 | 1.32 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 189 | 16080.34 | 143.09 | 161.11 | 128.62 | 496.18 | 0.82 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 190 | 2110.45 | 51.84 | 67.80 | 47.18 | 200.15 | 0.66 | 1.44 | | 0 | 1 | 0 |
| | | | | | | | | 0.76 | | | |
| 191 | 12457.93 | 125.94 | 156.85 | 103.71 | 456.74 | 0.75 | 1.51 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 192 | 12447.43 | 125.89 | 165.09 | 98.39 | 461.55 | 0.73 | 1.68 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 193 | 687.73 | 29.59 | 46.97 | 21.16 | 112.99 | 0.68 | 2.22 | | 0 | 1 | 0 |
| | | | | | | | | 0.63 | | | |
| 194 | 94.50 | 10.97 | 19.78 | 7.21 | 40.46 | 0.73 | 2.74 | | 0 | 0 | 1 |
| | | | | | | | | 0.55 | | | |
| 195 | 776.98 | 31.45 | 43.64 | 33.40 | 137.01 | 0.52 | 1.31 | | 0 | 1 | 0 |
| | | | | | | | | 0.72 | | | |
| 196 | 7108.32 | 95.13 | 134.17 | 84.74 | 443.54 | 0.45 | 1.58 | | 0 | 1 | 0 |
| | | | | | | | | 0.71 | | | |
| 197 | 22752.92 | 170.21 | 224.12 | 130.86 | 613.75 | 0.76 | 1.71 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 198 | 8746.28 | 105.53 | 144.75 | 79.56 | 398.97 | 0.69 | 1.82 | | 1 | 0 | 0 |
| | | | | | | | | 0.73 | | | |
| 199 | 577.49 | 27.12 | 48.50 | 20.98 | 121.37 | 0.49 | 2.31 | | 0 | 1 | 0 |
| | | | | | | | | 0.56 | | | |
| 200 | 3533.16 | 67.07 | 90.45 | 53.79 | 259.27 | 0.66 | 1.68 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 201 | 1023.72 | 36.10 | 60.20 | 22.49 | 137.01 | 0.69 | 2.68 | | 1 | 0 | 0 |
| | | | | | | | | 0.60 | | | |
| 202 | 15.75 | 4.48 | 7.94 | 2.65 | 9.17 | 2.36 | 3.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.56 | | | |
| 203 | 18390.28 | 153.02 | 178.02 | 133.60 | 542.65 | 0.78 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 204 | 1249.47 | 39.89 | 49.16 | 36.37 | 148.08 | 0.72 | 1.35 | | 0 | 1 | 0 |
| | | | | | | | | 0.81 | | | |
| 205 | 4037.15 | 71.70 | 83.07 | 63.73 | 249.08 | 0.82 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|---------|------|------|------|---|---|---|
| 206 | 745.48 | 30.81 | 49.42 | 23.09 | 121.93 | 0.63 | 2.14 | | 0 | 1 | 0 |
| | | | | | | | | 0.62 | | | |
| 207 | 2063.20 | 51.25 | 91.07 | 30.32 | 206.63 | 0.61 | 3.00 | | 0 | 1 | 0 |
| | | | | | | | | 0.56 | | | |
| 208 | 12599.68 | 126.66 | 144.83 | 112.04 | 443.77 | 0.80 | 1.29 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 209 | 1181.22 | 38.78 | 41.36 | 38.53 | 136.78 | 0.79 | 1.07 | | 0 | 1 | 0 |
| | | | | | | | | 0.94 | | | |
| 210 | 15943.84 | 142.48 | 163.66 | 126.10 | 495.29 | 0.82 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 211 | 1821.70 | 48.16 | 99.30 | 30.57 | 235.80 | 0.41 | 3.25 | | 0 | 1 | 0 |
| | | | | | | | | 0.49 | | | |
| 212 | 3890.15 | 70.38 | 87.59 | 58.78 | 249.78 | 0.78 | 1.49 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 213 | 4252.39 | 73.58 | 88.42 | 64.01 | 267.32 | 0.75 | 1.38 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 214 | 3270.67 | 64.53 | 105.95 | 47.24 | 304.54 | 0.44 | 2.24 | | 0 | 1 | 0 |
| | | | | | | | | 0.61 | | | |
| 215 | 13707.40 | 132.11 | 188.33 | 106.72 | 552.18 | 0.56 | 1.76 | | 0 | 0 | 1 |
| | | | | | | | | 0.70 | | | |
| 216 | 17067.31 | 147.41 | 173.69 | 127.64 | 533.07 | 0.75 | 1.36 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 217 | 7365.56 | 96.84 | 127.40 | 75.58 | 343.97 | 0.78 | 1.69 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 218 | 2372.94 | 54.97 | 63.49 | 49.68 | 188.07 | 0.84 | 1.28 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 219 | 9817.25 | 111.80 | 161.58 | 78.19 | 417.16 | 0.71 | 2.07 | | 1 | 0 | 0 |
| | | | | | | | | 0.69 | | | |
| 220 | 4997.87 | 79.77 | 122.19 | 87.48 | 453.26 | 0.31 | 1.40 | | 0 | 1 | 0 |
| | | | | | | | | 0.65 | | | |
| 221 | 52.50 | 8.18 | 14.09 | 5.04 | 24.81 | 1.07 | 2.80 | | 0 | 1 | 0 |
| | | | | | | | | 0.58 | | | |
| 222 | 3748.40 | 69.08 | 81.69 | 66.08 | 253.34 | 0.73 | 1.24 | | 0 | 1 | 0 |
| | | | | | | | | 0.85 | | | |
| 223 | 35142.60 | 211.53 | 485.65 | 157.24 | 1552.12 | 0.18 | 3.09 | | 0 | 1 | 0 |
| | | | | | | | | 0.44 | | | |
| 224 | 9465.51 | 109.78 | 120.26 | 103.64 | 384.43 | 0.80 | 1.16 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 225 | 11465.71 | 120.82 | 166.39 | 92.68 | 449.60 | 0.71 | 1.80 | | 1 | 0 | 0 |
| | | | | | | | | 0.73 | | | |
| 226 | 17545.05 | 149.46 | 220.39 | 102.94 | 567.37 | 0.68 | 2.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.68 | | | |
| 227 | 1895.20 | 49.12 | 81.43 | 43.55 | 223.07 | 0.48 | 1.87 | | 0 | 1 | 0 |
| | | | | | | | | 0.60 | | | |
| 228 | 11371.21 | 120.33 | 170.06 | 86.72 | 446.00 | 0.72 | 1.96 | | 1 | 0 | 0 |
| | | | | | | | | 0.71 | | | |
| 229 | 10504.98 | 115.65 | 166.96 | 81.97 | 443.54 | 0.67 | 2.04 | | 1 | 0 | 0 |
| | | | | | | | | 0.69 | | | |
| 230 | 1721.96 | 46.82 | 57.80 | 43.21 | 183.72 | 0.64 | 1.34 | | 0 | 1 | 0 |
| | | | | | | | | 0.81 | | | |
| 231 | 12190.19 | 124.58 | 147.77 | 106.93 | 433.73 | 0.81 | 1.38 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 232 | 11449.96 | 120.74 | 139.82 | 107.61 | 428.59 | 0.78 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 233 | 876.73 | 33.41 | 64.52 | 21.49 | 148.63 | 0.50 | 3.00 | | 0 | 1 | 0 |
| | | | | | | | | 0.52 | | | |
| 234 | 5612.11 | 84.53 | 96.52 | 76.28 | 291.57 | 0.83 | 1.27 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 235 | 16542.33 | 145.13 | 167.41 | 127.90 | 517.42 | 0.78 | 1.31 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 236 | 11449.96 | 120.74 | 145.69 | 100.72 | 421.88 | 0.81 | 1.45 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 237 | 11229.46 | 119.57 | 161.70 | 95.27 | 450.81 | 0.69 | 1.70 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 238 | 17828.54 | 150.67 | 235.64 | 97.06 | 587.13 | 0.65 | 2.43 | | 1 | 0 | 0 |
| | | | | | | | | 0.64 | | | |
| 239 | 698.23 | 29.82 | 37.51 | 28.19 | 109.52 | 0.73 | 1.33 | | 0 | 1 | 0 |
| | | | | | | | | 0.79 | | | |
| 240 | 14972.62 | 138.07 | 162.43 | 121.80 | 498.07 | 0.76 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|---------|------|-------|------|---|---|---|
| 241 | 8352.54 | 103.13 | 142.63 | 76.69 | 376.28 | 0.74 | 1.86 | | 1 | 0 | 0 |
| | | | | | | | | 0.72 | | | |
| 242 | 393.74 | 22.39 | 102.29 | 8.30 | 174.46 | 0.16 | 12.33 | | 0 | 0 | 1 |
| | | | | | | | | 0.22 | | | |
| 243 | 14080.14 | 133.89 | 155.60 | 119.51 | 488.03 | 0.74 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 244 | 766.48 | 31.24 | 34.50 | 29.92 | 106.28 | 0.85 | 1.15 | | 0 | 1 | 0 |
| | | | | | | | | 0.91 | | | |
| 245 | 31.50 | 6.33 | 9.17 | 5.07 | 15.65 | 1.62 | 1.81 | | 0 | 0 | 1 |
| | | | | | | | | 0.69 | | | |
| 246 | 9990.49 | 112.78 | 131.71 | 99.51 | 407.44 | 0.76 | 1.32 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 247 | 12541.93 | 126.37 | 136.23 | 119.96 | 439.19 | 0.82 | 1.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 248 | 808.48 | 32.08 | 47.88 | 22.73 | 116.00 | 0.76 | 2.11 | | 0 | 1 | 0 |
| | | | | | | | | 0.67 | | | |
| 249 | 42.00 | 7.31 | 14.00 | 4.77 | 24.81 | 0.86 | 2.94 | | 1 | 0 | 0 |
| | | | | | | | | 0.52 | | | |
| 250 | 4320.64 | 74.17 | 157.56 | 50.31 | 401.42 | 0.34 | 3.13 | | 0 | 1 | 0 |
| | | | | | | | | 0.47 | | | |
| 251 | 766.48 | 31.24 | 47.75 | 24.14 | 121.93 | 0.65 | 1.98 | | 0 | 1 | 0 |
| | | | | | | | | 0.65 | | | |
| 252 | 10462.98 | 115.42 | 154.45 | 87.79 | 418.41 | 0.75 | 1.76 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 253 | 461.99 | 24.25 | 42.80 | 16.60 | 107.62 | 0.50 | 2.58 | | 0 | 0 | 1 |
| | | | | | | | | 0.57 | | | |
| 254 | 14557.88 | 136.15 | 170.00 | 112.53 | 495.29 | 0.75 | 1.51 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 255 | 8310.54 | 102.87 | 203.21 | 83.96 | 585.51 | 0.30 | 2.42 | | 0 | 0 | 1 |
| | | | | | | | | 0.51 | | | |
| 256 | 3559.41 | 67.32 | 74.42 | 64.34 | 243.62 | 0.75 | 1.16 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 257 | 9932.75 | 112.46 | 170.63 | 76.88 | 433.82 | 0.66 | 2.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.66 | | | |
| 258 | 15308.61 | 139.61 | 161.29 | 121.68 | 478.63 | 0.84 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 259 | 3333.66 | 65.15 | 80.17 | 54.14 | 229.09 | 0.80 | 1.48 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 260 | 11386.96 | 120.41 | 151.93 | 98.22 | 443.54 | 0.73 | 1.55 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 261 | 3202.42 | 63.85 | 78.25 | 60.83 | 244.73 | 0.67 | 1.29 | | 0 | 1 | 0 |
| | | | | | | | | 0.82 | | | |
| 262 | 22422.18 | 168.96 | 196.85 | 146.96 | 600.56 | 0.78 | 1.34 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 263 | 17618.55 | 149.78 | 186.98 | 126.14 | 563.80 | 0.70 | 1.48 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 264 | 18715.77 | 154.37 | 259.47 | 170.39 | 1167.37 | 0.17 | 1.52 | | 0 | 1 | 0 |
| | | | | | | | | 0.59 | | | |
| 265 | 2803.43 | 59.74 | 66.89 | 55.47 | 205.39 | 0.84 | 1.21 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 266 | 11801.70 | 122.58 | 174.86 | 87.26 | 463.77 | 0.69 | 2.00 | | 1 | 0 | 0 |
| | | | | | | | | 0.70 | | | |
| 267 | 3002.92 | 61.83 | 90.05 | 46.22 | 234.22 | 0.69 | 1.95 | | 1 | 0 | 0 |
| | | | | | | | | 0.69 | | | |
| 268 | 509.24 | 25.46 | 34.99 | 21.63 | 93.87 | 0.73 | 1.62 | | 0 | 0 | 1 |
| | | | | | | | | 0.73 | | | |
| 269 | 283.49 | 19.00 | 26.10 | 14.85 | 62.58 | 0.91 | 1.76 | | 0 | 1 | 0 |
| | | | | | | | | 0.73 | | | |
| 270 | 9938.00 | 112.49 | 149.97 | 89.23 | 413.36 | 0.73 | 1.68 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 271 | 687.73 | 29.59 | 32.71 | 28.38 | 98.46 | 0.89 | 1.15 | | 0 | 1 | 0 |
| | | | | | | | | 0.90 | | | |
| 272 | 13880.65 | 132.94 | 149.85 | 126.52 | 499.09 | 0.70 | 1.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 273 | 241.49 | 17.54 | 26.57 | 12.28 | 59.34 | 0.86 | 2.16 | | 0 | 1 | 0 |
| | | | | | | | | 0.66 | | | |
| 274 | 1244.22 | 39.80 | 49.91 | 32.34 | 132.20 | 0.89 | 1.54 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 275 | 414.74 | 22.98 | 26.05 | 22.28 | 76.33 | 0.89 | 1.17 | | 0 | 1 | 0 |
| | | | | | | | | 0.88 | | | |

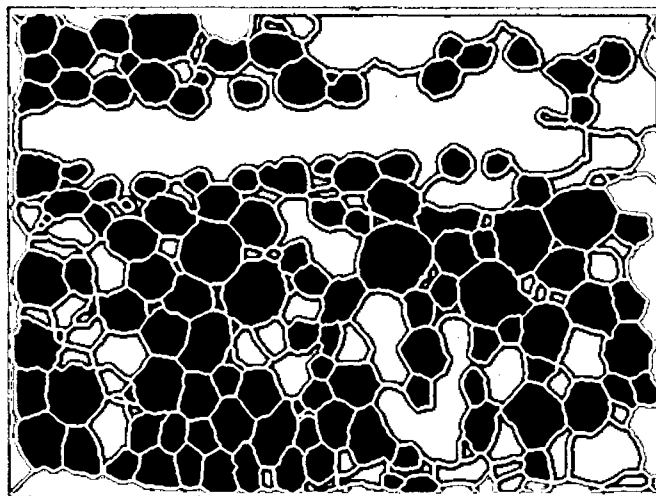
| | | | | | | | | | | | |
|-----|----------|--------|--------|-------|--------|------|------|------|---|---|---|
| 276 | 11696.70 | 122.04 | 161.46 | 94.10 | 439.29 | 0.76 | 1.72 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 277 | 1233.72 | 39.63 | 64.97 | 26.69 | 156.23 | 0.64 | 2.43 | | 0 | 1 | 0 |
| | | | | | | | | 0.61 | | | |
| 278 | 1044.72 | 36.47 | 59.81 | 24.95 | 149.19 | 0.59 | 2.40 | | 0 | 1 | 0 |
| | | | | | | | | 0.61 | | | |
| 279 | 8483.78 | 103.93 | 137.17 | 80.27 | 384.43 | 0.72 | 1.71 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 280 | 7255.31 | 96.11 | 120.40 | 81.27 | 349.34 | 0.75 | 1.48 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 281 | 7586.06 | 98.28 | 131.28 | 77.86 | 381.42 | 0.66 | 1.69 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 282 | 3296.92 | 64.79 | 76.67 | 57.18 | 226.08 | 0.81 | 1.34 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 283 | 792.73 | 31.77 | 34.85 | 29.67 | 102.25 | 0.95 | 1.17 | | 0 | 1 | 0 |
| | | | | | | | | 0.91 | | | |
| 284 | 5129.12 | 80.81 | 129.73 | 53.96 | 326.89 | 0.60 | 2.40 | | 1 | 0 | 0 |
| | | | | | | | | 0.62 | | | |
| 285 | 2609.18 | 57.64 | 95.49 | 37.98 | 232.23 | 0.61 | 2.51 | | 0 | 0 | 1 |
| | | | | | | | | 0.60 | | | |
| 286 | 556.49 | 26.62 | 36.35 | 21.98 | 99.24 | 0.71 | 1.65 | | 0 | 0 | 1 |
| | | | | | | | | 0.73 | | | |
| 287 | 1622.21 | 45.45 | 116.44 | 19.03 | 241.07 | 0.35 | 6.12 | | 0 | 0 | 1 |
| | | | | | | | | 0.39 | | | |
| 288 | 787.48 | 31.66 | 58.91 | 18.01 | 132.66 | 0.56 | 3.27 | | 0 | 0 | 1 |
| | | | | | | | | 0.54 | | | |
| 289 | 477.74 | 24.66 | 43.60 | 15.51 | 101.14 | 0.59 | 2.81 | | 0 | 0 | 1 |
| | | | | | | | | 0.57 | | | |
| 290 | 147.00 | 13.68 | 19.92 | 11.49 | 48.28 | 0.79 | 1.73 | | 0 | 0 | 1 |
| | | | | | | | | 0.69 | | | |
| 291 | 178.50 | 15.08 | 26.53 | 9.53 | 57.44 | 0.68 | 2.78 | | 0 | 0 | 1 |
| | | | | | | | | 0.57 | | | |
| 292 | 283.49 | 19.00 | 47.32 | 9.71 | 106.51 | 0.31 | 4.87 | | 0 | 0 | 1 |
| | | | | | | | | 0.40 | | | |
| 293 | 152.25 | 13.92 | 30.08 | 7.10 | 56.89 | 0.59 | 4.24 | | 0 | 0 | 1 |
| | | | | | | | | 0.46 | | | |
| 294 | 42.00 | 7.31 | 21.17 | 2.65 | 32.08 | 0.51 | 8.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.35 | | | |

Código: 9H-11



a)

b)



c)

Figura A3. a) Imagen Original b) Imagen procesada c) Imagen segmentada y clasificada

Tabla A3. Parámetros de tamaño y forma y clasificación de elementos en micrografía 9H-11

| Núm. | Área | Deq | Ejemay | Ejemen | Per | Red | Elg | Comp | Célula | Espint | Elem No Rec |
|------|-----------|--------|---------|--------|---------|------|-------|------|--------|--------|-------------|
| 1 | 6026.85 | 87.60 | 408.85 | 25.45 | 842.13 | 0.11 | 16.06 | | 0 | 0 | 1 |
| | | | | | | | | 0.21 | | | |
| 2 | 209.99 | 16.35 | 28.05 | 11.12 | 62.58 | 0.67 | 2.52 | | 0 | 0 | 1 |
| | | | | | | | | 0.58 | | | |
| 3 | 4068.65 | 71.97 | 366.84 | 27.52 | 659.06 | 0.12 | 13.33 | | 0 | 0 | 1 |
| | | | | | | | | 0.20 | | | |
| 4 | 52.50 | 8.18 | 14.00 | 5.21 | 24.81 | 1.07 | 2.69 | | 0 | 1 | 0 |
| | | | | | | | | 0.58 | | | |
| 5 | 2729.93 | 58.96 | 245.73 | 22.31 | 463.03 | 0.16 | 11.01 | | 0 | 0 | 1 |
| | | | | | | | | 0.24 | | | |
| 6 | 404.24 | 22.69 | 32.54 | 19.38 | 89.29 | 0.64 | 1.68 | | 0 | 0 | 1 |
| | | | | | | | | 0.70 | | | |
| 7 | 12184.94 | 124.56 | 136.25 | 117.42 | 438.54 | 0.80 | 1.16 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 8 | 4499.13 | 75.69 | 88.01 | 71.49 | 273.57 | 0.76 | 1.23 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 9 | 12127.19 | 124.26 | 131.71 | 121.05 | 460.99 | 0.72 | 1.09 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 10 | 556.49 | 26.62 | 115.37 | 7.00 | 217.83 | 0.15 | 16.48 | | 0 | 0 | 1 |
| | | | | | | | | 0.23 | | | |
| 11 | 1333.47 | 41.20 | 61.30 | 31.69 | 164.28 | 0.62 | 1.93 | | 0 | 0 | 1 |
| | | | | | | | | 0.67 | | | |
| 12 | 14951.62 | 137.97 | 141.88 | 136.48 | 480.43 | 0.81 | 1.04 | | 1 | 0 | 0 |
| | | | | | | | | 0.97 | | | |
| 13 | 624.73 | 28.20 | 41.63 | 19.87 | 99.80 | 0.79 | 2.10 | | 0 | 1 | 0 |
| | | | | | | | | 0.68 | | | |
| 14 | 18175.04 | 152.12 | 178.33 | 137.44 | 593.19 | 0.65 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 15 | 406124.37 | 719.09 | 1950.19 | 421.69 | 9128.48 | 0.06 | 4.62 | | 0 | 1 | 0 |
| | | | | | | | | 0.37 | | | |
| 16 | 8966.77 | 106.85 | 143.44 | 84.21 | 402.90 | 0.69 | 1.70 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 17 | 5879.85 | 86.52 | 99.96 | 80.20 | 316.15 | 0.74 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 18 | 136.50 | 13.18 | 20.24 | 9.36 | 43.14 | 0.92 | 2.16 | | 0 | 1 | 0 |
| | | | | | | | | 0.65 | | | |
| 19 | 8856.52 | 106.19 | 120.34 | 94.56 | 366.56 | 0.83 | 1.27 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 20 | 404.24 | 22.69 | 29.57 | 18.34 | 74.43 | 0.92 | 1.61 | | 0 | 1 | 0 |
| | | | | | | | | 0.77 | | | |
| 21 | 1448.96 | 42.95 | 62.35 | 32.02 | 159.14 | 0.72 | 1.95 | | 0 | 1 | 0 |
| | | | | | | | | 0.69 | | | |
| 22 | 3170.92 | 63.54 | 101.95 | 45.49 | 266.53 | 0.56 | 2.24 | | 1 | 0 | 0 |
| | | | | | | | | 0.62 | | | |
| 23 | 6184.34 | 88.74 | 99.70 | 80.41 | 303.75 | 0.84 | 1.24 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 24 | 7838.05 | 99.90 | 154.83 | 69.14 | 433.50 | 0.52 | 2.24 | | 1 | 0 | 0 |
| | | | | | | | | 0.65 | | | |
| 25 | 813.73 | 32.19 | 69.65 | 17.61 | 146.74 | 0.47 | 3.96 | | 0 | 1 | 0 |
| | | | | | | | | 0.46 | | | |
| 26 | 8011.30 | 101.00 | 146.06 | 76.26 | 413.82 | 0.59 | 1.92 | | 1 | 0 | 0 |
| | | | | | | | | 0.69 | | | |
| 27 | 9208.26 | 108.28 | 159.50 | 75.58 | 424.56 | 0.64 | 2.11 | | 1 | 0 | 0 |
| | | | | | | | | 0.68 | | | |
| 28 | 740.23 | 30.70 | 45.85 | 22.34 | 111.42 | 0.75 | 2.05 | | 0 | 1 | 0 |
| | | | | | | | | 0.67 | | | |
| 29 | 4005.65 | 71.42 | 123.32 | 46.32 | 309.67 | 0.52 | 2.66 | | 0 | 1 | 0 |
| | | | | | | | | 0.58 | | | |
| 30 | 19938.99 | 159.33 | 166.35 | 154.39 | 557.65 | 0.81 | 1.08 | | 1 | 0 | 0 |
| | | | | | | | | 0.96 | | | |
| 31 | 9932.75 | 112.46 | 116.65 | 110.15 | 388.78 | 0.83 | 1.06 | | 1 | 0 | 0 |
| | | | | | | | | 0.96 | | | |

| | | | | | | | | | | | |
|----|----------|--------|--------|--------|--------|------|-------|------|---|---|---|
| 32 | 7150.32 | 95.42 | 106.27 | 86.52 | 323.98 | 0.86 | 1.23 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 33 | 7318.31 | 96.53 | 126.60 | 75.39 | 343.74 | 0.78 | 1.68 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 34 | 713.98 | 30.15 | 33.03 | 28.19 | 97.11 | 0.95 | 1.17 | | 0 | 1 | 0 |
| | | | | | | | | 0.91 | | | |
| 35 | 393.74 | 22.39 | 39.37 | 15.29 | 94.43 | 0.55 | 2.57 | | 0 | 1 | 0 |
| | | | | | | | | 0.57 | | | |
| 36 | 3932.15 | 70.76 | 105.13 | 56.57 | 288.10 | 0.60 | 1.86 | | 1 | 0 | 0 |
| | | | | | | | | 0.67 | | | |
| 37 | 2514.69 | 56.58 | 75.76 | 43.58 | 196.91 | 0.81 | 1.74 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 38 | 2724.68 | 58.90 | 90.59 | 41.63 | 225.52 | 0.67 | 2.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.65 | | | |
| 39 | 5690.85 | 85.12 | 94.40 | 77.62 | 285.88 | 0.88 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 40 | 7622.81 | 98.52 | 120.85 | 81.42 | 354.16 | 0.76 | 1.48 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 41 | 6662.08 | 92.10 | 112.03 | 77.92 | 323.75 | 0.80 | 1.44 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 42 | 15.75 | 4.48 | 7.94 | 2.65 | 9.17 | 2.36 | 3.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.56 | | | |
| 43 | 4304.89 | 74.03 | 339.05 | 24.89 | 728.02 | 0.10 | 13.62 | | 0 | 0 | 1 |
| | | | | | | | | 0.22 | | | |
| 44 | 3968.90 | 71.09 | 80.95 | 64.30 | 245.84 | 0.83 | 1.26 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 45 | 4588.38 | 76.43 | 99.71 | 66.93 | 321.06 | 0.56 | 1.49 | | 0 | 1 | 0 |
| | | | | | | | | 0.77 | | | |
| 46 | 10226.74 | 114.11 | 138.02 | 102.78 | 423.78 | 0.72 | 1.34 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 47 | 12851.67 | 127.92 | 163.66 | 102.72 | 465.11 | 0.75 | 1.59 | | 1 | 0 | 0 |
| | | | | | | | | 0.78 | | | |
| 48 | 3596.16 | 67.67 | 83.96 | 55.40 | 235.24 | 0.82 | 1.52 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 49 | 12541.93 | 126.37 | 149.88 | 110.94 | 462.10 | 0.74 | 1.35 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 50 | 8126.79 | 101.72 | 112.65 | 92.94 | 350.69 | 0.83 | 1.21 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 51 | 6588.58 | 91.59 | 106.27 | 79.57 | 315.92 | 0.83 | 1.34 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 52 | 13460.66 | 130.91 | 153.97 | 116.25 | 478.63 | 0.74 | 1.32 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 53 | 871.48 | 33.31 | 45.68 | 25.11 | 111.65 | 0.88 | 1.82 | | 0 | 1 | 0 |
| | | | | | | | | 0.73 | | | |
| 54 | 1910.95 | 49.33 | 64.13 | 43.19 | 190.20 | 0.66 | 1.48 | | 0 | 1 | 0 |
| | | | | | | | | 0.77 | | | |
| 55 | 325.49 | 20.36 | 81.96 | 6.87 | 147.75 | 0.19 | 11.93 | | 0 | 0 | 1 |
| | | | | | | | | 0.25 | | | |
| 56 | 4420.39 | 75.02 | 91.44 | 65.87 | 273.57 | 0.74 | 1.39 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 57 | 703.48 | 29.93 | 43.36 | 22.40 | 106.28 | 0.78 | 1.94 | | 0 | 1 | 0 |
| | | | | | | | | 0.69 | | | |
| 58 | 12153.44 | 124.40 | 140.60 | 110.66 | 421.42 | 0.86 | 1.27 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 59 | 4693.38 | 77.30 | 93.50 | 64.52 | 263.29 | 0.85 | 1.45 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 60 | 2126.20 | 52.03 | 58.96 | 48.11 | 179.46 | 0.83 | 1.23 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 61 | 608.98 | 27.85 | 32.44 | 24.33 | 87.95 | 0.99 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 62 | 1191.72 | 38.95 | 49.13 | 37.40 | 149.19 | 0.67 | 1.31 | | 0 | 1 | 0 |
| | | | | | | | | 0.79 | | | |
| 63 | 304.49 | 19.69 | 24.00 | 16.97 | 62.03 | 0.99 | 1.41 | | 0 | 1 | 0 |
| | | | | | | | | 0.82 | | | |
| 64 | 11906.70 | 123.13 | 131.51 | 117.55 | 427.34 | 0.82 | 1.12 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 65 | 1081.47 | 37.11 | 43.02 | 36.46 | 138.13 | 0.71 | 1.18 | | 0 | 1 | 0 |
| | | | | | | | | 0.86 | | | |
| 66 | 10683.48 | 116.63 | 126.00 | 108.90 | 397.16 | 0.85 | 1.16 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 67 | 6887.82 | 93.65 | 108.69 | 81.48 | 319.95 | 0.85 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 68 | 20253.98 | 160.59 | 196.51 | 135.70 | 573.10 | 0.77 | 1.45 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 69 | 16174.84 | 143.51 | 159.09 | 130.38 | 489.92 | 0.85 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 70 | 3974.15 | 71.13 | 89.58 | 57.88 | 251.67 | 0.79 | 1.55 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 71 | 9680.75 | 111.02 | 119.93 | 108.27 | 399.75 | 0.76 | 1.11 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 72 | 12232.19 | 124.80 | 128.06 | 123.28 | 426.00 | 0.85 | 1.04 | | 1 | 0 | 0 |
| | | | | | | | | 0.97 | | | |
| 73 | 11365.96 | 120.30 | 141.69 | 102.74 | 413.59 | 0.83 | 1.38 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 74 | 902.98 | 33.91 | 52.31 | 26.37 | 135.67 | 0.62 | 1.98 | | 0 | 1 | 0 |
| | | | | | | | | 0.65 | | | |
| 75 | 2819.18 | 59.91 | 63.26 | 60.31 | 213.35 | 0.78 | 1.05 | | 1 | 0 | 0 |
| | | | | | | | | 0.95 | | | |
| 76 | 341.24 | 20.84 | 25.57 | 19.26 | 70.41 | 0.87 | 1.33 | | 0 | 1 | 0 |
| | | | | | | | | 0.82 | | | |
| 77 | 6011.10 | 87.48 | 110.59 | 70.01 | 302.41 | 0.83 | 1.58 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 78 | 10935.47 | 118.00 | 128.20 | 112.40 | 418.18 | 0.79 | 1.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 79 | 2834.93 | 60.08 | 95.39 | 42.83 | 243.06 | 0.60 | 2.23 | | 0 | 1 | 0 |
| | | | | | | | | 0.63 | | | |
| 80 | 3202.42 | 63.85 | 77.31 | 57.10 | 233.34 | 0.74 | 1.35 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 81 | 5890.35 | 86.60 | 94.43 | 80.16 | 293.01 | 0.86 | 1.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 82 | 488.24 | 24.93 | 40.57 | 16.68 | 91.19 | 0.74 | 2.43 | | 0 | 1 | 0 |
| | | | | | | | | 0.61 | | | |
| 83 | 409.49 | 22.83 | 27.47 | 20.45 | 76.33 | 0.88 | 1.34 | | 0 | 1 | 0 |
| | | | | | | | | 0.83 | | | |
| 84 | 6378.59 | 90.12 | 118.61 | 69.49 | 315.60 | 0.80 | 1.71 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 85 | 16810.07 | 146.30 | 183.53 | 119.19 | 523.34 | 0.77 | 1.54 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 86 | 22390.68 | 168.85 | 170.10 | 168.60 | 571.16 | 0.86 | 1.01 | | 1 | 0 | 0 |
| | | | | | | | | 0.99 | | | |
| 87 | 10200.49 | 113.96 | 132.71 | 100.22 | 402.99 | 0.79 | 1.32 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 88 | 2813.93 | 59.86 | 66.17 | 55.52 | 200.48 | 0.88 | 1.19 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 89 | 5622.61 | 84.61 | 101.23 | 72.67 | 299.17 | 0.79 | 1.39 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 90 | 2283.69 | 53.92 | 94.63 | 33.69 | 229.32 | 0.55 | 2.81 | | 0 | 1 | 0 |
| | | | | | | | | 0.57 | | | |
| 91 | 1291.47 | 40.55 | 44.17 | 38.89 | 140.81 | 0.82 | 1.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 92 | 430.49 | 23.41 | 40.53 | 14.36 | 88.74 | 0.69 | 2.82 | | 0 | 1 | 0 |
| | | | | | | | | 0.58 | | | |
| 93 | 9371.01 | 109.23 | 123.95 | 97.10 | 368.23 | 0.87 | 1.28 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 94 | 8447.03 | 103.71 | 146.97 | 76.12 | 381.33 | 0.73 | 1.93 | | 1 | 0 | 0 |
| | | | | | | | | 0.71 | | | |
| 95 | 8641.28 | 104.89 | 130.31 | 88.88 | 388.46 | 0.72 | 1.47 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 96 | 8667.53 | 105.05 | 122.39 | 93.99 | 374.94 | 0.77 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 97 | 11938.19 | 123.29 | 144.33 | 107.88 | 441.42 | 0.77 | 1.34 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 98 | 1664.21 | 46.03 | 86.25 | 30.03 | 204.97 | 0.50 | 2.87 | | 0 | 1 | 0 |
| | | | | | | | | 0.53 | | | |
| 99 | 4976.87 | 79.60 | 86.95 | 74.68 | 273.80 | 0.83 | 1.16 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 100 | 23913.14 | 174.49 | 189.55 | 161.41 | 600.56 | 0.83 | 1.17 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 101 | 703.48 | 29.93 | 47.91 | 23.95 | 120.03 | 0.61 | 2.00 | | 0 | 1 | 0 |
| | | | | | | | | 0.62 | | | |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|-------|------|---|---|---|
| 102 | 13234.91 | 129.81 | 141.40 | 120.49 | 449.79 | 0.82 | 1.17 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 103 | 3480.66 | 66.57 | 72.80 | 61.37 | 217.70 | 0.92 | 1.19 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 104 | 650.98 | 28.79 | 39.73 | 24.34 | 104.94 | 0.74 | 1.63 | | 0 | 1 | 0 |
| | | | | | | | | 0.72 | | | |
| 105 | 4703.88 | 77.39 | 88.68 | 68.31 | 259.50 | 0.88 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 106 | 7150.32 | 95.42 | 123.56 | 79.06 | 354.25 | 0.72 | 1.56 | | 1 | 0 | 0 |
| | | | | | | | | 0.77 | | | |
| 107 | 7187.07 | 95.66 | 139.63 | 67.44 | 376.05 | 0.64 | 2.07 | | 1 | 0 | 0 |
| | | | | | | | | 0.69 | | | |
| 108 | 94.50 | 10.97 | 12.97 | 9.52 | 29.39 | 1.37 | 1.36 | | 0 | 1 | 0 |
| | | | | | | | | 0.85 | | | |
| 109 | 11806.95 | 122.61 | 137.94 | 110.65 | 430.03 | 0.80 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 110 | 2813.93 | 59.86 | 112.10 | 40.14 | 288.66 | 0.42 | 2.79 | | 0 | 1 | 0 |
| | | | | | | | | 0.53 | | | |
| 111 | 1322.97 | 41.04 | 52.29 | 34.89 | 144.28 | 0.80 | 1.50 | | 0 | 1 | 0 |
| | | | | | | | | 0.78 | | | |
| 112 | 10783.22 | 117.17 | 146.69 | 95.29 | 413.82 | 0.79 | 1.54 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 113 | 6662.08 | 92.10 | 216.34 | 71.29 | 547.27 | 0.28 | 3.03 | | 0 | 0 | 1 |
| | | | | | | | | 0.43 | | | |
| 114 | 14347.88 | 135.16 | 181.85 | 103.76 | 522.00 | 0.66 | 1.75 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 115 | 6530.83 | 91.19 | 103.69 | 83.99 | 322.96 | 0.79 | 1.23 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 116 | 325.49 | 20.36 | 84.02 | 7.45 | 149.65 | 0.18 | 11.28 | | 0 | 0 | 1 |
| | | | | | | | | 0.24 | | | |
| 117 | 9266.01 | 108.62 | 138.30 | 90.02 | 396.28 | 0.74 | 1.54 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 118 | 1774.45 | 47.53 | 64.08 | 36.77 | 169.09 | 0.78 | 1.74 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 119 | 1223.22 | 39.46 | 47.85 | 33.89 | 137.57 | 0.81 | 1.41 | | 0 | 1 | 0 |
| | | | | | | | | 0.82 | | | |
| 120 | 1538.21 | 44.26 | 70.83 | 29.15 | 168.31 | 0.68 | 2.43 | | 1 | 0 | 0 |
| | | | | | | | | 0.62 | | | |
| 121 | 9649.25 | 110.84 | 127.75 | 98.67 | 390.45 | 0.80 | 1.29 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 122 | 7517.81 | 97.84 | 125.35 | 79.11 | 352.81 | 0.76 | 1.58 | | 1 | 0 | 0 |
| | | | | | | | | 0.78 | | | |
| 123 | 7066.32 | 94.85 | 100.21 | 92.08 | 322.08 | 0.86 | 1.09 | | 1 | 0 | 0 |
| | | | | | | | | 0.95 | | | |
| 124 | 13518.40 | 131.20 | 135.83 | 128.04 | 453.82 | 0.82 | 1.06 | | 1 | 0 | 0 |
| | | | | | | | | 0.97 | | | |
| 125 | 3113.17 | 62.96 | 132.70 | 63.74 | 363.09 | 0.30 | 2.08 | | 0 | 1 | 0 |
| | | | | | | | | 0.47 | | | |
| 126 | 4835.13 | 78.46 | 94.49 | 67.40 | 283.29 | 0.76 | 1.40 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 127 | 7502.06 | 97.73 | 119.49 | 88.00 | 373.37 | 0.68 | 1.36 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 128 | 5375.86 | 82.73 | 92.54 | 75.93 | 289.45 | 0.81 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 129 | 5843.10 | 86.25 | 100.06 | 76.53 | 307.87 | 0.77 | 1.31 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 130 | 1018.47 | 36.01 | 48.00 | 27.97 | 123.27 | 0.84 | 1.72 | | 0 | 1 | 0 |
| | | | | | | | | 0.75 | | | |
| 131 | 4577.88 | 76.35 | 103.83 | 59.21 | 290.00 | 0.68 | 1.75 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 132 | 1485.71 | 43.49 | 67.09 | 31.80 | 167.85 | 0.66 | 2.11 | | 0 | 1 | 0 |
| | | | | | | | | 0.65 | | | |
| 133 | 4961.12 | 79.48 | 90.79 | 71.87 | 281.95 | 0.78 | 1.26 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 134 | 22758.17 | 170.23 | 185.98 | 158.58 | 606.71 | 0.78 | 1.17 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 135 | 2283.69 | 53.92 | 108.65 | 35.77 | 249.78 | 0.46 | 3.04 | | 0 | 0 | 1 |
| | | | | | | | | 0.50 | | | |
| 136 | 6578.08 | 91.52 | 103.21 | 81.83 | 307.55 | 0.87 | 1.26 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |

