



RWANDA CIVIL AVIATION REGULATION

PART 39: UNMANNED FREE BALLOON, AIRSHIPS AND HIGH ALTITUDE PLATFORM STATION (HAPS)

Consolidated to include Special Regulations issued since last amendment of Ministerial Order N°01/CAB.M/019 OF 06/02/2019 Establishing Civil Aviation Regulations.

Part 39

Unmanned Free Balloon, Airships and High Altitude Platform Station (HAPS)

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SUBPART A: GENERAL

39.001 CITATION & APPLICABILITY

- (a) These regulations may be cited as Civil Aviation (Unmanned Free Balloons, Airships, and High Altitude Platform Station (HAPS) Regulations.
- (b) This Part prescribes the requirements of the Republic of Rwanda for the operations of unmanned free balloons, Airships and High Altitude Platform Station (HAPS).
- (c) This Part is applicable to all persons and organizations conducting operations of unmanned free balloons, Airships and High Altitude Platform Station (HAPS) in Rwanda.

39.003 SUMMARY OF AMENDMENTS AND REVISION HIGHLIGHTS

- (a) The summary of amendments and revision highlights to this Part are contained in Appendix 1 to 1.003.

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.005 DEFINITIONS

- (a) Definitions relating to this Part are found in Appendix 1 to 1.015.

39.010 ACRONYMS & ABBREVIATIONS

- (a) Acronyms and abbreviations used in this Part are identified in Appendix 1 to 1.020.

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SUBPART B: UNMANNED FREE BALLOONS

39.015 APPLICABILITY

- (a) This Subpart is applicable to the operations of unmanned free balloons and Airships in the national and international airspace.

39.020 CLASSIFICATION OF UNMANNED FREE BALLOONS

- (a) Unmanned free balloons shall be classified as—

- (1) **Light:** an unmanned free balloon which carries a payload of one or more packages with a combined mass of less than 4 kg, unless qualifying as a heavy balloon in accordance with (3)(ii)(iii) or (iv) below; or
 - (2) **Medium:** an unmanned free balloon which carries a payload of two or more packages with a combined mass of 4 kg or more, but less than 6 kg, unless qualifying as a heavy balloon in accordance with (a)(3) below; or
 - (3) **Heavy:** an unmanned free balloon which carries a payload which—
 - (i) Has a combined mass of 6 kg or more; or
 - (ii) Includes a package of 3 kg or more; or
 - (iii) Includes a package of 2 kg or more with an area density of more than 13 g per square centimeter; or
 - (iv) Uses a rope or other device for suspension of the payload that requires an impact force of 230 N or more to separate the suspended payload from the balloon.
- (b) The area density referred to in paragraph (a) (3) (iii) is determined by dividing the total mass in grams of the payload package by the area in square centimeters of its smallest surface.

Note: Refer to Appendix 1 of 39.020 for a graphic description of the classifications of unmanned free balloons.

39.025 APPROPRIATE AUTHORISATION FOR FLIGHT

- (a) No person may operate an unmanned free balloon without appropriate authorization from the authority of the State from which the launch is made.

39.030 INTERNATIONAL OPERATIONS

- (a) No person may operate an unmanned free balloon, other than a light balloon used exclusively for meteorological purposes and operated in the manner prescribed by the Authority, across the territory of another State without appropriate authorization from the other State concerned.
- (1) The authorization referred to in Regulation 39.025(a) shall be obtained prior to the launching of the balloon if there is reasonable expectation, when planning the operation that the balloon may drift into airspace over the territory of another State.
 - (2) Such authorization may be obtained for a series of balloon flights or for a particular type of recurring flight, e.g. atmospheric research balloon flights.

39.035 OPERATIONS OVER THE HIGH SEAS

- (a) No person may operate a heavy unmanned free balloon over the high seas without prior coordination with the appropriate ATS authority.

