Sail Area/Displacement

The parameter Sail Area/Displacement gives an indication of sail power to weight of the craft and thus its agility. A boat with a high SA/disp will generally compare well in light winds but will need early reefing of the sail. The formula has no dimensions since the displacement has been reduced by raising it to the power of 0.6667.

When I use the formula with metric values,
I just use the sail area in sqm and
the displacement in metric tons since one cubic meter
of fresh water is one metric ton.

So what value on the SA/disp should we aim for?

- A value of 15 is quite low; "Motor Sailor"
- A value of 20 isn't bad, OK for cruisers
- A value of 25 is very hot. Fine for small junk-rigged boats – easy to reef you know...

Note (20150721):You will see that my recommended numbers, above are set quite a bit higher than in most books. Remember then: The junk rig is also supposed to drive the boat downwind without any help from spinnakers. In addition, with the quick and easy reefing of the JR, it makes sense to be more generous with the sail area.

$$\frac{Sail.Area}{Displacement} = \frac{Sail.Area[sqft]}{Displacement[cubic.feet]^{0.6667}} = \frac{Sail.Area[sqm]}{Displacement[cubic.meter]^{0.6667}}$$

Example:
Junk-rigged schooner Samson, SA=107sqm and Displacement= 23metric tons (roughly).

$$\frac{Sail.Area}{Displacement} = \frac{107[sqm]}{23[metric.tons]^{0.6667}} = 13.2$$

Note (20150721):
The original formula in imperial numbers is based on the density of *seawater* (one cubic foot=64lbs). To get the same result when using metric numbers, the displacement in tons should be divided with 1.025 since seawater is 2.5% denser than fresh water. If you don't bother with that, the "metric" SA/disp. factor will just come out around 0.2 below the imperial factor, so it is no big deal, really.