Product Data Sheet

DYHARD® CAT-Line

DYHARD® UR300
DYHARD® UR300AB

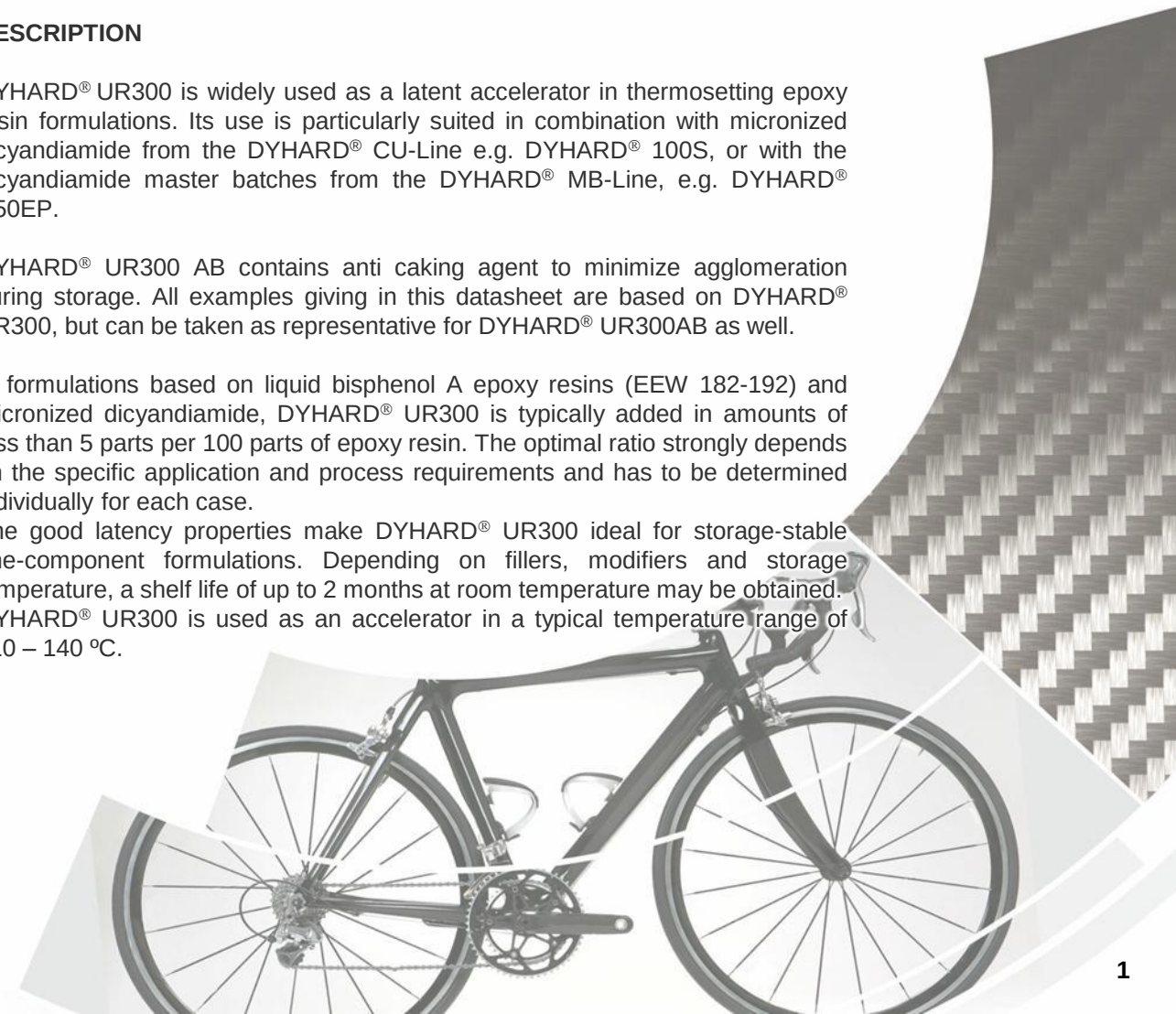
DYHARD® UR300 and DYHARD® UR300AB represent latent, micronized accelerators based on a substituted urea. Their prominent use is preferably in combination with the highly latent curing agents of the DYHARD® 100 series in thermosetting epoxy resin formulations.