39.040 COMPLIANCE WITH SPECIFIED CONDITIONS & LIMITATIONS

- (a) No person may operate an unmanned free balloon unless in accordance with conditions specified by the Authority and the State(s) expected to be overflown.

39.045 HAZARD TO PERSONS OR PROPERTY

- (a) No person may operate an unmanned free balloon in such a manner that impact of the balloon, or any part thereof, including its payload, with the surface of the earth, creates a hazard to persons or property not associated with the operation.

39.050 OPERATING LIMITATIONS

- (a) No person may operate a heavy unmanned free balloons without authorisation from the appropriate ATS authority at or through any level below 18 000 m (60 000 ft) pressure altitude at which—
 - (1) There are clouds or obscuring phenomena of more than four oktas coverage; or
 - (2) The horizontal visibility is less than 8 km.
- (b) No person may release a heavy or medium unmanned free balloon in a manner that will cause it to fly lower than 300 m (1 000 ft) over the congested areas of cities, towns or settlements or an open-air assembly of persons not associated with the operation.

39.055 FLIGHT TERMINATION DEVICES & RADAR TRACKING

- (a) No person may operate a heavy unmanned free balloon unless—
 - (1) It is equipped with at least two payload flight-termination devices or systems, whether automatic or operated by telecommand, that operate independently of each other;
 - (2) Tor polyethylene zero-pressure balloons, at least two methods, systems, devices, or combinations thereof, that function independently of each other are employed for terminating the flight of the balloon envelope;

Note: Superpressure balloons do not require these devices as they quickly rise after payload discharge and burst without the need for a device or system designed to puncture the balloon envelope. In this context a super pressure balloon is a simple non-extensible envelope capable of withstanding a differential of pressure, higher inside than out. It is inflated so that the smaller night- time pressure of the gas still fully extends the envelope. Such a superpressure balloon will keep essentially constant level until too much gas diffuses out of it.

- (3) The balloon envelope is equipped with either a radar reflective device(s) or radar reflective material that will present an echo to surface radar operating in the 200 MHz to 2 700 MHz frequency range, and/or the balloon is equipped with such other devices as will permit continuous tracking by the operator beyond the range of ground-based radar.

39.060 RADIO EQUIPMENT

- (a) No person may operate a heavy unmanned free balloon under the following conditions—
 - (1) In an area where ground-based SSR equipment is in use, unless it is equipped with a secondary surveillance radar transponder, with pressure-altitude reporting capability, which is continuously operating on an assigned code, or which can be turned on when necessary by the tracking station; or
 - (2) In an area where ground-based ADS-B equipment is in use, unless it is equipped with an ADS-B transmitter, with pressure-altitude reporting capability, which is continuously operating or which can be turned on when necessary by the tracking station.

39.065 TRAILING ANTENNA PENNANTS

- (a) No person may operate an unmanned free balloon that is equipped with a trailing antenna that requires a force of more than 230 N to break it at any point unless the antenna has coloured pennants or streamers that are attached at not more than 15 m intervals.

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39.070 BALLOON LIGHTING

- (a) No person may operate a heavy unmanned free balloon below 18 000 m (60 000 ft) pressure-altitude between sunset and sunrise or such other period between sunset and sunrise (corrected to the altitude of operation) as may be prescribed by the appropriate ATS authority, unless the balloon and its attachments and payload, whether or not they become separated during the operation, are lighted

39.075 SUSPENSION DEVICE

- (a) No person may operate a heavy unmanned free balloon that is equipped with a suspension device (other than a highly conspicuously coloured open parachute) more than 15 m long between sunrise and sunset below 18 000 m (60 000 ft) pressure-altitude unless the suspension device is coloured in alternate bands of high conspicuity colours or has coloured pennants attached.

39.080 ACTIVATION OF TERMINATION DEVICES

- (a) The operator of a heavy unmanned free balloon shall activate the appropriate termination devices required by Regulation 27.260—
 - (1) When it becomes known that weather conditions are less than those prescribed for the operation;
 - (2) If a malfunction or any other reason makes further operation hazardous to air traffic or to persons or property on the surface; or
 - (3) Prior to unauthorised entry into the airspace over another State's territory.

