SWP™

Mitsui Chemicals, Inc.
Synthetic Wooden Pulp Department
Nonwoven Fabric Division

Pore Size of SWP™ -based Synthetic Fiber Paper

Pore size of SWP™ -based synthetic fiber paper can be controlled by SWP™ ratio in the paper. The pore size controlled paper can be used for filters, etc. This technical sheet provides information on pore size of synthetic fiber paper using SWP.

1. Papermaking Process for SWP™ -based synthetic paper

1) Comparison of pore size of SWP™-based synthetic fiber paper

SWP™ Grade : E620 (mp：135℃、C S F：340ml)
E400 (mp：135℃、C S F：580ml)
E790 (mp：135℃、C S F：680ml)
Basis Weight : 60g/m^2
SWP™ ratio : 100%
Dryer Releasing Agent：SUNTORL KL (NICCA CHEMICAL.CO., LTD) * Dosage：1phr
Drying Condition ：105℃×2min. (Rotary Dryer)
Heat Treatment Condition：135℃×2min. (Heated Role)

2) Correlation between Pore sizes and E620 ratio in synthetic fiber paper

SWP™ Grade ：E620 (mp：135℃)
Thermal bonded fibers：Polyolefin-type bicomponet fibers
(mp；High mp type fibers：135℃、Low mp type fibers ：100℃)
Basis Weight ：50g/m^2
SWP™ ratio：10, 30, 50, 70, 90%
Dryer Releasing Agent：SUNTORL KL (NICCA CHEMICAL.CO.,LTD) * Dosage：1phr Drying Condition ：105℃×2min. (Rotary Dryer)
Heat Treatment Condition ：130℃×30sec. (Heated Role)

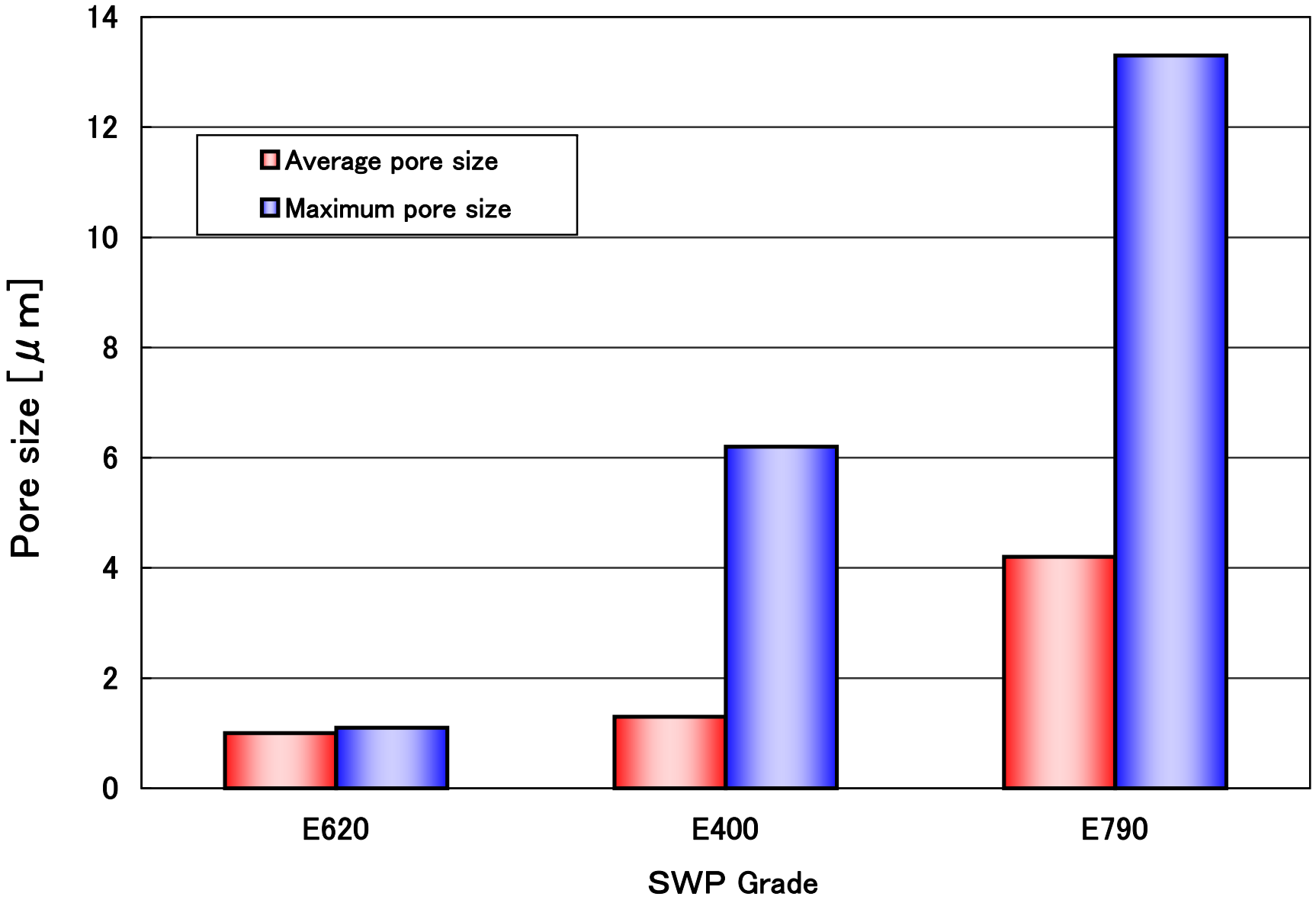
3) Evaluation of Pore Size of synthetic fiber paper