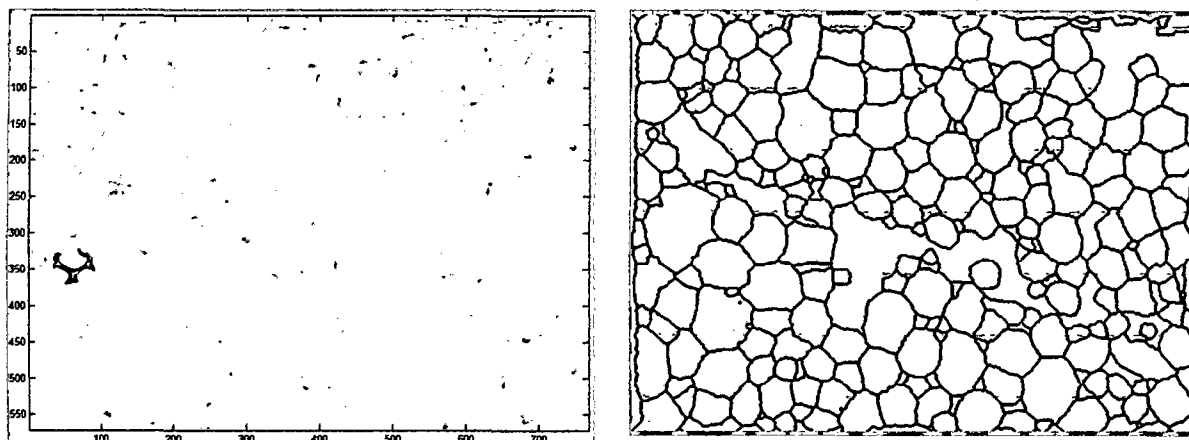
| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 137 | 141.75 | 13.43 | 16.75 | 11.17 | 39.11 | 1.16 | 1.50 | 0.80 | 0 | 1 | 0 |
| 138 | 2162.94 | 52.48 | 93.74 | 30.38 | 210.10 | 0.62 | 3.09 | 0.56 | 1 | 0 | 0 |
| 139 | 1968.70 | 50.07 | 70.25 | 38.27 | 193.67 | 0.66 | 1.84 | 0.71 | 1 | 0 | 0 |
| 140 | 1874.20 | 48.85 | 70.70 | 36.69 | 182.28 | 0.71 | 1.93 | 0.69 | 0 | 1 | 0 |
| 141 | 120.75 | 12.40 | 23.88 | 7.62 | 49.62 | 0.62 | 3.14 | 0.52 | 0 | 0 | 1 |
| 142 | 5533.36 | 83.94 | 98.52 | 73.38 | 294.26 | 0.80 | 1.34 | 0.85 | 1 | 0 | 0 |
| 143 | 1123.47 | 37.82 | 42.64 | 40.35 | 141.37 | 0.71 | 1.06 | 0.89 | 0 | 1 | 0 |
| 144 | 2971.42 | 61.51 | 64.75 | 59.50 | 206.40 | 0.88 | 1.09 | 0.95 | 1 | 0 | 0 |
| 145 | 13544.65 | 131.32 | 143.74 | 122.30 | 461.32 | 0.80 | 1.18 | 0.91 | 1 | 0 | 0 |
| 146 | 9749.00 | 111.41 | 135.24 | 95.32 | 399.85 | 0.77 | 1.42 | 0.82 | 1 | 0 | 0 |
| 147 | 797.98 | 31.88 | 40.23 | 29.46 | 116.00 | 0.75 | 1.37 | 0.79 | 0 | 1 | 0 |
| 148 | 3622.41 | 67.91 | 90.98 | 53.47 | 257.60 | 0.69 | 1.70 | 0.75 | 1 | 0 | 0 |
| 149 | 9402.51 | 109.42 | 129.36 | 95.59 | 388.00 | 0.78 | 1.35 | 0.85 | 1 | 0 | 0 |
| 150 | 713.98 | 30.15 | 34.03 | 28.74 | 101.14 | 0.88 | 1.18 | 0.89 | 0 | 1 | 0 |
| 151 | 5974.35 | 87.22 | 99.63 | 79.86 | 311.02 | 0.78 | 1.25 | 0.88 | 1 | 0 | 0 |
| 152 | 12515.68 | 126.24 | 137.03 | 118.43 | 441.09 | 0.81 | 1.16 | 0.92 | 1 | 0 | 0 |
| 153 | 1716.71 | 46.75 | 149.24 | 20.37 | 344.90 | 0.18 | 7.33 | 0.31 | 0 | 0 | 1 |
| 154 | 9444.51 | 109.66 | 126.76 | 95.63 | 375.27 | 0.84 | 1.33 | 0.87 | 1 | 0 | 0 |
| 155 | 7381.31 | 96.94 | 115.13 | 90.79 | 362.31 | 0.71 | 1.27 | 0.84 | 1 | 0 | 0 |
| 156 | 3018.67 | 62.00 | 74.76 | 54.92 | 217.70 | 0.80 | 1.36 | 0.83 | 1 | 0 | 0 |
| 157 | 3968.90 | 71.09 | 161.18 | 34.63 | 354.71 | 0.40 | 4.66 | 0.44 | 0 | 1 | 0 |
| 158 | 2488.44 | 56.29 | 78.37 | 44.56 | 219.83 | 0.65 | 1.76 | 0.72 | 1 | 0 | 0 |
| 159 | 3417.66 | 65.97 | 76.37 | 58.36 | 225.52 | 0.84 | 1.31 | 0.86 | 1 | 0 | 0 |
| 160 | 12552.43 | 126.42 | 157.98 | 102.55 | 460.76 | 0.74 | 1.54 | 0.80 | 1 | 0 | 0 |
| 161 | 17734.05 | 150.27 | 163.71 | 140.13 | 522.56 | 0.82 | 1.17 | 0.92 | 1 | 0 | 0 |
| 162 | 29451.75 | 193.65 | 206.40 | 182.90 | 671.42 | 0.82 | 1.13 | 0.94 | 1 | 0 | 0 |
| 163 | 1254.72 | 39.97 | 52.72 | 32.36 | 140.26 | 0.80 | 1.63 | 0.76 | 0 | 1 | 0 |
| 164 | 12715.17 | 127.24 | 149.17 | 109.47 | 441.65 | 0.82 | 1.36 | 0.85 | 1 | 0 | 0 |
| 165 | 8478.53 | 103.90 | 127.56 | 86.05 | 368.79 | 0.78 | 1.48 | 0.81 | 1 | 0 | 0 |
| 166 | 976.48 | 35.26 | 46.36 | 32.10 | 133.77 | 0.69 | 1.44 | 0.76 | 0 | 1 | 0 |
| 167 | 12006.44 | 123.64 | 170.27 | 91.94 | 449.47 | 0.75 | 1.85 | 0.73 | 1 | 0 | 0 |
| 168 | 5465.11 | 83.42 | 102.12 | 69.52 | 291.34 | 0.81 | 1.47 | 0.82 | 1 | 0 | 0 |
| 169 | 1679.96 | 46.25 | 56.46 | 38.95 | 155.11 | 0.88 | 1.45 | 0.82 | 1 | 0 | 0 |
| 170 | 1443.71 | 42.87 | 65.59 | 28.79 | 157.01 | 0.74 | 2.28 | 0.65 | 1 | 0 | 0 |
| 171 | 4845.63 | 78.55 | 93.16 | 67.49 | 268.43 | 0.85 | 1.38 | 0.84 | 1 | 0 | 0 |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|-------|------|---|---|---|
| 172 | 2666.93 | 58.27 | 142.29 | 39.15 | 337.95 | 0.29 | 3.63 | | 0 | 1 | 0 |
| | | | | | | | | 0.41 | | | |
| 173 | 52.50 | 8.18 | 26.46 | 2.65 | 41.24 | 0.39 | 10.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.31 | | | |
| 174 | 3464.91 | 66.42 | 73.49 | 62.29 | 226.31 | 0.85 | 1.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 175 | 12111.44 | 124.18 | 139.49 | 112.52 | 433.59 | 0.81 | 1.24 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 176 | 3485.91 | 66.62 | 101.86 | 45.66 | 250.56 | 0.70 | 2.23 | | 0 | 0 | 1 |
| | | | | | | | | 0.65 | | | |
| 177 | 461.99 | 24.25 | 32.89 | 21.03 | 89.29 | 0.73 | 1.56 | | 0 | 1 | 0 |
| | | | | | | | | 0.74 | | | |
| 178 | 6278.84 | 89.41 | 105.11 | 77.94 | 308.56 | 0.83 | 1.35 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 179 | 4635.63 | 76.83 | 90.90 | 66.35 | 267.32 | 0.82 | 1.37 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 180 | 14998.87 | 138.19 | 165.26 | 118.77 | 494.74 | 0.77 | 1.39 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 181 | 5958.60 | 87.10 | 93.19 | 87.68 | 329.12 | 0.69 | 1.06 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 182 | 1889.95 | 49.05 | 87.94 | 30.09 | 199.92 | 0.59 | 2.92 | | 0 | 1 | 0 |
| | | | | | | | | 0.56 | | | |
| 183 | 63.00 | 8.96 | 10.58 | 7.94 | 22.91 | 1.51 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 184 | 7691.05 | 98.96 | 109.60 | 89.93 | 333.47 | 0.87 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 185 | 7607.06 | 98.42 | 109.55 | 90.16 | 338.28 | 0.84 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 186 | 5176.37 | 81.18 | 91.59 | 73.03 | 275.70 | 0.86 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 187 | 1296.72 | 40.63 | 57.08 | 32.38 | 159.14 | 0.64 | 1.76 | | 0 | 1 | 0 |
| | | | | | | | | 0.71 | | | |
| 188 | 1133.97 | 38.00 | 64.00 | 32.66 | 174.00 | 0.47 | 1.96 | | 0 | 1 | 0 |
| | | | | | | | | 0.59 | | | |
| 189 | 10111.24 | 113.46 | 144.04 | 90.89 | 395.26 | 0.81 | 1.58 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 190 | 10783.22 | 117.17 | 124.35 | 111.57 | 403.32 | 0.83 | 1.11 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 191 | 425.24 | 23.27 | 30.89 | 21.07 | 85.50 | 0.73 | 1.47 | | 0 | 1 | 0 |
| | | | | | | | | 0.75 | | | |
| 192 | 7386.56 | 96.98 | 158.13 | 63.99 | 389.57 | 0.61 | 2.47 | | 1 | 0 | 0 |
| | | | | | | | | 0.61 | | | |
| 193 | 8599.28 | 104.64 | 128.77 | 86.69 | 363.09 | 0.82 | 1.49 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 194 | 1958.20 | 49.93 | 64.53 | 45.74 | 205.06 | 0.59 | 1.41 | | 0 | 1 | 0 |
| | | | | | | | | 0.77 | | | |
| 195 | 1637.96 | 45.67 | 97.98 | 22.20 | 209.78 | 0.47 | 4.41 | | 0 | 0 | 1 |
| | | | | | | | | 0.47 | | | |
| 196 | 4987.37 | 79.69 | 84.84 | 75.37 | 263.62 | 0.90 | 1.13 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 197 | 314.99 | 20.03 | 22.22 | 18.97 | 62.03 | 1.03 | 1.17 | | 0 | 1 | 0 |
| | | | | | | | | 0.90 | | | |
| 198 | 2771.93 | 59.41 | 122.84 | 45.09 | 338.05 | 0.30 | 2.72 | | 0 | 1 | 0 |
| | | | | | | | | 0.48 | | | |
| 199 | 162.75 | 14.39 | 16.07 | 13.64 | 42.35 | 1.14 | 1.18 | | 0 | 1 | 0 |
| | | | | | | | | 0.90 | | | |
| 200 | 84.00 | 10.34 | 16.09 | 7.63 | 32.63 | 0.99 | 2.11 | | 0 | 1 | 0 |
| | | | | | | | | 0.64 | | | |
| 201 | 614.23 | 27.97 | 32.63 | 27.74 | 98.46 | 0.80 | 1.18 | | 0 | 1 | 0 |
| | | | | | | | | 0.86 | | | |
| 202 | 3785.15 | 69.42 | 74.98 | 65.51 | 232.23 | 0.88 | 1.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 203 | 5260.37 | 81.84 | 102.38 | 66.41 | 290.56 | 0.78 | 1.54 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 204 | 23745.14 | 173.88 | 186.04 | 165.74 | 614.30 | 0.79 | 1.12 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 205 | 9077.02 | 107.50 | 138.71 | 88.10 | 397.95 | 0.72 | 1.57 | | 1 | 0 | 0 |
| | | | | | | | | 0.78 | | | |
| 206 | 1443.71 | 42.87 | 59.40 | 34.99 | 156.46 | 0.74 | 1.70 | | 0 | 1 | 0 |
| | | | | | | | | 0.72 | | | |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 207 | 4362.64 | 74.53 | 102.61 | 54.75 | 264.63 | 0.78 | 1.87 | | 1 | 0 | 0 |
| | | | | | | | | 0.73 | | | |
| 208 | 5496.61 | 83.66 | 97.54 | 76.14 | 297.27 | 0.78 | 1.28 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 209 | 4278.64 | 73.81 | 87.21 | 64.49 | 258.38 | 0.81 | 1.35 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 210 | 1685.21 | 46.32 | 56.41 | 42.27 | 166.18 | 0.77 | 1.33 | | 0 | 0 | 1 |
| | | | | | | | | 0.82 | | | |
| 211 | 1039.47 | 36.38 | 46.52 | 29.65 | 124.61 | 0.84 | 1.57 | | 0 | 1 | 0 |
| | | | | | | | | 0.78 | | | |
| 212 | 7848.55 | 99.97 | 126.17 | 94.83 | 407.67 | 0.59 | 1.33 | | 0 | 1 | 0 |
| | | | | | | | | 0.79 | | | |
| 213 | 2645.93 | 58.04 | 66.93 | 50.99 | 193.67 | 0.89 | 1.31 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 214 | 13476.41 | 130.99 | 169.74 | 102.35 | 467.80 | 0.77 | 1.66 | | 1 | 0 | 0 |
| | | | | | | | | 0.77 | | | |
| 215 | 4929.62 | 79.22 | 88.60 | 72.27 | 271.90 | 0.84 | 1.23 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 216 | 2819.18 | 59.91 | 94.03 | 39.88 | 228.99 | 0.68 | 2.36 | | 1 | 0 | 0 |
| | | | | | | | | 0.64 | | | |
| 217 | 21713.44 | 166.27 | 182.37 | 155.19 | 594.31 | 0.77 | 1.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 218 | 3023.92 | 62.05 | 86.69 | 45.98 | 224.96 | 0.75 | 1.89 | | 0 | 1 | 0 |
| | | | | | | | | 0.72 | | | |
| 219 | 3643.41 | 68.11 | 75.95 | 62.79 | 233.57 | 0.84 | 1.21 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 220 | 20022.99 | 159.67 | 174.78 | 149.97 | 560.20 | 0.80 | 1.17 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 221 | 5181.62 | 81.22 | 89.01 | 76.40 | 275.47 | 0.86 | 1.17 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 222 | 461.99 | 24.25 | 35.88 | 18.91 | 89.29 | 0.73 | 1.90 | | 0 | 1 | 0 |
| | | | | | | | | 0.68 | | | |
| 223 | 17886.29 | 150.91 | 225.41 | 108.12 | 587.27 | 0.65 | 2.08 | | 1 | 0 | 0 |
| | | | | | | | | 0.67 | | | |
| 224 | 1742.96 | 47.11 | 67.16 | 38.09 | 191.54 | 0.60 | 1.76 | | 0 | 1 | 0 |
| | | | | | | | | 0.70 | | | |
| 225 | 6441.59 | 90.56 | 97.71 | 84.79 | 303.19 | 0.88 | 1.15 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 226 | 15865.09 | 142.13 | 159.16 | 128.87 | 495.29 | 0.81 | 1.24 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 227 | 47.25 | 7.76 | 13.93 | 5.01 | 24.81 | 0.96 | 2.78 | | 0 | 0 | 1 |
| | | | | | | | | 0.56 | | | |
| 228 | 4572.63 | 76.30 | 89.20 | 67.74 | 266.21 | 0.81 | 1.32 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 229 | 1511.96 | 43.88 | 71.95 | 28.33 | 172.89 | 0.64 | 2.54 | | 0 | 0 | 1 |
| | | | | | | | | 0.61 | | | |
| 230 | 3958.40 | 70.99 | 78.42 | 67.51 | 249.22 | 0.80 | 1.16 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 231 | 2157.69 | 52.41 | 58.23 | 47.71 | 172.89 | 0.91 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 232 | 12347.68 | 125.39 | 144.49 | 112.33 | 449.70 | 0.77 | 1.29 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 233 | 1181.22 | 38.78 | 62.96 | 25.93 | 152.10 | 0.64 | 2.43 | | 0 | 1 | 0 |
| | | | | | | | | 0.62 | | | |
| 234 | 24616.62 | 177.04 | 193.29 | 163.86 | 611.06 | 0.83 | 1.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 235 | 6704.08 | 92.39 | 153.94 | 61.38 | 385.45 | 0.57 | 2.51 | | 1 | 0 | 0 |
| | | | | | | | | 0.60 | | | |
| 236 | 8504.78 | 104.06 | 125.81 | 89.94 | 378.28 | 0.75 | 1.40 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 237 | 3953.15 | 70.95 | 82.91 | 63.76 | 250.43 | 0.79 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 238 | 404.24 | 22.69 | 32.02 | 19.94 | 88.18 | 0.65 | 1.61 | | 1 | 0 | 0 |
| | | | | | | | | 0.71 | | | |
| 239 | 18988.76 | 155.49 | 283.67 | 109.62 | 761.50 | 0.41 | 2.59 | | 0 | 1 | 0 |
| | | | | | | | | 0.55 | | | |
| 240 | 1433.21 | 42.72 | 54.38 | 35.35 | 152.10 | 0.78 | 1.54 | | 0 | 1 | 0 |
| | | | | | | | | 0.79 | | | |
| 241 | 435.74 | 23.55 | 26.81 | 22.60 | 78.23 | 0.89 | 1.19 | | 0 | 1 | 0 |
| | | | | | | | | 0.88 | | | |

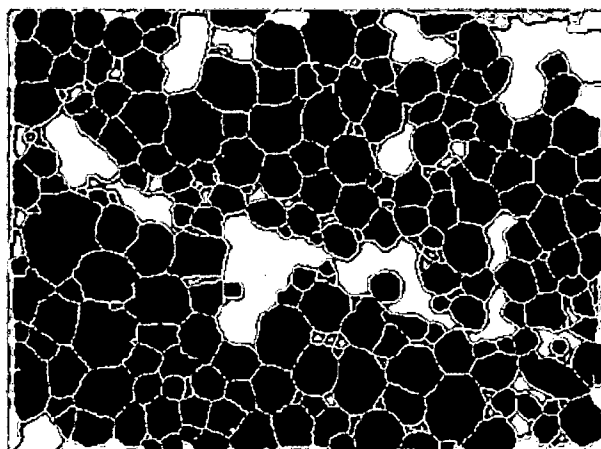
| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|---------|------|-------|------|---|---|---|
| 242 | 13471.16 | 130.97 | 153.03 | 116.98 | 477.75 | 0.74 | 1.31 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 243 | 2357.19 | 54.78 | 110.69 | 29.51 | 254.82 | 0.46 | 3.75 | | 0 | 0 | 1 |
| | | | | | | | | 0.49 | | | |
| 244 | 13733.65 | 132.24 | 146.60 | 120.05 | 456.97 | 0.83 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 245 | 14636.63 | 136.51 | 156.60 | 123.90 | 491.27 | 0.76 | 1.26 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 246 | 7764.55 | 99.43 | 127.48 | 81.78 | 355.27 | 0.77 | 1.56 | | 1 | 0 | 0 |
| | | | | | | | | 0.78 | | | |
| 247 | 4373.14 | 74.62 | 83.32 | 68.33 | 250.01 | 0.88 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 248 | 4472.89 | 75.47 | 109.16 | 55.98 | 287.64 | 0.68 | 1.95 | | 1 | 0 | 0 |
| | | | | | | | | 0.69 | | | |
| 249 | 1007.97 | 35.82 | 46.14 | 31.17 | 128.96 | 0.76 | 1.48 | | 0 | 1 | 0 |
| | | | | | | | | 0.78 | | | |
| 250 | 6893.07 | 93.68 | 101.49 | 88.08 | 322.31 | 0.83 | 1.15 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 251 | 1490.96 | 43.57 | 51.55 | 37.97 | 144.84 | 0.89 | 1.36 | | 0 | 1 | 0 |
| | | | | | | | | 0.85 | | | |
| 252 | 10814.72 | 117.34 | 164.62 | 88.63 | 468.91 | 0.62 | 1.86 | | 1 | 0 | 0 |
| | | | | | | | | 0.71 | | | |
| 253 | 7386.56 | 96.98 | 102.67 | 93.06 | 329.90 | 0.85 | 1.10 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 254 | 10394.73 | 115.04 | 157.20 | 104.08 | 565.37 | 0.41 | 1.51 | | 0 | 1 | 0 |
| | | | | | | | | 0.73 | | | |
| 255 | 829.48 | 32.50 | 171.41 | 10.22 | 307.91 | 0.11 | 16.77 | | 0 | 0 | 1 |
| | | | | | | | | 0.19 | | | |
| 256 | 14878.12 | 137.64 | 147.98 | 130.01 | 482.56 | 0.80 | 1.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 257 | 5197.37 | 81.35 | 112.32 | 60.84 | 303.52 | 0.71 | 1.85 | | 1 | 0 | 0 |
| | | | | | | | | 0.72 | | | |
| 258 | 3475.41 | 66.52 | 118.01 | 41.21 | 283.19 | 0.54 | 2.86 | | 1 | 0 | 0 |
| | | | | | | | | 0.56 | | | |
| 259 | 572.24 | 26.99 | 38.44 | 21.23 | 98.46 | 0.74 | 1.81 | | 0 | 1 | 0 |
| | | | | | | | | 0.70 | | | |
| 260 | 26196.83 | 182.63 | 563.59 | 108.13 | 1419.68 | 0.16 | 5.21 | | 0 | 0 | 1 |
| | | | | | | | | 0.32 | | | |
| 261 | 2351.94 | 54.72 | 60.35 | 52.20 | 190.99 | 0.81 | 1.16 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 262 | 7097.82 | 95.06 | 118.87 | 78.46 | 344.99 | 0.75 | 1.51 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 263 | 430.49 | 23.41 | 31.14 | 19.09 | 79.01 | 0.87 | 1.63 | | 0 | 1 | 0 |
| | | | | | | | | 0.75 | | | |
| 264 | 5223.62 | 81.55 | 147.21 | 66.88 | 408.92 | 0.39 | 2.20 | | 0 | 0 | 1 |
| | | | | | | | | 0.55 | | | |
| 265 | 9313.26 | 108.89 | 206.93 | 66.48 | 488.72 | 0.49 | 3.11 | | 0 | 0 | 1 |
| | | | | | | | | 0.53 | | | |
| 266 | 4294.39 | 73.94 | 93.22 | 60.50 | 267.32 | 0.76 | 1.54 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 267 | 393.74 | 22.39 | 25.25 | 20.69 | 72.53 | 0.94 | 1.22 | | 0 | 0 | 1 |
| | | | | | | | | 0.89 | | | |
| 268 | 31.50 | 6.33 | 9.54 | 4.58 | 15.65 | 1.62 | 2.08 | | 0 | 0 | 1 |
| | | | | | | | | 0.66 | | | |

Código: B9-11



a)

b)



c)

Figura A4. a) Imagen Original b) Imagen procesada c) Imagen segmentada y clasificada

Tabla A4. Parámetros de tamaño y forma y clasificación de elementos en micrografía B9-11

| Núm. | Árca | Deq | Ejemay | Ejemen | Pcr | Rcd | Elg | Comp | Célula | Espint | Elem No Rec |
|------|----------|--------|--------|--------|---------|------|-------|------|--------|--------|----------------|
| 1 | 7029.57 | 94.61 | 751.69 | 16.30 | 1428.55 | 0.04 | 46.12 | | 0 | 0 | 1 |
| | | | | | | | | 0.13 | | | |
| 2 | 7449.56 | 97.39 | 620.25 | 24.18 | 1194.52 | 0.07 | 25.66 | | 0 | 0 | 1 |
| | | | | | | | | 0.16 | | | |
| 3 | 246.74 | 17.72 | 29.16 | 12.48 | 67.17 | 0.69 | 2.34 | | 0 | 0 | 1 |
| | | | | | | | | 0.61 | | | |
| 4 | 2446.44 | 55.81 | 85.48 | 39.82 | 221.40 | 0.63 | 2.15 | | 0 | 1 | 0 |
| | | | | | | | | 0.65 | | | |
| 5 | 12358.18 | 125.44 | 142.38 | 119.03 | 478.31 | 0.68 | 1.20 | | 0 | 1 | 0 |
| | | | | | | | | 0.88 | | | |
| 6 | 2110.45 | 51.84 | 58.61 | 46.92 | 175.57 | 0.86 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 7 | 1721.96 | 46.82 | 62.65 | 36.92 | 167.52 | 0.77 | 1.70 | | 0 | 1 | 0 |
| | | | | | | | | 0.75 | | | |
| 8 | 11717.70 | 122.15 | 156.57 | 103.92 | 490.39 | 0.61 | 1.51 | | 1 | 0 | 0 |
| | | | | | | | | 0.78 | | | |
| 9 | 4950.62 | 79.39 | 97.14 | 66.20 | 271.90 | 0.84 | 1.47 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 10 | 14143.14 | 134.19 | 142.82 | 128.40 | 465.34 | 0.82 | 1.11 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 11 | 3270.67 | 64.53 | 106.69 | 44.86 | 282.96 | 0.51 | 2.38 | | 0 | 1 | 0 |
| | | | | | | | | 0.60 | | | |
| 12 | 8174.04 | 102.02 | 140.37 | 78.03 | 379.29 | 0.71 | 1.80 | | 1 | 0 | 0 |
| | | | | | | | | 0.73 | | | |
| 13 | 17839.04 | 150.71 | 229.19 | 104.13 | 631.20 | 0.56 | 2.20 | | 1 | 0 | 0 |
| | | | | | | | | 0.66 | | | |
| 14 | 11008.97 | 118.39 | 126.07 | 114.00 | 420.54 | 0.78 | 1.11 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 15 | 1842.70 | 48.44 | 60.89 | 39.67 | 167.75 | 0.82 | 1.54 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 16 | 6536.08 | 91.22 | 103.14 | 82.25 | 317.04 | 0.82 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 17 | 43001.65 | 233.99 | 273.78 | 205.27 | 907.78 | 0.66 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 18 | 698.23 | 29.82 | 31.29 | 28.80 | 93.87 | 1.00 | 1.09 | | 0 | 1 | 0 |
| | | | | | | | | 0.95 | | | |
| 19 | 493.49 | 25.07 | 38.21 | 20.11 | 99.80 | 0.62 | 1.90 | | 0 | 1 | 0 |
| | | | | | | | | 0.66 | | | |
| 20 | 4793.13 | 78.12 | 106.06 | 60.46 | 292.78 | 0.70 | 1.75 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 21 | 13707.40 | 132.11 | 144.21 | 124.70 | 472.94 | 0.77 | 1.16 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 22 | 1002.72 | 35.73 | 76.36 | 25.89 | 183.17 | 0.38 | 2.95 | | 0 | 1 | 0 |
| | | | | | | | | 0.47 | | | |
| 23 | 11707.20 | 122.09 | 135.86 | 112.60 | 433.50 | 0.78 | 1.21 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 24 | 52.50 | 8.18 | 14.00 | 5.21 | 24.81 | 1.07 | 2.69 | | 0 | 0 | 1 |
| | | | | | | | | 0.58 | | | |
| 25 | 3044.92 | 62.26 | 80.83 | 50.21 | 230.33 | 0.72 | 1.61 | | 1 | 0 | 0 |
| | | | | | | | | 0.77 | | | |
| 26 | 26952.81 | 185.25 | 264.91 | 146.74 | 816.13 | 0.51 | 1.81 | | 0 | 1 | 0 |
| | | | | | | | | 0.70 | | | |
| 27 | 3055.42 | 62.37 | 84.84 | 50.51 | 234.46 | 0.70 | 1.68 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 28 | 8021.79 | 101.06 | 108.30 | 96.20 | 351.80 | 0.81 | 1.13 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 29 | 12095.69 | 124.10 | 147.80 | 106.62 | 450.48 | 0.75 | 1.39 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 30 | 3202.42 | 63.85 | 85.87 | 54.64 | 250.10 | 0.64 | 1.57 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 31 | 3485.91 | 66.62 | 79.92 | 59.29 | 238.25 | 0.77 | 1.35 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |

| | | | | | | | | | | | |
|----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 32 | 425.24 | 23.27 | 29.93 | 18.90 | 76.89 | 0.90 | 1.58 | 0.78 | 0 | 1 | 0 |
| 33 | 15.75 | 4.48 | 7.94 | 2.65 | 9.17 | 2.36 | 3.00 | 0.56 | 0 | 0 | 1 |
| 34 | 4525.38 | 75.91 | 226.45 | 39.39 | 439.65 | 0.29 | 5.75 | 0.34 | 0 | 0 | 1 |
| 35 | 1506.71 | 43.80 | 69.68 | 30.06 | 179.70 | 0.59 | 2.32 | 0.63 | 0 | 1 | 0 |
| 36 | 3202.42 | 63.85 | 89.08 | 47.31 | 227.97 | 0.77 | 1.88 | 0.72 | 1 | 0 | 0 |
| 37 | 1700.96 | 46.54 | 60.02 | 38.12 | 165.95 | 0.78 | 1.57 | 0.78 | 1 | 0 | 0 |
| 38 | 94.50 | 10.97 | 19.78 | 7.21 | 40.46 | 0.73 | 2.74 | 0.55 | 0 | 0 | 1 |
| 39 | 9360.51 | 109.17 | 123.79 | 101.05 | 390.59 | 0.77 | 1.23 | 0.88 | 1 | 0 | 0 |
| 40 | 5234.12 | 81.64 | 85.19 | 84.61 | 302.50 | 0.72 | 1.01 | 0.96 | 1 | 0 | 0 |
| 41 | 27593.29 | 187.44 | 198.53 | 183.10 | 700.82 | 0.71 | 1.08 | 0.94 | 1 | 0 | 0 |
| 42 | 7953.55 | 100.63 | 112.69 | 91.18 | 345.55 | 0.84 | 1.24 | 0.89 | 1 | 0 | 0 |
| 43 | 20679.22 | 162.26 | 180.51 | 147.48 | 581.90 | 0.77 | 1.22 | 0.90 | 1 | 0 | 0 |
| 44 | 19177.76 | 156.26 | 174.96 | 141.83 | 561.44 | 0.76 | 1.23 | 0.89 | 1 | 0 | 0 |
| 45 | 362.24 | 21.48 | 30.01 | 16.85 | 74.99 | 0.81 | 1.78 | 0.72 | 0 | 1 | 0 |
| 46 | 593.23 | 27.48 | 37.71 | 21.85 | 98.46 | 0.77 | 1.73 | 0.73 | 0 | 1 | 0 |
| 47 | 6441.59 | 90.56 | 115.34 | 72.18 | 318.61 | 0.80 | 1.60 | 0.79 | 1 | 0 | 0 |
| 48 | 15602.60 | 140.95 | 289.99 | 86.82 | 818.71 | 0.29 | 3.34 | 0.49 | 0 | 1 | 0 |
| 49 | 1900.45 | 49.19 | 64.88 | 39.14 | 172.66 | 0.80 | 1.66 | 0.76 | 1 | 0 | 0 |
| 50 | 7827.55 | 99.83 | 104.64 | 97.76 | 346.43 | 0.82 | 1.07 | 0.95 | 1 | 0 | 0 |
| 51 | 12841.17 | 127.87 | 137.90 | 119.58 | 441.09 | 0.83 | 1.15 | 0.93 | 1 | 0 | 0 |
| 52 | 10252.99 | 114.26 | 144.88 | 93.04 | 419.61 | 0.73 | 1.56 | 0.79 | 1 | 0 | 0 |
| 53 | 1091.97 | 37.29 | 54.27 | 31.54 | 160.48 | 0.53 | 1.72 | 0.69 | 0 | 0 | 1 |
| 54 | 9817.25 | 111.80 | 114.84 | 109.63 | 377.16 | 0.87 | 1.05 | 0.97 | 1 | 0 | 0 |
| 55 | 1653.71 | 45.89 | 68.95 | 35.26 | 178.81 | 0.65 | 1.96 | 0.67 | 0 | 1 | 0 |
| 56 | 524.99 | 25.85 | 35.28 | 20.03 | 90.08 | 0.81 | 1.76 | 0.73 | 0 | 1 | 0 |
| 57 | 545.99 | 26.37 | 37.23 | 19.34 | 88.18 | 0.88 | 1.92 | 0.71 | 0 | 1 | 0 |
| 58 | 8956.27 | 106.79 | 131.01 | 88.19 | 368.23 | 0.83 | 1.49 | 0.82 | 1 | 0 | 0 |
| 59 | 15975.34 | 142.62 | 155.01 | 135.29 | 507.47 | 0.78 | 1.15 | 0.92 | 1 | 0 | 0 |
| 60 | 31.50 | 6.33 | 9.17 | 5.07 | 15.65 | 1.62 | 1.81 | 0.69 | 0 | 0 | 1 |
| 61 | 4031.90 | 71.65 | 87.37 | 61.55 | 257.37 | 0.76 | 1.42 | 0.82 | 1 | 0 | 0 |
| 62 | 782.23 | 31.56 | 47.93 | 21.54 | 113.55 | 0.76 | 2.23 | 0.66 | 0 | 0 | 1 |
| 63 | 12263.69 | 124.96 | 133.63 | 119.02 | 447.01 | 0.77 | 1.12 | 0.94 | 1 | 0 | 0 |
| 64 | 866.23 | 33.21 | 70.07 | 17.05 | 150.21 | 0.48 | 4.11 | 0.47 | 0 | 0 | 1 |
| 65 | 6877.32 | 93.58 | 105.84 | 85.35 | 336.71 | 0.76 | 1.24 | 0.88 | 1 | 0 | 0 |
| 66 | 15581.60 | 140.85 | 156.25 | 129.54 | 491.27 | 0.81 | 1.21 | 0.90 | 1 | 0 | 0 |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 67 | 21681.95 | 166.15 | 188.54 | 150.05 | 604.81 | 0.74 | 1.26 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 68 | 110.25 | 11.85 | 14.86 | 9.93 | 33.98 | 1.20 | 1.50 | | 0 | 1 | 0 |
| | | | | | | | | 0.80 | | | |
| 69 | 5423.11 | 83.10 | 97.39 | 72.02 | 294.03 | 0.79 | 1.35 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 70 | 4562.13 | 76.21 | 103.08 | 58.64 | 280.84 | 0.73 | 1.76 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 71 | 6992.82 | 94.36 | 105.28 | 85.75 | 324.30 | 0.84 | 1.23 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 72 | 7265.81 | 96.18 | 126.13 | 76.43 | 358.74 | 0.71 | 1.65 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 73 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.69 | | | |
| 74 | 1627.46 | 45.52 | 56.17 | 37.85 | 155.11 | 0.85 | 1.48 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 75 | 5402.11 | 82.93 | 99.82 | 70.49 | 295.70 | 0.78 | 1.42 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 76 | 1506.71 | 43.80 | 51.31 | 41.74 | 162.61 | 0.72 | 1.23 | | 0 | 1 | 0 |
| | | | | | | | | 0.85 | | | |
| 77 | 9754.25 | 111.44 | 123.89 | 102.64 | 391.70 | 0.80 | 1.21 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 78 | 120.75 | 12.40 | 15.07 | 10.76 | 35.87 | 1.18 | 1.40 | | 0 | 1 | 0 |
| | | | | | | | | 0.82 | | | |
| 79 | 23671.64 | 173.61 | 271.01 | 116.75 | 724.05 | 0.57 | 2.32 | | 0 | 1 | 0 |
| | | | | | | | | 0.64 | | | |
| 80 | 7129.32 | 95.28 | 115.76 | 87.03 | 376.05 | 0.63 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 81 | 2724.68 | 58.90 | 63.55 | 55.81 | 195.57 | 0.90 | 1.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 82 | 4982.12 | 79.65 | 98.75 | 66.00 | 281.95 | 0.79 | 1.50 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 83 | 52.50 | 8.18 | 10.83 | 7.50 | 23.47 | 1.20 | 1.44 | | 0 | 0 | 1 |
| | | | | | | | | 0.75 | | | |
| 84 | 3496.41 | 66.72 | 67.61 | 66.78 | 221.72 | 0.89 | 1.01 | | 1 | 0 | 0 |
| | | | | | | | | 0.99 | | | |
| 85 | 28071.03 | 189.05 | 214.29 | 171.89 | 714.33 | 0.69 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 86 | 78.75 | 10.01 | 26.25 | 4.74 | 47.72 | 0.43 | 5.53 | | 0 | 0 | 1 |
| | | | | | | | | 0.38 | | | |
| 87 | 16846.82 | 146.46 | 171.81 | 133.02 | 545.05 | 0.71 | 1.29 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 88 | 640.48 | 28.56 | 53.12 | 16.88 | 119.24 | 0.57 | 3.15 | | 0 | 1 | 0 |
| | | | | | | | | 0.54 | | | |
| 89 | 2997.67 | 61.78 | 83.62 | 49.70 | 241.17 | 0.65 | 1.68 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 90 | 2777.18 | 59.46 | 65.27 | 56.79 | 206.08 | 0.82 | 1.15 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 91 | 12977.67 | 128.54 | 140.55 | 119.15 | 450.81 | 0.80 | 1.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 92 | 2036.95 | 50.93 | 58.95 | 46.15 | 175.11 | 0.83 | 1.28 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 93 | 42.00 | 7.31 | 21.17 | 2.65 | 32.08 | 0.51 | 8.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.35 | | | |
| 94 | 5995.35 | 87.37 | 90.67 | 87.28 | 316.61 | 0.75 | 1.04 | | 1 | 0 | 0 |
| | | | | | | | | 0.96 | | | |
| 95 | 1679.96 | 46.25 | 118.42 | 20.68 | 247.55 | 0.34 | 5.73 | | 0 | 1 | 0 |
| | | | | | | | | 0.39 | | | |
| 96 | 813.73 | 32.19 | 68.04 | 17.11 | 149.98 | 0.45 | 3.98 | | 0 | 1 | 0 |
| | | | | | | | | 0.47 | | | |
| 97 | 866.23 | 33.21 | 63.14 | 22.29 | 144.84 | 0.52 | 2.83 | | 0 | 1 | 0 |
| | | | | | | | | 0.53 | | | |
| 98 | 614.23 | 27.97 | 38.27 | 24.06 | 108.96 | 0.65 | 1.59 | | 0 | 0 | 1 |
| | | | | | | | | 0.73 | | | |
| 99 | 3491.16 | 66.67 | 75.31 | 62.62 | 254.91 | 0.68 | 1.20 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 100 | 7481.06 | 97.60 | 104.22 | 95.23 | 347.91 | 0.78 | 1.09 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 101 | 5386.36 | 82.81 | 96.90 | 75.29 | 302.64 | 0.74 | 1.29 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |

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|-----|-----------|--------|--------|--------|---------|------|-------|------|---|---|---|
| 102 | 5391.61 | 82.85 | 106.27 | 66.69 | 305.65 | 0.73 | 1.59 | | 1 | 0 | 0 |
| | | | | | | | | 0.78 | | | |
| 103 | 126.00 | 12.67 | 16.53 | 10.23 | 38.56 | 1.06 | 1.62 | | 0 | 1 | 0 |
| | | | | | | | | 0.77 | | | |
| 104 | 7407.56 | 97.12 | 104.85 | 90.94 | 327.54 | 0.87 | 1.15 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 105 | 31.50 | 6.33 | 15.87 | 2.65 | 22.91 | 0.75 | 6.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.40 | | | |
| 106 | 22280.43 | 168.43 | 188.10 | 153.50 | 598.24 | 0.78 | 1.23 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 107 | 152.25 | 13.92 | 16.29 | 12.30 | 40.46 | 1.17 | 1.32 | | 0 | 1 | 0 |
| | | | | | | | | 0.85 | | | |
| 108 | 1380.71 | 41.93 | 72.52 | 31.51 | 184.51 | 0.51 | 2.30 | | 0 | 1 | 0 |
| | | | | | | | | 0.58 | | | |
| 109 | 36.75 | 6.84 | 18.52 | 2.65 | 27.50 | 0.61 | 7.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.37 | | | |
| 110 | 7948.30 | 100.60 | 105.97 | 99.56 | 384.76 | 0.67 | 1.06 | | 1 | 0 | 0 |
| | | | | | | | | 0.95 | | | |
| 111 | 10825.22 | 117.40 | 149.01 | 104.43 | 605.50 | 0.37 | 1.43 | | 0 | 1 | 0 |
| | | | | | | | | 0.79 | | | |
| 112 | 6593.83 | 91.63 | 104.19 | 81.86 | 327.22 | 0.77 | 1.27 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 113 | 7360.31 | 96.81 | 175.99 | 55.09 | 396.74 | 0.59 | 3.19 | | 1 | 0 | 0 |
| | | | | | | | | 0.55 | | | |
| 114 | 11092.97 | 118.84 | 135.45 | 106.17 | 421.97 | 0.78 | 1.28 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 115 | 14962.12 | 138.02 | 143.99 | 134.47 | 519.32 | 0.70 | 1.07 | | 1 | 0 | 0 |
| | | | | | | | | 0.96 | | | |
| 116 | 173.25 | 14.85 | 23.22 | 10.15 | 49.62 | 0.88 | 2.29 | | 0 | 1 | 0 |
| | | | | | | | | 0.64 | | | |
| 117 | 100697.68 | 358.07 | 822.02 | 347.12 | 2933.43 | 0.15 | 2.37 | | 0 | 1 | 0 |
| | | | | | | | | 0.44 | | | |
| 118 | 241.49 | 17.54 | 34.94 | 12.00 | 80.36 | 0.47 | 2.91 | | 0 | 0 | 1 |
| | | | | | | | | 0.50 | | | |
| 119 | 4782.63 | 78.03 | 80.34 | 78.12 | 268.34 | 0.83 | 1.03 | | 1 | 0 | 0 |
| | | | | | | | | 0.97 | | | |
| 120 | 1737.71 | 47.04 | 52.16 | 43.56 | 154.23 | 0.92 | 1.20 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 121 | 5407.36 | 82.98 | 103.63 | 69.85 | 297.50 | 0.77 | 1.48 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 122 | 12090.44 | 124.07 | 138.48 | 117.59 | 456.97 | 0.73 | 1.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 123 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | | 0 | 1 | 0 |
| | | | | | | | | 0.69 | | | |
| 124 | 535.49 | 26.11 | 37.14 | 20.16 | 93.87 | 0.76 | 1.84 | | 0 | 1 | 0 |
| | | | | | | | | 0.70 | | | |
| 125 | 2042.20 | 50.99 | 70.85 | 48.46 | 223.62 | 0.51 | 1.46 | | 0 | 1 | 0 |
| | | | | | | | | 0.72 | | | |
| 126 | 7050.57 | 94.75 | 114.38 | 79.81 | 329.67 | 0.82 | 1.43 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 127 | 19366.75 | 157.03 | 178.01 | 148.04 | 596.11 | 0.68 | 1.20 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 128 | 540.74 | 26.24 | 30.93 | 24.98 | 90.40 | 0.83 | 1.24 | | 0 | 1 | 0 |
| | | | | | | | | 0.85 | | | |
| 129 | 13198.16 | 129.63 | 139.47 | 122.72 | 454.84 | 0.80 | 1.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 130 | 16773.32 | 146.14 | 162.03 | 133.77 | 512.51 | 0.80 | 1.21 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 131 | 22154.43 | 167.95 | 188.74 | 151.13 | 594.31 | 0.79 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 132 | 10546.98 | 115.88 | 122.75 | 114.45 | 406.14 | 0.80 | 1.07 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 133 | 11974.94 | 123.48 | 133.41 | 115.52 | 419.75 | 0.85 | 1.15 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 134 | 2346.69 | 54.66 | 195.68 | 17.49 | 402.34 | 0.18 | 11.19 | | 0 | 0 | 1 |
| | | | | | | | | 0.28 | | | |
| 135 | 110.25 | 11.85 | 21.97 | 7.40 | 45.04 | 0.68 | 2.97 | | 1 | 0 | 0 |
| | | | | | | | | 0.54 | | | |
| 136 | 3947.90 | 70.90 | 118.95 | 44.52 | 288.89 | 0.59 | 2.67 | | 0 | 0 | 1 |
| | | | | | | | | 0.60 | | | |

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|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 137 | 11785.95 | 122.50 | 129.98 | 118.06 | 438.87 | 0.77 | 1.10 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 138 | 1296.72 | 40.63 | 65.40 | 30.02 | 172.66 | 0.55 | 2.18 | | 0 | 1 | 0 |
| | | | | | | | | 0.62 | | | |
| 139 | 797.98 | 31.88 | 38.02 | 28.19 | 107.39 | 0.87 | 1.35 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 140 | 2950.42 | 61.29 | 71.69 | 55.79 | 226.86 | 0.72 | 1.29 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 141 | 6436.34 | 90.53 | 98.74 | 83.96 | 316.15 | 0.81 | 1.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 142 | 7171.32 | 95.56 | 102.87 | 91.58 | 339.39 | 0.78 | 1.12 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 143 | 3160.42 | 63.43 | 67.74 | 60.92 | 214.46 | 0.86 | 1.11 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 144 | 14878.12 | 137.64 | 150.76 | 126.57 | 469.14 | 0.85 | 1.19 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 145 | 598.48 | 27.60 | 42.26 | 19.60 | 100.91 | 0.74 | 2.16 | | 0 | 1 | 0 |
| | | | | | | | | 0.65 | | | |
| 146 | 4824.63 | 78.38 | 102.62 | 63.35 | 281.62 | 0.76 | 1.62 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 147 | 10851.47 | 117.54 | 123.50 | 114.40 | 416.28 | 0.79 | 1.08 | | 1 | 0 | 0 |
| | | | | | | | | 0.95 | | | |
| 148 | 15917.59 | 142.36 | 148.46 | 138.29 | 491.82 | 0.83 | 1.07 | | 1 | 0 | 0 |
| | | | | | | | | 0.96 | | | |
| 149 | 21461.45 | 165.30 | 177.99 | 156.04 | 613.88 | 0.72 | 1.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 150 | 2918.93 | 60.96 | 71.94 | 55.37 | 223.95 | 0.73 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 151 | 16006.84 | 142.76 | 165.04 | 126.80 | 530.38 | 0.72 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 152 | 866.23 | 33.21 | 35.76 | 32.02 | 106.84 | 0.95 | 1.12 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 153 | 1128.72 | 37.91 | 40.93 | 37.87 | 133.77 | 0.79 | 1.08 | | 0 | 1 | 0 |
| | | | | | | | | 0.93 | | | |
| 154 | 3139.42 | 63.22 | 78.30 | 56.61 | 233.34 | 0.72 | 1.38 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 155 | 8273.79 | 102.64 | 133.68 | 83.66 | 379.29 | 0.72 | 1.60 | | 1 | 0 | 0 |
| | | | | | | | | 0.77 | | | |
| 156 | 866.23 | 33.21 | 70.79 | 22.48 | 157.24 | 0.44 | 3.15 | | 0 | 1 | 0 |
| | | | | | | | | 0.47 | | | |
| 157 | 1233.72 | 39.63 | 57.40 | 33.27 | 162.94 | 0.58 | 1.73 | | 0 | 1 | 0 |
| | | | | | | | | 0.69 | | | |
| 158 | 1238.97 | 39.72 | 42.07 | 38.96 | 130.86 | 0.91 | 1.08 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 159 | 7318.31 | 96.53 | 113.87 | 82.31 | 332.13 | 0.83 | 1.38 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 160 | 934.48 | 34.49 | 45.54 | 26.91 | 120.58 | 0.81 | 1.69 | | 0 | 1 | 0 |
| | | | | | | | | 0.76 | | | |
| 161 | 955.48 | 34.88 | 47.04 | 27.90 | 123.82 | 0.78 | 1.69 | | 0 | 1 | 0 |
| | | | | | | | | 0.74 | | | |
| 162 | 15387.36 | 139.97 | 145.33 | 135.68 | 471.04 | 0.87 | 1.07 | | 1 | 0 | 0 |
| | | | | | | | | 0.96 | | | |
| 163 | 52.50 | 8.18 | 10.74 | 6.88 | 21.57 | 1.42 | 1.56 | | 0 | 1 | 0 |
| | | | | | | | | 0.76 | | | |
| 164 | 3496.41 | 66.72 | 75.99 | 59.95 | 222.51 | 0.89 | 1.27 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 165 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | | 1 | 0 | 0 |
| | | | | | | | | 0.69 | | | |
| 166 | 556.49 | 26.62 | 31.20 | 25.30 | 91.19 | 0.84 | 1.23 | | 0 | 1 | 0 |
| | | | | | | | | 0.85 | | | |
| 167 | 22028.44 | 167.47 | 198.56 | 144.01 | 590.05 | 0.80 | 1.38 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 168 | 12515.68 | 126.24 | 157.97 | 104.88 | 469.47 | 0.71 | 1.51 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 169 | 12484.18 | 126.08 | 135.79 | 118.60 | 433.04 | 0.84 | 1.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 170 | 1007.97 | 35.82 | 41.46 | 35.14 | 130.30 | 0.75 | 1.18 | | 0 | 1 | 0 |
| | | | | | | | | 0.86 | | | |
| 171 | 13476.41 | 130.99 | 155.39 | 114.37 | 481.09 | 0.73 | 1.36 | | 1 | 0 | 0 |
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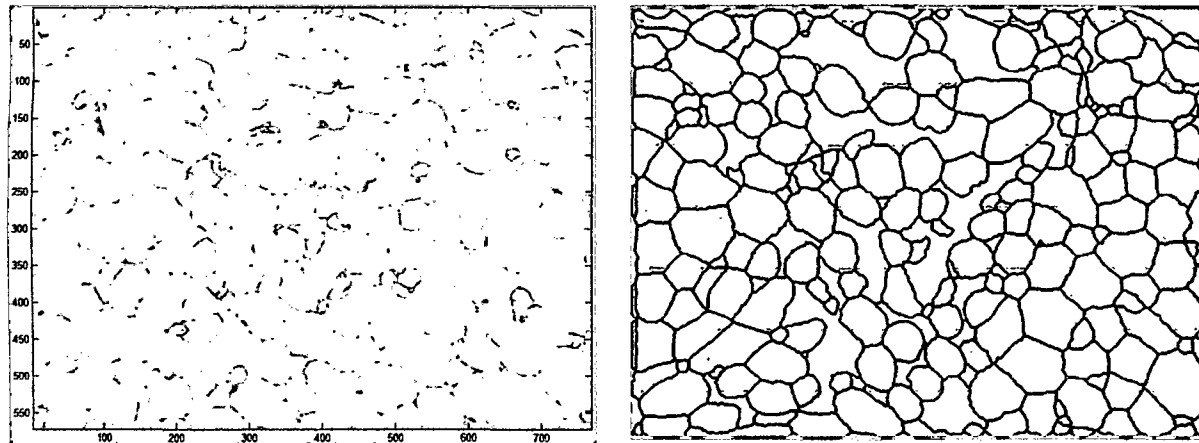
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|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 172 | 220.49 | 16.76 | 39.42 | 8.34 | 79.01 | 0.44 | 4.73 | | 0 | 0 | 1 |
| | | | | | | | | 0.43 | | | |
| 173 | 461.99 | 24.25 | 38.31 | 17.32 | 91.42 | 0.69 | 2.21 | | 0 | 1 | 0 |
| | | | | | | | | 0.63 | | | |
| 174 | 755.98 | 31.02 | 32.90 | 30.88 | 102.25 | 0.91 | 1.07 | | 0 | 1 | 0 |
| | | | | | | | | 0.94 | | | |
| 175 | 866.23 | 33.21 | 68.40 | 22.72 | 158.59 | 0.43 | 3.01 | | 0 | 1 | 0 |
| | | | | | | | | 0.49 | | | |
| 176 | 682.48 | 29.48 | 47.76 | 23.08 | 119.47 | 0.60 | 2.07 | | 0 | 1 | 0 |
| | | | | | | | | 0.62 | | | |
| 177 | 3207.67 | 63.91 | 85.16 | 49.50 | 230.89 | 0.76 | 1.72 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 178 | 572.24 | 26.99 | 39.61 | 19.48 | 97.11 | 0.76 | 2.03 | | 0 | 1 | 0 |
| | | | | | | | | 0.68 | | | |
| 179 | 656.23 | 28.91 | 37.31 | 23.57 | 97.90 | 0.86 | 1.58 | | 0 | 1 | 0 |
| | | | | | | | | 0.77 | | | |
| 180 | 14888.62 | 137.68 | 146.41 | 130.92 | 458.86 | 0.89 | 1.12 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 181 | 7948.30 | 100.60 | 109.70 | 93.91 | 350.13 | 0.81 | 1.17 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 182 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.69 | | | |
| 183 | 5953.35 | 87.06 | 98.43 | 79.31 | 306.20 | 0.80 | 1.24 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 184 | 12615.43 | 126.74 | 157.38 | 104.26 | 451.60 | 0.78 | 1.51 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 185 | 7607.06 | 98.42 | 108.04 | 95.53 | 357.82 | 0.75 | 1.13 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 186 | 1412.21 | 42.40 | 56.47 | 32.95 | 146.28 | 0.83 | 1.71 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 187 | 388.49 | 22.24 | 39.83 | 15.44 | 91.42 | 0.58 | 2.58 | | 0 | 1 | 0 |
| | | | | | | | | 0.56 | | | |
| 188 | 5942.85 | 86.99 | 89.99 | 84.72 | 288.10 | 0.90 | 1.06 | | 1 | 0 | 0 |
| | | | | | | | | 0.97 | | | |
| 189 | 2488.44 | 56.29 | 66.42 | 49.90 | 195.57 | 0.82 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 190 | 5606.86 | 84.49 | 101.78 | 76.39 | 314.35 | 0.71 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 191 | 13009.17 | 128.70 | 192.06 | 100.86 | 594.86 | 0.46 | 1.90 | | 0 | 1 | 0 |
| | | | | | | | | 0.67 | | | |
| 192 | 535.49 | 26.11 | 33.19 | 24.32 | 95.22 | 0.74 | 1.36 | | 0 | 1 | 0 |
| | | | | | | | | 0.79 | | | |
| 193 | 561.74 | 26.74 | 38.38 | 21.95 | 100.35 | 0.70 | 1.75 | | 0 | 1 | 0 |
| | | | | | | | | 0.70 | | | |
| 194 | 21025.71 | 163.62 | 243.63 | 133.73 | 720.26 | 0.51 | 1.82 | | 0 | 1 | 0 |
| | | | | | | | | 0.67 | | | |
| 195 | 671.98 | 29.25 | 36.91 | 25.41 | 101.70 | 0.82 | 1.45 | | 0 | 1 | 0 |
| | | | | | | | | 0.79 | | | |
| 196 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | | 0 | 1 | 0 |
| | | | | | | | | 0.69 | | | |
| 197 | 346.49 | 21.00 | 33.45 | 17.00 | 84.15 | 0.61 | 1.97 | | 0 | 1 | 0 |
| | | | | | | | | 0.63 | | | |
| 198 | 5638.36 | 84.73 | 139.87 | 58.17 | 348.00 | 0.59 | 2.40 | | 1 | 0 | 0 |
| | | | | | | | | 0.61 | | | |
| 199 | 9806.75 | 111.74 | 140.71 | 90.94 | 398.18 | 0.78 | 1.55 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 200 | 16600.08 | 145.38 | 160.44 | 134.72 | 513.72 | 0.79 | 1.19 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 201 | 682.48 | 29.48 | 35.58 | 27.33 | 103.60 | 0.80 | 1.30 | | 0 | 1 | 0 |
| | | | | | | | | 0.83 | | | |
| 202 | 9607.25 | 110.60 | 121.48 | 110.20 | 424.33 | 0.67 | 1.10 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 203 | 6730.33 | 92.57 | 102.59 | 86.22 | 322.87 | 0.81 | 1.19 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 204 | 11176.96 | 119.29 | 133.48 | 108.09 | 413.04 | 0.82 | 1.23 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 205 | 293.99 | 19.35 | 63.59 | 7.61 | 117.57 | 0.27 | 8.35 | | 0 | 0 | 1 |
| | | | | | | | | 0.30 | | | |
| 206 | 5076.62 | 80.40 | 111.76 | 60.88 | 309.12 | 0.67 | 1.84 | | 1 | 0 | 0 |
| | | | | | | | | 0.72 | | | |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|-------|------|---|---|---|
| 207 | 1191.72 | 38.95 | 76.64 | 24.92 | 177.47 | 0.48 | 3.07 | | 0 | 1 | 0 |
| | | | | | | | | 0.51 | | | |
| 208 | 3800.90 | 69.57 | 477.76 | 22.31 | 858.79 | 0.06 | 21.42 | | 0 | 0 | 1 |
| | | | | | | | | 0.15 | | | |
| 209 | 792.73 | 31.77 | 55.15 | 23.90 | 136.78 | 0.53 | 2.31 | | 0 | 1 | 0 |
| | | | | | | | | 0.58 | | | |
| 210 | 6105.59 | 88.17 | 121.92 | 65.03 | 321.85 | 0.74 | 1.87 | | 1 | 0 | 0 |
| | | | | | | | | 0.72 | | | |
| 211 | 729.73 | 30.48 | 70.79 | 19.85 | 157.24 | 0.37 | 3.57 | | 0 | 1 | 0 |
| | | | | | | | | 0.43 | | | |
| 212 | 10489.23 | 115.57 | 131.25 | 102.67 | 397.95 | 0.83 | 1.28 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 213 | 6845.82 | 93.36 | 156.38 | 60.36 | 398.87 | 0.54 | 2.59 | | 1 | 0 | 0 |
| | | | | | | | | 0.60 | | | |
| 214 | 955.48 | 34.88 | 43.60 | 32.66 | 130.30 | 0.71 | 1.34 | | 0 | 1 | 0 |
| | | | | | | | | 0.80 | | | |
| 215 | 2960.92 | 61.40 | 66.26 | 57.51 | 201.27 | 0.92 | 1.15 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 216 | 7475.81 | 97.56 | 111.41 | 86.88 | 347.77 | 0.78 | 1.28 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 217 | 1028.97 | 36.20 | 51.19 | 26.63 | 130.30 | 0.76 | 1.92 | | 0 | 1 | 0 |
| | | | | | | | | 0.71 | | | |
| 218 | 745.48 | 30.81 | 40.98 | 29.13 | 118.13 | 0.67 | 1.41 | | 0 | 1 | 0 |
| | | | | | | | | 0.75 | | | |
| 219 | 26475.07 | 183.60 | 203.96 | 166.35 | 648.84 | 0.79 | 1.23 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 220 | 1973.95 | 50.13 | 58.08 | 45.50 | 169.97 | 0.86 | 1.28 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 221 | 7727.80 | 99.19 | 118.31 | 85.00 | 353.93 | 0.78 | 1.39 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 222 | 2782.43 | 59.52 | 64.48 | 56.93 | 208.76 | 0.80 | 1.13 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 223 | 1653.71 | 45.89 | 50.45 | 42.64 | 155.11 | 0.86 | 1.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 224 | 11113.97 | 118.96 | 131.18 | 109.51 | 408.69 | 0.84 | 1.20 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 225 | 4667.13 | 77.09 | 107.67 | 60.36 | 294.35 | 0.68 | 1.78 | | 1 | 0 | 0 |
| | | | | | | | | 0.72 | | | |
| 226 | 1653.71 | 45.89 | 67.25 | 36.44 | 190.76 | 0.57 | 1.85 | | 0 | 1 | 0 |
| | | | | | | | | 0.68 | | | |
| 227 | 472.49 | 24.53 | 46.52 | 14.59 | 100.35 | 0.59 | 3.19 | | 0 | 1 | 0 |
| | | | | | | | | 0.53 | | | |
| 228 | 21.00 | 5.17 | 10.58 | 2.65 | 13.75 | 1.40 | 4.00 | | 0 | 0 | 1 |
| | | | | | | | | 0.49 | | | |
| 229 | 5501.86 | 83.70 | 95.78 | 78.17 | 304.86 | 0.74 | 1.23 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 230 | 1060.47 | 36.75 | 43.40 | 32.82 | 124.61 | 0.86 | 1.32 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 231 | 15466.10 | 140.33 | 153.89 | 128.64 | 476.41 | 0.86 | 1.20 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 232 | 650.98 | 28.79 | 35.72 | 24.99 | 97.90 | 0.85 | 1.43 | | 0 | 1 | 0 |
| | | | | | | | | 0.81 | | | |
| 233 | 16279.83 | 143.97 | 192.31 | 116.27 | 558.66 | 0.66 | 1.65 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 234 | 766.48 | 31.24 | 54.90 | 20.39 | 130.30 | 0.57 | 2.69 | | 0 | 1 | 0 |
| | | | | | | | | 0.57 | | | |
| 235 | 3412.41 | 65.92 | 80.89 | 55.24 | 236.03 | 0.77 | 1.46 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 236 | 7780.30 | 99.53 | 118.55 | 88.31 | 366.66 | 0.73 | 1.34 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 237 | 1837.45 | 48.37 | 53.93 | 45.42 | 170.20 | 0.80 | 1.19 | | 0 | 1 | 0 |
| | | | | | | | | 0.90 | | | |
| 238 | 7528.31 | 97.90 | 112.32 | 86.20 | 331.01 | 0.86 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 239 | 509.24 | 25.46 | 38.33 | 19.71 | 100.35 | 0.64 | 1.94 | | 0 | 0 | 1 |
| | | | | | | | | 0.66 | | | |
| 240 | 12820.17 | 127.76 | 147.79 | 111.79 | 437.06 | 0.84 | 1.32 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 241 | 8000.80 | 100.93 | 113.71 | 93.08 | 368.79 | 0.74 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|---------|------|------|------|---|---|---|
| 242 | 5738.10 | 85.48 | 97.75 | 80.19 | 310.00 | 0.75 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 243 | 11880.45 | 122.99 | 152.12 | 103.93 | 436.74 | 0.78 | 1.46 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 244 | 10861.97 | 117.60 | 185.51 | 114.52 | 612.96 | 0.36 | 1.62 | | 0 | 1 | 0 |
| | | | | | | | | 0.63 | | | |
| 245 | 10993.22 | 118.31 | 136.89 | 104.04 | 413.04 | 0.81 | 1.32 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 246 | 11150.71 | 119.15 | 145.32 | 100.45 | 444.33 | 0.71 | 1.45 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 247 | 2262.69 | 53.67 | 71.06 | 41.97 | 192.33 | 0.77 | 1.69 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 248 | 1438.46 | 42.80 | 100.18 | 25.97 | 215.80 | 0.39 | 3.86 | | 0 | 0 | 1 |
| | | | | | | | | 0.43 | | | |
| 249 | 398.99 | 22.54 | 39.67 | 13.20 | 86.84 | 0.66 | 3.01 | | 0 | 0 | 1 |
| | | | | | | | | 0.57 | | | |
| 250 | 5344.36 | 82.49 | 104.79 | 67.93 | 294.12 | 0.78 | 1.54 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 251 | 845.23 | 32.81 | 37.73 | 34.65 | 123.82 | 0.69 | 1.09 | | 0 | 1 | 0 |
| | | | | | | | | 0.87 | | | |
| 252 | 8641.28 | 104.89 | 187.34 | 71.75 | 471.36 | 0.49 | 2.61 | | 0 | 1 | 0 |
| | | | | | | | | 0.56 | | | |
| 253 | 1034.22 | 36.29 | 43.59 | 39.03 | 145.39 | 0.61 | 1.12 | | 0 | 1 | 0 |
| | | | | | | | | 0.83 | | | |
| 254 | 59360.23 | 274.92 | 387.52 | 288.52 | 1549.38 | 0.31 | 1.34 | | 0 | 1 | 0 |
| | | | | | | | | 0.71 | | | |
| 255 | 10357.99 | 114.84 | 133.12 | 104.62 | 430.81 | 0.70 | 1.27 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 256 | 4063.40 | 71.93 | 78.43 | 68.22 | 244.18 | 0.86 | 1.15 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 257 | 10741.23 | 116.95 | 134.67 | 103.31 | 407.67 | 0.81 | 1.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 258 | 1664.21 | 46.03 | 52.89 | 41.87 | 157.80 | 0.84 | 1.26 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 259 | 8394.54 | 103.38 | 123.70 | 88.97 | 365.55 | 0.79 | 1.39 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 260 | 3391.41 | 65.71 | 83.08 | 55.47 | 236.58 | 0.76 | 1.50 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 261 | 8279.04 | 102.67 | 126.38 | 87.71 | 380.96 | 0.72 | 1.44 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 262 | 3328.41 | 65.10 | 83.53 | 55.64 | 258.48 | 0.63 | 1.50 | | 0 | 1 | 0 |
| | | | | | | | | 0.78 | | | |
| 263 | 11334.46 | 120.13 | 136.11 | 108.76 | 435.95 | 0.75 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 264 | 3753.65 | 69.13 | 144.42 | 46.34 | 364.53 | 0.35 | 3.12 | | 0 | 1 | 0 |
| | | | | | | | | 0.48 | | | |
| 265 | 3323.17 | 65.05 | 95.04 | 49.96 | 266.21 | 0.59 | 1.90 | | 0 | 0 | 1 |
| | | | | | | | | 0.68 | | | |
| 266 | 3905.90 | 70.52 | 79.05 | 64.64 | 244.18 | 0.82 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 267 | 3800.90 | 69.57 | 84.90 | 57.79 | 237.70 | 0.85 | 1.47 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 268 | 16216.84 | 143.69 | 218.13 | 96.14 | 576.86 | 0.61 | 2.27 | | 1 | 0 | 0 |
| | | | | | | | | 0.66 | | | |
| 269 | 10147.99 | 113.67 | 121.42 | 112.60 | 425.90 | 0.70 | 1.08 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 270 | 12825.42 | 127.79 | 157.60 | 107.52 | 478.08 | 0.71 | 1.47 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 271 | 1097.22 | 37.38 | 110.67 | 16.67 | 255.37 | 0.21 | 6.64 | | 0 | 0 | 1 |
| | | | | | | | | 0.34 | | | |
| 272 | 4294.39 | 73.94 | 108.88 | 54.02 | 283.52 | 0.67 | 2.02 | | 1 | 0 | 0 |
| | | | | | | | | 0.68 | | | |
| 273 | 7160.82 | 95.49 | 154.05 | 106.70 | 650.73 | 0.21 | 1.44 | | 0 | 1 | 0 |
| | | | | | | | | 0.62 | | | |
| 274 | 4667.13 | 77.09 | 85.25 | 71.17 | 267.87 | 0.82 | 1.20 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 275 | 13759.90 | 132.36 | 144.13 | 122.63 | 460.76 | 0.81 | 1.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 276 | 393.74 | 22.39 | 26.55 | 19.30 | 70.41 | 1.00 | 1.38 | | 0 | 1 | 0 |
| | | | | | | | | 0.84 | | | |