DESCRIPTION

DYHARD® UR300 is widely used as a latent accelerator in thermosetting epoxy resin formulations. Its use is particularly suited in combination with micronized dicyandiamide from the DYHARD® CU-Line e.g. DYHARD® 100S, or with the dicyandiamide master batches from the DYHARD® MB-Line, e.g. DYHARD® D50EP.

DYHARD® UR300 AB contains anti caking agent to minimize agglomeration during storage. All examples giving in this datasheet are based on DYHARD® UR300, but can be taken as representative for DYHARD® UR300AB as well.

In formulations based on liquid bisphenol A epoxy resins (EEW 182-192) and micronized dicyandiamide, DYHARD® UR300 is typically added in amounts of less than 5 parts per 100 parts of epoxy resin. The optimal ratio strongly depends on the specific application and process requirements and has to be determined individually for each case.
The good latency properties make DYHARD® UR300 ideal for storage-stable one-component formulations. Depending on fillers, modifiers and storage temperature, a shelf life of up to 2 months at room temperature may be obtained.
DYHARD® UR300 is used as an accelerator in a typical temperature range of 110 – 140 ºC.



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RECOMMENDATIONS

Historically the good balance of reactivity and latency properties made Fenuron products like DYHARD® UR300 to an industry standard. Unfortunately toxicological labelling issues result in increasing environmental and safety concerns. Please contact us for state-of-the-art alternatives.

ADVANTAGES

- Good balance of reactivity and latency
- Historically known uron accelerator with broad performance record