39.085 EARLY PRE-FLIGHT NOTIFICATION

- (a) The operator shall make early notification of the intended flight of an unmanned free balloon in the medium or heavy category to the appropriate air traffic services unit not less than seven days before the date of the intended flight.
- (b) The operator shall provide notification of the intended flight, including such of the following information as may be required by the appropriate air traffic services unit—
 - (1) Balloon flight identification or project code name;
 - (2) Balloon classification and description;
 - (3) SSR code, aircraft address or NDB frequency, as applicable;
 - (4) Operator's name and telephone number;
 - (5) Launch site;
 - (6) Estimated time of launch (or time of commencement and completion of multiple launches);
 - (7) Number of balloons to be launched and the scheduled interval between launches (if multiple launches);
 - (8) Expected direction of ascent;
 - (9) Cruising level(s) (pressure-altitude);
 - (10) The estimated elapsed time to pass 18 000 m (60 000 ft) pressure-altitude or to reach cruising level if at or below 18 000 m (60 000 ft), together with the estimated location;
 - (11) The estimated date and time of termination of the flight and the planned location of the impact/ recovery area. In the case of balloons carrying out flights of long duration, as

a result of which the date and time of termination of the flight and the location of impact cannot be forecast with accuracy, the term “long duration” shall be used.

- (c) If the operation consists of continuous launchings, the time to be included is the estimated time specified in paragraph (b) (10) at which the first and the last in the series will reach the appropriate level (e.g. 122136Z– 130330Z).
- (d) If there is to be more than one location of impact/recovery, each location specified in paragraph (b) (11) is to be listed together with the appropriate estimated time of impact. If there is to be a series of continuous impacts, the time to be included is the estimated time of the first and the last in the series (e.g. 070330Z– 072300Z).

39.090 PRE-LAUNCH CHANGES

- (a) The operator shall forward any changes in the pre-launch information notified in accordance with Regulation 39.095(a) to the air traffic services unit concerned—
 - (1) Not less than 6 hours before the estimated time of launch; or
 - (2) In the case of solar or cosmic disturbance investigations involving a critical time element, not less than 30 minutes before the estimated time of the commencement of the operation

39.095 NOTIFICATION OF LAUNCH

- (a) Immediately after a medium or heavy unmanned free balloon is launched the operator shall notify the appropriate air traffic services unit of the following—
 - (1) Balloon flight identification;
 - (2) Launch site;
 - (3) Actual time of launch;
 - (4) Estimated time at which 18 000 m (60 000 ft) pressure-altitude will be passed, or the estimated time at which the cruising level will be reached if at or below 18 000 m (60 000 ft.), and the estimated location; and
 - (5) Any changes to the information previously notified in accordance with 39.090(a).

39.100 NOTIFICATION OF CANCELLATION

- (a) The operator shall notify the appropriate air traffic services unit immediately when it is known that the intended flight of a medium or heavy unmanned free balloon, previously notified in accordance with 39.090(a) has been cancelled.

39.105 POSITION RECORDING & REPORTING

- (a) The operator of a heavy unmanned free balloon operating at or below 18 000 m (60 000 ft) pressure- altitude shall—
 - (1) Monitor the flight path of the balloon; and
 - (2) Record the position and forward reports of the balloon’s position every 2 hours; or
 - (3) At more frequent intervals if required by air traffic services
- (b) The operator of a heavy unmanned free balloon operating above 18 000 m (60 000 ft) pressure altitude shall—
 - (1) Monitor the flight progress of the balloon; and
 - (2) Record the position and forward reports of the balloon’s position every 24 hours; or
 - (3) At more frequent intervals if required by air traffic services.

