# ADVANCE SIGMA 8

Product presentation

ADVANCE SIGMA 8

# Discover free riding

As a top-performance intermediate with a high fun-factor the SIGMA 8 is the definitive Cross Country Free Rider.

This wing is just waiting to take you on new flying adventures, to leave your well-worn paths and investigate some fresh countryside.

# A selection of frequently asked questions about the SIGMA 8

**Which were the main design specifications that the SIGMA 8 had to achieve?**

In the SIGMA 8 ADVANCE wanted to develop a well-balanced fun wing with sporty and agile flying qualities, and, above all, which would be one of the best in its class as a high performing intermediate. To achieve this level of friendly handling was not a simple task considering the high aspect ratio. It's all the more pleasing to us that all the ADVANCE test pilot are agreed: the unique handling of the SIGMA 8 is sensational in every flight situation, whether it be circling in a thermal or making wingovers.

**How is the SIGMA 8 different from the previous SIGMA 7?**

The SIGMA 8 has much improved turning behaviour, thanks to the wing's ideal lift distribution. A newly developed profile and a lighter canopy makes the SIGMA 8 much easier to takeoff than its predecessor. The SIGMA 8 also has lower braking/ steering loads and turns more agreeably into thermals, always giving the pilot an exceptionally good feeling. As a true three liner the SIGMA 8 has distinctly less line drag and much better performance. A glide ratio of 10 and a maximum speed of 55 km/h means that the SIGMA 8 need not be ashamed of any comparison. For the same speed range the SIGMA 8's speed system is lighter to push and needs less foot travel.

**Which new materials and technologies have been used in the SIGMA 8?**

Instead of single diagonal ribs the SIGMA 8 has continuous diagonals, made possible by the use of lighter materials for the unsuspended ribs. Together with improved tension distribution in the load-bearing structure this primarily makes the true three liner a reality. Also new are the SIGMA 8's Nylon wires for shaping the leading edge, completely replacing the Mylar. Together these changes make a reduction of up to 900 gm in canopy weight, without compromising the robustness of the wing. As before, upper and lower surfaces are made of well-tried 40 g/m2 or 44 g/m2 long-life cloth.

Interior structure: the continuous diagonals of the SIGMA 8

**Is the SIGMA 8 a true three liner?**

The SIGMA 8 geometry has only 3 line levels up to the top gallery, and this gives the wing all the advantages of a real three liner. On one hand this is responsible for a clear performance increase because of reduced line drag, and on the other it allows the speed system to be more efficiently applied over the same accelerate range, requiring lower loading over a shorter travel. Then there's the less cluttered nature of the line geometry, which makes line sorting easier.

**To what extent is the SIGMA 8 a Fun Wing?**

The SIGMA 8 was designed to have perfect handling and sporty turning behaviour, so that dynamic manoeuvers – be they slope soaring or wingovers – deliver a high fun factor. Always assuming that the pilot has the necessary ability and correct technique, the SIGMA 8 lends itself well to flying manoeuvres such as the wingover, asymmetric spiral, SAT and reversal. The successful compromise between the SIGMA 8's performance and dynamic handling comes mainly from the carefully designed lift distribution, achieved by the choice of profile and wing twist. In addition the high curvature of the wing has resulted in improved agility in roll.

**What does 'balanced pitching behaviour' mean?**

When you fly back into a thermal, or fly through bumpy air, you don't have to correct large pitch disturbances under a SIGMA 8. Because the wing does not pitch strongly back and forward the glider keeps its good performance even when flying through bumpy conditions. This balanced pitching quality is achieved by the profile shape - the suitable choice of thicknesses and curving shapes in the profile.

**What are the advantages of plastic rods in the leading edge?**

The Nylon wires built into the front of the leading edge only go as far round as the previous Mylar reinforcements. These plastic rods are not particularly radical, but they make sure that the important airflow at the leading edge of the wing stays good all the time. They are one feature, after the choice of profile, that is responsible for the wing's easy takeoff behaviour. One further advantage is weight reduction and therefore reduced canopy inertia: this means that reactions to extreme flight situations turn out to be less dynamic. ADVANCE has not in any way been able to establish that the SIGMA 8's plastic rods lead to a higher risk of cravats.

**What is a three liner's collapse behaviour like?**

The SIGMA 8 wing has a high degree of stability. Its precise canopy feedback enables the pilot to sense the onset of a collapse and to react accordingly. If this were not to be done early enough, however, a SIGMA 8 wing will fold from the wingtip towards the centre in a predictable manner. Due to its improved internal airflow, compared with its forebear, the SIGMA 8 displays no degradation in collapse characteristics, despite the reduction from 4 to 3 line levels. It is worth bearing in mind that simulated collapses (by pulling the riser down) are fundamentally different from natural collapses (pressure from above). With the SIGMA 8 both kinds of collapse are well controllable.