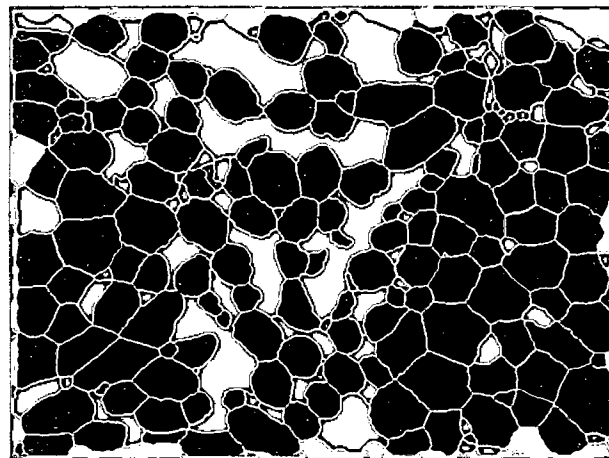
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|-----|----------|--------|--------|--------|---------|------|------|------|---|---|---|
| 277 | 3779.90 | 69.37 | 80.09 | 62.86 | 246.86 | 0.78 | 1.27 | 0.87 | 1 | 0 | 0 |
| 278 | 8861.77 | 106.22 | 133.80 | 86.61 | 384.99 | 0.75 | 1.54 | 0.79 | 1 | 0 | 0 |
| 279 | 1480.46 | 43.42 | 47.88 | 41.07 | 148.08 | 0.85 | 1.17 | 0.91 | 1 | 0 | 0 |
| 280 | 2063.20 | 51.25 | 100.78 | 28.59 | 231.12 | 0.49 | 3.52 | 0.51 | 0 | 0 | 1 |
| 281 | 7491.56 | 97.67 | 107.50 | 91.07 | 345.87 | 0.79 | 1.18 | 0.91 | 1 | 0 | 0 |
| 282 | 57.75 | 8.57 | 10.30 | 7.51 | 21.57 | 1.56 | 1.37 | 0.83 | 0 | 1 | 0 |
| 283 | 1207.47 | 39.21 | 54.03 | 35.90 | 159.47 | 0.60 | 1.50 | 0.73 | 0 | 1 | 0 |
| 284 | 14767.87 | 137.12 | 142.07 | 134.21 | 484.46 | 0.79 | 1.06 | 0.97 | 1 | 0 | 0 |
| 285 | 1338.72 | 41.29 | 42.78 | 40.35 | 131.09 | 0.98 | 1.06 | 0.97 | 1 | 0 | 0 |
| 286 | 3396.66 | 65.76 | 82.98 | 53.43 | 230.43 | 0.80 | 1.55 | 0.79 | 1 | 0 | 0 |
| 287 | 435.74 | 23.55 | 29.10 | 21.31 | 79.57 | 0.86 | 1.37 | 0.81 | 0 | 1 | 0 |
| 288 | 14143.14 | 134.19 | 145.02 | 125.68 | 462.99 | 0.83 | 1.15 | 0.93 | 1 | 0 | 0 |
| 289 | 9539.01 | 110.21 | 129.63 | 98.54 | 398.18 | 0.76 | 1.32 | 0.85 | 1 | 0 | 0 |
| 290 | 2021.20 | 50.73 | 100.72 | 32.84 | 239.82 | 0.44 | 3.07 | 0.50 | 0 | 1 | 0 |
| 291 | 4583.13 | 76.39 | 118.57 | 55.78 | 316.29 | 0.58 | 2.13 | 0.64 | 0 | 0 | 1 |
| 292 | 577.49 | 27.12 | 34.81 | 23.96 | 96.56 | 0.78 | 1.45 | 0.78 | 0 | 0 | 1 |
| 293 | 3580.41 | 67.52 | 74.54 | 67.43 | 248.99 | 0.73 | 1.11 | 0.91 | 1 | 0 | 0 |
| 294 | 3449.16 | 66.27 | 77.57 | 60.61 | 240.05 | 0.75 | 1.28 | 0.85 | 1 | 0 | 0 |
| 295 | 10447.23 | 115.33 | 132.48 | 103.66 | 470.71 | 0.59 | 1.28 | 0.87 | 1 | 0 | 0 |
| 296 | 12321.43 | 125.25 | 589.43 | 84.76 | 1254.42 | 0.10 | 6.95 | 0.21 | 0 | 0 | 1 |
| 297 | 4441.39 | 75.20 | 90.48 | 73.38 | 300.74 | 0.62 | 1.23 | 0.83 | 1 | 0 | 0 |
| 298 | 8814.52 | 105.94 | 142.11 | 82.51 | 392.48 | 0.72 | 1.72 | 0.75 | 1 | 0 | 0 |
| 299 | 6389.09 | 90.19 | 102.23 | 81.61 | 311.25 | 0.83 | 1.25 | 0.88 | 1 | 0 | 0 |
| 300 | 15.75 | 4.48 | 5.92 | 4.04 | 7.82 | 3.23 | 1.46 | 0.76 | 0 | 0 | 1 |
| 301 | 5386.36 | 82.81 | 295.14 | 65.04 | 567.18 | 0.21 | 4.54 | 0.28 | 0 | 0 | 1 |
| 302 | 1312.47 | 40.88 | 78.12 | 25.04 | 182.05 | 0.50 | 3.12 | 0.52 | 0 | 1 | 0 |
| 303 | 136.50 | 13.18 | 34.42 | 7.92 | 67.95 | 0.37 | 4.35 | 0.38 | 0 | 1 | 0 |
| 304 | 1753.46 | 47.25 | 74.80 | 33.19 | 196.59 | 0.57 | 2.25 | 0.63 | 0 | 0 | 1 |
| 305 | 3821.90 | 69.76 | 177.93 | 28.90 | 360.77 | 0.37 | 6.16 | 0.39 | 0 | 0 | 1 |
| 306 | 73.50 | 9.67 | 24.55 | 4.70 | 43.14 | 0.50 | 5.22 | 0.39 | 0 | 0 | 1 |
| 307 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | 0.69 | 0 | 0 | 1 |

Código: F9-11a



a)

b)



c)

Figura A5. a) Imagen Original b) Imagen procesada c) Imagen segmentada y clasificada

Tabla A5. Parámetros de tamaño y forma y clasificación de elementos en micrografía F9-11a

| Núm. | Área | Deq | Ejemay | Ejemen | Per | Red | Elg | Comp | Cétula | Espint | Elem No Rec |
|------|----------|--------|--------|--------|--------|------|-------|------|--------|--------|-------------|
| 1 | 435.74 | 23.55 | 66.44 | 12.45 | 151.55 | 0.24 | 5.34 | 0.35 | 0 | 0 | 1 |
| 2 | 498.74 | 25.20 | 108.66 | 7.25 | 192.24 | 0.17 | 15.00 | 0.23 | 0 | 0 | 1 |
| 3 | 147.00 | 13.68 | 21.44 | 9.99 | 48.28 | 0.79 | 2.15 | 0.64 | 0 | 0 | 1 |
| 4 | 356.99 | 21.32 | 34.44 | 14.56 | 82.26 | 0.66 | 2.37 | 0.62 | 0 | 0 | 1 |
| 5 | 2420.19 | 55.51 | 233.63 | 15.74 | 439.79 | 0.16 | 14.85 | 0.24 | 0 | 0 | 1 |
| 6 | 105.00 | 11.56 | 13.83 | 12.55 | 39.11 | 0.86 | 1.10 | 0.84 | 0 | 0 | 1 |
| 7 | 168.00 | 14.63 | 40.85 | 8.17 | 77.67 | 0.35 | 5.00 | 0.36 | 1 | 0 | 0 |
| 8 | 2084.20 | 51.51 | 96.19 | 33.05 | 259.17 | 0.39 | 2.91 | 0.54 | 0 | 0 | 1 |
| 9 | 15.75 | 4.48 | 7.94 | 2.65 | 9.17 | 2.36 | 3.00 | 0.56 | 0 | 0 | 1 |
| 10 | 7869.55 | 100.10 | 107.76 | 97.34 | 361.42 | 0.76 | 1.11 | 0.93 | 1 | 0 | 0 |
| 11 | 12064.19 | 123.94 | 139.49 | 114.27 | 446.13 | 0.76 | 1.22 | 0.89 | 1 | 0 | 0 |
| 12 | 8037.54 | 101.16 | 142.46 | 81.87 | 401.65 | 0.63 | 1.74 | 0.71 | 0 | 0 | 1 |
| 13 | 566.99 | 26.87 | 104.83 | 8.23 | 189.00 | 0.20 | 12.74 | 0.26 | 0 | 0 | 1 |
| 14 | 577.49 | 27.12 | 116.47 | 9.79 | 203.30 | 0.18 | 11.89 | 0.23 | 0 | 0 | 1 |
| 15 | 813.73 | 32.19 | 157.14 | 7.55 | 288.47 | 0.12 | 20.81 | 0.20 | 0 | 0 | 1 |
| 16 | 7145.07 | 95.38 | 167.98 | 60.99 | 464.00 | 0.42 | 2.75 | 0.57 | 0 | 1 | 0 |
| 17 | 15.75 | 4.48 | 7.94 | 2.65 | 9.17 | 2.36 | 3.00 | 0.56 | 0 | 0 | 1 |
| 18 | 5969.10 | 87.18 | 202.34 | 48.79 | 438.08 | 0.39 | 4.15 | 0.43 | 0 | 1 | 0 |
| 19 | 540.74 | 26.24 | 35.37 | 20.32 | 87.39 | 0.89 | 1.74 | 0.74 | 0 | 1 | 0 |
| 20 | 11250.46 | 119.69 | 163.43 | 90.75 | 444.23 | 0.72 | 1.80 | 0.73 | 1 | 0 | 0 |
| 21 | 13051.17 | 128.91 | 146.15 | 123.81 | 477.75 | 0.72 | 1.18 | 0.88 | 1 | 0 | 0 |
| 22 | 4866.63 | 78.72 | 159.68 | 51.58 | 381.98 | 0.42 | 3.10 | 0.49 | 0 | 1 | 0 |
| 23 | 15917.59 | 142.36 | 161.69 | 128.90 | 508.72 | 0.77 | 1.25 | 0.88 | 1 | 0 | 0 |
| 24 | 13560.40 | 131.40 | 150.65 | 117.15 | 457.75 | 0.81 | 1.29 | 0.87 | 1 | 0 | 0 |
| 25 | 14269.14 | 134.79 | 155.04 | 125.66 | 511.07 | 0.69 | 1.23 | 0.87 | 1 | 0 | 0 |
| 26 | 20511.23 | 161.60 | 222.09 | 119.63 | 588.94 | 0.74 | 1.86 | 0.73 | 1 | 0 | 0 |
| 27 | 1716.71 | 46.75 | 87.85 | 27.26 | 208.21 | 0.50 | 3.22 | 0.53 | 0 | 0 | 1 |
| 28 | 7727.80 | 99.19 | 157.85 | 65.06 | 378.87 | 0.68 | 2.43 | 0.63 | 1 | 0 | 0 |
| 29 | 31.50 | 6.33 | 9.17 | 5.07 | 15.65 | 1.62 | 1.81 | 0.69 | 0 | 0 | 1 |
| 30 | 9785.75 | 111.62 | 132.27 | 98.56 | 410.45 | 0.73 | 1.34 | 0.84 | 1 | 0 | 0 |
| 31 | 860.98 | 33.11 | 44.46 | 26.67 | 117.34 | 0.79 | 1.67 | 0.74 | 0 | 1 | 0 |
| 32 | 8982.52 | 106.94 | 127.80 | 95.10 | 393.69 | 0.73 | 1.34 | 0.84 | 1 | 0 | 0 |

| | | | | | | | | | | | |
|----|----------|--------|--------|--------|--------|------|-------|------|---|---|---|
| 33 | 8987.77 | 106.97 | 120.73 | 97.35 | 376.70 | 0.80 | 1.24 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 34 | 25104.86 | 178.79 | 229.32 | 143.13 | 672.17 | 0.70 | 1.60 | | 0 | 1 | 0 |
| | | | | | | | | 0.78 | | | |
| 35 | 834.73 | 32.60 | 53.70 | 21.10 | 128.96 | 0.63 | 2.55 | | 0 | 1 | 0 |
| | | | | | | | | 0.61 | | | |
| 36 | 15172.11 | 138.99 | 173.27 | 114.18 | 501.31 | 0.76 | 1.52 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 37 | 24165.13 | 175.41 | 193.22 | 164.10 | 621.80 | 0.79 | 1.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 38 | 2798.18 | 59.69 | 124.91 | 39.34 | 350.36 | 0.29 | 3.17 | | 0 | 0 | 1 |
| | | | | | | | | 0.48 | | | |
| 39 | 2913.68 | 60.91 | 88.84 | 44.47 | 224.41 | 0.73 | 2.00 | | 1 | 0 | 0 |
| | | | | | | | | 0.69 | | | |
| 40 | 20847.22 | 162.92 | 193.55 | 142.08 | 589.17 | 0.75 | 1.36 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 41 | 13549.90 | 131.35 | 202.85 | 88.98 | 515.62 | 0.64 | 2.28 | | 1 | 0 | 0 |
| | | | | | | | | 0.65 | | | |
| 42 | 2840.18 | 60.14 | 75.20 | 49.28 | 215.24 | 0.77 | 1.53 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 43 | 792.73 | 31.77 | 34.11 | 30.41 | 101.93 | 0.96 | 1.12 | | 0 | 1 | 0 |
| | | | | | | | | 0.93 | | | |
| 44 | 519.74 | 25.72 | 38.10 | 19.56 | 95.22 | 0.72 | 1.95 | | 0 | 1 | 0 |
| | | | | | | | | 0.68 | | | |
| 45 | 6893.07 | 93.68 | 374.30 | 32.86 | 707.80 | 0.17 | 11.39 | | 0 | 0 | 1 |
| | | | | | | | | 0.25 | | | |
| 46 | 11360.71 | 120.27 | 141.45 | 104.50 | 434.38 | 0.76 | 1.35 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 47 | 19812.99 | 158.83 | 253.73 | 104.26 | 653.28 | 0.58 | 2.43 | | 1 | 0 | 0 |
| | | | | | | | | 0.63 | | | |
| 48 | 10168.99 | 113.79 | 153.66 | 85.46 | 406.46 | 0.77 | 1.80 | | 1 | 0 | 0 |
| | | | | | | | | 0.74 | | | |
| 49 | 4751.13 | 77.78 | 133.21 | 54.91 | 348.33 | 0.49 | 2.43 | | 0 | 1 | 0 |
| | | | | | | | | 0.58 | | | |
| 50 | 971.23 | 35.17 | 66.09 | 21.50 | 143.50 | 0.59 | 3.07 | | 0 | 1 | 0 |
| | | | | | | | | 0.53 | | | |
| 51 | 7895.80 | 100.27 | 108.64 | 97.97 | 365.78 | 0.74 | 1.11 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 52 | 6299.84 | 89.56 | 231.33 | 69.52 | 593.65 | 0.22 | 3.33 | | 0 | 1 | 0 |
| | | | | | | | | 0.39 | | | |
| 53 | 13812.40 | 132.61 | 158.50 | 112.42 | 471.59 | 0.78 | 1.41 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 54 | 939.73 | 34.59 | 51.11 | 26.89 | 129.75 | 0.70 | 1.90 | | 0 | 1 | 0 |
| | | | | | | | | 0.68 | | | |
| 55 | 666.73 | 29.14 | 43.26 | 21.19 | 107.62 | 0.72 | 2.04 | | 0 | 1 | 0 |
| | | | | | | | | 0.67 | | | |
| 56 | 10105.99 | 113.43 | 148.34 | 116.71 | 545.47 | 0.43 | 1.27 | | 0 | 1 | 0 |
| | | | | | | | | 0.76 | | | |
| 57 | 8699.03 | 105.24 | 121.39 | 92.25 | 359.39 | 0.85 | 1.32 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 58 | 2042.20 | 50.99 | 126.26 | 21.68 | 286.67 | 0.31 | 5.82 | | 0 | 0 | 1 |
| | | | | | | | | 0.40 | | | |
| 59 | 7134.57 | 95.31 | 111.70 | 84.67 | 361.52 | 0.69 | 1.32 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 60 | 5522.86 | 83.86 | 147.99 | 63.11 | 410.58 | 0.41 | 2.35 | | 0 | 1 | 0 |
| | | | | | | | | 0.57 | | | |
| 61 | 1349.22 | 41.45 | 57.70 | 33.62 | 159.70 | 0.66 | 1.72 | | 0 | 1 | 0 |
| | | | | | | | | 0.72 | | | |
| 62 | 21151.71 | 164.11 | 180.85 | 151.28 | 584.12 | 0.78 | 1.20 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 63 | 6383.84 | 90.16 | 98.60 | 84.07 | 309.21 | 0.84 | 1.17 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 64 | 18122.54 | 151.90 | 202.52 | 119.99 | 574.40 | 0.69 | 1.69 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 65 | 8373.54 | 103.25 | 104.82 | 102.23 | 348.56 | 0.87 | 1.03 | | 1 | 0 | 0 |
| | | | | | | | | 0.99 | | | |
| 66 | 9145.27 | 107.91 | 119.79 | 98.51 | 377.16 | 0.81 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 67 | 11864.70 | 122.91 | 150.77 | 101.47 | 436.74 | 0.78 | 1.49 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|---------|------|------|------|---|---|---|
| 68 | 16395.33 | 144.48 | 181.82 | 116.43 | 510.80 | 0.79 | 1.56 | 0.79 | 1 | 0 | 0 |
| 69 | 7838.05 | 99.90 | 114.21 | 90.34 | 347.45 | 0.82 | 1.26 | 0.87 | 1 | 0 | 0 |
| 70 | 11365.96 | 120.30 | 149.73 | 98.41 | 430.26 | 0.77 | 1.52 | 0.80 | 1 | 0 | 0 |
| 71 | 1060.47 | 36.75 | 45.82 | 35.74 | 138.91 | 0.69 | 1.28 | 0.80 | 0 | 1 | 0 |
| 72 | 12258.44 | 124.93 | 139.08 | 113.02 | 424.89 | 0.85 | 1.23 | 0.90 | 1 | 0 | 0 |
| 73 | 3060.67 | 62.43 | 140.05 | 32.66 | 300.97 | 0.42 | 4.29 | 0.45 | 1 | 0 | 0 |
| 74 | 14190.39 | 134.42 | 155.12 | 117.96 | 473.49 | 0.80 | 1.32 | 0.87 | 1 | 0 | 0 |
| 75 | 6268.34 | 89.34 | 158.67 | 66.61 | 476.18 | 0.35 | 2.38 | 0.56 | 0 | 1 | 0 |
| 76 | 8105.79 | 101.59 | 148.57 | 115.17 | 597.87 | 0.28 | 1.29 | 0.68 | 0 | 1 | 0 |
| 77 | 1412.21 | 42.40 | 48.04 | 37.96 | 138.68 | 0.92 | 1.27 | 0.88 | 1 | 0 | 0 |
| 78 | 661.48 | 29.02 | 81.00 | 15.13 | 192.79 | 0.22 | 5.35 | 0.36 | 0 | 0 | 1 |
| 79 | 1028.97 | 36.20 | 40.61 | 38.81 | 152.20 | 0.56 | 1.05 | 0.89 | 0 | 1 | 0 |
| 80 | 7486.31 | 97.63 | 112.16 | 86.55 | 336.94 | 0.83 | 1.30 | 0.87 | 1 | 0 | 0 |
| 81 | 9418.26 | 109.51 | 127.49 | 96.52 | 380.64 | 0.82 | 1.32 | 0.86 | 1 | 0 | 0 |
| 82 | 44256.37 | 237.38 | 436.14 | 181.90 | 1411.31 | 0.28 | 2.40 | 0.54 | 0 | 1 | 0 |
| 83 | 41925.43 | 231.04 | 457.43 | 204.17 | 1910.86 | 0.14 | 2.24 | 0.51 | 0 | 1 | 0 |
| 84 | 8137.29 | 101.79 | 128.30 | 84.11 | 380.96 | 0.70 | 1.53 | 0.79 | 1 | 0 | 0 |
| 85 | 9008.77 | 107.10 | 122.46 | 95.50 | 364.99 | 0.85 | 1.28 | 0.87 | 1 | 0 | 0 |
| 86 | 419.99 | 23.12 | 34.04 | 18.02 | 82.81 | 0.77 | 1.89 | 0.68 | 0 | 1 | 0 |
| 87 | 16300.83 | 144.07 | 164.84 | 127.44 | 505.57 | 0.80 | 1.29 | 0.87 | 1 | 0 | 0 |
| 88 | 1007.97 | 35.82 | 53.25 | 25.70 | 134.89 | 0.70 | 2.07 | 0.67 | 0 | 1 | 0 |
| 89 | 10462.98 | 115.42 | 188.23 | 73.65 | 456.08 | 0.63 | 2.56 | 0.61 | 1 | 0 | 0 |
| 90 | 4793.13 | 78.12 | 94.67 | 67.95 | 285.97 | 0.74 | 1.39 | 0.83 | 0 | 1 | 0 |
| 91 | 5039.87 | 80.11 | 89.61 | 73.14 | 275.47 | 0.83 | 1.23 | 0.89 | 1 | 0 | 0 |
| 92 | 36.75 | 6.84 | 8.85 | 6.99 | 18.89 | 1.29 | 1.27 | 0.77 | 1 | 0 | 0 |
| 93 | 1805.95 | 47.95 | 55.64 | 45.91 | 178.58 | 0.71 | 1.21 | 0.86 | 0 | 1 | 0 |
| 94 | 1679.96 | 46.25 | 76.18 | 34.42 | 194.55 | 0.56 | 2.21 | 0.61 | 0 | 1 | 0 |
| 95 | 99.75 | 11.27 | 17.29 | 7.69 | 33.98 | 1.09 | 2.25 | 0.65 | 0 | 1 | 0 |
| 96 | 46382.56 | 243.01 | 720.34 | 135.24 | 1730.71 | 0.19 | 5.33 | 0.34 | 0 | 1 | 0 |
| 97 | 99.75 | 11.27 | 12.98 | 10.19 | 30.74 | 1.33 | 1.27 | 0.87 | 0 | 1 | 0 |
| 98 | 1611.71 | 45.30 | 90.59 | 24.34 | 201.73 | 0.50 | 3.72 | 0.50 | 0 | 0 | 1 |
| 99 | 2792.93 | 59.63 | 75.74 | 49.08 | 217.47 | 0.74 | 1.54 | 0.79 | 1 | 0 | 0 |
| 100 | 1548.71 | 44.41 | 93.46 | 30.89 | 221.49 | 0.40 | 3.03 | 0.48 | 0 | 1 | 0 |
| 101 | 16075.09 | 143.06 | 172.14 | 121.01 | 511.82 | 0.77 | 1.42 | 0.83 | 1 | 0 | 0 |
| 102 | 136.50 | 13.18 | 18.81 | 9.63 | 40.46 | 1.05 | 1.95 | 0.70 | 0 | 1 | 0 |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|---------|------|------|------|---|---|---|
| 103 | 2446.44 | 55.81 | 71.64 | 48.60 | 221.26 | 0.63 | 1.47 | | 0 | 1 | 0 |
| | | | | | | | | 0.78 | | | |
| 104 | 10216.24 | 114.05 | 122.68 | 107.17 | 385.54 | 0.86 | 1.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 105 | 2257.44 | 53.61 | 73.92 | 41.37 | 201.73 | 0.70 | 1.79 | | 0 | 1 | 0 |
| | | | | | | | | 0.73 | | | |
| 106 | 1144.47 | 38.17 | 43.95 | 34.62 | 127.62 | 0.88 | 1.27 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 107 | 5832.60 | 86.18 | 112.67 | 70.35 | 333.70 | 0.66 | 1.60 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 108 | 2498.94 | 56.41 | 62.80 | 51.60 | 196.13 | 0.82 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 109 | 4630.38 | 76.78 | 114.84 | 54.95 | 291.90 | 0.68 | 2.09 | | 0 | 0 | 1 |
| | | | | | | | | 0.67 | | | |
| 110 | 19755.24 | 158.60 | 295.85 | 120.77 | 894.03 | 0.31 | 2.45 | | 0 | 1 | 0 |
| | | | | | | | | 0.54 | | | |
| 111 | 19697.50 | 158.37 | 227.62 | 112.06 | 587.60 | 0.72 | 2.03 | | 1 | 0 | 0 |
| | | | | | | | | 0.70 | | | |
| 112 | 10741.23 | 116.95 | 139.37 | 98.80 | 408.46 | 0.81 | 1.41 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 113 | 4352.14 | 74.44 | 76.59 | 74.76 | 257.37 | 0.83 | 1.02 | | 1 | 0 | 0 |
| | | | | | | | | 0.97 | | | |
| 114 | 14316.38 | 135.01 | 160.27 | 115.14 | 474.60 | 0.80 | 1.39 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 115 | 3711.66 | 68.74 | 109.31 | 47.51 | 276.81 | 0.61 | 2.30 | | 1 | 0 | 0 |
| | | | | | | | | 0.63 | | | |
| 116 | 430.49 | 23.41 | 78.40 | 9.18 | 154.23 | 0.23 | 8.54 | | 0 | 0 | 1 |
| | | | | | | | | 0.30 | | | |
| 117 | 1002.72 | 35.73 | 48.24 | 29.37 | 140.02 | 0.64 | 1.64 | | 0 | 1 | 0 |
| | | | | | | | | 0.74 | | | |
| 118 | 824.23 | 32.40 | 36.79 | 30.39 | 110.86 | 0.84 | 1.21 | | 0 | 1 | 0 |
| | | | | | | | | 0.88 | | | |
| 119 | 18416.53 | 153.13 | 169.70 | 139.29 | 528.71 | 0.83 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 120 | 12358.18 | 125.44 | 141.62 | 112.02 | 429.47 | 0.84 | 1.26 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 121 | 15702.35 | 141.40 | 150.36 | 134.47 | 480.76 | 0.85 | 1.12 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 122 | 1685.21 | 46.32 | 84.00 | 30.11 | 208.53 | 0.49 | 2.79 | | 0 | 1 | 0 |
| | | | | | | | | 0.55 | | | |
| 123 | 1963.45 | 50.00 | 156.53 | 23.37 | 332.49 | 0.22 | 6.70 | | 0 | 0 | 1 |
| | | | | | | | | 0.32 | | | |
| 124 | 12058.94 | 123.91 | 143.85 | 107.56 | 421.97 | 0.85 | 1.34 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 125 | 5291.86 | 82.08 | 234.73 | 55.79 | 526.91 | 0.24 | 4.21 | | 0 | 1 | 0 |
| | | | | | | | | 0.35 | | | |
| 126 | 488.24 | 24.93 | 29.79 | 25.39 | 91.19 | 0.74 | 1.17 | | 0 | 1 | 0 |
| | | | | | | | | 0.84 | | | |
| 127 | 6998.07 | 94.39 | 113.09 | 81.33 | 334.48 | 0.79 | 1.39 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 128 | 10657.23 | 116.49 | 139.32 | 98.25 | 401.98 | 0.83 | 1.42 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 129 | 11318.71 | 120.05 | 164.63 | 93.81 | 454.28 | 0.69 | 1.75 | | 1 | 0 | 0 |
| | | | | | | | | 0.73 | | | |
| 130 | 10819.97 | 117.37 | 123.79 | 112.09 | 391.47 | 0.89 | 1.10 | | 1 | 0 | 0 |
| | | | | | | | | 0.95 | | | |
| 131 | 7874.80 | 100.13 | 120.96 | 83.56 | 341.85 | 0.85 | 1.45 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 132 | 3879.65 | 70.28 | 139.55 | 60.89 | 408.36 | 0.29 | 2.29 | | 0 | 1 | 0 |
| | | | | | | | | 0.50 | | | |
| 133 | 173.25 | 14.85 | 25.86 | 9.76 | 56.10 | 0.69 | 2.65 | | 0 | 0 | 1 |
| | | | | | | | | 0.57 | | | |
| 134 | 15082.86 | 138.58 | 155.82 | 124.41 | 478.86 | 0.83 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 135 | 42439.91 | 232.46 | 565.48 | 171.15 | 1959.24 | 0.14 | 3.30 | | 0 | 1 | 0 |
| | | | | | | | | 0.41 | | | |
| 136 | 3800.90 | 69.57 | 173.46 | 42.75 | 485.48 | 0.20 | 4.06 | | 0 | 0 | 1 |
| | | | | | | | | 0.40 | | | |
| 137 | 15602.60 | 140.95 | 162.83 | 126.34 | 514.97 | 0.74 | 1.29 | | 1 | 0 | 0 |
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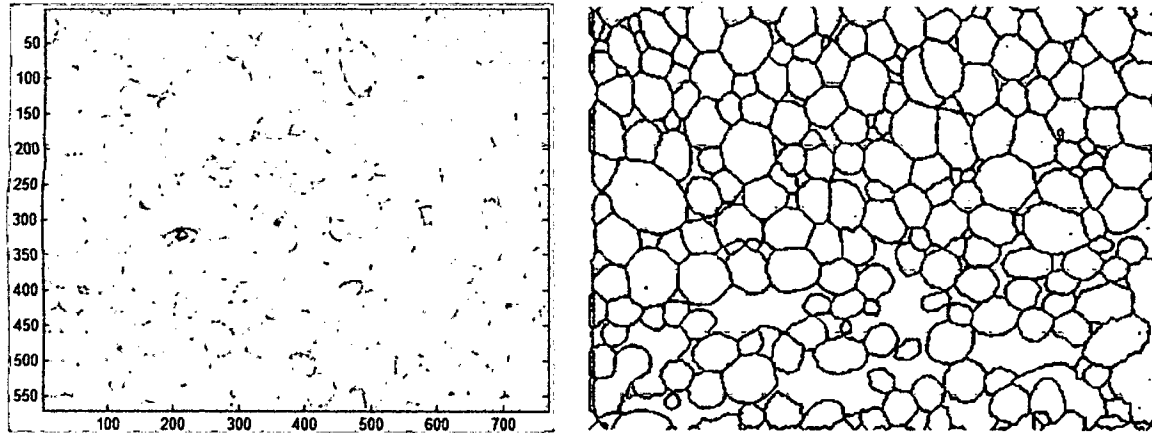
| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|---------|------|------|------|---|---|---|
| 138 | 7738.30 | 99.26 | 111.16 | 89.28 | 330.23 | 0.89 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 139 | 2435.94 | 55.69 | 80.77 | 41.53 | 215.80 | 0.66 | 1.94 | | 1 | 0 | 0 |
| | | | | | | | | 0.69 | | | |
| 140 | 1370.21 | 41.77 | 85.82 | 26.43 | 202.61 | 0.42 | 3.25 | | 0 | 1 | 0 |
| | | | | | | | | 0.49 | | | |
| 141 | 9287.01 | 108.74 | 124.55 | 99.93 | 398.18 | 0.74 | 1.25 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 142 | 5375.86 | 82.73 | 109.11 | 65.62 | 297.59 | 0.76 | 1.66 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 143 | 19219.76 | 156.43 | 173.51 | 162.64 | 670.41 | 0.54 | 1.07 | | 0 | 1 | 0 |
| | | | | | | | | 0.90 | | | |
| 144 | 5790.60 | 85.87 | 95.74 | 78.50 | 292.92 | 0.85 | 1.22 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 145 | 661.48 | 29.02 | 38.84 | 22.06 | 95.77 | 0.91 | 1.76 | | 0 | 1 | 0 |
| | | | | | | | | 0.75 | | | |
| 146 | 31.50 | 6.33 | 7.94 | 5.29 | 13.75 | 2.09 | 1.50 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 147 | 10252.99 | 114.26 | 132.33 | 99.30 | 385.31 | 0.87 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 148 | 7213.32 | 95.83 | 103.46 | 89.89 | 329.67 | 0.83 | 1.15 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 149 | 89.25 | 10.66 | 15.71 | 9.10 | 35.87 | 0.87 | 1.73 | | 0 | 0 | 1 |
| | | | | | | | | 0.68 | | | |
| 150 | 30611.97 | 197.42 | 295.45 | 164.09 | 1045.35 | 0.35 | 1.80 | | 0 | 1 | 0 |
| | | | | | | | | 0.67 | | | |
| 151 | 1522.46 | 44.03 | 66.09 | 31.50 | 166.73 | 0.69 | 2.10 | | 1 | 0 | 0 |
| | | | | | | | | 0.67 | | | |
| 152 | 3139.42 | 63.22 | 94.32 | 44.69 | 244.41 | 0.66 | 2.11 | | 1 | 0 | 0 |
| | | | | | | | | 0.67 | | | |
| 153 | 682.48 | 29.48 | 34.17 | 26.04 | 94.99 | 0.95 | 1.31 | | 1 | 0 | 0 |
| | | | | | | | | 0.86 | | | |
| 154 | 2430.69 | 55.63 | 62.06 | 53.93 | 197.47 | 0.78 | 1.15 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 155 | 12195.44 | 124.61 | 147.08 | 108.52 | 444.56 | 0.78 | 1.36 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 156 | 21.00 | 5.17 | 10.58 | 2.65 | 13.75 | 1.40 | 4.00 | | 0 | 1 | 0 |
| | | | | | | | | 0.49 | | | |
| 157 | 561.74 | 26.74 | 57.94 | 15.31 | 123.27 | 0.46 | 3.78 | | 0 | 1 | 0 |
| | | | | | | | | 0.46 | | | |
| 158 | 11759.70 | 122.36 | 132.94 | 113.65 | 423.55 | 0.82 | 1.17 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 159 | 2577.68 | 57.29 | 85.51 | 48.01 | 254.68 | 0.50 | 1.78 | | 0 | 1 | 0 |
| | | | | | | | | 0.67 | | | |
| 160 | 5832.60 | 86.18 | 139.12 | 73.90 | 450.48 | 0.36 | 1.88 | | 0 | 1 | 0 |
| | | | | | | | | 0.62 | | | |
| 161 | 21104.46 | 163.92 | 236.80 | 117.13 | 626.29 | 0.68 | 2.02 | | 1 | 0 | 0 |
| | | | | | | | | 0.69 | | | |
| 162 | 1685.21 | 46.32 | 55.46 | 42.50 | 175.67 | 0.69 | 1.30 | | 0 | 1 | 0 |
| | | | | | | | | 0.84 | | | |
| 163 | 5097.62 | 80.56 | 105.71 | 62.69 | 290.88 | 0.76 | 1.69 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 164 | 5076.62 | 80.40 | 149.16 | 48.58 | 354.39 | 0.51 | 3.07 | | 0 | 0 | 1 |
| | | | | | | | | 0.54 | | | |
| 165 | 1448.96 | 42.95 | 53.44 | 34.93 | 143.27 | 0.89 | 1.53 | | 0 | 0 | 1 |
| | | | | | | | | 0.80 | | | |
| 166 | 8468.03 | 103.84 | 130.86 | 86.32 | 380.73 | 0.73 | 1.52 | | 1 | 0 | 0 |
| | | | | | | | | 0.79 | | | |
| 167 | 18952.02 | 155.34 | 162.32 | 153.23 | 548.58 | 0.79 | 1.06 | | 1 | 0 | 0 |
| | | | | | | | | 0.96 | | | |
| 168 | 7139.82 | 95.35 | 113.80 | 80.79 | 327.22 | 0.84 | 1.41 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 169 | 16610.58 | 145.43 | 190.64 | 116.74 | 554.73 | 0.68 | 1.63 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 170 | 1742.96 | 47.11 | 60.39 | 37.49 | 163.49 | 0.82 | 1.61 | | 1 | 0 | 0 |
| | | | | | | | | 0.78 | | | |
| 171 | 162.75 | 14.39 | 18.85 | 13.01 | 48.84 | 0.86 | 1.45 | | 0 | 0 | 1 |
| | | | | | | | | 0.76 | | | |
| 172 | 24117.88 | 175.24 | 243.87 | 127.37 | 638.88 | 0.74 | 1.91 | | 1 | 0 | 0 |
| | | | | | | | | 0.72 | | | |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|-------|------|---|---|---|
| 173 | 6761.83 | 92.79 | 130.63 | 68.22 | 346.10 | 0.71 | 1.91 | 0.71 | 1 | 0 | 0 |
| 174 | 1065.72 | 36.84 | 53.04 | 32.47 | 151.64 | 0.58 | 1.63 | 0.69 | 0 | 1 | 0 |
| 175 | 2162.94 | 52.48 | 59.45 | 47.99 | 180.16 | 0.84 | 1.24 | 0.88 | 1 | 0 | 0 |
| 176 | 913.48 | 34.10 | 53.30 | 24.25 | 127.62 | 0.70 | 2.20 | 0.64 | 0 | 1 | 0 |
| 177 | 11145.47 | 119.13 | 125.00 | 114.91 | 409.80 | 0.83 | 1.09 | 0.95 | 1 | 0 | 0 |
| 178 | 13518.40 | 131.20 | 137.54 | 126.37 | 446.46 | 0.85 | 1.09 | 0.95 | 1 | 0 | 0 |
| 179 | 24060.13 | 175.03 | 203.52 | 153.37 | 627.59 | 0.77 | 1.33 | 0.86 | 1 | 0 | 0 |
| 180 | 755.98 | 31.02 | 37.61 | 26.89 | 104.15 | 0.88 | 1.40 | 0.82 | 0 | 1 | 0 |
| 181 | 5008.37 | 79.86 | 101.56 | 64.36 | 281.62 | 0.79 | 1.58 | 0.79 | 1 | 0 | 0 |
| 182 | 4346.89 | 74.40 | 79.90 | 70.30 | 252.79 | 0.85 | 1.14 | 0.93 | 1 | 0 | 0 |
| 183 | 6478.33 | 90.82 | 110.50 | 76.63 | 313.93 | 0.83 | 1.44 | 0.82 | 1 | 0 | 0 |
| 184 | 1338.72 | 41.29 | 105.82 | 23.34 | 220.38 | 0.35 | 4.53 | 0.39 | 0 | 1 | 0 |
| 185 | 3575.16 | 67.47 | 107.74 | 45.11 | 262.97 | 0.65 | 2.39 | 0.63 | 0 | 0 | 1 |
| 186 | 419.99 | 23.12 | 72.78 | 8.82 | 145.07 | 0.25 | 8.25 | 0.32 | 0 | 0 | 1 |
| 187 | 2257.44 | 53.61 | 63.65 | 45.93 | 181.59 | 0.86 | 1.39 | 0.84 | 1 | 0 | 0 |
| 188 | 25157.36 | 178.97 | 197.00 | 167.20 | 632.63 | 0.79 | 1.18 | 0.91 | 1 | 0 | 0 |
| 189 | 10557.48 | 115.94 | 135.71 | 103.61 | 429.14 | 0.72 | 1.31 | 0.85 | 1 | 0 | 0 |
| 190 | 5060.87 | 80.27 | 92.52 | 72.58 | 280.05 | 0.81 | 1.27 | 0.87 | 1 | 0 | 0 |
| 191 | 14888.62 | 137.68 | 158.30 | 121.37 | 485.57 | 0.79 | 1.30 | 0.87 | 1 | 0 | 0 |
| 192 | 10657.23 | 116.49 | 124.96 | 112.76 | 437.85 | 0.70 | 1.11 | 0.93 | 1 | 0 | 0 |
| 193 | 16489.83 | 144.90 | 159.41 | 134.97 | 514.41 | 0.78 | 1.18 | 0.91 | 1 | 0 | 0 |
| 194 | 2393.94 | 55.21 | 79.87 | 47.01 | 244.96 | 0.50 | 1.70 | 0.69 | 0 | 1 | 0 |
| 195 | 23377.65 | 172.53 | 232.40 | 134.64 | 651.75 | 0.69 | 1.73 | 0.74 | 1 | 0 | 0 |
| 196 | 3769.40 | 69.28 | 91.49 | 53.79 | 255.47 | 0.73 | 1.70 | 0.76 | 1 | 0 | 0 |
| 197 | 6919.32 | 93.86 | 163.17 | 73.44 | 518.21 | 0.32 | 2.22 | 0.58 | 0 | 1 | 0 |
| 198 | 31.50 | 6.33 | 7.94 | 5.29 | 13.75 | 2.09 | 1.50 | 0.80 | 0 | 1 | 0 |
| 199 | 8011.30 | 101.00 | 117.71 | 88.52 | 355.59 | 0.80 | 1.33 | 0.86 | 1 | 0 | 0 |
| 200 | 493.49 | 25.07 | 98.31 | 8.23 | 195.48 | 0.16 | 11.94 | 0.25 | 0 | 0 | 1 |
| 201 | 78.75 | 10.01 | 15.20 | 7.55 | 31.29 | 1.01 | 2.01 | 0.66 | 0 | 0 | 1 |
| 202 | 1196.97 | 39.04 | 48.46 | 34.22 | 140.02 | 0.77 | 1.42 | 0.81 | 0 | 1 | 0 |
| 203 | 871.48 | 33.31 | 46.30 | 24.87 | 117.34 | 0.80 | 1.86 | 0.72 | 0 | 1 | 0 |
| 204 | 16757.57 | 146.07 | 174.68 | 124.41 | 524.46 | 0.77 | 1.40 | 0.84 | 1 | 0 | 0 |
| 205 | 566.99 | 26.87 | 35.34 | 21.96 | 95.22 | 0.79 | 1.61 | 0.76 | 0 | 1 | 0 |
| 206 | 2892.68 | 60.69 | 72.06 | 53.66 | 216.03 | 0.78 | 1.34 | 0.84 | 1 | 0 | 0 |
| 207 | 2078.95 | 51.45 | 74.75 | 42.65 | 221.49 | 0.53 | 1.75 | 0.69 | 0 | 1 | 0 |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 208 | 2147.20 | 52.29 | 71.95 | 39.30 | 191.54 | 0.74 | 1.83 | | 1 | 0 | 0 |
| | | | | | | | | 0.73 | | | |
| 209 | 20358.98 | 161.00 | 172.49 | 155.08 | 570.15 | 0.79 | 1.11 | | 1 | 0 | 0 |
| | | | | | | | | 0.93 | | | |
| 210 | 11182.21 | 119.32 | 146.89 | 100.76 | 434.28 | 0.75 | 1.46 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 211 | 6305.09 | 89.60 | 95.15 | 85.20 | 308.10 | 0.83 | 1.12 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 212 | 147.00 | 13.68 | 21.56 | 13.63 | 59.34 | 0.52 | 1.58 | | 0 | 0 | 1 |
| | | | | | | | | 0.63 | | | |
| 213 | 698.23 | 29.82 | 59.23 | 15.73 | 125.95 | 0.55 | 3.77 | | 1 | 0 | 0 |
| | | | | | | | | 0.50 | | | |
| 214 | 1275.72 | 40.30 | 46.76 | 42.57 | 158.91 | 0.63 | 1.10 | | 0 | 1 | 0 |
| | | | | | | | | 0.86 | | | |
| 215 | 4047.65 | 71.79 | 91.02 | 59.48 | 260.61 | 0.75 | 1.53 | | 0 | 1 | 0 |
| | | | | | | | | 0.79 | | | |
| 216 | 11192.71 | 119.38 | 134.33 | 110.71 | 434.93 | 0.74 | 1.21 | | 1 | 0 | 0 |
| | | | | | | | | 0.89 | | | |
| 217 | 1107.72 | 37.56 | 69.91 | 24.66 | 183.40 | 0.41 | 2.83 | | 0 | 1 | 0 |
| | | | | | | | | 0.54 | | | |
| 218 | 1790.20 | 47.74 | 68.13 | 35.81 | 184.28 | 0.66 | 1.90 | | 0 | 1 | 0 |
| | | | | | | | | 0.70 | | | |
| 219 | 3653.91 | 68.21 | 85.19 | 57.96 | 246.30 | 0.76 | 1.47 | | 1 | 0 | 0 |
| | | | | | | | | 0.80 | | | |
| 220 | 1585.46 | 44.93 | 91.82 | 23.09 | 206.31 | 0.47 | 3.98 | | 0 | 1 | 0 |
| | | | | | | | | 0.49 | | | |
| 221 | 4577.88 | 76.35 | 165.49 | 44.83 | 412.81 | 0.34 | 3.69 | | 0 | 1 | 0 |
| | | | | | | | | 0.46 | | | |
| 222 | 63.00 | 8.96 | 13.95 | 6.94 | 28.05 | 1.01 | 2.01 | | 0 | 0 | 1 |
| | | | | | | | | 0.64 | | | |
| 223 | 10489.23 | 115.57 | 141.12 | 99.85 | 425.21 | 0.73 | 1.41 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 224 | 15749.60 | 141.61 | 153.47 | 133.92 | 526.58 | 0.71 | 1.15 | | 1 | 0 | 0 |
| | | | | | | | | 0.92 | | | |
| 225 | 330.74 | 20.52 | 28.55 | 15.60 | 69.06 | 0.87 | 1.83 | | 0 | 1 | 0 |
| | | | | | | | | 0.72 | | | |
| 226 | 5501.86 | 83.70 | 111.65 | 66.35 | 306.99 | 0.73 | 1.68 | | 1 | 0 | 0 |
| | | | | | | | | 0.75 | | | |
| 227 | 10116.49 | 113.49 | 128.75 | 104.10 | 413.27 | 0.74 | 1.24 | | 1 | 0 | 0 |
| | | | | | | | | 0.88 | | | |
| 228 | 1632.71 | 45.59 | 59.80 | 40.04 | 172.10 | 0.69 | 1.49 | | 1 | 0 | 0 |
| | | | | | | | | 0.76 | | | |
| 229 | 230.99 | 17.15 | 21.08 | 14.53 | 52.08 | 1.07 | 1.45 | | 0 | 1 | 0 |
| | | | | | | | | 0.81 | | | |
| 230 | 272.99 | 18.64 | 29.69 | 14.64 | 74.99 | 0.61 | 2.03 | | 0 | 0 | 1 |
| | | | | | | | | 0.63 | | | |
| 231 | 10714.98 | 116.80 | 121.13 | 116.17 | 412.48 | 0.79 | 1.04 | | 1 | 0 | 0 |
| | | | | | | | | 0.96 | | | |
| 232 | 1317.72 | 40.96 | 43.01 | 42.27 | 144.61 | 0.79 | 1.02 | | 0 | 1 | 0 |
| | | | | | | | | 0.95 | | | |
| 233 | 708.73 | 30.04 | 37.22 | 25.11 | 102.25 | 0.85 | 1.48 | | 0 | 1 | 0 |
| | | | | | | | | 0.81 | | | |
| 234 | 19214.51 | 156.41 | 185.16 | 135.72 | 551.72 | 0.79 | 1.36 | | 1 | 0 | 0 |
| | | | | | | | | 0.84 | | | |
| 235 | 12363.43 | 125.47 | 147.83 | 108.23 | 433.82 | 0.83 | 1.37 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 236 | 12384.43 | 125.57 | 154.06 | 104.35 | 445.02 | 0.79 | 1.48 | | 1 | 0 | 0 |
| | | | | | | | | 0.82 | | | |
| 237 | 6394.34 | 90.23 | 109.46 | 81.15 | 342.31 | 0.69 | 1.35 | | 0 | 0 | 1 |
| | | | | | | | | 0.82 | | | |
| 238 | 8179.29 | 102.05 | 112.17 | 98.26 | 370.68 | 0.75 | 1.14 | | 1 | 0 | 0 |
| | | | | | | | | 0.91 | | | |
| 239 | 68.25 | 9.32 | 18.66 | 5.15 | 33.98 | 0.74 | 3.62 | | 0 | 0 | 1 |
| | | | | | | | | 0.50 | | | |
| 240 | 666.73 | 29.14 | 37.50 | 23.61 | 99.24 | 0.85 | 1.59 | | 0 | 1 | 0 |
| | | | | | | | | 0.78 | | | |
| 241 | 14363.63 | 135.23 | 139.72 | 134.48 | 482.43 | 0.78 | 1.04 | | 1 | 0 | 0 |
| | | | | | | | | 0.97 | | | |
| 242 | 1433.21 | 42.72 | 52.27 | 35.67 | 140.26 | 0.92 | 1.47 | | 0 | 1 | 0 |
| | | | | | | | | 0.82 | | | |