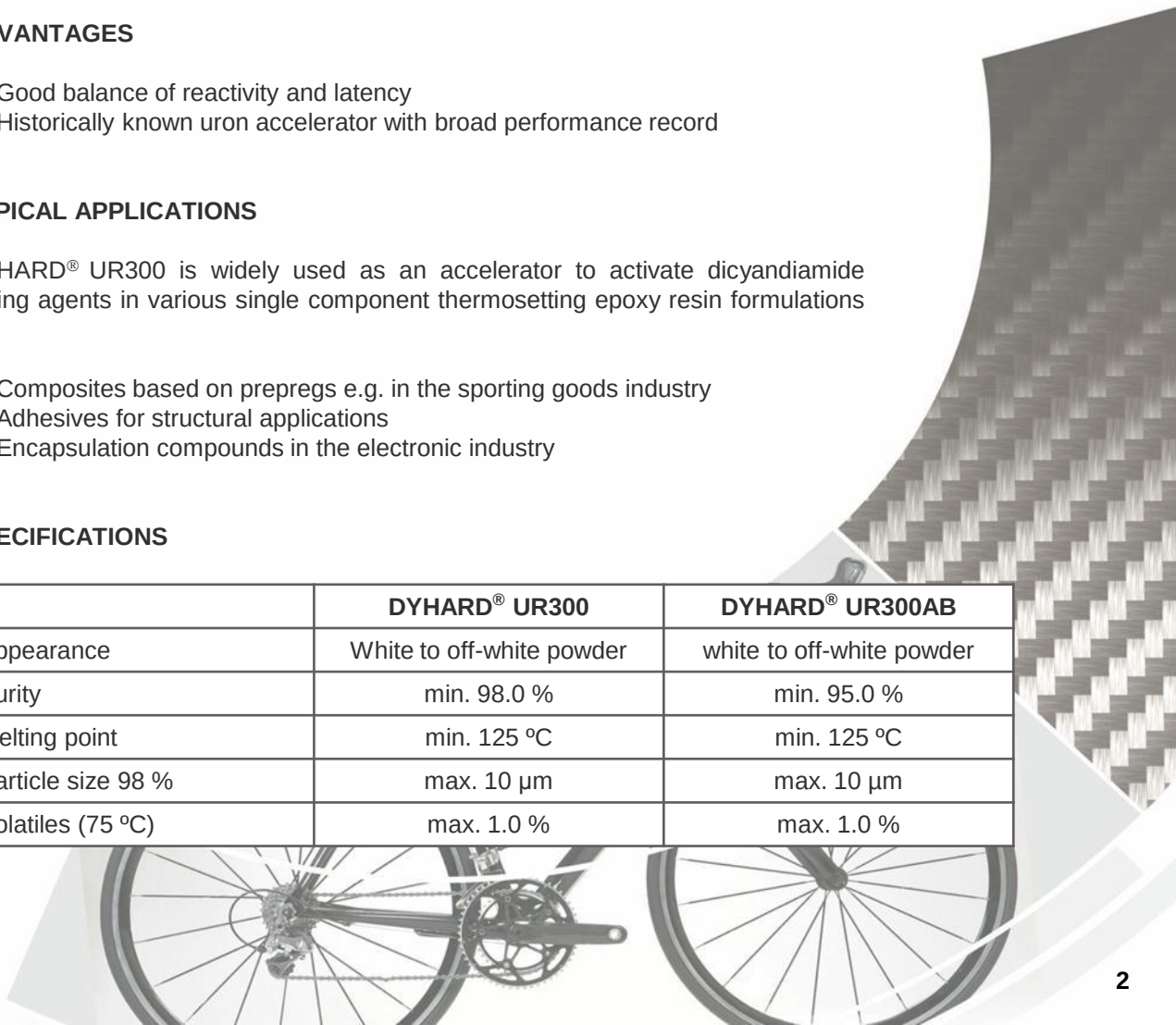
TYPICAL APPLICATIONS

DYHARD® UR300 is widely used as an accelerator to activate dicyandiamide curing agents in various single component thermosetting epoxy resin formulations for:

- Composites based on prepregs e.g. in the sporting goods industry
- Adhesives for structural applications
- Encapsulation compounds in the electronic industry

SPECIFICATIONS

	DYHARD® UR300	DYHARD® UR300AB
Appearance	White to off-white powder	white to off-white powder
Purity	min. 98.0 %	min. 95.0 %
Melting point	min. 125 ºC	min. 125 ºC
Particle size 98 %	max. 10 µm	max. 10 µm
Volatiles (75 ºC)	max. 1.0 %	max. 1.0 %