Evaluation of Pore size : PMI “Perm Poro meter”
Evaluation of Airflow resistance：Kato Tec Co., LTD.
“KES - F8 - AP1：Air permeability equipment

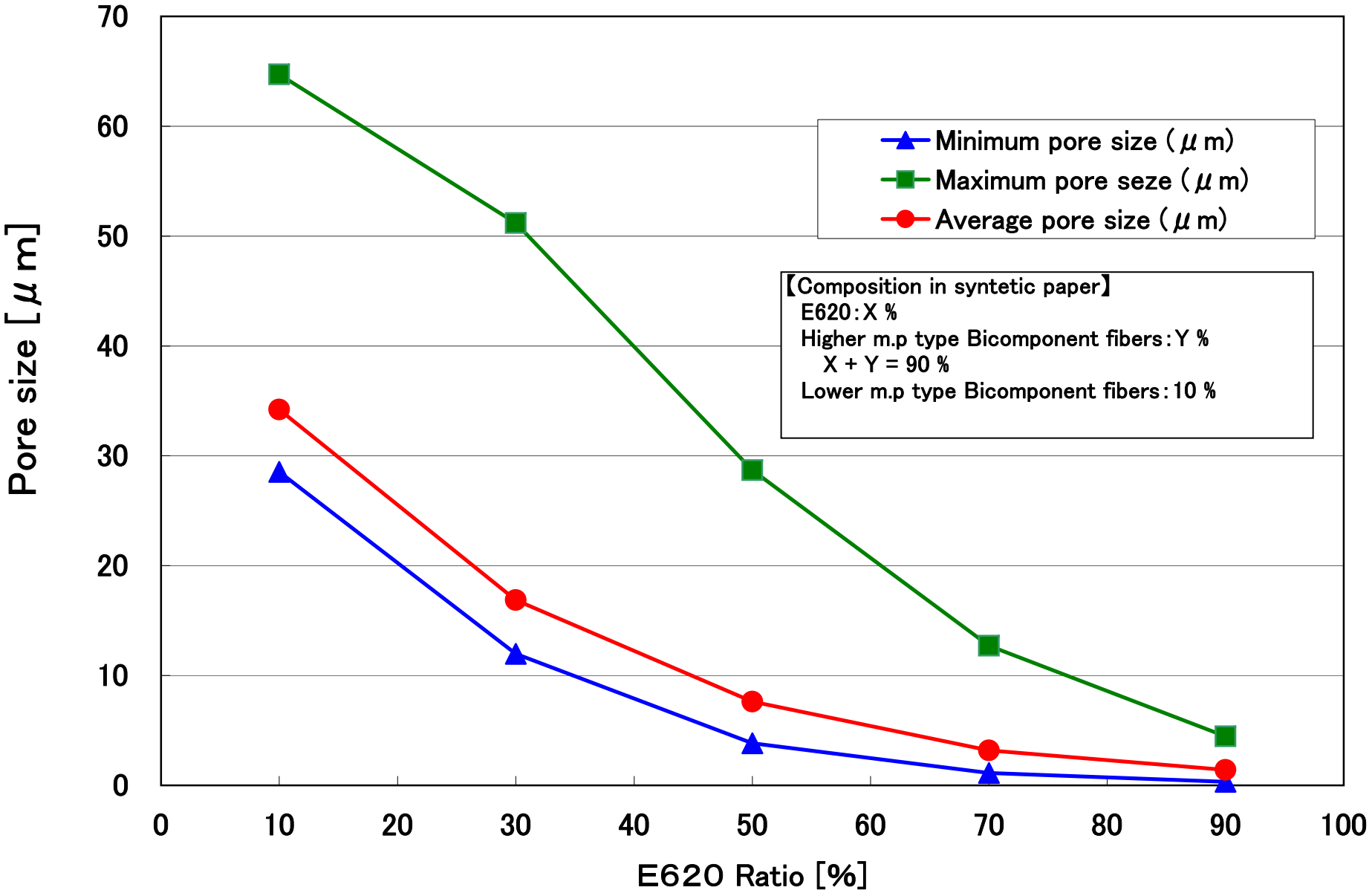
2. Results

1) Comparison of pore size of SWP™-based synthetic fiber paper (Refer to Graph 1)
- In this examination the average pore size was 1～5μm and the maximum pore size was 1～15μm.
- Low CSF values of SWP™ mean smaller pore size. By using E620, paper with extremely small pore size is obtained.