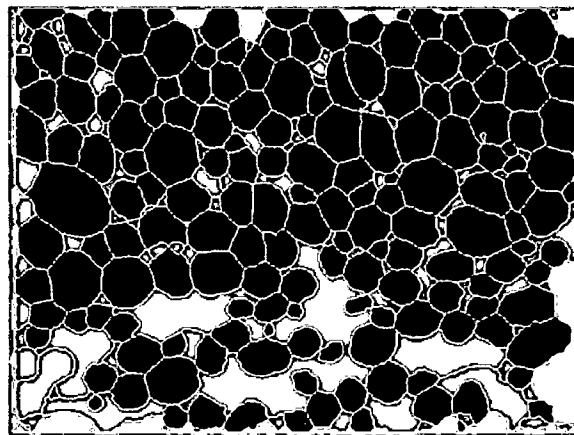
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|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 243 | 3155.17 | 63.38 | 88.34 | 48.50 | 240.15 | 0.69 | 1.82 | | 0 | 1 | 0 |
| | | | | | | | | 0.72 | | | |
| 244 | 13990.89 | 133.47 | 205.39 | 91.04 | 569.03 | 0.54 | 2.26 | | 1 | 0 | 0 |
| | | | | | | | | 0.65 | | | |
| 245 | 1769.20 | 47.46 | 58.96 | 41.17 | 168.54 | 0.78 | 1.43 | | 0 | 1 | 0 |
| | | | | | | | | 0.81 | | | |
| 246 | 6593.83 | 91.63 | 119.02 | 75.55 | 339.39 | 0.72 | 1.58 | | 1 | 0 | 0 |
| | | | | | | | | 0.77 | | | |
| 247 | 11292.46 | 119.91 | 220.02 | 80.05 | 610.55 | 0.38 | 2.75 | | 0 | 0 | 1 |
| | | | | | | | | 0.54 | | | |
| 248 | 9565.26 | 110.36 | 132.25 | 100.20 | 442.66 | 0.61 | 1.32 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 249 | 6347.09 | 89.90 | 170.54 | 51.60 | 427.67 | 0.44 | 3.30 | | 0 | 1 | 0 |
| | | | | | | | | 0.53 | | | |
| 250 | 9365.76 | 109.20 | 132.25 | 91.87 | 378.97 | 0.82 | 1.44 | | 1 | 0 | 0 |
| | | | | | | | | 0.83 | | | |
| 251 | 16279.83 | 143.97 | 150.90 | 140.76 | 511.63 | 0.78 | 1.07 | | 1 | 0 | 0 |
| | | | | | | | | 0.95 | | | |
| 252 | 12184.94 | 124.56 | 146.91 | 109.48 | 440.40 | 0.79 | 1.34 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 253 | 15208.86 | 139.16 | 190.29 | 106.02 | 522.23 | 0.70 | 1.79 | | 1 | 0 | 0 |
| | | | | | | | | 0.73 | | | |
| 254 | 31.50 | 6.33 | 10.34 | 4.62 | 16.99 | 1.37 | 2.24 | | 0 | 0 | 1 |
| | | | | | | | | 0.61 | | | |
| 255 | 26559.07 | 183.89 | 210.38 | 165.91 | 654.99 | 0.78 | 1.27 | | 1 | 0 | 0 |
| | | | | | | | | 0.87 | | | |
| 256 | 14652.38 | 136.59 | 144.09 | 130.83 | 484.23 | 0.79 | 1.10 | | 1 | 0 | 0 |
| | | | | | | | | 0.95 | | | |
| 257 | 15161.61 | 138.94 | 147.42 | 132.88 | 487.70 | 0.80 | 1.11 | | 1 | 0 | 0 |
| | | | | | | | | 0.94 | | | |
| 258 | 15765.35 | 141.68 | 166.05 | 125.04 | 505.80 | 0.77 | 1.33 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 259 | 14090.64 | 133.94 | 148.05 | 125.43 | 493.07 | 0.73 | 1.18 | | 1 | 0 | 0 |
| | | | | | | | | 0.90 | | | |
| 260 | 2299.44 | 54.11 | 87.56 | 38.39 | 220.15 | 0.60 | 2.28 | | 0 | 1 | 0 |
| | | | | | | | | 0.62 | | | |
| 261 | 2204.94 | 52.99 | 91.65 | 34.29 | 241.63 | 0.47 | 2.67 | | 0 | 0 | 1 |
| | | | | | | | | 0.58 | | | |
| 262 | 10783.22 | 117.17 | 137.89 | 101.99 | 411.04 | 0.80 | 1.35 | | 1 | 0 | 0 |
| | | | | | | | | 0.85 | | | |
| 263 | 1233.72 | 39.63 | 67.05 | 28.39 | 201.50 | 0.38 | 2.36 | | 0 | 1 | 0 |
| | | | | | | | | 0.59 | | | |
| 264 | 1653.71 | 45.89 | 80.70 | 27.74 | 191.54 | 0.57 | 2.91 | | 0 | 1 | 0 |
| | | | | | | | | 0.57 | | | |
| 265 | 908.23 | 34.01 | 52.55 | 23.25 | 128.64 | 0.69 | 2.26 | | 0 | 1 | 0 |
| | | | | | | | | 0.65 | | | |
| 266 | 6945.57 | 94.04 | 115.55 | 78.14 | 328.23 | 0.81 | 1.48 | | 1 | 0 | 0 |
| | | | | | | | | 0.81 | | | |
| 267 | 1322.97 | 41.04 | 41.77 | 41.39 | 134.56 | 0.92 | 1.01 | | 1 | 0 | 0 |
| | | | | | | | | 0.98 | | | |
| 268 | 913.48 | 34.10 | 53.46 | 24.96 | 131.09 | 0.67 | 2.14 | | 0 | 1 | 0 |
| | | | | | | | | 0.64 | | | |
| 269 | 4961.12 | 79.48 | 204.32 | 43.81 | 516.44 | 0.23 | 4.66 | | 0 | 0 | 1 |
| | | | | | | | | 0.39 | | | |
| 270 | 860.98 | 33.11 | 44.54 | 26.55 | 118.68 | 0.77 | 1.68 | | 0 | 1 | 0 |
| | | | | | | | | 0.74 | | | |
| 271 | 1858.45 | 48.64 | 89.39 | 35.00 | 238.16 | 0.41 | 2.55 | | 1 | 0 | 0 |
| | | | | | | | | 0.54 | | | |
| 272 | 346.49 | 21.00 | 32.36 | 17.42 | 83.37 | 0.63 | 1.86 | | 0 | 1 | 0 |
| | | | | | | | | 0.65 | | | |
| 273 | 713.98 | 30.15 | 50.43 | 26.01 | 154.00 | 0.38 | 1.94 | | 0 | 0 | 1 |
| | | | | | | | | 0.60 | | | |
| 274 | 1023.72 | 36.10 | 68.50 | 20.74 | 157.47 | 0.52 | 3.30 | | 0 | 0 | 1 |
| | | | | | | | | 0.53 | | | |
| 275 | 708.73 | 30.04 | 51.40 | 20.66 | 124.61 | 0.57 | 2.49 | | 0 | 0 | 1 |
| | | | | | | | | 0.58 | | | |
| 276 | 42.00 | 7.31 | 9.48 | 6.60 | 18.89 | 1.48 | 1.44 | | 0 | 0 | 1 |
| | | | | | | | | 0.77 | | | |

Código: H8-11a



a)

b)



c)

Figura A6. a) Imagen Original b) Imagen procesada c) Imagen segmentada y clasificada

Tabla A6. Parámetros de tamaño y forma y clasificación de elementos en micrografía H8-11a