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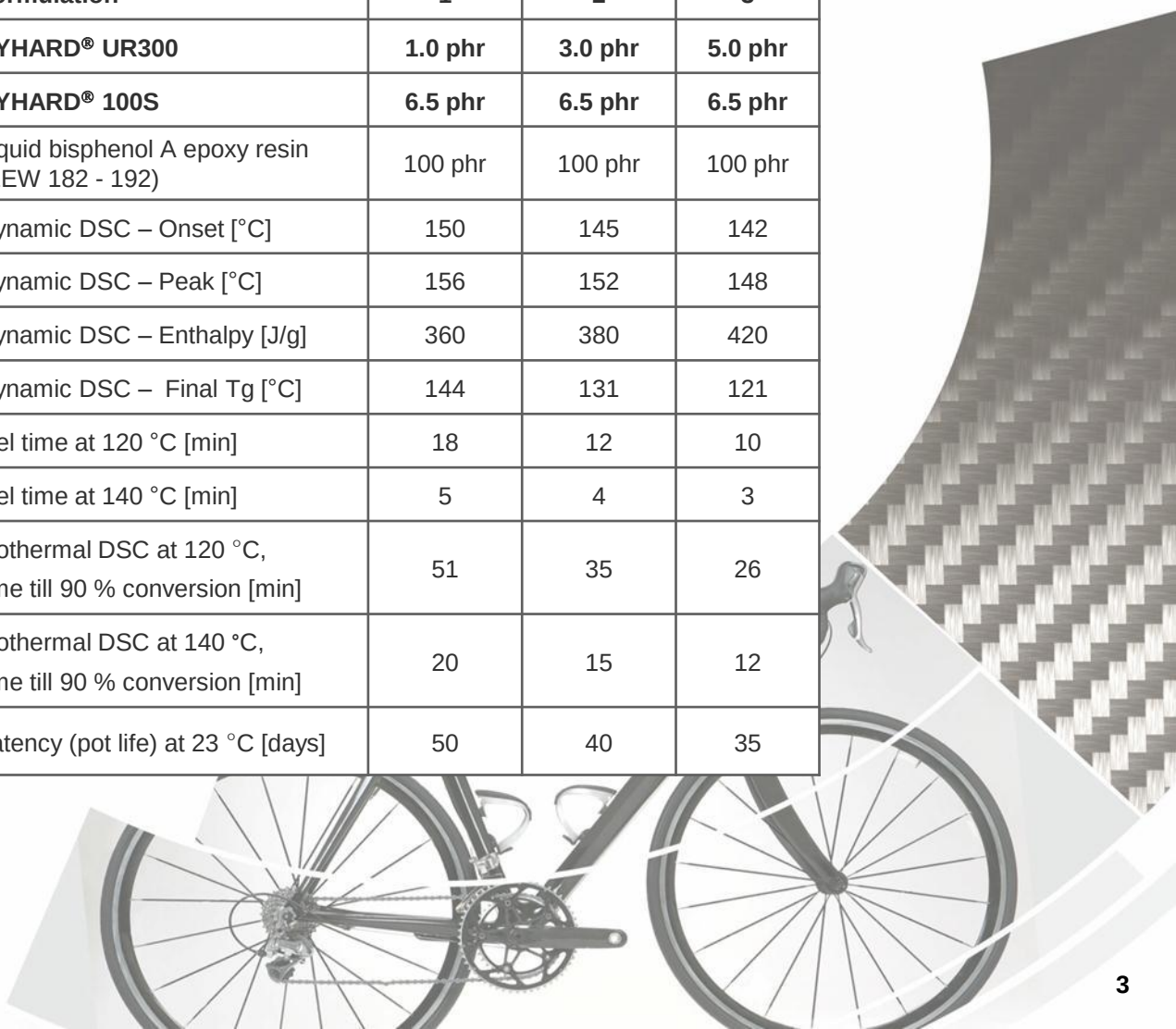
FORMULATION EXAMPLES

The formulation examples below refer to a pure resin matrix only. Depending on the resin used, results may vary and differ from the values shown. Fillers and other additives to the resin matrix may change properties significantly.

Formulation	1	2	3
DYHARD® UR300	**1.0 phr**	**3.0 phr**	**5.0 phr**
DYHARD® 100S	**6.5 phr**	**6.5 phr**	**6.5 phr**
Liquid bisphenol A epoxy resin (EEW 182 - 192)	100 phr	100 phr	100 phr
Dynamic DSC – Onset [°C]	150	145	142
Dynamic DSC – Peak [°C]	156	152	148
Dynamic DSC – Enthalpy [J/g]	360	380	420
Dynamic DSC – Final Tg [°C]	144	131	121
Gel time at 120 °C [min]	18	12	10
Gel time at 140 °C [min]	5	4	3
Isothermal DSC at 120 °C, time till 90 % conversion [min]	51	35	26
Isothermal DSC at 140 °C, time till 90 % conversion [min]	20	15	12
Latency (pot life) at 23 °C [days]	50	40	35