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- (c) If a position cannot be recorded in accordance with (a) and (b), the operator shall immediately notify the appropriate air traffic services unit.
- (1) This notification shall include the last recorded position.
 - (2) The appropriate air traffic services unit shall be notified immediately when tracking of the balloon is re-established.

39.110 REPORTING THE PLANNED DESCENT

- (a) One hour before the beginning of planned descent of a heavy unmanned free balloon, the operator shall forward to the appropriate ATS unit the following information regarding the balloon—
- (1) the current geographical position;
 - (2) the current level (pressure-altitude);
 - (3) the forecast time of penetration of 18 000 m (60 000 ft) pressure-altitude, if applicable;
 - (4) the forecast time and location of ground impact.

39.115 NOTIFICATION OF ENDING OF OPERATION

- (a) The operator of a heavy or medium unmanned free balloon shall notify the appropriate air traffic services unit when the operation is ended.

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SUBPART C: AIRSHIPS

39.120 OPERATION OF TRANSPORT CATEGORY AIRSHIPS

- (a) No person shall operate an unmanned airship in the transport category without authorization by the authority
- (b) The operator of airship falling under transport category shall comply with transport airship requirements set by the authority
- (c) No person shall establish an operation site for airship unless a thorough risk assessment is conducted by the operator and submitted to the authority for review and approval

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SUBPART D: HIGH ALTITUDE PLATFORM STATION (HAPS)

39.125 APPLICABILITY

- (a) This Subpart is applicable to the operations of High Altitude Platform Station (HAPS) in the national and international airspace.

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.130 APPROPRIATE AUTHORISATION FOR FLIGHT

- (a) No person shall operate High Altitude Platform Station (HAPS) without appropriate authorization from the authority of the State.
- (b) No person shall operate any HAPS Flight, without conducting an operational safety risk assessment acceptable by the Authority.
- (c) The Authority shall issue a HAPS operating permit on the basis that the associated hazards identified and mitigation put in place are satisfactory.

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.131 GENERAL OPERATING RULES

- (a) A HAPS shall be operated in such a manner as to minimize hazards to persons, property or other aircraft and in accordance with the conditions specified in these regulations and Rwanda Civil Aviation Technical Standards (RCATS) that shall be issued by the Authority.

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.135 FREQUENCY SPECTRUM REQUIREMENT

- (a) No person shall operate a HAPS without an aeronautical frequency spectrum license issued by an appropriate Entity.

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.140 SEPARATION WITH MANNED AIRCRAFT

- (a) No person shall operate a High Altitude Platform Station (HAPS) without—
- (1) Lateral separation between HAPS and the manned aircraft of 10km (5NM) and its operational airport at 20km away from the controlled aerodrome.
 - (2) Vertical separation between HAPS and the manned aircraft of 10000 ft (3km) below and above the ascending and descending HAPS

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.145 METEOROLOGICAL LIMITATIONS

- (a) No person shall operate High Altitude Platform Station (HAPS) without authorization from the appropriate ATS authority at or through any level below 18 000 m (60 000 ft) pressure altitude at which—

- (1) There are clouds or obscuring phenomena of more than four oktas coverage; or
- (2) The horizontal visibility is less than 5km.

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.150 FLIGHT TERMINATION DEVICES AND RADAR TRACKING

- (a) No person shall operate a High Altitude Platform Stations (HAPS) unless—
- (1) It is equipped with at least two payload flight-termination devices or systems, whether automatic or operated by telecommand, that operate independently of each other;
 - (2) The High Altitude Platform Station (HAPS) is equipped with either a radar reflective device(s) or radar reflective material that will present an echo to surface radar operating in the 200 MHz to 2 700 MHz frequency range, and/or the HAPS is equipped with such other devices as will permit continuous tracking by the operator beyond the range of ground-based radar

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.155 RADAR EQUIPMENT

- (a) No person shall operate a High Altitude Platform Station (HAPS) under the following conditions—
- (1) In an area where ground-based SSR equipment is in use, unless it is equipped with a secondary surveillance radar transponder, with pressure-altitude reporting capability, which is continuously operating on an assigned code, or which can be turned on when necessary by the tracking station; or
 - (2) In an area where ground-based ADS-B equipment is in use, unless it is equipped with an ADS-B transmitter, with pressure-altitude reporting capability, which is continuously operating or which can be turned on when necessary by the tracking station.