| Núm. | Área | Deq | Ejemay | Ejemen | Per | Red | Elg | Comp | Célula | Espint | Elem No Rec |
|------|----------|--------|--------|--------|---------|------|-------|------|--------|--------|-------------|
| 1 | 94.50 | 10.97 | 14.43 | 11.16 | 37.77 | 0.83 | 1.29 | 0.76 | 0 | 0 | 1 |
| 2 | 236.24 | 17.34 | 73.45 | 6.52 | 129.98 | 0.18 | 11.27 | 0.24 | 0 | 0 | 1 |
| 3 | 666.73 | 29.14 | 61.08 | 16.91 | 137.01 | 0.45 | 3.61 | 0.48 | 0 | 0 | 1 |
| 4 | 1685.21 | 46.32 | 104.79 | 22.58 | 238.39 | 0.37 | 4.64 | 0.44 | 0 | 0 | 1 |
| 5 | 5087.12 | 80.48 | 453.87 | 22.70 | 946.18 | 0.07 | 19.99 | 0.18 | 0 | 0 | 1 |
| 6 | 430.49 | 23.41 | 80.13 | 8.20 | 155.58 | 0.22 | 9.78 | 0.29 | 0 | 0 | 1 |
| 7 | 31.50 | 6.33 | 9.17 | 5.07 | 15.65 | 1.62 | 1.81 | 0.69 | 0 | 0 | 1 |
| 8 | 761.23 | 31.13 | 48.28 | 22.14 | 120.03 | 0.66 | 2.18 | 0.64 | 0 | 0 | 1 |
| 9 | 209.99 | 16.35 | 24.82 | 12.41 | 58.00 | 0.78 | 2.00 | 0.66 | 0 | 0 | 1 |
| 10 | 293.99 | 19.35 | 57.13 | 7.11 | 105.95 | 0.33 | 8.03 | 0.34 | 0 | 0 | 1 |
| 11 | 740.23 | 30.70 | 152.88 | 7.86 | 269.35 | 0.13 | 19.46 | 0.20 | 0 | 0 | 1 |
| 12 | 488.24 | 24.93 | 108.81 | 6.80 | 193.58 | 0.16 | 16.00 | 0.23 | 0 | 0 | 1 |
| 13 | 309.74 | 19.86 | 78.15 | 6.03 | 141.27 | 0.20 | 12.96 | 0.25 | 0 | 0 | 1 |
| 14 | 561.74 | 26.74 | 124.64 | 8.33 | 211.12 | 0.16 | 14.95 | 0.21 | 0 | 0 | 1 |
| 15 | 572.24 | 26.99 | 39.22 | 23.44 | 111.42 | 0.58 | 1.67 | 0.69 | 0 | 0 | 1 |
| 16 | 1879.45 | 48.92 | 60.74 | 45.83 | 191.54 | 0.64 | 1.33 | 0.81 | 0 | 1 | 0 |
| 17 | 5580.61 | 84.29 | 105.61 | 69.92 | 313.37 | 0.71 | 1.51 | 0.80 | 0 | 1 | 0 |
| 18 | 5344.36 | 82.49 | 100.05 | 72.42 | 297.27 | 0.76 | 1.38 | 0.82 | 1 | 0 | 0 |
| 19 | 1711.46 | 46.68 | 83.63 | 35.46 | 224.96 | 0.42 | 2.36 | 0.56 | 0 | 1 | 0 |
| 20 | 1632.71 | 45.59 | 79.58 | 28.36 | 190.43 | 0.57 | 2.81 | 0.57 | 0 | 1 | 0 |
| 21 | 1060.47 | 36.75 | 45.02 | 32.15 | 127.29 | 0.82 | 1.40 | 0.82 | 0 | 1 | 0 |
| 22 | 5412.61 | 83.02 | 104.12 | 72.46 | 315.60 | 0.68 | 1.44 | 0.80 | 0 | 1 | 0 |
| 23 | 3428.16 | 66.07 | 88.08 | 52.33 | 245.52 | 0.71 | 1.68 | 0.75 | 0 | 1 | 0 |
| 24 | 8804.02 | 105.88 | 109.79 | 103.89 | 362.54 | 0.84 | 1.06 | 0.96 | 1 | 0 | 0 |
| 25 | 12820.17 | 127.76 | 177.72 | 95.08 | 488.49 | 0.68 | 1.87 | 0.72 | 1 | 0 | 0 |
| 26 | 2714.18 | 58.79 | 94.30 | 40.55 | 242.74 | 0.58 | 2.33 | 0.62 | 0 | 1 | 0 |
| 27 | 18894.27 | 155.10 | 269.00 | 99.56 | 672.21 | 0.53 | 2.70 | 0.58 | 0 | 1 | 0 |
| 28 | 15534.35 | 140.64 | 154.54 | 129.47 | 481.64 | 0.84 | 1.19 | 0.91 | 1 | 0 | 0 |
| 29 | 9738.50 | 111.35 | 117.47 | 112.52 | 394.94 | 0.78 | 1.04 | 0.95 | 1 | 0 | 0 |
| 30 | 1627.46 | 45.52 | 60.77 | 42.58 | 189.65 | 0.57 | 1.43 | 0.75 | 0 | 1 | 0 |
| 31 | 5165.87 | 81.10 | 133.46 | 56.78 | 329.90 | 0.60 | 2.35 | 0.61 | 1 | 0 | 0 |
| 32 | 813.73 | 32.19 | 50.36 | 22.47 | 120.58 | 0.70 | 2.24 | 0.64 | 0 | 1 | 0 |
| 33 | 40843.96 | 228.04 | 267.94 | 195.24 | 817.47 | 0.77 | 1.37 | 0.85 | 1 | 0 | 0 |
| 34 | 3632.91 | 68.01 | 75.22 | 63.66 | 234.69 | 0.83 | 1.18 | 0.90 | 1 | 0 | 0 |
| 35 | 31.50 | 6.33 | 10.34 | 4.62 | 16.99 | 1.37 | 2.24 | 0.61 | 0 | 1 | 0 |
| 36 | 10462.98 | 115.42 | 155.50 | 87.24 | 426.00 | 0.72 | 1.78 | 0.74 | 1 | 0 | 0 |
| 37 | 7229.07 | 95.94 | 110.36 | 84.59 | 332.59 | 0.82 | 1.30 | 0.87 | 1 | 0 | 0 |
| 38 | 7885.30 | 100.20 | 178.97 | 58.67 | 421.78 | 0.56 | 3.05 | 0.56 | 0 | 0 | 1 |
| 39 | 22684.67 | 169.95 | 252.69 | 190.43 | 970.45 | 0.30 | 1.33 | 0.67 | 0 | 1 | 0 |
| 40 | 388.49 | 22.24 | 27.27 | 19.85 | 73.09 | 0.91 | 1.37 | 0.82 | 0 | 1 | 0 |
| 41 | 425.24 | 23.27 | 32.69 | 22.69 | 96.33 | 0.58 | 1.44 | 0.71 | 0 | 1 | 0 |
| 42 | 18306.28 | 152.67 | 385.26 | 96.78 | 1135.98 | 0.18 | 3.98 | 0.40 | 0 | 1 | 0 |
| 43 | 2246.94 | 53.49 | 76.97 | 42.80 | 218.02 | 0.59 | 1.80 | 0.69 | 0 | 1 | 0 |
| 44 | 10583.73 | 116.08 | 127.57 | 107.81 | 403.55 | 0.82 | 1.18 | 0.91 | 1 | 0 | 0 |
| 45 | 22280.43 | 168.43 | 179.23 | 159.36 | 563.57 | 0.88 | 1.12 | 0.94 | 1 | 0 | 0 |
| 46 | 488.24 | 24.93 | 34.47 | 21.97 | 100.35 | 0.61 | 1.57 | 0.72 | 0 | 1 | 0 |
| 47 | 1317.72 | 40.96 | 53.11 | 32.38 | 140.26 | 0.84 | 1.64 | 0.77 | 0 | 1 | 0 |
| 48 | 13345.16 | 130.35 | 150.44 | 114.81 | 452.94 | 0.82 | 1.31 | 0.87 | 1 | 0 | 0 |
| 49 | 1312.47 | 40.88 | 63.41 | 27.83 | 155.67 | 0.68 | 2.28 | 0.64 | 0 | 1 | 0 |
| 50 | 9665.00 | 110.93 | 153.77 | 81.93 | 418.73 | 0.69 | 1.88 | 0.72 | 1 | 0 | 0 |
| 51 | 2152.44 | 52.35 | 63.24 | 47.92 | 201.73 | 0.66 | 1.32 | 0.83 | 0 | 1 | 0 |
| 52 | 6441.59 | 90.56 | 100.35 | 82.81 | 306.43 | 0.86 | 1.21 | 0.90 | 1 | 0 | 0 |
| 53 | 3716.90 | 68.79 | 72.79 | 68.26 | 240.61 | 0.81 | 1.07 | 0.95 | 1 | 0 | 0 |
| 54 | 729.73 | 30.48 | 67.96 | 17.28 | 151.55 | 0.40 | 3.93 | 0.45 | 0 | 0 | 1 |
| 55 | 729.73 | 30.48 | 47.50 | 22.63 | 122.48 | 0.61 | 2.10 | 0.64 | 0 | 1 | 0 |
| 56 | 11980.19 | 123.51 | 146.51 | 106.51 | 434.61 | 0.80 | 1.38 | 0.84 | 1 | 0 | 0 |
| 57 | 5879.85 | 86.52 | 106.37 | 74.80 | 317.59 | 0.73 | 1.42 | 0.81 | 1 | 0 | 0 |
| 58 | 6620.08 | 91.81 | 95.69 | 88.82 | 311.90 | 0.86 | 1.08 | 0.96 | 1 | 0 | 0 |
| 59 | 4588.38 | 76.43 | 84.77 | 71.61 | 266.76 | 0.81 | 1.18 | 0.90 | 1 | 0 | 0 |
| 60 | 4656.63 | 77.00 | 98.00 | 64.09 | 271.90 | 0.79 | 1.53 | 0.79 | 1 | 0 | 0 |
| 61 | 1968.70 | 50.07 | 57.70 | 44.77 | 168.08 | 0.88 | 1.29 | 0.87 | 0 | 1 | 0 |
| 62 | 1186.47 | 38.87 | 41.40 | 37.12 | 124.94 | 0.96 | 1.12 | 0.94 | 1 | 0 | 0 |
| 63 | 3575.16 | 67.47 | 81.15 | 60.91 | 254.13 | 0.70 | 1.33 | 0.83 | 0 | 1 | 0 |
| 64 | 839.98 | 32.70 | 45.98 | 29.91 | 132.20 | 0.60 | 1.54 | 0.71 | 0 | 1 | 0 |
| 65 | 36.75 | 6.84 | 9.88 | 5.11 | 16.99 | 1.60 | 1.94 | 0.69 | 0 | 0 | 1 |
| 66 | 4619.88 | 76.70 | 86.55 | 70.08 | 271.44 | 0.79 | 1.23 | 0.89 | 1 | 0 | 0 |
| 67 | 5790.60 | 85.87 | 112.23 | 67.04 | 303.52 | 0.79 | 1.67 | 0.77 | 1 | 0 | 0 |
| 68 | 362.24 | 21.48 | 40.52 | 14.68 | 91.42 | 0.54 | 2.76 | 0.53 | 0 | 1 | 0 |
| 69 | 3249.67 | 64.32 | 138.43 | 75.87 | 434.05 | 0.22 | 1.82 | 0.46 | 0 | 1 | 0 |
| 70 | 19188.26 | 156.30 | 159.67 | 153.59 | 516.63 | 0.90 | 1.04 | 0.98 | 1 | 0 | 0 |
| 71 | 2183.94 | 52.73 | 107.69 | 54.29 | 301.39 | 0.30 | 1.98 | 0.49 | 0 | 1 | 0 |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|---------|------|------|------|---|---|---|
| 72 | 9318.51 | 108.93 | 126.08 | 96.02 | 379.85 | 0.81 | 1.31 | 0.86 | 1 | 0 | 0 |
| 73 | 6420.59 | 90.42 | 99.69 | 83.02 | 304.63 | 0.87 | 1.20 | 0.91 | 1 | 0 | 0 |
| 74 | 52.50 | 8.18 | 16.67 | 4.84 | 29.39 | 0.76 | 3.45 | 0.49 | 0 | 0 | 1 |
| 75 | 14295.38 | 134.91 | 150.61 | 124.85 | 480.76 | 0.78 | 1.21 | 0.90 | 1 | 0 | 0 |
| 76 | 9407.76 | 109.45 | 122.47 | 98.40 | 376.61 | 0.83 | 1.24 | 0.89 | 1 | 0 | 0 |
| 77 | 944.98 | 34.69 | 50.14 | 32.55 | 146.74 | 0.55 | 1.54 | 0.69 | 0 | 1 | 0 |
| 78 | 13318.91 | 130.22 | 147.06 | 117.14 | 445.58 | 0.84 | 1.26 | 0.89 | 1 | 0 | 0 |
| 79 | 9507.51 | 110.02 | 113.21 | 108.18 | 376.84 | 0.84 | 1.05 | 0.97 | 1 | 0 | 0 |
| 80 | 35489.09 | 212.57 | 368.74 | 141.32 | 1258.10 | 0.28 | 2.61 | 0.58 | 0 | 1 | 0 |
| 81 | 14116.89 | 134.07 | 149.83 | 121.31 | 477.52 | 0.78 | 1.24 | 0.89 | 1 | 0 | 0 |
| 82 | 84.00 | 10.34 | 21.66 | 5.26 | 38.56 | 0.71 | 4.12 | 0.48 | 0 | 0 | 1 |
| 83 | 11880.45 | 122.99 | 138.12 | 110.10 | 419.52 | 0.85 | 1.25 | 0.89 | 1 | 0 | 0 |
| 84 | 4157.89 | 72.76 | 141.34 | 42.11 | 317.96 | 0.52 | 3.36 | 0.51 | 0 | 0 | 1 |
| 85 | 4472.89 | 75.47 | 78.84 | 73.51 | 258.15 | 0.84 | 1.07 | 0.96 | 1 | 0 | 0 |
| 86 | 440.99 | 23.70 | 31.03 | 23.50 | 93.32 | 0.64 | 1.32 | 0.76 | 0 | 1 | 0 |
| 87 | 5522.86 | 83.86 | 102.68 | 72.51 | 307.87 | 0.73 | 1.42 | 0.82 | 1 | 0 | 0 |
| 88 | 12631.18 | 126.82 | 149.79 | 114.32 | 476.96 | 0.70 | 1.31 | 0.85 | 1 | 0 | 0 |
| 89 | 887.23 | 33.61 | 40.24 | 30.12 | 116.33 | 0.82 | 1.34 | 0.84 | 0 | 1 | 0 |
| 90 | 4677.63 | 77.17 | 92.50 | 66.20 | 268.99 | 0.81 | 1.40 | 0.83 | 1 | 0 | 0 |
| 91 | 335.99 | 20.68 | 49.32 | 12.28 | 99.57 | 0.43 | 4.02 | 0.42 | 0 | 1 | 0 |
| 92 | 19650.25 | 158.18 | 173.46 | 145.31 | 543.11 | 0.84 | 1.19 | 0.91 | 1 | 0 | 0 |
| 93 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | 0.69 | 0 | 0 | 1 |
| 97 | 1249.47 | 39.89 | 58.90 | 28.31 | 145.72 | 0.74 | 2.08 | 0.68 | 0 | 1 | 0 |
| 98 | 13129.91 | 129.30 | 148.52 | 114.12 | 459.19 | 0.78 | 1.30 | 0.87 | 1 | 0 | 0 |
| 99 | 4058.15 | 71.88 | 76.83 | 69.22 | 251.12 | 0.81 | 1.11 | 0.94 | 1 | 0 | 0 |
| 100 | 530.24 | 25.98 | 38.44 | 21.28 | 99.80 | 0.67 | 1.81 | 0.68 | 0 | 1 | 0 |
| 101 | 3758.90 | 69.18 | 81.42 | 59.88 | 234.69 | 0.86 | 1.36 | 0.85 | 1 | 0 | 0 |
| 102 | 3984.65 | 71.23 | 75.49 | 68.13 | 239.59 | 0.87 | 1.11 | 0.94 | 1 | 0 | 0 |
| 103 | 110.25 | 11.85 | 15.44 | 9.71 | 34.53 | 1.16 | 1.59 | 0.77 | 0 | 1 | 0 |
| 104 | 7601.81 | 98.38 | 105.54 | 94.10 | 351.24 | 0.77 | 1.12 | 0.93 | 1 | 0 | 0 |
| 105 | 12200.69 | 124.64 | 131.87 | 119.85 | 426.33 | 0.84 | 1.10 | 0.95 | 1 | 0 | 0 |
| 106 | 131.25 | 12.93 | 42.99 | 5.11 | 73.88 | 0.30 | 8.42 | 0.30 | 0 | 0 | 1 |
| 107 | 887.23 | 33.61 | 39.96 | 29.58 | 110.63 | 0.91 | 1.35 | 0.84 | 0 | 1 | 0 |
| 108 | 3827.15 | 69.81 | 98.61 | 53.34 | 268.11 | 0.67 | 1.85 | 0.71 | 0 | 0 | 1 |
| 109 | 8993.02 | 107.01 | 125.21 | 93.50 | 379.62 | 0.78 | 1.34 | 0.85 | 1 | 0 | 0 |
| 110 | 89158.47 | 336.93 | 680.98 | 371.57 | 3640.13 | 0.08 | 1.83 | 0.49 | 0 | 1 | 0 |
| 111 | 1265.22 | 40.14 | 49.57 | 35.73 | 148.96 | 0.72 | 1.39 | 0.81 | 0 | 1 | 0 |
| 112 | 3291.67 | 64.74 | 103.53 | 52.48 | 284.86 | 0.51 | 1.97 | 0.63 | 0 | 1 | 0 |
| 113 | 519.74 | 25.72 | 29.94 | 24.36 | 86.05 | 0.88 | 1.23 | 0.86 | 0 | 0 | 1 |
| 114 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | 0.69 | 0 | 0 | 1 |
| 115 | 14605.13 | 136.37 | 151.97 | 123.54 | 459.98 | 0.87 | 1.23 | 0.90 | 1 | 0 | 0 |
| 116 | 8641.28 | 104.89 | 115.79 | 97.47 | 374.48 | 0.77 | 1.19 | 0.91 | 1 | 0 | 0 |
| 117 | 17046.31 | 147.32 | 163.20 | 133.96 | 496.87 | 0.87 | 1.22 | 0.90 | 1 | 0 | 0 |
| 118 | 813.73 | 32.19 | 63.36 | 19.33 | 140.81 | 0.52 | 3.28 | 0.51 | 0 | 1 | 0 |
| 119 | 3711.66 | 68.74 | 71.13 | 67.41 | 230.43 | 0.88 | 1.06 | 0.97 | 1 | 0 | 0 |
| 120 | 11644.20 | 121.76 | 129.12 | 115.72 | 413.27 | 0.86 | 1.12 | 0.94 | 1 | 0 | 0 |
| 121 | 3905.90 | 70.52 | 113.74 | 47.28 | 284.63 | 0.61 | 2.41 | 0.62 | 0 | 1 | 0 |
| 122 | 78.75 | 10.01 | 20.11 | 5.26 | 35.32 | 0.79 | 3.83 | 0.50 | 1 | 0 | 0 |
| 123 | 7964.05 | 100.70 | 113.80 | 90.75 | 353.14 | 0.80 | 1.25 | 0.88 | 1 | 0 | 0 |
| 124 | 913.48 | 34.10 | 52.93 | 31.17 | 153.22 | 0.49 | 1.70 | 0.64 | 0 | 1 | 0 |
| 125 | 10961.72 | 118.14 | 128.64 | 109.84 | 408.13 | 0.83 | 1.17 | 0.92 | 1 | 0 | 0 |
| 126 | 5512.36 | 83.78 | 88.19 | 80.98 | 280.05 | 0.88 | 1.09 | 0.95 | 1 | 0 | 0 |
| 127 | 934.48 | 34.49 | 75.72 | 23.90 | 175.34 | 0.38 | 3.17 | 0.46 | 0 | 1 | 0 |
| 128 | 288.74 | 19.17 | 60.81 | 7.90 | 119.47 | 0.25 | 7.69 | 0.32 | 0 | 0 | 1 |
| 129 | 923.98 | 34.30 | 43.24 | 29.98 | 124.05 | 0.75 | 1.44 | 0.79 | 0 | 1 | 0 |
| 130 | 9896.00 | 112.25 | 125.16 | 102.72 | 392.25 | 0.81 | 1.22 | 0.90 | 1 | 0 | 0 |
| 131 | 7643.80 | 98.65 | 110.42 | 91.75 | 350.23 | 0.78 | 1.20 | 0.89 | 1 | 0 | 0 |
| 132 | 4882.38 | 78.84 | 95.98 | 69.75 | 289.22 | 0.73 | 1.38 | 0.82 | 1 | 0 | 0 |
| 133 | 997.47 | 35.64 | 44.10 | 31.79 | 128.18 | 0.76 | 1.39 | 0.81 | 0 | 1 | 0 |
| 134 | 10347.49 | 114.78 | 137.22 | 98.50 | 393.83 | 0.84 | 1.39 | 0.84 | 1 | 0 | 0 |
| 135 | 8053.29 | 101.26 | 136.85 | 77.02 | 379.85 | 0.70 | 1.78 | 0.74 | 1 | 0 | 0 |
| 136 | 2304.69 | 54.17 | 64.31 | 47.93 | 190.20 | 0.80 | 1.34 | 0.84 | 1 | 0 | 0 |
| 137 | 7276.31 | 96.25 | 104.34 | 91.43 | 340.41 | 0.79 | 1.14 | 0.92 | 1 | 0 | 0 |
| 138 | 3559.41 | 67.32 | 80.13 | 57.36 | 226.86 | 0.87 | 1.40 | 0.84 | 1 | 0 | 0 |
| 139 | 10961.72 | 118.14 | 132.46 | 106.66 | 407.44 | 0.83 | 1.24 | 0.89 | 1 | 0 | 0 |
| 140 | 9854.00 | 112.01 | 126.26 | 100.73 | 386.33 | 0.83 | 1.25 | 0.89 | 1 | 0 | 0 |
| 141 | 2813.93 | 59.86 | 106.12 | 43.91 | 290.33 | 0.42 | 2.42 | 0.56 | 0 | 1 | 0 |
| 142 | 5638.36 | 84.73 | 100.94 | 75.61 | 305.32 | 0.76 | 1.33 | 0.84 | 0 | 0 | 1 |
| 143 | 13439.66 | 130.81 | 162.03 | 106.23 | 462.66 | 0.79 | 1.53 | 0.81 | 1 | 0 | 0 |
| 144 | 9024.52 | 107.19 | 131.12 | 89.69 | 386.10 | 0.76 | 1.46 | 0.82 | 1 | 0 | 0 |
| 145 | 3123.67 | 63.06 | 89.53 | 51.89 | 267.87 | 0.55 | 1.73 | 0.70 | 0 | 1 | 0 |
| 146 | 9449.76 | 109.69 | 119.75 | 101.41 | 375.27 | 0.84 | 1.18 | 0.92 | 1 | 0 | 0 |
| 147 | 99.75 | 11.27 | 21.47 | 7.27 | 45.04 | 0.62 | 2.95 | 0.52 | 0 | 0 | 1 |
| 148 | 367.49 | 21.63 | 30.79 | 15.88 | 71.75 | 0.90 | 1.94 | 0.70 | 0 | 1 | 0 |
| 149 | 12914.67 | 128.23 | 156.40 | 107.74 | 450.72 | 0.80 | 1.45 | 0.82 | 1 | 0 | 0 |
| 150 | 6478.33 | 90.82 | 111.53 | 74.58 | 310.56 | 0.84 | 1.50 | 0.81 | 1 | 0 | 0 |
| 151 | 1170.72 | 38.61 | 58.17 | 29.41 | 153.77 | 0.62 | 1.98 | 0.66 | 0 | 0 | 1 |
| 152 | 1081.47 | 37.11 | 90.16 | 20.44 | 192.66 | 0.37 | 4.41 | 0.41 | 0 | 1 | 0 |
| 153 | 8494.28 | 104.00 | 104.87 | 104.18 | 351.01 | 0.87 | 1.01 | 0.99 | 1 | 0 | 0 |
| 154 | 3659.16 | 68.26 | 135.38 | 65.26 | 394.71 | 0.30 | 2.07 | 0.50 | 0 | 1 | 0 |
| 155 | 6567.58 | 91.44 | 92.64 | 91.01 | 299.40 | 0.92 | 1.02 | 0.99 | 1 | 0 | 0 |
| 156 | 6572.83 | 91.48 | 98.55 | 85.83 | 310.79 | 0.86 | 1.15 | 0.93 | 1 | 0 | 0 |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|--------|------|------|------|---|---|---|
| 157 | 19692.25 | 158.34 | 183.16 | 138.85 | 556.30 | 0.80 | 1.32 | 0.86 | 1 | 0 | 0 |
| 158 | 8977.27 | 106.91 | 117.55 | 100.08 | 380.64 | 0.78 | 1.17 | 0.91 | 1 | 0 | 0 |
| 159 | 698.23 | 29.82 | 37.22 | 24.71 | 100.35 | 0.87 | 1.51 | 0.80 | 1 | 0 | 0 |
| 160 | 6131.84 | 88.36 | 134.48 | 61.66 | 339.30 | 0.67 | 2.18 | 0.66 | 1 | 0 | 0 |
| 161 | 1317.72 | 40.96 | 47.05 | 39.98 | 145.16 | 0.79 | 1.18 | 0.87 | 0 | 1 | 0 |
| 162 | 8095.29 | 101.52 | 109.04 | 95.29 | 340.50 | 0.88 | 1.14 | 0.93 | 1 | 0 | 0 |
| 163 | 209.99 | 16.35 | 24.82 | 12.41 | 58.00 | 0.78 | 2.00 | 0.66 | 0 | 0 | 1 |
| 164 | 320.24 | 20.19 | 32.93 | 14.36 | 74.99 | 0.72 | 2.29 | 0.61 | 0 | 1 | 0 |
| 165 | 488.24 | 24.93 | 35.51 | 18.81 | 85.82 | 0.83 | 1.89 | 0.70 | 0 | 1 | 0 |
| 166 | 12389.68 | 125.60 | 144.70 | 111.43 | 442.99 | 0.79 | 1.30 | 0.87 | 1 | 0 | 0 |
| 167 | 4241.89 | 73.49 | 86.75 | 64.05 | 252.46 | 0.84 | 1.35 | 0.85 | 1 | 0 | 0 |
| 168 | 16227.34 | 143.74 | 165.37 | 126.62 | 506.68 | 0.79 | 1.31 | 0.87 | 1 | 0 | 0 |
| 169 | 1391.21 | 42.09 | 45.25 | 40.38 | 142.15 | 0.87 | 1.12 | 0.93 | 1 | 0 | 0 |
| 170 | 6887.82 | 93.65 | 99.85 | 88.28 | 314.58 | 0.87 | 1.13 | 0.94 | 1 | 0 | 0 |
| 171 | 8284.29 | 102.70 | 122.21 | 88.06 | 361.52 | 0.80 | 1.39 | 0.84 | 1 | 0 | 0 |
| 172 | 3307.42 | 64.89 | 83.35 | 52.07 | 230.10 | 0.78 | 1.60 | 0.78 | 1 | 0 | 0 |
| 173 | 461.99 | 24.25 | 38.85 | 16.83 | 88.18 | 0.75 | 2.31 | 0.62 | 0 | 1 | 0 |
| 174 | 892.48 | 33.71 | 38.73 | 32.34 | 119.24 | 0.79 | 1.20 | 0.87 | 0 | 1 | 0 |
| 175 | 3921.65 | 70.66 | 82.45 | 61.40 | 242.51 | 0.84 | 1.34 | 0.86 | 1 | 0 | 0 |
| 176 | 2840.18 | 60.14 | 73.83 | 50.39 | 211.22 | 0.80 | 1.47 | 0.81 | 1 | 0 | 0 |
| 177 | 341.24 | 20.84 | 26.77 | 19.28 | 74.99 | 0.76 | 1.39 | 0.78 | 0 | 1 | 0 |
| 178 | 8200.29 | 102.18 | 106.77 | 98.95 | 349.67 | 0.84 | 1.08 | 0.96 | 1 | 0 | 0 |
| 179 | 1842.70 | 48.44 | 54.58 | 45.72 | 168.63 | 0.81 | 1.19 | 0.89 | 0 | 1 | 0 |
| 180 | 11995.94 | 123.59 | 144.95 | 107.61 | 428.13 | 0.82 | 1.35 | 0.85 | 1 | 0 | 0 |
| 181 | 4562.13 | 76.21 | 89.95 | 66.06 | 262.51 | 0.83 | 1.36 | 0.85 | 1 | 0 | 0 |
| 182 | 419.99 | 23.12 | 61.10 | 9.85 | 118.92 | 0.37 | 6.20 | 0.38 | 0 | 0 | 1 |
| 183 | 734.98 | 30.59 | 46.35 | 22.26 | 116.79 | 0.68 | 2.08 | 0.66 | 0 | 1 | 0 |
| 184 | 19487.50 | 157.52 | 175.43 | 144.18 | 543.80 | 0.83 | 1.22 | 0.90 | 1 | 0 | 0 |
| 185 | 10347.49 | 114.78 | 134.52 | 99.27 | 401.74 | 0.81 | 1.36 | 0.85 | 1 | 0 | 0 |
| 186 | 2929.43 | 61.07 | 77.02 | 49.61 | 216.59 | 0.78 | 1.55 | 0.79 | 1 | 0 | 0 |
| 187 | 881.98 | 33.51 | 40.11 | 28.99 | 112.76 | 0.87 | 1.38 | 0.84 | 0 | 1 | 0 |
| 188 | 5669.86 | 84.97 | 95.93 | 77.66 | 302.96 | 0.78 | 1.24 | 0.89 | 1 | 0 | 0 |
| 189 | 509.24 | 25.46 | 49.20 | 16.83 | 111.42 | 0.52 | 2.92 | 0.52 | 0 | 1 | 0 |
| 190 | 11329.21 | 120.10 | 200.04 | 85.24 | 529.27 | 0.51 | 2.35 | 0.60 | 1 | 0 | 0 |
| 191 | 2651.18 | 58.10 | 71.64 | 49.72 | 214.46 | 0.72 | 1.44 | 0.81 | 0 | 1 | 0 |
| 192 | 8856.52 | 106.19 | 127.37 | 91.12 | 389.57 | 0.73 | 1.40 | 0.83 | 1 | 0 | 0 |
| 193 | 2924.18 | 61.02 | 69.40 | 54.33 | 205.29 | 0.87 | 1.28 | 0.88 | 1 | 0 | 0 |
| 194 | 7328.81 | 96.60 | 102.63 | 91.54 | 322.17 | 0.89 | 1.12 | 0.94 | 1 | 0 | 0 |
| 195 | 1821.70 | 48.16 | 78.93 | 34.14 | 199.60 | 0.57 | 2.31 | 0.61 | 0 | 0 | 1 |
| 196 | 10441.98 | 115.30 | 116.22 | 115.58 | 399.06 | 0.82 | 1.01 | 0.99 | 1 | 0 | 0 |
| 197 | 16363.83 | 144.34 | 183.95 | 115.12 | 516.63 | 0.77 | 1.60 | 0.78 | 1 | 0 | 0 |
| 198 | 2850.68 | 60.25 | 86.93 | 42.82 | 222.28 | 0.73 | 2.03 | 0.69 | 1 | 0 | 0 |
| 199 | 12232.19 | 124.80 | 136.13 | 116.80 | 443.54 | 0.78 | 1.17 | 0.92 | 1 | 0 | 0 |
| 200 | 624.73 | 28.20 | 49.22 | 18.57 | 111.42 | 0.63 | 2.65 | 0.57 | 0 | 1 | 0 |
| 201 | 63.00 | 8.96 | 12.15 | 7.24 | 24.81 | 1.29 | 1.68 | 0.74 | 0 | 0 | 1 |
| 202 | 7124.07 | 95.24 | 108.30 | 84.85 | 323.19 | 0.86 | 1.28 | 0.88 | 1 | 0 | 0 |
| 203 | 4294.39 | 73.94 | 92.91 | 60.52 | 265.75 | 0.76 | 1.54 | 0.80 | 1 | 0 | 0 |
| 204 | 13859.65 | 132.84 | 144.89 | 123.57 | 458.86 | 0.83 | 1.17 | 0.92 | 1 | 0 | 0 |
| 205 | 3753.65 | 69.13 | 74.16 | 67.11 | 232.79 | 0.87 | 1.11 | 0.93 | 1 | 0 | 0 |
| 206 | 16232.58 | 143.76 | 196.88 | 106.78 | 527.05 | 0.73 | 1.84 | 0.73 | 1 | 0 | 0 |
| 207 | 1469.96 | 43.26 | 57.87 | 37.59 | 174.00 | 0.61 | 1.54 | 0.75 | 0 | 1 | 0 |
| 208 | 12552.43 | 126.42 | 169.00 | 111.22 | 564.03 | 0.50 | 1.52 | 0.75 | 0 | 1 | 0 |
| 209 | 12011.69 | 123.67 | 126.01 | 122.11 | 422.76 | 0.84 | 1.03 | 0.98 | 1 | 0 | 0 |
| 210 | 2325.69 | 54.42 | 59.00 | 52.79 | 188.86 | 0.82 | 1.12 | 0.92 | 1 | 0 | 0 |
| 211 | 2467.44 | 56.05 | 113.19 | 35.66 | 280.05 | 0.40 | 3.17 | 0.50 | 0 | 1 | 0 |
| 212 | 2010.70 | 50.60 | 74.24 | 39.74 | 200.94 | 0.63 | 1.87 | 0.68 | 0 | 0 | 1 |
| 213 | 3727.40 | 68.89 | 77.88 | 61.81 | 233.02 | 0.86 | 1.26 | 0.88 | 1 | 0 | 0 |
| 214 | 488.24 | 24.93 | 33.58 | 21.23 | 86.61 | 0.82 | 1.58 | 0.74 | 0 | 1 | 0 |
| 215 | 147.00 | 13.68 | 48.38 | 5.10 | 81.70 | 0.28 | 9.48 | 0.28 | 0 | 0 | 1 |
| 216 | 1086.72 | 37.20 | 50.53 | 28.92 | 131.09 | 0.79 | 1.75 | 0.74 | 0 | 1 | 0 |
| 217 | 5879.85 | 86.52 | 88.50 | 85.40 | 291.67 | 0.87 | 1.04 | 0.98 | 1 | 0 | 0 |
| 218 | 14578.88 | 136.24 | 159.08 | 120.26 | 497.42 | 0.74 | 1.32 | 0.86 | 1 | 0 | 0 |
| 219 | 9938.00 | 112.49 | 125.92 | 101.24 | 376.38 | 0.88 | 1.24 | 0.89 | 1 | 0 | 0 |
| 220 | 13660.15 | 131.88 | 147.71 | 119.34 | 464.79 | 0.79 | 1.24 | 0.89 | 1 | 0 | 0 |
| 221 | 456.74 | 24.12 | 38.14 | 18.33 | 95.77 | 0.63 | 2.08 | 0.63 | 0 | 1 | 0 |
| 222 | 1013.22 | 35.92 | 43.69 | 29.98 | 117.34 | 0.92 | 1.46 | 0.82 | 1 | 0 | 0 |
| 223 | 356.99 | 21.32 | 25.42 | 19.02 | 67.72 | 0.98 | 1.34 | 0.84 | 0 | 1 | 0 |
| 224 | 7528.31 | 97.90 | 109.03 | 90.57 | 340.18 | 0.82 | 1.20 | 0.90 | 1 | 0 | 0 |
| 226 | 31084.46 | 198.94 | 363.64 | 118.14 | 973.37 | 0.41 | 3.08 | 0.55 | 0 | 1 | 0 |
| 227 | 12725.67 | 127.29 | 153.68 | 107.15 | 447.01 | 0.80 | 1.43 | 0.83 | 1 | 0 | 0 |
| 228 | 16390.08 | 144.46 | 165.96 | 127.07 | 505.80 | 0.81 | 1.31 | 0.87 | 1 | 0 | 0 |
| 229 | 12279.44 | 125.04 | 144.01 | 109.70 | 433.27 | 0.82 | 1.31 | 0.87 | 1 | 0 | 0 |
| 230 | 414.74 | 22.98 | 39.27 | 15.70 | 89.85 | 0.65 | 2.50 | 0.59 | 0 | 1 | 0 |
| 231 | 1086.72 | 37.20 | 43.54 | 32.39 | 120.58 | 0.94 | 1.34 | 0.85 | 1 | 0 | 0 |
| 232 | 23146.66 | 171.67 | 180.04 | 164.89 | 586.58 | 0.85 | 1.09 | 0.95 | 1 | 0 | 0 |
| 233 | 4693.38 | 77.30 | 100.02 | 62.21 | 275.47 | 0.78 | 1.61 | 0.77 | 1 | 0 | 0 |
| 234 | 7271.06 | 96.22 | 104.12 | 91.82 | 342.86 | 0.78 | 1.13 | 0.92 | 1 | 0 | 0 |
| 235 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | 0.69 | 1 | 0 | 0 |
| 236 | 6236.84 | 89.11 | 237.29 | 75.93 | 602.45 | 0.22 | 3.13 | 0.38 | 0 | 1 | 0 |
| 237 | 13896.39 | 133.02 | 135.42 | 131.88 | 451.92 | 0.86 | 1.03 | 0.98 | 1 | 0 | 0 |
| 238 | 10063.99 | 113.20 | 119.59 | 108.34 | 390.13 | 0.83 | 1.10 | 0.95 | 1 | 0 | 0 |
| 239 | 755.98 | 31.02 | 56.00 | 28.17 | 155.67 | 0.39 | 1.99 | 0.55 | 0 | 1 | 0 |

| | | | | | | | | | | | |
|-----|----------|--------|--------|--------|---------|------|------|------|---|---|---|
| 240 | 692.98 | 29.70 | 46.59 | 21.55 | 114.10 | 0.67 | 2.16 | 0.64 | 0 | 1 | 0 |
| 241 | 6777.58 | 92.89 | 105.70 | 83.40 | 315.92 | 0.85 | 1.27 | 0.88 | 1 | 0 | 0 |
| 242 | 10520.73 | 115.74 | 150.04 | 90.06 | 404.89 | 0.81 | 1.67 | 0.77 | 1 | 0 | 0 |
| 243 | 7244.81 | 96.04 | 100.47 | 92.83 | 323.75 | 0.87 | 1.08 | 0.96 | 1 | 0 | 0 |
| 244 | 2246.94 | 53.49 | 79.66 | 43.27 | 229.78 | 0.53 | 1.84 | 0.67 | 0 | 0 | 1 |
| 245 | 17046.31 | 147.32 | 170.07 | 130.44 | 523.90 | 0.78 | 1.30 | 0.87 | 1 | 0 | 0 |
| 246 | 619.48 | 28.08 | 77.87 | 11.31 | 158.82 | 0.31 | 6.89 | 0.36 | 0 | 0 | 1 |
| 247 | 20521.73 | 161.64 | 314.67 | 125.99 | 892.46 | 0.32 | 2.50 | 0.51 | 0 | 1 | 0 |
| 248 | 1055.22 | 36.65 | 59.25 | 24.01 | 141.83 | 0.66 | 2.47 | 0.62 | 0 | 1 | 0 |
| 249 | 1774.45 | 47.53 | 96.73 | 29.13 | 225.06 | 0.44 | 3.32 | 0.49 | 0 | 1 | 0 |
| 250 | 7838.05 | 99.90 | 104.37 | 96.18 | 331.34 | 0.90 | 1.09 | 0.96 | 1 | 0 | 0 |
| 251 | 6961.32 | 94.15 | 120.80 | 75.31 | 334.58 | 0.78 | 1.60 | 0.78 | 1 | 0 | 0 |
| 252 | 1034.22 | 36.29 | 74.75 | 21.09 | 163.26 | 0.49 | 3.54 | 0.49 | 0 | 1 | 0 |
| 253 | 22616.42 | 169.69 | 201.58 | 144.46 | 602.92 | 0.78 | 1.40 | 0.84 | 1 | 0 | 0 |
| 254 | 7439.06 | 97.32 | 112.43 | 85.31 | 334.81 | 0.83 | 1.32 | 0.87 | 1 | 0 | 0 |
| 255 | 9276.51 | 108.68 | 125.35 | 101.09 | 406.00 | 0.71 | 1.24 | 0.87 | 1 | 0 | 0 |
| 256 | 1853.20 | 48.58 | 103.32 | 31.21 | 236.58 | 0.42 | 3.31 | 0.47 | 0 | 1 | 0 |
| 257 | 509.24 | 25.46 | 34.22 | 20.20 | 87.39 | 0.84 | 1.69 | 0.74 | 0 | 1 | 0 |
| 258 | 971.23 | 35.17 | 50.20 | 26.04 | 125.17 | 0.78 | 1.93 | 0.70 | 0 | 1 | 0 |
| 259 | 1816.45 | 48.09 | 103.62 | 33.45 | 255.47 | 0.35 | 3.10 | 0.46 | 0 | 1 | 0 |
| 260 | 7785.55 | 99.56 | 114.74 | 88.21 | 345.64 | 0.82 | 1.30 | 0.87 | 1 | 0 | 0 |
| 261 | 12184.94 | 124.56 | 143.62 | 112.81 | 436.97 | 0.80 | 1.27 | 0.87 | 1 | 0 | 0 |
| 262 | 13838.65 | 132.74 | 161.67 | 112.47 | 472.94 | 0.78 | 1.44 | 0.82 | 1 | 0 | 0 |
| 263 | 4399.39 | 74.84 | 121.33 | 54.56 | 323.65 | 0.53 | 2.22 | 0.62 | 0 | 0 | 1 |
| 264 | 5055.62 | 80.23 | 100.17 | 66.75 | 283.29 | 0.79 | 1.50 | 0.80 | 1 | 0 | 0 |
| 265 | 11770.20 | 122.42 | 132.91 | 119.50 | 505.57 | 0.58 | 1.11 | 0.92 | 1 | 0 | 0 |
| 266 | 4976.87 | 79.60 | 96.90 | 67.04 | 278.94 | 0.80 | 1.45 | 0.82 | 1 | 0 | 0 |
| 267 | 8016.55 | 101.03 | 115.57 | 90.98 | 349.34 | 0.83 | 1.27 | 0.87 | 1 | 0 | 0 |
| 268 | 1170.72 | 38.61 | 52.38 | 32.19 | 148.86 | 0.66 | 1.63 | 0.74 | 0 | 1 | 0 |
| 269 | 8063.79 | 101.33 | 117.35 | 90.24 | 358.05 | 0.79 | 1.30 | 0.86 | 1 | 0 | 0 |
| 270 | 5213.12 | 81.47 | 87.83 | 76.86 | 279.26 | 0.84 | 1.14 | 0.93 | 1 | 0 | 0 |
| 271 | 120.75 | 12.40 | 22.10 | 8.45 | 46.94 | 0.69 | 2.62 | 0.56 | 0 | 1 | 0 |
| 272 | 8573.03 | 104.48 | 117.52 | 93.93 | 363.19 | 0.82 | 1.25 | 0.89 | 1 | 0 | 0 |
| 273 | 393.74 | 22.39 | 31.49 | 19.16 | 84.15 | 0.70 | 1.64 | 0.71 | 0 | 1 | 0 |
| 274 | 4808.88 | 78.25 | 85.63 | 74.84 | 279.03 | 0.78 | 1.14 | 0.91 | 1 | 0 | 0 |
| 275 | 708.73 | 30.04 | 40.65 | 23.55 | 105.49 | 0.80 | 1.73 | 0.74 | 0 | 1 | 0 |
| 276 | 2703.68 | 58.67 | 115.14 | 35.23 | 277.37 | 0.44 | 3.27 | 0.51 | 0 | 1 | 0 |
| 277 | 15691.85 | 141.35 | 178.23 | 113.74 | 513.39 | 0.75 | 1.57 | 0.79 | 1 | 0 | 0 |
| 278 | 1401.71 | 42.25 | 64.58 | 32.84 | 173.77 | 0.58 | 1.97 | 0.65 | 0 | 1 | 0 |
| 279 | 1422.71 | 42.56 | 49.17 | 37.48 | 139.24 | 0.92 | 1.31 | 0.87 | 1 | 0 | 0 |
| 280 | 666.73 | 29.14 | 40.62 | 22.98 | 106.28 | 0.74 | 1.77 | 0.72 | 0 | 0 | 1 |
| 281 | 2393.94 | 55.21 | 72.78 | 43.71 | 194.78 | 0.79 | 1.67 | 0.76 | 1 | 0 | 0 |
| 282 | 15203.61 | 139.13 | 155.19 | 129.36 | 490.71 | 0.79 | 1.20 | 0.90 | 1 | 0 | 0 |
| 283 | 7475.81 | 97.56 | 115.44 | 85.43 | 341.85 | 0.80 | 1.35 | 0.85 | 1 | 0 | 0 |
| 284 | 4714.38 | 77.48 | 98.83 | 63.08 | 279.82 | 0.76 | 1.57 | 0.78 | 1 | 0 | 0 |
| 285 | 18505.78 | 153.50 | 166.23 | 143.43 | 527.47 | 0.84 | 1.16 | 0.92 | 1 | 0 | 0 |
| 286 | 20505.98 | 161.58 | 214.68 | 122.53 | 591.95 | 0.74 | 1.75 | 0.75 | 1 | 0 | 0 |
| 287 | 3926.90 | 70.71 | 78.14 | 65.12 | 237.14 | 0.88 | 1.20 | 0.90 | 1 | 0 | 0 |
| 288 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | 0.69 | 0 | 0 | 1 |
| 289 | 10541.73 | 115.85 | 131.01 | 104.72 | 403.78 | 0.81 | 1.25 | 0.88 | 1 | 0 | 0 |
| 290 | 2357.19 | 54.78 | 69.13 | 44.23 | 188.86 | 0.83 | 1.56 | 0.79 | 1 | 0 | 0 |
| 291 | 461.99 | 24.25 | 32.36 | 22.66 | 90.08 | 0.72 | 1.43 | 0.75 | 0 | 1 | 0 |
| 292 | 372.74 | 21.79 | 60.35 | 10.24 | 119.47 | 0.33 | 5.89 | 0.36 | 0 | 0 | 1 |
| 293 | 78.75 | 10.01 | 16.00 | 7.27 | 32.63 | 0.93 | 2.20 | 0.63 | 1 | 0 | 0 |
| 294 | 629.98 | 28.32 | 41.81 | 22.20 | 106.84 | 0.69 | 1.88 | 0.68 | 0 | 1 | 0 |
| 295 | 2015.95 | 50.66 | 83.51 | 32.22 | 207.98 | 0.59 | 2.59 | 0.61 | 0 | 1 | 0 |
| 296 | 14442.38 | 135.60 | 144.14 | 129.41 | 476.18 | 0.80 | 1.11 | 0.94 | 1 | 0 | 0 |
| 297 | 9959.00 | 112.61 | 234.53 | 137.47 | 819.18 | 0.19 | 1.71 | 0.48 | 0 | 1 | 0 |
| 298 | 1307.22 | 40.80 | 52.68 | 34.68 | 151.87 | 0.71 | 1.52 | 0.77 | 0 | 1 | 0 |
| 299 | 4021.40 | 71.56 | 78.51 | 65.75 | 240.15 | 0.88 | 1.19 | 0.91 | 1 | 0 | 0 |
| 300 | 15119.61 | 138.75 | 146.91 | 132.14 | 473.72 | 0.85 | 1.11 | 0.94 | 1 | 0 | 0 |
| 301 | 3359.91 | 65.41 | 87.49 | 54.00 | 253.80 | 0.66 | 1.62 | 0.75 | 1 | 0 | 0 |
| 302 | 38959.25 | 222.72 | 595.98 | 130.45 | 1319.55 | 0.28 | 4.57 | 0.37 | 0 | 0 | 1 |
| 303 | 855.73 | 33.01 | 69.63 | 20.64 | 169.09 | 0.38 | 3.37 | 0.47 | 0 | 0 | 1 |
| 304 | 1249.47 | 39.89 | 74.67 | 27.44 | 177.57 | 0.50 | 2.72 | 0.53 | 0 | 1 | 0 |
| 305 | 15445.11 | 140.23 | 168.76 | 118.36 | 493.63 | 0.80 | 1.43 | 0.83 | 1 | 0 | 0 |
| 306 | 456.74 | 24.12 | 32.57 | 20.38 | 87.95 | 0.74 | 1.60 | 0.74 | 0 | 1 | 0 |
| 307 | 5134.37 | 80.85 | 83.17 | 79.23 | 271.12 | 0.88 | 1.05 | 0.97 | 1 | 0 | 0 |
| 308 | 9880.25 | 112.16 | 119.11 | 109.44 | 416.74 | 0.71 | 1.09 | 0.94 | 1 | 0 | 0 |
| 309 | 15.75 | 4.48 | 7.94 | 2.65 | 9.17 | 2.36 | 3.00 | 0.56 | 0 | 0 | 1 |
| 310 | 671.98 | 29.25 | 34.26 | 26.47 | 101.70 | 0.82 | 1.29 | 0.85 | 0 | 1 | 0 |
| 311 | 5895.60 | 86.64 | 94.95 | 81.38 | 303.19 | 0.81 | 1.17 | 0.91 | 1 | 0 | 0 |
| 312 | 5123.87 | 80.77 | 88.46 | 77.83 | 295.04 | 0.74 | 1.14 | 0.91 | 0 | 0 | 1 |
| 313 | 467.24 | 24.39 | 42.85 | 17.85 | 106.84 | 0.51 | 2.40 | 0.57 | 0 | 1 | 0 |
| 314 | 2299.44 | 54.11 | 64.87 | 45.86 | 180.48 | 0.89 | 1.41 | 0.83 | 1 | 0 | 0 |
| 315 | 26.25 | 5.78 | 7.58 | 4.88 | 12.41 | 2.14 | 1.55 | 0.76 | 0 | 0 | 1 |
| 316 | 131.25 | 12.93 | 18.52 | 11.01 | 44.25 | 0.84 | 1.68 | 0.70 | 0 | 0 | 1 |
| 317 | 939.73 | 34.59 | 114.41 | 14.27 | 209.78 | 0.27 | 8.02 | 0.30 | 0 | 0 | 1 |
| 318 | 419.99 | 23.12 | 52.38 | 13.46 | 128.64 | 0.32 | 3.89 | 0.44 | 0 | 0 | 1 |
| 319 | 168.00 | 14.63 | 19.35 | 12.54 | 46.94 | 0.96 | 1.54 | 0.76 | 0 | 0 | 1 |
| 320 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | 0.69 | 0 | 0 | 1 |
| 321 | 10.50 | 3.66 | 5.29 | 2.65 | 4.58 | 6.28 | 2.00 | 0.69 | 0 | 0 | 1 |

Anexo B. Consolidado del análisis de características de tamaño y forma de micrografías de Entrenamiento

Las características de tamaño y forma extraídos de cada una de las micrografías se graficaron a como distribuciones acumuladas fin de determinar la existencia de alguna tendencia. A continuación se muestran las graficas realizadas con los datos extraídos de los elementos clasificados como células.