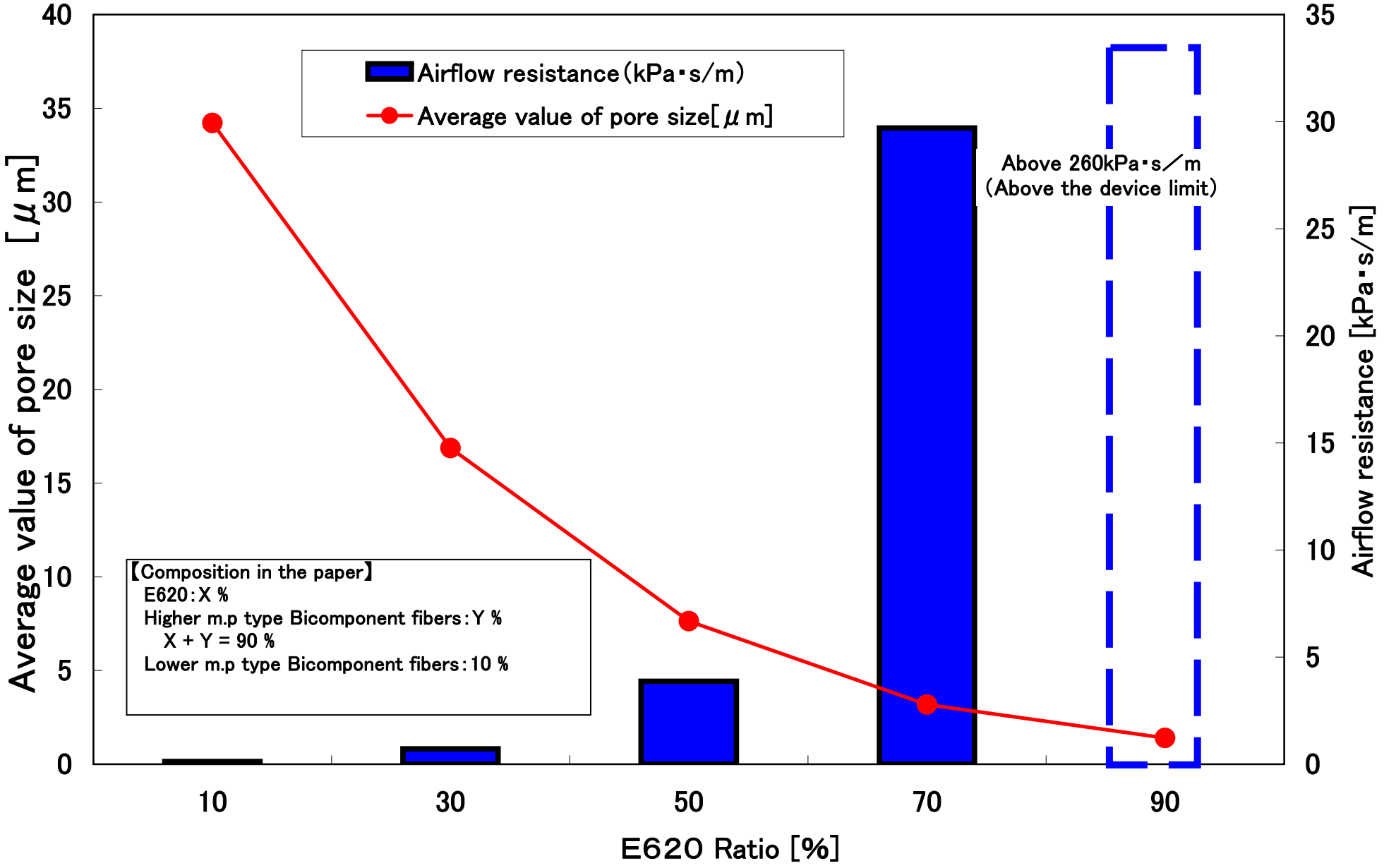
2) Relation between SWP™ (E620) ratio in synthetic fiber paper and pore sizes
- Graph 2 and 3 show evaluated data of SWP™-based synthetic fiber paper.
- The smaller the pore size is, the more the airflow resistance of the paper increases. (Graph 2).
- Pore size of paper can be controlled by SWP™ ratio in the paper. Paper with controlled pore size can be used in filter-related fields (Graph 3).



Graph1： Comparison of pore sizes of SWP-based synthetic fiber paper



Graph2 : Correlation between E620 ratio in synthetic fiber paper and the Pore sizes



Graph3 : Correlation between E620 ratio in synthetic fiber paper and average value of pore sizes, airflow resistance