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In this work we study associated capacities to degenerate elliptic PDEs in divergence form, i.e.

$$\operatorname{div}[\mathbf{A}\nabla u(x)] = 0$$

with suitable structural assumptions on  $\mathbf{A} : \mathbb{R}^n \rightarrow \mathbb{R}^n$  that include the  $p$ -Laplacian  $\mathbf{A}(\mathbf{v}) = \|\mathbf{v}\|^{p-2}\mathbf{v}$  as an example. Our main result is a Brunn-Minkowski inequality for such capacities:

$$[\operatorname{Cap}_{\mathcal{A}}(\lambda E_1 + (1 - \lambda)E_2)]^{\frac{1}{(n-p)}} \geq \lambda [\operatorname{Cap}_{\mathcal{A}}(E_1)]^{\frac{1}{(n-p)}} + (1 - \lambda) [\operatorname{Cap}_{\mathcal{A}}(E_2)]^{\frac{1}{(n-p)}}$$

where  $1 < p < n$  and  $0 < \lambda < 1$ , and where  $E_1, E_2$  are convex compact sets with positive  $\mathcal{A}$ -capacity. Moreover, if equality holds in the above inequality for some  $E_1$  and  $E_2$ , then with further regularity assumptions on  $\mathcal{A}$ , we show that  $E_1$  and  $E_2$  must be homothetic. (Received February 20, 2018)