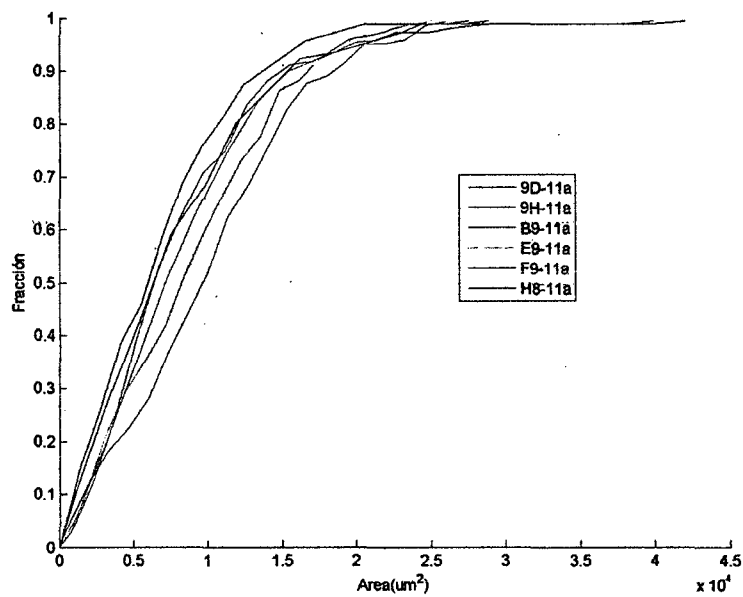


Figura A7. Distribución acumulada de área celular

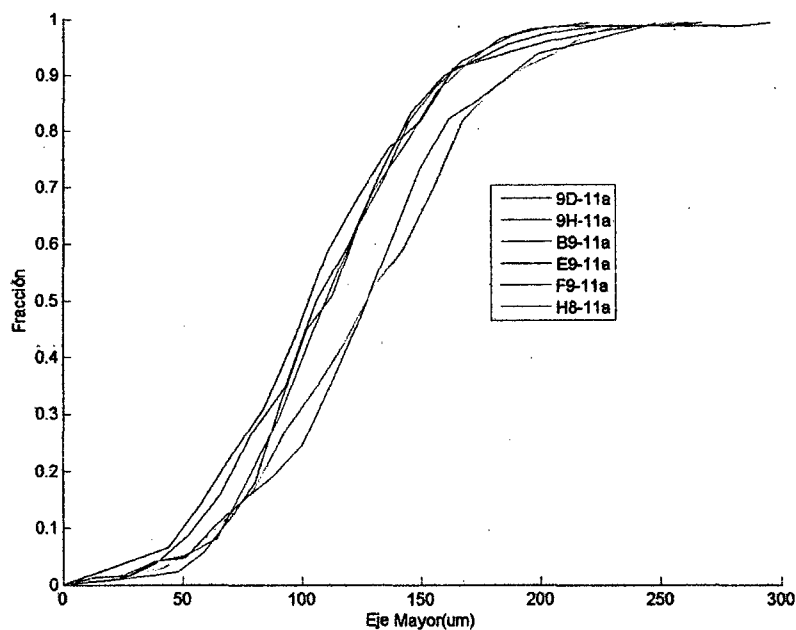


Figura A8. Distribución acumulada de eje mayor

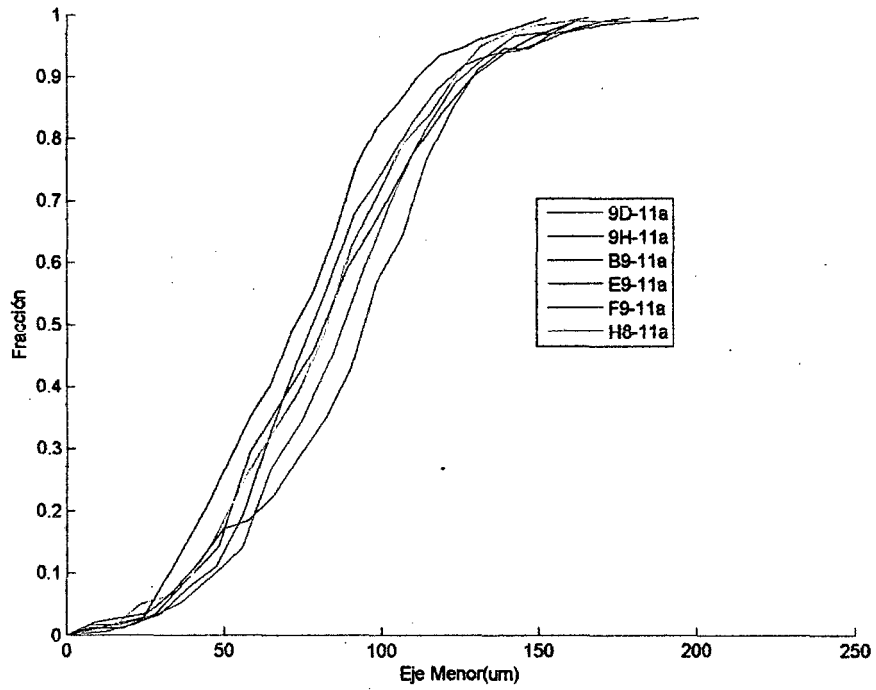


Figura A9. Distribución acumulada de eje menor

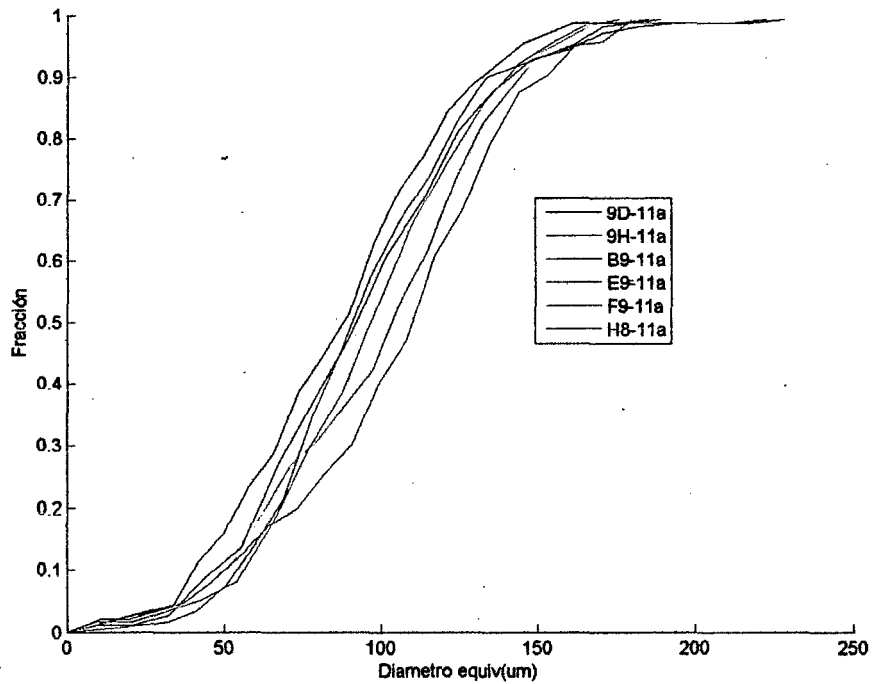


Figura A10. Distribución acumulada de diámetro equivalente

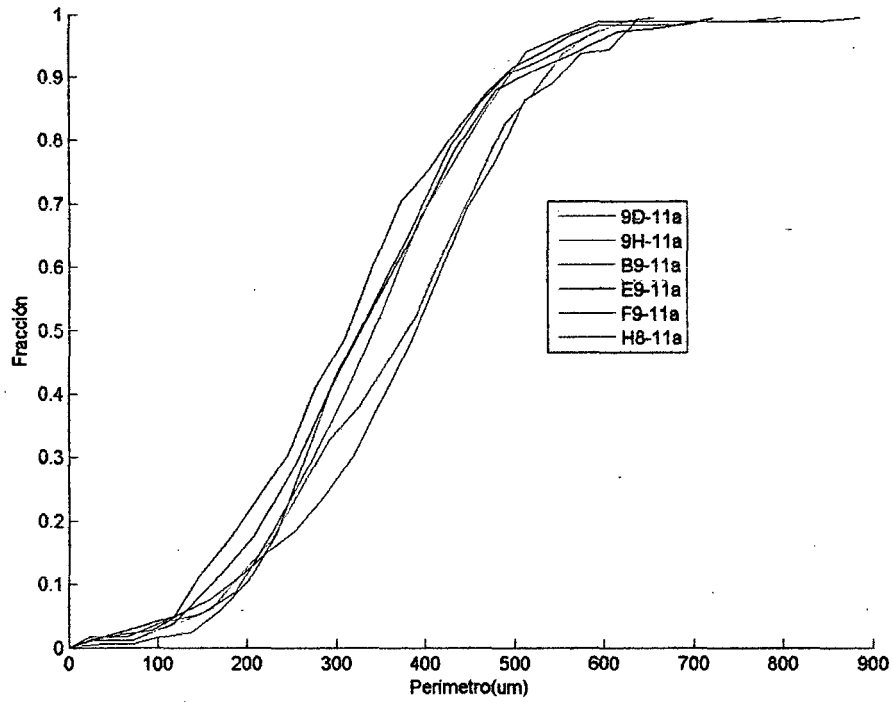


Figura A11. Distribución acumulada de perímetro

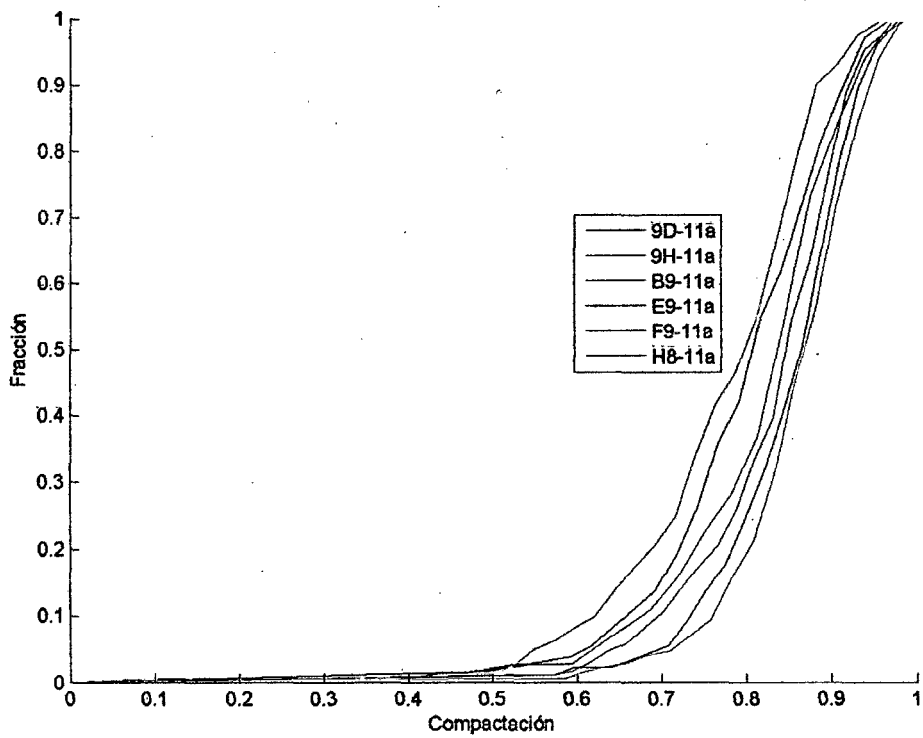


Figura A12. Distribución acumulada de compactación

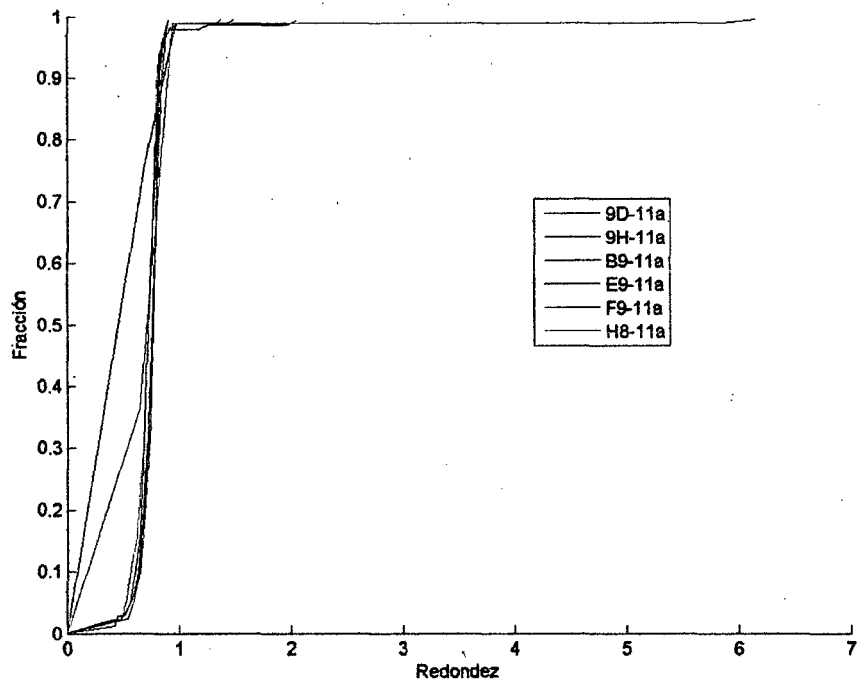


Figura A13. Distribución acumulada de redondez

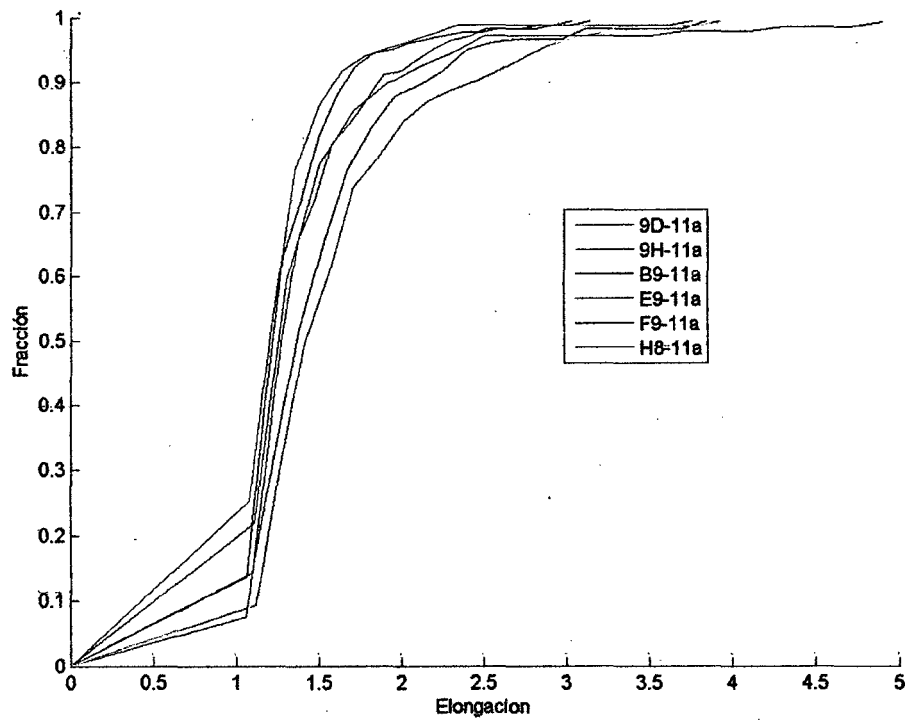


Figura A14. Distribución acumulada de elongación

A continuación se muestran las graficas realizadas con los datos extraídos de los elementos clasificados como células.

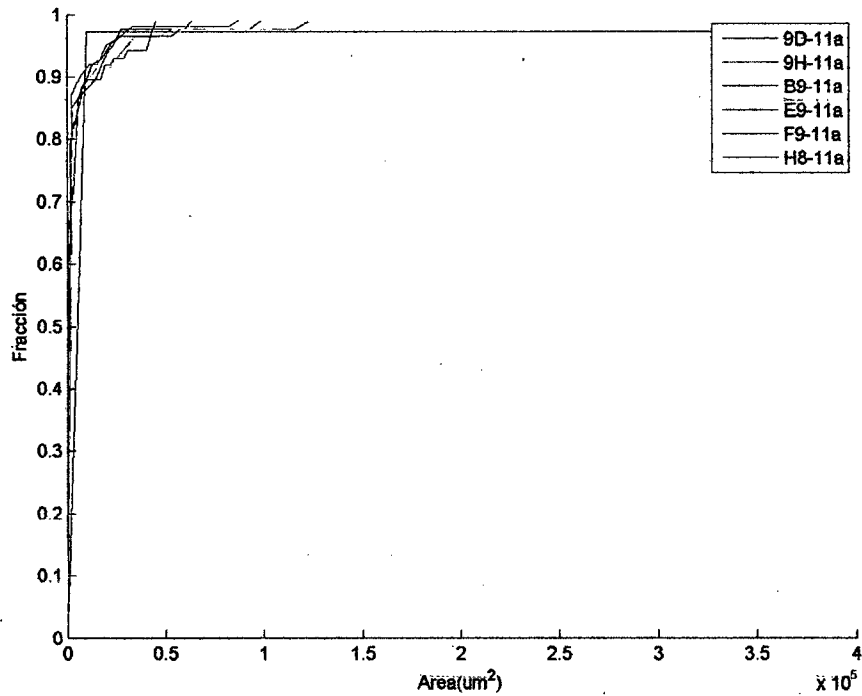


Figura A15. Distribución acumulada de área celular

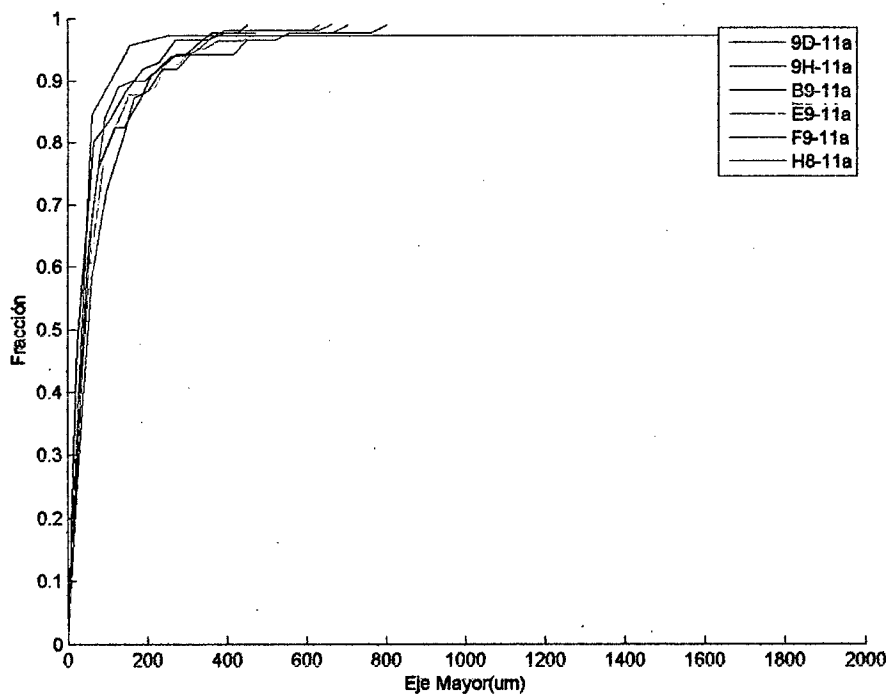


Figura A16. Distribución acumulada de eje mayor

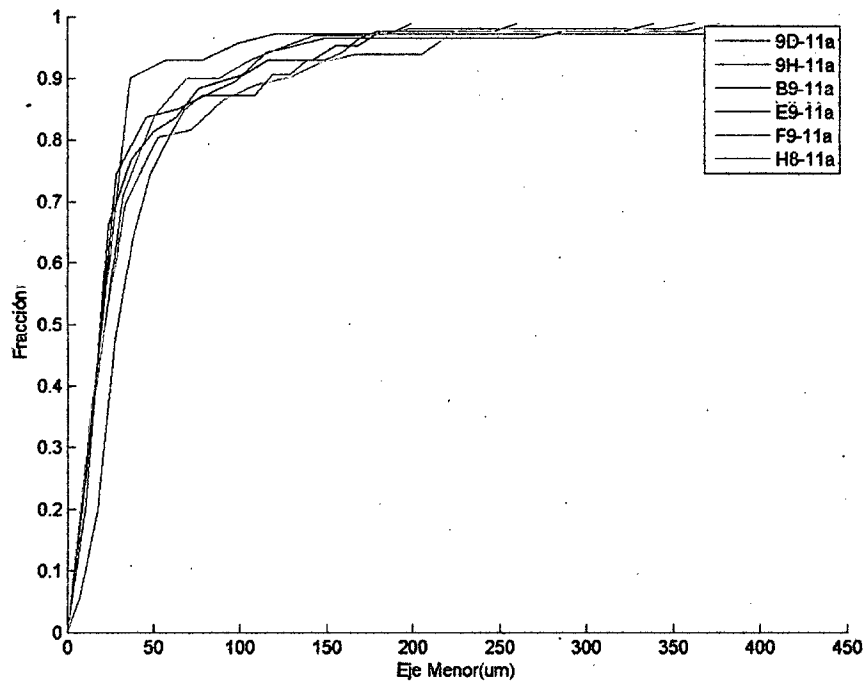


Figura A17. Distribución acumulada de eje menor

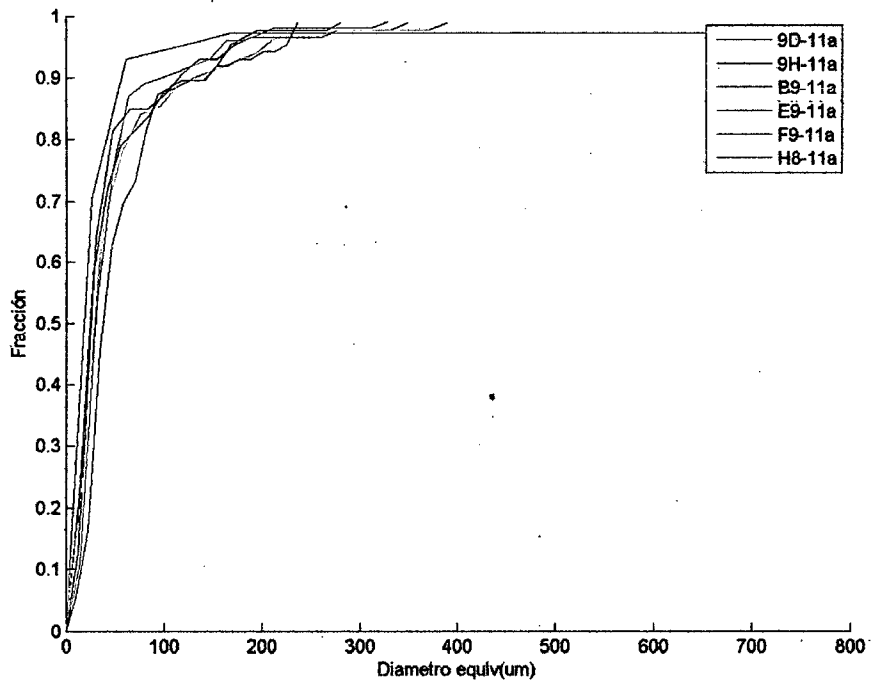


Figura A18. Distribución acumulada de diámetro equivalente

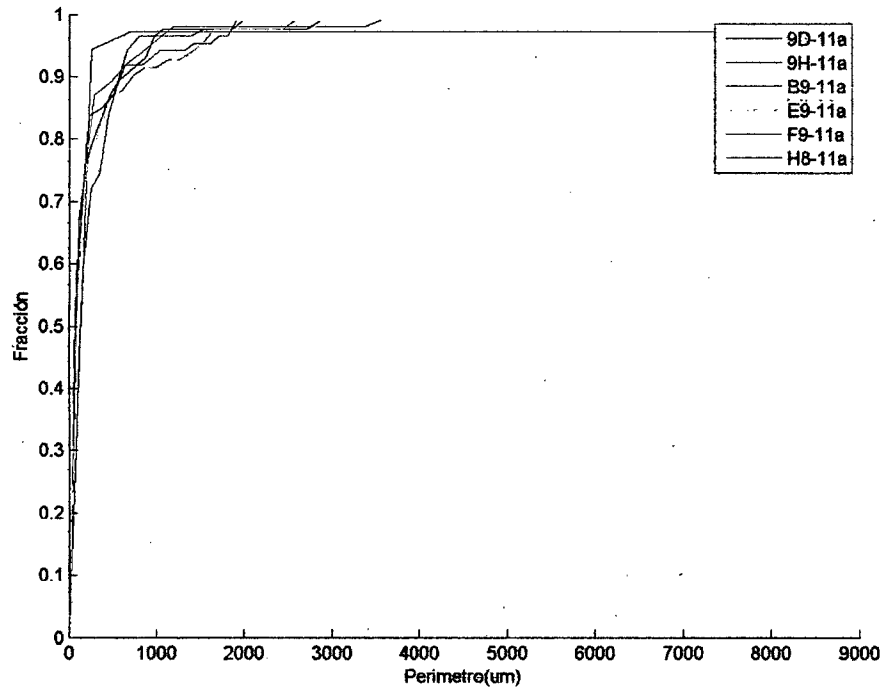


Figura A19. Distribución acumulada de perímetro

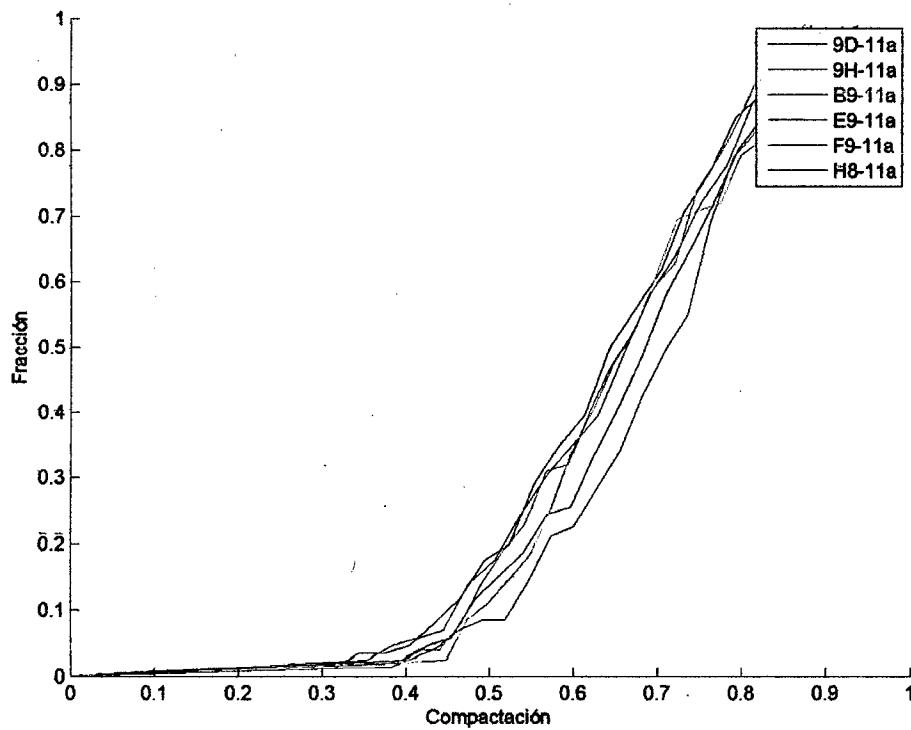


Figura A20. Distribución acumulada de compactación

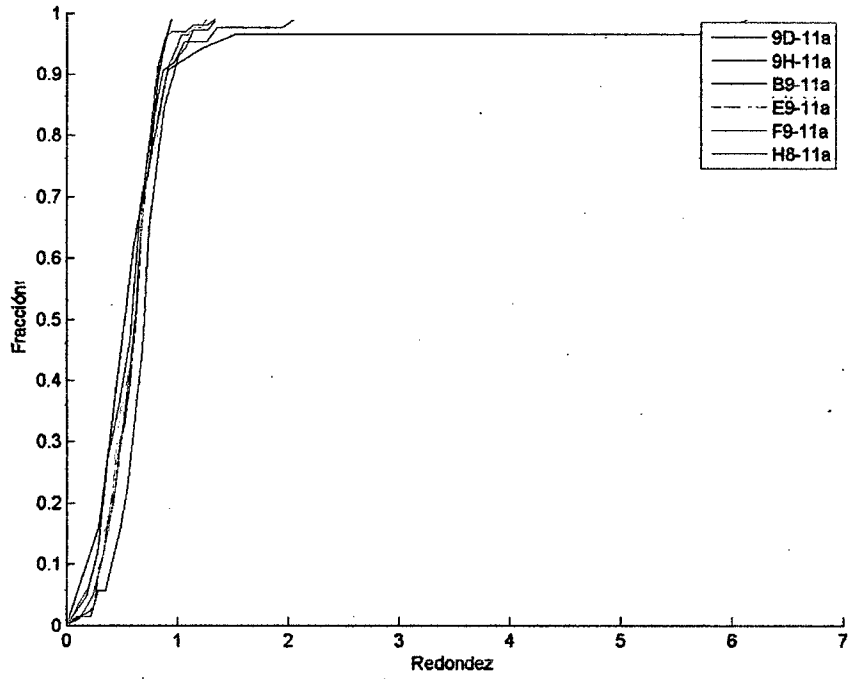


Figura A21. Distribución acumulada de redondez

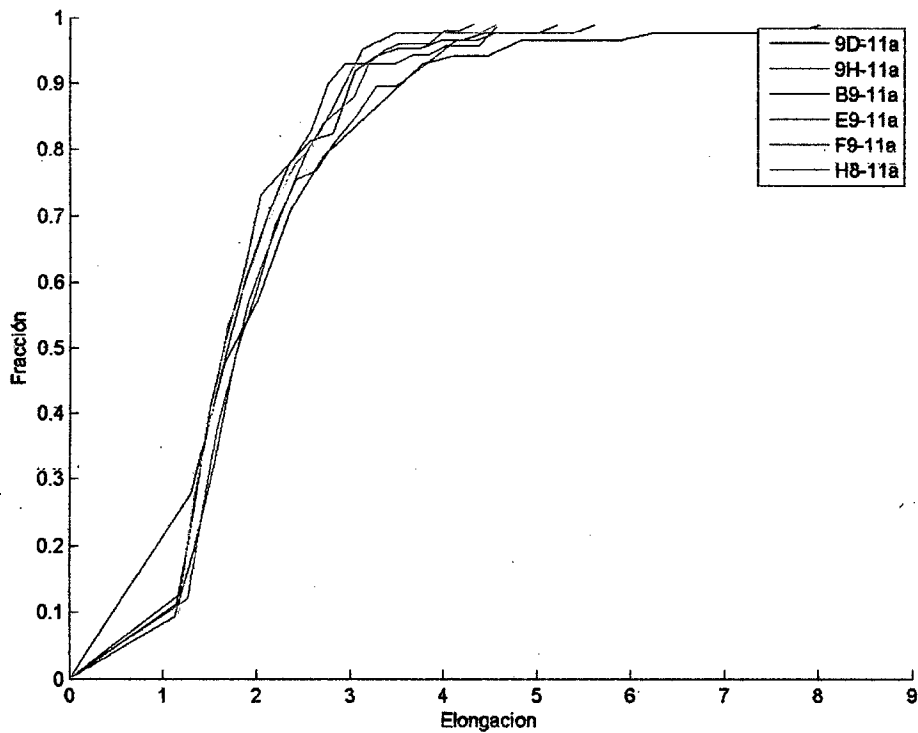


Figura A21. Distribución acumulada de elongación

Anexo C. Determinación de constantes de normalización

Las constantes de normalización se calculan como aquellos valores que hacen alcanzar la distribución acumulada al 95%. Estos datos se muestran en las siguientes tablas.