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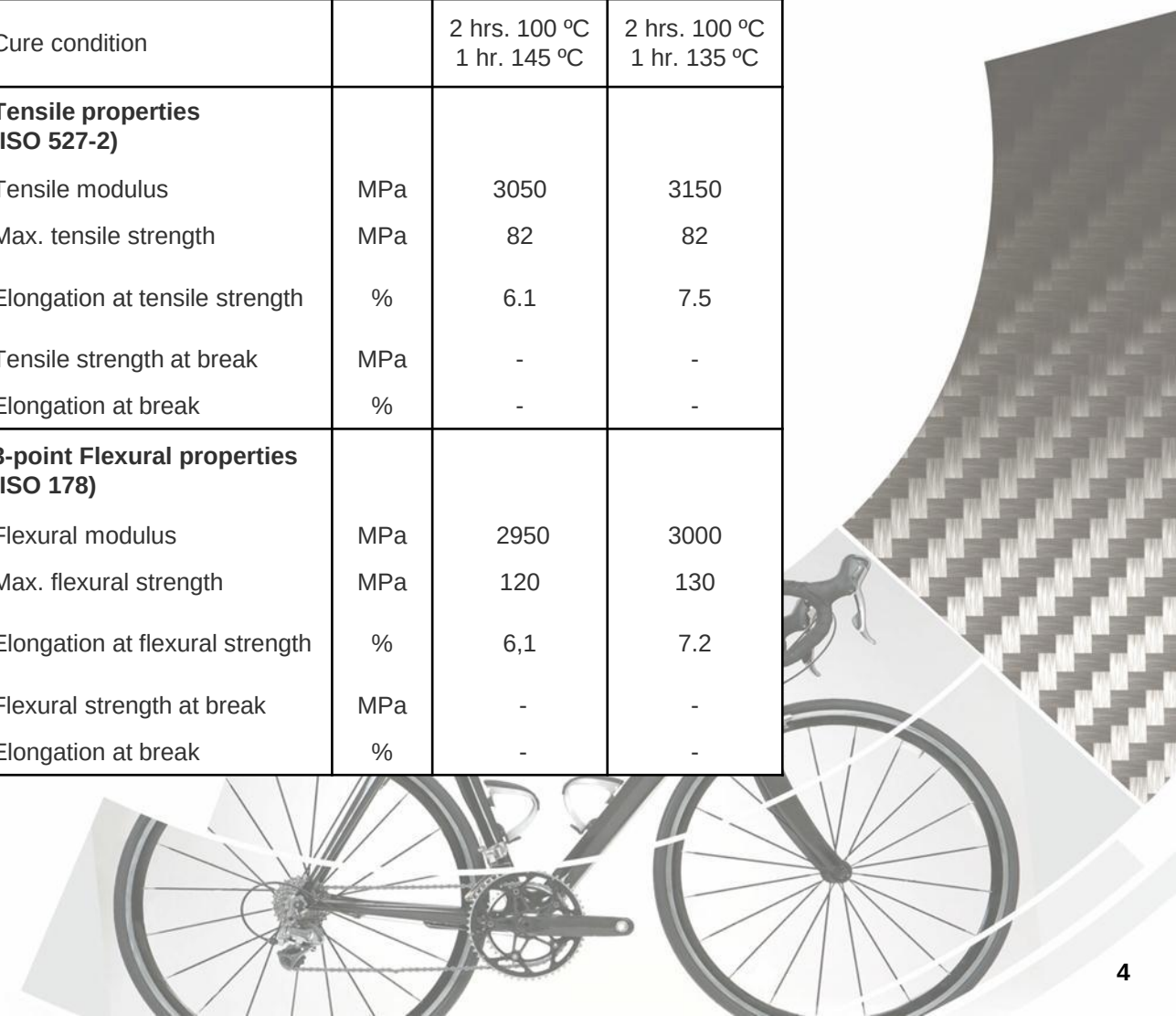
MECHANICAL PROPERTIES

The mechanical properties have been measured on cast resin plates. The results shown below refer to the formulation examples on page 3.

Formulation		**1**	**2**
Cure condition		2 hrs. 100 ºC 1 hr. 145 ºC	2 hrs. 100 ºC 1 hr. 135 ºC
Tensile properties (ISO 527-2)			
Tensile modulus	MPa	3050	3150
Max. tensile strength	MPa	82	82
Elongation at tensile strength	%	6.1	7.5
Tensile strength at break	MPa	-	-
Elongation at break	%	-	-
3-point Flexural properties (ISO 178)			
Flexural modulus	MPa	2950	3000
Max. flexural strength	MPa	120	130
Elongation at flexural strength	%	6,1	7.2
Flexural strength at break	MPa	-	-
Elongation at break	%	-	-