**Why does the SIGMA 8 have covered A and B lower lines?**

For our SIGMA pilots we want a balanced wing that feels good all the time, and even line sorting gives a satisfying feeling. Covered A and B bottom lines also better protected against damage. The uncovered lines on the SIGMA 8 C base lines and the upper galleries produce less aerodynamic drag. The more compact weave and an additional coating of the line fibres significantly improves these lines' resistance to UV light and physical abrasion. In addition the uncovered line loops at the junctions have an internal thickening which results in lower surface pressure.

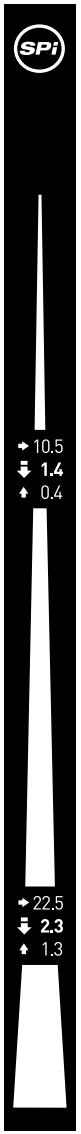
**Why is the SIGMA 8 so manageable at full speed?**

The SIGMA 8 has a particularly homogeneous and stable canopy that also gives the pilot adequate information about the nature of the surrounding air. Combined with the balanced pitching behaviour of the profile balanced canopy stability means that the SIGMA 8 pilot does not have to correct for large pitching movements. With an active flying style collapses can be almost completely avoided in normal conditions. The SIGMA 8 gives very precise canopy feedback and this makes it possible to detect the onset of a collapse early, and so react accordingly. If the collapse is not prevented early enough the wingtip will collapse first, proceeding progressively towards the wing centre in a predictable way.

**How important is the ability to accelerate when flying a paraglider?**

Even leisure pilots are interested in performance in that a high average speed significantly affects the success of a long flight. A on-going and considered choice of speed, depending on actual headwind, sink rate and expected climb, is essential while making a transit if the best possible glide or the shortest time to cloudbase is to be achieved. Based on exact figures from the polar curve there is a Speed-Performance-Indicator provided on the backs of the SIGMA 8 C risers, which can be accurately set using the red marks on the speed system.

Example:
SIGMA 8/25




Neutral position

Position 30%

Position 80%

| **Value table SPI** | **23** | **25** | **27** | **29** |
|---|---|---|---|---|
| **30% Position** | | | | |
| Headwind in km/h | * | 10.5 | * | * |
| Expected climb in m/s (Vario value) | * | 0.4 | * | * |
| Sink rate in m/s (Vario sink) | * | 1.4 | * | * |
| **80% Position** | | | | |
| Headwind in km/h | * | 22.5 | * | * |
| Expected climb in m/s (Vario value) | * | 1.3 | * | * |
| Sink rate in m/s (Vario sink) | * | 2.3 | * | * |