Tabla A7. Constantes de normalización para elementos clasificados como células

| Código de Micrografía | Área | Diámetro equivalente | Eje | | Perímetro | Redondez | Elongación | Compactación |
|--------------------------|----------------|-------------------------|--------------|--------------|--------------|------------|------------|--------------|
| | | | Mayor | Menor | | | | |
| 9D-11 | 17823.3 | 153.3 | 216.3 | 138.8 | 594.8 | 0.9 | 2.5 | 0.96 |
| 9H-11 | 21369.8 | 170.6 | 198.6 | 161.0 | 622.8 | 0.9 | 2.3 | 0.96 |
| B9-11 | 22580.9 | 182.2 | 199.9 | 159.7 | 659.4 | 1.3 | 2.0 | 0.98 |
| E9-11 | 21178.6 | 167.6 | 230.3 | 140.4 | 620.1 | 0.9 | 3.0 | 0.95 |
| F9-11 | 21916.7 | 170.6 | 223.0 | 163.1 | 1.0 | 1.0 | 2.7 | 0.99 |
| H8-11 | 21448.1 | 166.3 | 195.7 | 151.9 | 593.9 | 1.2 | 2.1 | 0.99 |
| Promedio | 21052.9 | 168.4 | 210.6 | 152.5 | 515.3 | 1.0 | 2.5 | 0.97 |

Tabla A8. Constantes de normalización para elementos clasificados como espacios intercelulares

| Código de Micrografía | Área | Diámetro equivalente | Eje | | Perímetro | Redondez | Elongación | Compactación |
|--------------------------|-----------------|-------------------------|---------------|---------------|----------------|-------------|-------------|--------------|
| | | | Mayor | Menor | | | | |
| 9D-11 | 27628.5 | 182.5 | 341.1 | 168.1 | 1077.7 | 0.9 | 5.2 | 0.53 |
| 9H-11 | 30507.9 | 168.1 | 255.1 | 119.7 | 1162.8 | 1.2 | 4.2 | 0.66 |
| B9-11 | 27699.5 | 189.7 | 311.6 | 149.0 | 956.5 | 1.8 | 3.7 | 0.61 |
| E9-11 | 40882.0 | 233.5 | 346.5 | 243.1 | 1654.3 | 1.1 | 3.3 | 0.67 |
| F9-11 | 45223.5 | 237.1 | 488.8 | 179.0 | 1521.5 | 1.2 | 4.4 | 0.48 |
| H8-11 | 24541.4 | 179.9 | 362.4 | 160.6 | 1194.5 | 1.0 | 3.5 | 0.50 |
| Promedio | 32747.13 | 198.46 | 350.93 | 169.92 | 1261.20 | 1.20 | 4.06 | 0.58 |

Tabla A9. Constantes de normalización para elementos clasificados como elementos no reconocibles

| Código de Micrografía | Área | Diámetro equivalente | Eje | | Perímetro | Redondez | Elongación | Compactación |
|--------------------------|-----------------|-------------------------|---------------|--------------|---------------|-------------|--------------|--------------|
| | | | Mayor | Menor | | | | |
| 9D-11 | 15541.2 | 142.7 | 294.5 | 132.7 | 706.4 | 1.0 | 17.4 | 0.48 |
| 9H-11 | 11142.7 | 115.8 | 438.6 | 79.1 | 890.7 | 1.7 | 1.0 | 0.26 |
| B9-11 | 8320.4 | 104.0 | 658.4 | 70.4 | 1321.8 | 1.0 | 27.1 | 0.16 |
| E9-11 | 9255.9 | 109.6 | 198.3 | 88.5 | 571.0 | 1.0 | 15.7 | 0.55 |
| F9-11 | 8752.8 | 105.2 | 253.5 | 75.0 | 654.7 | 1.0 | 16.4 | 0.42 |
| H8-11 | 10721.4 | 107.7 | 492.6 | 82.5 | 1023.7 | 1.0 | 1.0 | 0.22 |
| Promedio | 10622.40 | 114.19 | 389.31 | 88.03 | 861.37 | 1.11 | 13.10 | 0.35 |

Tabla A10. Consolidado de constantes de normalización para elementos clasificados

| Elementos | Área | Diámetro equivalente | Eje | | Perímetro | Redondez | Elongación | Compactación |
|---------------------------------|-----------------|-------------------------|---------------|---------------|----------------|-------------|--------------|--------------|
| | | | Mayor | Menor | | | | |
| Células | 21052.90 | 168.43 | 210.63 | 152.48 | 515.34 | 1.04 | 2.45 | 0.97 |
| Espacios intercelulares | 32747.13 | 198.46 | 350.93 | 169.92 | 1261.20 | 1.20 | 4.06 | 0.58 |
| Elementos no reconocibles | 10622.40 | 114.19 | 389.31 | 88.03 | 861.37 | 1.11 | 13.10 | 0.35 |
| Máximo | 32747.13 | 198.46 | 389.31 | 169.92 | 1261.20 | 1.20 | 13.10 | 0.97 |

Anexo D. Combinaciones de los parámetros de tamaño y forma

Tabla A11. Detalle de las combinaciones de los parámetros de tamaño y forma

| Combinación | Parámetros | Combinación | Parámetros | Combinación | Parámetros |
|-------------|------------|-------------|------------|-------------|------------|
| C1 | 1,2 | C83 | 5,7,8 | C165 | 1,2,4,5,6 |
| C2 | 1,3 | C84 | 6,7,8 | C166 | 1,2,4,5,7 |
| C3 | 1,4 | C85 | 1,2,3,4 | C167 | 1,2,4,5,8 |
| C4 | 1,5 | C86 | 1,2,3,5 | C168 | 1,2,4,6,7 |
| C5 | 1,6 | C87 | 1,2,3,6 | C169 | 1,2,4,6,8 |
| C6 | 1,7 | C88 | 1,2,3,7 | C170 | 1,2,4,7,8 |
| C7 | 1,8 | C89 | 1,2,3,8 | C171 | 1,2,5,6,7 |
| C8 | 2,3 | C90 | 1,2,4,5 | C172 | 1,2,5,6,8 |
| C9 | 2,4 | C91 | 1,2,4,6 | C173 | 1,2,5,7,8 |
| C10 | 2,5 | C92 | 1,2,4,7 | C174 | 1,2,6,7,8 |
| C11 | 2,6 | C93 | 1,2,4,8 | C175 | 1,3,4,5,6 |
| C12 | 2,7 | C94 | 1,2,5,6 | C176 | 1,3,4,5,7 |
| C13 | 2,8 | C95 | 1,2,5,7 | C177 | 1,3,4,5,8 |
| C14 | 3,4 | C96 | 1,2,5,8 | C178 | 1,3,4,6,7 |
| C15 | 3,5 | C97 | 1,2,6,7 | C179 | 1,3,4,6,8 |
| C16 | 3,6 | C98 | 1,2,6,8 | C180 | 1,3,4,7,8 |
| C17 | 3,7 | C99 | 1,2,7,8 | C181 | 1,3,5,6,7 |
| C18 | 3,8 | C100 | 1,3,4,5 | C182 | 1,3,5,6,8 |
| C19 | 4,5 | C101 | 1,3,4,6 | C183 | 1,3,5,7,8 |
| C20 | 4,6 | C102 | 1,3,4,7 | C184 | 1,3,6,7,8 |
| C21 | 4,7 | C103 | 1,3,4,8 | C185 | 1,4,5,6,7 |
| C22 | 4,8 | C104 | 1,3,5,6 | C186 | 1,4,5,6,8 |
| C23 | 5,6 | C105 | 1,3,5,7 | C187 | 1,4,5,7,8 |
| C24 | 5,7 | C106 | 1,3,5,8 | C188 | 1,4,6,7,8 |
| C25 | 5,8 | C107 | 1,3,6,7 | C189 | 1,5,6,7,8 |
| C26 | 6,7 | C108 | 1,3,6,8 | C190 | 2,3,4,5,6 |
| C27 | 6,8 | C109 | 1,3,7,8 | C191 | 2,3,4,5,7 |
| C28 | 7,8 | C110 | 1,4,5,6 | C192 | 2,3,4,5,8 |
| C29 | 1,2,3 | C111 | 1,4,5,7 | C193 | 2,3,4,6,7 |
| C30 | 1,2,4 | C112 | 1,4,5,8 | C194 | 2,3,4,6,8 |
| C31 | 1,2,5 | C113 | 1,4,6,7 | C195 | 2,3,4,7,8 |
| C32 | 1,2,6 | C114 | 1,4,6,8 | C196 | 2,3,5,6,7 |
| C33 | 1,2,7 | C115 | 1,4,7,8 | C197 | 2,3,5,6,8 |
| C34 | 1,2,8 | C116 | 1,5,6,7 | C198 | 2,3,5,7,8 |
| C35 | 1,3,4 | C117 | 1,5,6,8 | C199 | 2,3,6,7,8 |
| C36 | 1,3,5 | C118 | 1,5,7,8 | C200 | 2,4,5,6,7 |
| C37 | 1,3,6 | C119 | 1,6,7,8 | C201 | 2,4,5,6,8 |
| C38 | 1,3,7 | C120 | 2,3,4,5 | C202 | 2,4,5,7,8 |
| C39 | 1,3,8 | C121 | 2,3,4,6 | C203 | 2,4,6,7,8 |
| C40 | 1,4,5 | C122 | 2,3,4,7 | C204 | 2,5,6,7,8 |

Tabla A11. Detalle de las combinaciones de los parámetros de tamaño y forma...continuación

| Combinación | Parámetros | Combinación | Parámetros | Combinación | Parámetros |
|-------------|------------|-------------|------------|-------------|---------------|
| C41 | 1,4,6 | C123 | 2,3,4,8 | C205 | 3,4,5,6,7 |
| C42 | 1,4,7 | C124 | 2,3,5,6 | C206 | 3,4,5,6,8 |
| C43 | 1,4,8 | C125 | 2,3,5,7 | C207 | 3,4,5,7,8 |
| C44 | 1,5,6 | C126 | 2,3,5,8 | C208 | 3,4,6,7,8 |
| C45 | 1,5,7 | C127 | 2,3,6,7 | C209 | 3,5,6,7,8 |
| C46 | 1,5,8 | C128 | 2,3,6,8 | C210 | 4,5,6,7,8 |
| C47 | 1,6,7 | C129 | 2,3,7,8 | C211 | 1,2,3,4,5,6 |
| C48 | 1,6,8 | C130 | 2,4,5,6 | C212 | 1,2,3,4,5,7 |
| C49 | 1,7,8 | C131 | 2,4,5,7 | C213 | 1,2,3,4,5,8 |
| C50 | 2,3,4 | C132 | 2,4,5,8 | C214 | 1,2,3,4,6,7 |
| C51 | 2,3,5 | C133 | 2,4,6,7 | C215 | 1,2,3,4,6,8 |
| C52 | 2,3,6 | C134 | 2,4,6,8 | C216 | 1,2,3,4,7,8 |
| C53 | 2,3,7 | C135 | 2,4,7,8 | C217 | 1,2,3,5,6,7 |
| C54 | 2,3,8 | C136 | 2,5,6,7 | C218 | 1,2,3,5,6,8 |
| C55 | 2,4,5 | C137 | 2,5,6,8 | C219 | 1,2,3,5,7,8 |
| C56 | 2,4,6 | C138 | 2,5,7,8 | C220 | 1,2,3,6,7,8 |
| C57 | 2,4,7 | C139 | 2,6,7,8 | C221 | 1,2,4,5,6,7 |
| C58 | 2,4,8 | C140 | 3,4,5,6 | C222 | 1,2,4,5,6,8 |
| C59 | 2,5,6 | C141 | 3,4,5,7 | C223 | 1,2,4,5,7,8 |
| C60 | 2,5,7 | C142 | 3,4,5,8 | C224 | 1,2,4,6,7,8 |
| C61 | 2,5,8 | C143 | 3,4,6,7 | C225 | 1,2,5,6,7,8 |
| C62 | 2,6,7 | C144 | 3,4,6,8 | C226 | 1,3,4,5,6,7 |
| C63 | 2,6,8 | C145 | 3,4,7,8 | C227 | 1,3,4,5,6,8 |
| C64 | 2,7,8 | C146 | 3,5,6,7 | C228 | 1,3,4,5,7,8 |
| C65 | 3,4,5 | C147 | 3,5,6,8 | C229 | 1,3,4,6,7,8 |
| C66 | 3,4,6 | C148 | 3,5,7,8 | C230 | 1,3,5,6,7,8 |
| C67 | 3,4,7 | C149 | 3,6,7,8 | C231 | 1,4,5,6,7,8 |
| C68 | 3,4,8 | C150 | 4,5,6,7 | C232 | 2,3,4,5,6,7 |
| C69 | 3,5,6 | C151 | 4,5,6,8 | C233 | 2,3,4,5,6,8 |
| C70 | 3,5,7 | C152 | 4,5,7,8 | C234 | 2,3,4,5,7,8 |
| C71 | 3,5,8 | C153 | 4,6,7,8 | C235 | 2,3,4,6,7,8 |
| C72 | 3,6,7 | C154 | 5,6,7,8 | C236 | 2,3,5,6,7,8 |
| C73 | 3,6,8 | C155 | 1,2,3,4,5 | C237 | 2,4,5,6,7,8 |
| C74 | 3,7,8 | C156 | 1,2,3,4,6 | C238 | 3,4,5,6,7,8 |
| C75 | 4,5,6 | C157 | 1,2,3,4,7 | C239 | 1,2,3,4,5,6,7 |
| C76 | 4,5,7 | C158 | 1,2,3,4,8 | C240 | 1,2,3,4,5,6,8 |
| C77 | 4,5,8 | C159 | 1,2,3,5,6 | C241 | 1,2,3,4,5,7,8 |
| C78 | 4,6,7 | C160 | 1,2,3,5,7 | C242 | 1,2,3,4,6,7,8 |
| C79 | 4,6,8 | C161 | 1,2,3,5,8 | C243 | 1,2,3,5,6,7,8 |
| C80 | 4,7,8 | C162 | 1,2,3,6,7 | C244 | 1,2,4,5,6,7,8 |
| C81 | 5,6,7 | C163 | 1,2,3,6,8 | C245 | 1,3,4,5,6,7,8 |
| C82 | 5,6,8 | C164 | 1,2,3,7,8 | C246 | 2,3,4,5,6,7,8 |

Anexo E. Determinación del porcentaje de error

| Combinación | P1 | P2 | Error (%) |
|-------------|----|----|-----------|
| C1 | 1 | 2 | 22.67 |
| C2 | 1 | 3 | 24.53 |
| C3 | 1 | 4 | 22.05 |
| C4 | 1 | 5 | 23.29 |
| C5 | 1 | 6 | 18.94 |
| C6 | 1 | 7 | 22.98 |
| C7 | 1 | 8 | 82.61 |
| C8 | 2 | 3 | 19.88 |
| C9 | 2 | 4 | 18.63 |
| C10 | 2 | 5 | 19.57 |
| C11 | 2 | 6 | 15.84 |
| C12 | 2 | 7 | 18.32 |
| C13 | 2 | 8 | 82.61 |
| C14 | 3 | 4 | 15.84 |
| C15 | 3 | 5 | 26.09 |
| C16 | 3 | 6 | 16.46 |
| C17 | 3 | 7 | 22.36 |
| C18 | 3 | 8 | 83.23 |
| C19 | 4 | 5 | 17.08 |
| C20 | 4 | 6 | 14.60 |
| C21 | 4 | 7 | 18.32 |
| C22 | 4 | 8 | 81.99 |
| C23 | 5 | 6 | 16.46 |
| C24 | 5 | 7 | 20.81 |
| C25 | 5 | 8 | 82.92 |
| C26 | 6 | 7 | 27.02 |
| C27 | 6 | 8 | 83.23 |
| C28 | 7 | 8 | 83.23 |

| Combinación | P1 | P2 | P3 | Error (%) |
|-------------|----|----|----|-----------|
| G29 | 1 | 2 | 3 | 18.9 |
| C30 | 1 | 2 | 4 | 18.9 |
| C31 | 1 | 2 | 5 | 19.6 |
| C32 | 1 | 2 | 6 | 15.5 |
| C33 | 1 | 2 | 7 | 18.3 |
| C34 | 1 | 2 | 8 | 82.6 |
| C35 | 1 | 3 | 4 | 14.9 |
| C36 | 1 | 3 | 5 | 21.7 |
| C37 | 1 | 3 | 6 | 16.1 |
| C38 | 1 | 3 | 7 | 21.1 |
| C39 | 1 | 3 | 8 | 81.7 |
| C40 | 1 | 4 | 5 | 16.8 |
| C41 | 1 | 4 | 6 | 14.6 |
| C42 | 1 | 4 | 7 | 18.0 |
| C43 | 1 | 4 | 8 | 82.3 |
| C44 | 1 | 5 | 6 | 17.1 |
| C45 | 1 | 5 | 7 | 19.6 |
| C46 | 1 | 5 | 8 | 82.6 |
| C47 | 1 | 6 | 7 | 16.1 |
| C48 | 1 | 6 | 8 | 77.0 |
| C49 | 1 | 7 | 8 | 82.3 |
| C50 | 2 | 3 | 4 | 15.5 |
| C51 | 2 | 3 | 5 | 19.3 |
| C52 | 2 | 3 | 6 | 15.5 |
| C53 | 2 | 3 | 7 | 17.7 |
| C54 | 2 | 3 | 8 | 82.6 |
| C55 | 2 | 4 | 5 | 16.8 |
| C56 | 2 | 4 | 6 | 14.6 |

| | | | | |
|-----|---|---|---|------|
| C57 | 2 | 4 | 7 | 18.3 |
| C58 | 2 | 4 | 8 | 82.3 |
| C59 | 2 | 5 | 6 | 15.8 |
| C60 | 2 | 5 | 7 | 16.8 |
| C61 | 2 | 5 | 8 | 83.2 |
| C62 | 2 | 6 | 7 | 14.0 |
| C63 | 2 | 6 | 8 | 76.4 |
| C64 | 2 | 7 | 8 | 82.6 |
| C65 | 3 | 4 | 5 | 16.5 |
| C66 | 3 | 4 | 6 | 13.4 |
| C67 | 3 | 4 | 7 | 17.4 |
| C68 | 3 | 4 | 8 | 81.7 |
| C69 | 3 | 5 | 6 | 15.5 |
| C70 | 3 | 5 | 7 | 19.6 |
| C71 | 3 | 5 | 8 | 82.9 |
| C72 | 3 | 6 | 7 | 14.0 |
| C73 | 3 | 6 | 8 | 83.2 |
| C74 | 3 | 7 | 8 | 74.2 |
| C75 | 4 | 5 | 6 | 14.0 |
| C76 | 4 | 5 | 7 | 17.4 |
| C77 | 4 | 5 | 8 | 82.3 |
| C78 | 4 | 6 | 7 | 14.0 |
| C79 | 4 | 6 | 8 | 74.8 |
| C80 | 4 | 7 | 8 | 82.3 |
| C81 | 5 | 6 | 7 | 14.9 |
| C82 | 5 | 6 | 8 | 82.9 |
| C83 | 5 | 7 | 8 | 74.5 |
| C84 | 6 | 7 | 8 | 73.3 |

| Combinación | P1 | P2 | P3 | P4 | Error (%) |
|-------------|----|----|----|----|-----------|
| C85 | 1 | 2 | 3 | 4 | 15.2 |
| C86 | 1 | 2 | 3 | 5 | 19.3 |
| C87 | 1 | 2 | 3 | 6 | 15.2 |
| C88 | 1 | 2 | 3 | 7 | 17.1 |
| C89 | 1 | 2 | 3 | 8 | 81.1 |
| C90 | 1 | 2 | 4 | 5 | 16.8 |
| C91 | 1 | 2 | 4 | 6 | 14.3 |
| C92 | 1 | 2 | 4 | 7 | 18.3 |
| C93 | 1 | 2 | 4 | 8 | 82.3 |
| C94 | 1 | 2 | 5 | 6 | 15.2 |
| C95 | 1 | 2 | 5 | 7 | 16.8 |
| C96 | 1 | 2 | 5 | 8 | 82.0 |
| C97 | 1 | 2 | 6 | 7 | 14.0 |
| C98 | 1 | 2 | 6 | 8 | 70.2 |
| C99 | 1 | 2 | 7 | 8 | 79.8 |
| C100 | 1 | 3 | 4 | 5 | 16.1 |
| C101 | 1 | 3 | 4 | 6 | 13.4 |
| C102 | 1 | 3 | 4 | 7 | 16.5 |
| C103 | 1 | 3 | 4 | 8 | 80.7 |
| C104 | 1 | 3 | 5 | 6 | 16.1 |
| C105 | 1 | 3 | 5 | 7 | 19.3 |
| C106 | 1 | 3 | 5 | 8 | 81.7 |
| C107 | 1 | 3 | 6 | 7 | 14.6 |
| C108 | 1 | 3 | 6 | 8 | 78.0 |
| C109 | 1 | 3 | 7 | 8 | 73.3 |
| C110 | 1 | 4 | 5 | 6 | 13.4 |
| C111 | 1 | 4 | 5 | 7 | 16.5 |
| C112 | 1 | 4 | 5 | 8 | 81.7 |
| C113 | 1 | 4 | 6 | 7 | 14.0 |
| C114 | 1 | 4 | 6 | 8 | 73.9 |
| C115 | 1 | 4 | 7 | 8 | 79.8 |
| C116 | 1 | 5 | 6 | 7 | 14.0 |

| Combinación | P1 | P2 | P3 | P4 | P5 | Error (%) |
|-------------|----|----|----|----|----|-----------|
| C155 | 1 | 2 | 3 | 4 | 5 | 15.8 |
| C156 | 1 | 2 | 3 | 4 | 6 | 13.4 |
| C157 | 1 | 2 | 3 | 4 | 7 | 15.8 |
| C158 | 1 | 2 | 3 | 4 | 8 | 80.7 |
| C159 | 1 | 2 | 3 | 5 | 6 | 14.6 |
| C160 | 1 | 2 | 3 | 5 | 7 | 17.4 |
| C161 | 1 | 2 | 3 | 5 | 8 | 79.5 |
| C162 | 1 | 2 | 3 | 6 | 7 | 13.7 |
| C163 | 1 | 2 | 3 | 6 | 8 | 73.3 |
| C164 | 1 | 2 | 3 | 7 | 8 | 73.3 |
| C165 | 1 | 2 | 4 | 5 | 6 | 13.7 |
| C166 | 1 | 2 | 4 | 5 | 7 | 15.8 |
| C167 | 1 | 2 | 4 | 5 | 8 | 81.4 |
| C168 | 1 | 2 | 4 | 6 | 7 | 14.0 |
| C169 | 1 | 2 | 4 | 6 | 8 | 70.5 |
| C170 | 1 | 2 | 4 | 7 | 8 | 77.6 |
| C171 | 1 | 2 | 5 | 6 | 7 | 13.7 |
| C172 | 1 | 2 | 5 | 6 | 8 | 70.2 |
| C173 | 1 | 2 | 5 | 7 | 8 | 74.2 |
| C174 | 1 | 2 | 6 | 7 | 8 | 48.8 |
| C175 | 1 | 3 | 4 | 5 | 6 | 13.0 |
| C176 | 1 | 3 | 4 | 5 | 7 | 17.1 |
| C177 | 1 | 3 | 4 | 5 | 8 | 80.7 |
| C178 | 1 | 3 | 4 | 6 | 7 | 13.7 |
| C179 | 1 | 3 | 4 | 6 | 8 | 59.6 |
| C180 | 1 | 3 | 4 | 7 | 8 | 71.7 |
| C181 | 1 | 3 | 5 | 6 | 7 | 13.4 |
| C182 | 1 | 3 | 5 | 6 | 8 | 77.6 |
| C183 | 1 | 3 | 5 | 7 | 8 | 72.7 |
| C184 | 1 | 3 | 6 | 7 | 8 | 54.7 |
| C185 | 1 | 4 | 5 | 6 | 7 | 13.7 |
| C186 | 1 | 4 | 5 | 6 | 8 | 62.4 |

| | | | | | |
|------|---|---|---|---|------|
| C117 | 1 | 5 | 6 | 8 | 76.1 |
| C118 | 1 | 5 | 7 | 8 | 73.6 |
| C119 | 1 | 6 | 7 | 8 | 57.5 |
| C120 | 2 | 3 | 4 | 5 | 15.8 |
| C121 | 2 | 3 | 4 | 6 | 13.4 |
| C122 | 2 | 3 | 4 | 7 | 16.5 |
| C123 | 2 | 3 | 4 | 8 | 80.7 |
| C124 | 2 | 3 | 5 | 6 | 15.2 |
| C125 | 2 | 3 | 5 | 7 | 18.0 |
| C126 | 2 | 3 | 5 | 8 | 82.0 |
| C127 | 2 | 3 | 6 | 7 | 14.0 |
| C128 | 2 | 3 | 6 | 8 | 78.9 |
| C129 | 2 | 3 | 7 | 8 | 73.9 |
| C130 | 2 | 4 | 5 | 6 | 14.0 |
| C131 | 2 | 4 | 5 | 7 | 15.8 |
| C132 | 2 | 4 | 5 | 8 | 81.7 |
| C133 | 2 | 4 | 6 | 7 | 14.6 |
| C134 | 2 | 4 | 6 | 8 | 71.1 |
| C135 | 2 | 4 | 7 | 8 | 79.2 |
| C136 | 2 | 5 | 6 | 7 | 14.0 |
| C137 | 2 | 5 | 6 | 8 | 77.6 |
| C138 | 2 | 5 | 7 | 8 | 74.5 |
| C139 | 2 | 6 | 7 | 8 | 52.8 |
| C140 | 3 | 4 | 5 | 6 | 12.7 |
| C141 | 3 | 4 | 5 | 7 | 17.4 |
| C142 | 3 | 4 | 5 | 8 | 80.7 |
| C143 | 3 | 4 | 6 | 7 | 13.7 |
| C144 | 3 | 4 | 6 | 8 | 64.9 |
| C145 | 3 | 4 | 7 | 8 | 72.0 |
| C146 | 3 | 5 | 6 | 7 | 13.4 |
| C147 | 3 | 5 | 6 | 8 | 82.9 |
| C148 | 3 | 5 | 7 | 8 | 73.0 |
| C149 | 3 | 6 | 7 | 8 | 70.8 |

| | | | | | | |
|------|---|---|---|---|---|------|
| C187 | 1 | 4 | 5 | 7 | 8 | 73.9 |
| C188 | 1 | 4 | 6 | 7 | 8 | 45.3 |
| C189 | 1 | 5 | 6 | 7 | 8 | 53.7 |
| C190 | 2 | 3 | 4 | 5 | 6 | 13.4 |
| C191 | 2 | 3 | 4 | 5 | 7 | 16.1 |
| C192 | 2 | 3 | 4 | 5 | 8 | 80.7 |
| C193 | 2 | 3 | 4 | 6 | 7 | 14.0 |
| C194 | 2 | 3 | 4 | 6 | 8 | 58.1 |
| C195 | 2 | 3 | 4 | 7 | 8 | 72.0 |
| C196 | 2 | 3 | 5 | 6 | 7 | 13.7 |
| C197 | 2 | 3 | 5 | 6 | 8 | 78.3 |
| C198 | 2 | 3 | 5 | 7 | 8 | 72.4 |
| C199 | 2 | 3 | 6 | 7 | 8 | 52.5 |
| C200 | 2 | 4 | 5 | 6 | 7 | 14.3 |
| C201 | 2 | 4 | 5 | 6 | 8 | 62.4 |
| C202 | 2 | 4 | 5 | 7 | 8 | 73.6 |
| C203 | 2 | 4 | 6 | 7 | 8 | 44.4 |
| C204 | 2 | 5 | 6 | 7 | 8 | 51.6 |
| C205 | 3 | 4 | 5 | 6 | 7 | 13.4 |
| C206 | 3 | 4 | 5 | 6 | 8 | 65.5 |
| C207 | 3 | 4 | 5 | 7 | 8 | 70.8 |
| C208 | 3 | 4 | 6 | 7 | 8 | 51.6 |
| C209 | 3 | 5 | 6 | 7 | 8 | 68.3 |
| C210 | 4 | 5 | 6 | 7 | 8 | 40.4 |

| | | | | | |
|------|---|---|---|---|------|
| C150 | 4 | 5 | 6 | 7 | 14.0 |
| C151 | 4 | 5 | 6 | 8 | 73.0 |
| C152 | 4 | 5 | 7 | 8 | 74.2 |
| C153 | 4 | 6 | 7 | 8 | 47.2 |
| C154 | 5 | 6 | 7 | 8 | 70.2 |

| Combinación | P1 | P2 | P3 | P4 | P5 | P6 | Error (%) |
|-------------|----|----|----|----|----|----|-----------|
| C211 | 1 | 2 | 3 | 4 | 5 | 6 | 13.4 |
| C212 | 1 | 2 | 3 | 4 | 5 | 7 | 15.8 |
| C213 | 1 | 2 | 3 | 4 | 5 | 8 | 80.7 |
| C214 | 1 | 2 | 3 | 4 | 6 | 7 | 14.0 |
| C215 | 1 | 2 | 3 | 4 | 6 | 8 | 55.3 |
| C216 | 1 | 2 | 3 | 4 | 7 | 8 | 72.7 |
| C217 | 1 | 2 | 3 | 5 | 6 | 7 | 13.4 |
| C218 | 1 | 2 | 3 | 5 | 6 | 8 | 73.0 |
| C219 | 1 | 2 | 3 | 5 | 7 | 8 | 72.0 |
| C220 | 1 | 2 | 3 | 6 | 7 | 8 | 47.8 |
| C221 | 1 | 2 | 4 | 5 | 6 | 7 | 14.0 |
| C222 | 1 | 2 | 4 | 5 | 6 | 8 | 59.9 |
| C223 | 1 | 2 | 4 | 5 | 7 | 8 | 73.3 |
| C224 | 1 | 2 | 4 | 6 | 7 | 8 | 43.2 |
| C225 | 1 | 2 | 5 | 6 | 7 | 8 | 48.4 |
| C226 | 1 | 3 | 4 | 5 | 6 | 7 | 14.0 |
| C227 | 1 | 3 | 4 | 5 | 6 | 8 | 58.7 |
| C228 | 1 | 3 | 4 | 5 | 7 | 8 | 71.4 |
| C229 | 1 | 3 | 4 | 6 | 7 | 8 | 45.7 |
| C230 | 1 | 3 | 5 | 6 | 7 | 8 | 53.4 |
| C231 | 1 | 4 | 5 | 6 | 7 | 8 | 40.1 |
| C232 | 2 | 3 | 4 | 5 | 6 | 7 | 14.0 |
| C233 | 2 | 3 | 4 | 5 | 6 | 8 | 56.8 |
| C234 | 2 | 3 | 4 | 5 | 7 | 8 | 72.4 |
| C235 | 2 | 3 | 4 | 6 | 7 | 8 | 42.9 |
| C236 | 2 | 3 | 5 | 6 | 7 | 8 | 50.3 |
| C237 | 2 | 4 | 5 | 6 | 7 | 8 | 38.5 |
| C238 | 3 | 4 | 5 | 6 | 7 | 8 | 50.6 |

| Combinación | P1 | P2 | P3 | P4 | P5 | P6 | P7 | Error (%) |
|-------------|----|----|----|----|----|----|----|-----------|
| C239 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 14.0 |
| C240 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 55.3 |
| C241 | 1 | 2 | 3 | 4 | 5 | 7 | 8 | 72.0 |
| C242 | 1 | 2 | 3 | 4 | 6 | 7 | 8 | 41.0 |
| C243 | 1 | 2 | 3 | 5 | 6 | 7 | 8 | 47.5 |
| C244 | 1 | 2 | 4 | 5 | 6 | 7 | 8 | 37.3 |
| C245 | 1 | 3 | 4 | 5 | 6 | 7 | 8 | 45.7 |
| C246 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 42.5 |

Anexo F. Código fuente del guide desarrollado para esta investigación

```
#####
#####
% Cálculos para aplicación de combinaciones en el guide restauración
% Desarrollado por:
%
%           Bach Marcelo Vásquez Rubio
%           Ing. Wilson Manuel Castro Silupu
% Fecha:           Enero - 2012
% Universidad Nacional Toribio Rodríguez de Mendoza de Amazonas
#####
#####

Function usarrna_Callback(hObject, eventdata, handles)

%=====

%Declaración de variables globales

globaldatprocstats ix ix1 datainputtelembase
globaldata_celdata_espdata_nr

%=====

%Crea data para su uso en la red neuronal

psim=zeros (datproc.Ne,8);

%Cargando la escala y cargando normalizador

load defEscala; %La escala es definida en el guide dimensionar

load normalizador; %El normalizador se define en el guide entrenamiento

for i=1:datproc.Ne

    psim(i,1)=stats(i).Area*(Escala^2)/normalizador(1);

    psim(i,2)=stats(i).EquivDiameter*Escala/normalizador(2);

    psim(i,3)=stats(i).MajorAxisLength*Escala/normalizador(3);

    psim(i,4)=stats(i).MinorAxisLength*Escala/normalizador(4);

    psim(i,5)=stats(i).Perimeter*Escala/normalizador(5);

    psim(i,6)=(4*3.1416*stats(i).Area*(Escala^2))/((stats(i).Perimeter*Escala)^2)...
```

```

/normalizador(6);

psim(i,7)=(stats(i).MajorAxisLength*Escala/(stats(i).MinorAxisLength*Escala))...

/normalizador(7);

psim(i,8)=(psim(i,2)/psim(i,3))/normalizador(8);

end

%Graba psim
savepsimpsim

%Crea variable imgetiq y aplica red neuronal
datproc.imgetiq=zeros(datproc.Ne,3);
imgsegm=datproc.L; %La imgsegm es obtenida a partir de L

% Lectura de la matriz de combinación de parámetros, a partir del libro de cálculo
% Datos.xlsx; el Rango corresponde a las celdas que contienen las combinaciones, en
% la hoja Resultados. Las combinaciones se almacenan en la matriz pa

pa = xlsread('F:\ Datos.xlsx', 'Resultados', Rango);

% Determinación de dimensiones de la matriz de combinaciones y asignando el numero
% de columnas a ma

[nfilncol]=size(pa); ma=ncol;

% Creación de la matriz de errores, Error

Error=zeros(nfil,10);

% Aplicación de bucle ForNext para aplicación de combinaciones; el bucle se ejecuta
% en todas las filas

for n=1:nfil

% Dimensionado de matriz de elementos para simulación en la RNA

d=size(psim);
    
```

```

% Creación de nueva matriz de datos para simulación
psim1=zeros(d(1),ma);

% Extracción de elementos de psim a psim1, de acuerdo a la combinación de parámetros
for r=1:ma
    psim1(:,r)=psim(:,pa(n,r));
end

% Aplicación de la red neuronal, mediante la función redestadl; esta función se
% basa en la función newppn, cuyos detalles se muestran en los anexos, misma que
% fue proporcionada por Castro et. Al (2011)
[imgetiq, ix, elembase]=redestadl (psim1,imgsegm, ma,pa(n,:));
d=size(ix); % Dimensionado de la matriz ix; indica la clase asignada

% Creación de la codificación de las clases asignadas a cada elemento analizado
fila=zeros(d(1),3);

for i=1:d(1)
    if ix(i)==1
fila(i,1)=1;fila(i,2)=0;fila(i,3)=0;
    elseif ix(i)==2
fila(i,1)=0;fila(i,2)=1;fila(i,3)=0;
    elseif ix(i)==3
fila(i,1)=0;fila(i,2)=0;fila(i,3)=1;
    end
end

% Crea matriz de resultados (numero de filas = nfil; numero de columnas =9)
Result = zeros(nfil,9);

% Cargado de resultados de clasificación en la matriz resultados

for i=1:d(1)
    fila1(1,1)=fila(i,1);

```

```
filal(1,2)=fila(i,2);
```

```
filal(1,3)=fila(i,3);
```

```
% Creando posicionador y vaciando datos según posición
```

```
if Real(i,1)==1
```

```
punto=strcat(num2str(i),1);
```

```
Result(i,1:3)=filal;
```

```
elseif Real(i,2)==1
```

```
punto=strcat(num2str(i),4);
```

```
Result(i,4:6)=filal;
```

```
elseif Real(i,3)==1
```

```
punto=strcat(num2str(i),7);
```

```
Result(i,7:9)=filal;
```

```
End
```

```
% Pasando resultados al libro con la clasificación previamente realizada de los
```

```
% elementos en análisis
```

```
xlswrite('F:\imagenesycodificacion\H8-11a.xlsx', Result, 'Data', 'M2');
```

```
% Leyendo datos de errores a partir del libro de preclasificaciones y guardándolos
```

```
% en la matriz Error
```

```
Error(n,1:10)=xlsread('F:\imagenesycodificacion\H8-11a.xlsx','Data', 'M324:V324');
```

```
end
```

```
% Determinando el error en valor porcentual
```

```
Error=Error*100;
```

```
% Pasando los resultados en el libro Datos
```

```
xlswrite('F:\Datos.xlsx', Error(:,10), 'Resultados', -1);
```

```
xlswrite('F:\Datos.xlsx', Error(:,1:9), 'Completo', -1);
```

```
% Indicador de fin de proceso
```

```
disp('Listo')
```


End

%Clasificacion de elementos estructurales, con RNA

function [imgetiq, ix, elembase]=redestadl(psim,imgsegm,m,p)

%Obtencion de Vector Input y Vector Target mediante la funcion vector Total

[vector_I, vector_T, elembase]= vector_Total(m,p);

%Prepara P y Tc para creacion y aplicacion de net

P=vector_I;

P=P'; %invirtiendo

Tc=vector_T;

Tc=Tc';%invirtiendo

%creacion y entrenamiento de la red newppn

net = newppn(P,Tc);

%aplicacion de la red con los datos psim(invirtiendo psim)

Y=sim(net,psim');

%Determina el tipo de elemento segun el numero en la respuesta

[ix,j,val]=find(Y); %(1=cel,2=esp y 3=no rec)

%Cambiando la imagensegmentada a imgetiquetada

[nfilncol]=size(imgsegm);

for k=1:nfil

for j=1:ncol

ifimgsegm(k,j)~= 0;

imgsegm(k,j) =ix(imgsegm(k,j));

end

end

end

imgetiq = imgsegm

end

#####

#####