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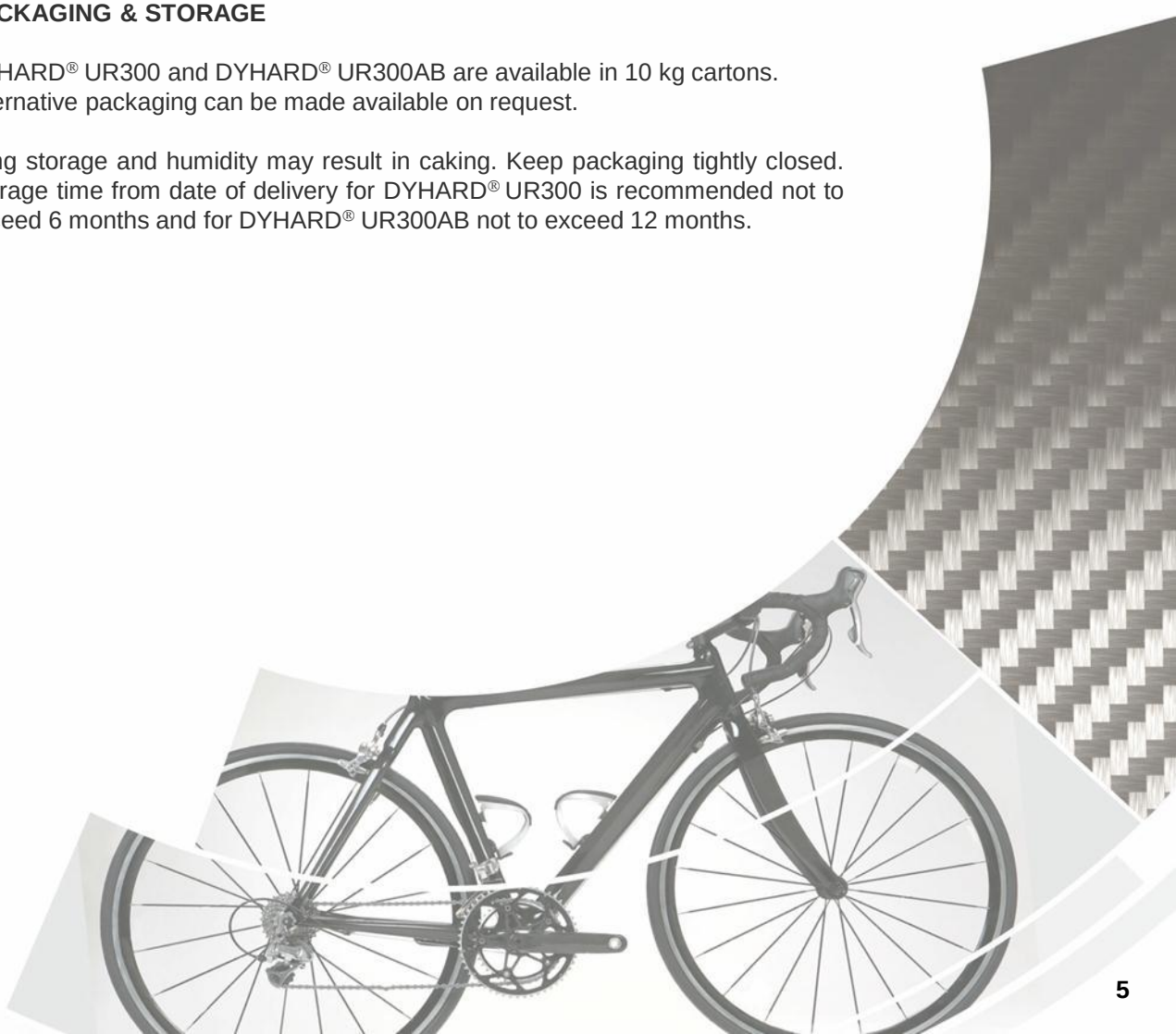
HEALTH & SAFETY PRECAUTIONS

The classification of DYHARD® UR300 and DYHARD® UR300AB are shown in the Material Safety Data Sheets. For additional health and safety information please also refer to our actual Material Safety Data Sheet.

PACKAGING & STORAGE

DYHARD® UR300 and DYHARD® UR300AB are available in 10 kg cartons. Alternative packaging can be made available on request.

Long storage and humidity may result in caking. Keep packaging tightly closed. Storage time from date of delivery for DYHARD® UR300 is recommended not to exceed 6 months and for DYHARD® UR300AB not to exceed 12 months.



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