* At present the data for these sizes are not yet available

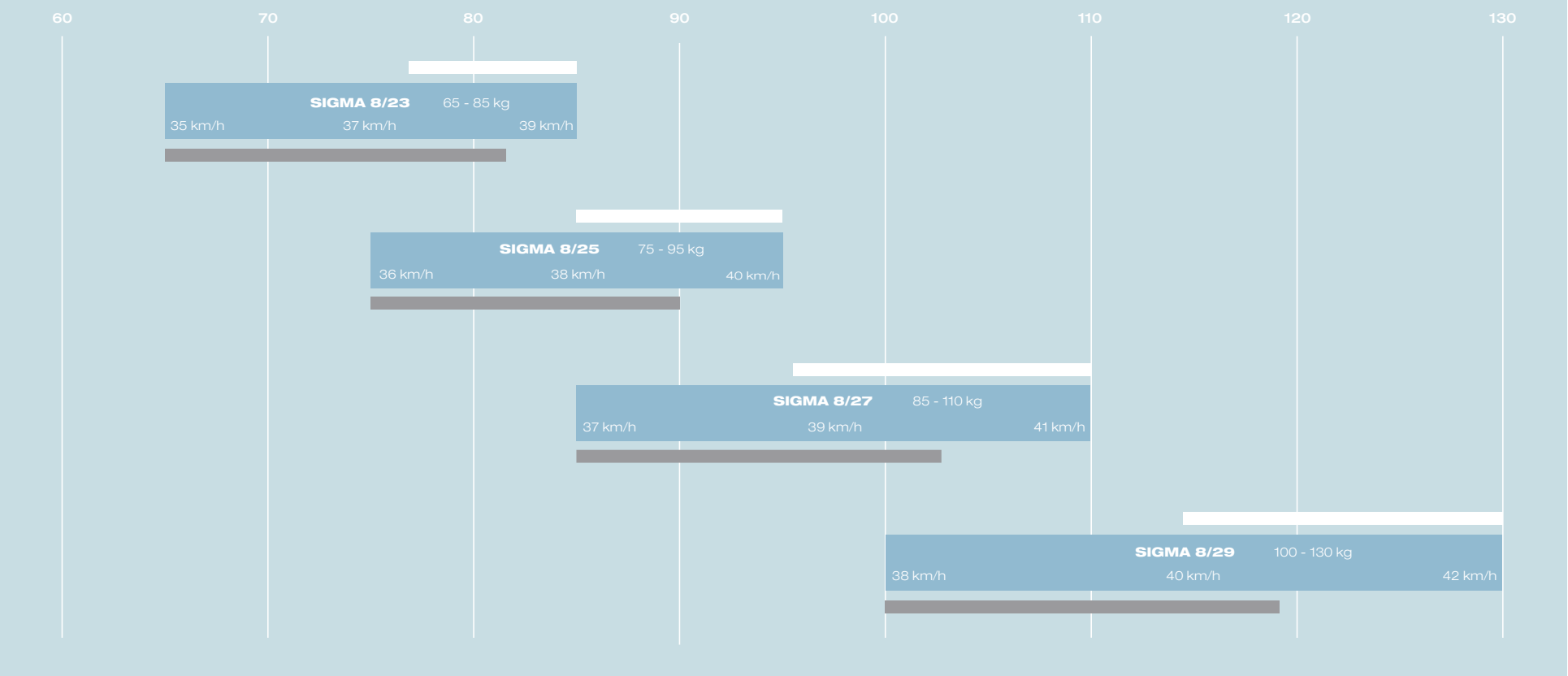
**What pilot experience is required to fly a SIGMA 8?**

As a high performing intermediate the SIGMA 8 is suitable specifically for the experienced thermal pilot who has, at least, made his first cross country flights and has acquired the necessary feeling for a glider in the air. The SIGMA pilot flies actively, recognises and can prevent problems at their outset, and has mastered the usual fast descent methods. Only if this is the case can he fully make use of the large performance potential of this wing, and thereby travel safely and relaxed across the countryside.

**Which size of wing should I choose?**

The weight ranges of the different sizes are given in the Technical Data. The areas of all four SIGMA 8 sizes are smaller when compared with the equivalent Sigma 7. The SIGMA 8 has a higher aspect ratio, which means greater span and therefore higher performance. The ideal weight range would therefore have changed slightly, so it has been possible to reduce the various sizes. The performance of the SIGMA 8 stays the same whether the pilot flies at the lower or upper end of the weight range.

# Choice of the size




Weight range of the different sizes.
The sporty side of the SIGMA 8 (optimal glide). The wing seeks out the strongest lift and pullst he XC enthusiast from one thermal to the next one
The thermal side of the SIGMA 8 (optimal glide). Great for long and relaxed soaring sessions with the sensation of real high performance.

# Technical details

| SIGMA 8 | | 23 | 25 | 27 | 29 |
|---|---|---|---|---|---|
| Flat surface | m2 | 22.50 | 25.00 | 27.00 | 29.00 |
| Projected surface | m2 | 18.92 | 21.03 | 22.71 | 24.39 |
| Span | m | 11.63 | 12.25 | 12.75 | 13.21 |
| Projected span | m | 9.03 | 9.49 | 9.90 | 10.26 |
| Aspect ratio | | | 6.0 | | |
| Projected aspect ratio | | | 4.3 | | |
| Max chord | m | 2.41 | 2.54 | 2.64 | 2.74 |
| Min chord | m | 0.54 | 0.57 | 0.59 | 0.62 |
| Take off weight [2] | kg | 65 - 85 | 75 - 95 | 85 - 110 | 100 - 130 |
| Glider weight | kg | 5.3 | 5.6 | 5.9 | 6.3 |
| Number of cells | | | 61 | | |
| Number of risers | | | 3 | | |
| Riser length | cm | 46 | 48 | 50 | 52 |
| Max length of the lines with the risers | cm | 707.0 | 745.0 | 774.0 | 802.0 |
| Min speed [1] | km/h | | 23 (+/- 1) | | |
| Trim speed [1] | km/h | | 39 (+/- 1) | | |
| Max speed [1] | km/h | | 55 (+/- 2) | | |
| Min sink rate [1] | m/s | | 1.1 (+/- 0.1) | | |
| Best glide [1] | | | 10 (+/- 0.2) | | |
| Certification | | | EN / LTF | | |

1 Values depending on wing loading, harness/pilot and glider size
2 Pilot, wing, equipment

# Materials used

We routinely inspect and test our materials many times over. Like all ADVANCE products the SIGMA 8 is designed and produced as a result of the latest developments and knowledge. We have chosen all the materials very carefully, under conditions of the strictest quality control.

Leading edge:
New Skytex 6.6 Evolution water-repellent, 9092 E117 / 44 g/m2

Upper and lower surface:
New Skytex 6.6 water-repellent, 9017 E77A / 40 g/m2

Ribs:
New Skytex 6.6 hard, 9017 E29 / 40 g/m2

Internal partitions:
New Skytex 6.6 hard, 70000 E91 / 27 g/m2

Leading and trailing edge reinforcements:
Polyester laminated, 20mm

Lower leading edge reinforcements:
Polyamid, 16 mm

Lines:

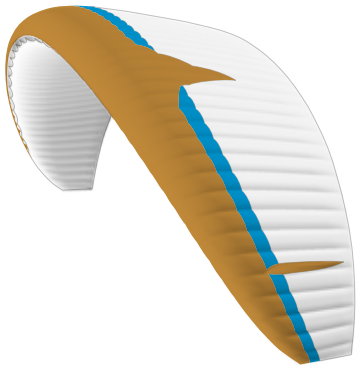
- Edelrid Technora (Aramid), 6843 200 / 160, sheated, 1,9 / 1,5 mm (main lines)
- Liros Technora (Aramid), LTC 200, unsheated UV coated, 1,3 mm (C main lines)
- Edelrid Technora (Aramid), 8000U 130 / 90, unsheated UV coated, 1,0 / 0,8 mm (2nd level)
- Edelrid Technora (Aramid), 8000U 70 / 50, unsheated UV coated, 0,7 / 0,5 mm (1st level)
- Edelrid Technora (Aramid), 8000U 70 / 50, unsheated UV coated, 0,7 / 0,5 mm (brake lines)
- DFLP 232, Dyneema/Polyester + Liros Technora (Aramid), LTC 160, 1,6 / 1,1 mm (stearing line)

Risers:
Polyester / Technora (Aramid), 13mm – 1000kg

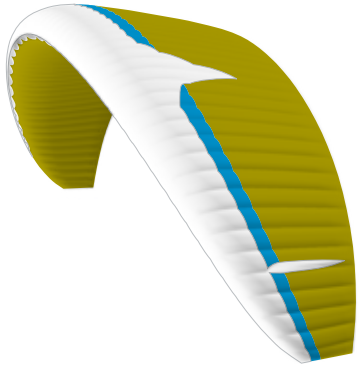
Quick links:
Maillon Rapide, Inox stainless, 3.5 mm - 750 kg

# Colours

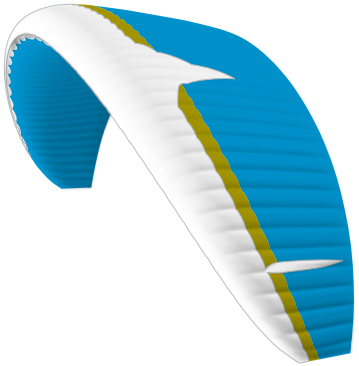
**Colour code** - Leading edge & winglets / design stripe / top & bottom surface



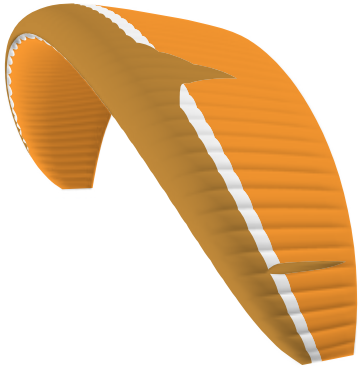
**WHITE -** bronze / azur / white



**PALM -** white / azur / palm



**AZUR -** white / palm / azur



**ORANGE -** bronze / white / orange

**GREY -** aubergine / white / grey

**Special colours**

The SIGMA 8 leading edge is made of a new fabric, developed exclusively for ourselves. This material is Nylon NCV waterrepellent Evolution New Skytex 6.6/44gm/m2 from Porcher Sport. Because this material is only made for us all SIGMA 8 leading edges will only come in one of the standard colours – aubergine, gold, grey, orange, petrol, red, white and bronze.