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.160 LIGHTING OF HAPS

- (a) No person shall operate a High Altitude Platform Station (HAPS) below 18 000 m (60 000 ft) pressure-altitude between sunset and sunrise or such other period between sunset and sunrise (corrected to the altitude of operation) as may be prescribed by the appropriate ATS authority, unless the HAPS and its attachments and payload, whether or not they become separated during the operation, are lighted

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.165 PRE-FLIGHT NOTIFICATION

- (a) The operator shall make early notification of the intended flight of a High Altitude Platform Station (HAPS) to the appropriate air traffic services unit not less than seven days before the date of the intended flight.
- (b) The operator shall provide notification of the intended flight, including such of the following information as may be required by the appropriate air traffic services unit—

- (1) HAPS flight identification or project code name;
- (2) HAPS type and description;
- (3) SSR code, aircraft address, as applicable;
- (4) Operator's name and telephone number;
- (5) Launch site;
- (6) Estimated time of launch (or time of commencement and completion of multiple launches if applicable);
- (7) Number of HAPS Flights to be launched and the scheduled interval between launches (if multiple launches);
- (8) Expected direction of ascent;
- (9) The estimated elapsed time to pass 18 000 m (60 000 ft) pressure-altitude;
- (10) The estimated date and time of termination of the flight and the planned location of the impact/recovery area.

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.170 PRE-LAUNCH CHANGES

- (a) The operator shall forward any changes in the pre-launch information notified in accordance with Regulation 39.165(b) to the air traffic services unit concerned—
- (1) Not less than 6 hours before the estimated time of launch; or

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- (2) In the case of solar or cosmic disturbance investigations involving a critical time element, not less than 1 hour before the estimated time of the commencement of the operation

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.175 NOTIFICATION OF LAUNCH

- (a) Immediately after the HAPS is launched the operator shall notify the appropriate air traffic services unit of the following—
 - (1) HAPS flight identification;
 - (2) Launch site;
 - (3) Actual time of launch;
 - (4) Estimated time at which 18 000 m (60 000 ft) pressure-altitude will be passed; and
 - (5) Any changes to the information previously notified in accordance with 39.165(b).

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.180 NOTIFICATION OF CANCELLATION

- (b) The operator shall notify the appropriate air traffic services unit immediately when it is known that the intended flight of a HAPS, previously notified in accordance with 39.165(b) has been cancelled.

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.185 POSITION RECORDING & REPORTING

- (a) The operator of a HAPS operating at or below 18 000 m (60 000 ft) pressure- altitude shall—
 - (1) Monitor the flight path of the HAPS; and
 - (2) Record the position and forward reports of the HAPS's position every 1 hour; or at more frequent intervals if required by air traffic services
- (b) The operator of a HAPS operating above 18 000 m (60 000 ft) pressure altitude shall—
 - (1) Monitor the flight progress of the HAPS; and
 - (2) Record the position and forward reports of the HAPS's position every 24 hours; or at more frequent intervals if required by air traffic services
- (c) If a position of the HAPS cannot be recorded in accordance with (a) and (b), the operator shall immediately notify the appropriate air traffic services unit.

- (1) This notification shall include the last recorded position.

- (2) The appropriate air traffic services unit shall be notified immediately when tracking of the HAPS is re- established.

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.190 REPORTING THE PLANNED DESCENT

- (a) Six (6) hours before the beginning of planned descent of a HAPS, the operator shall forward to the appropriate ATS unit the following information regarding the HAPS—
 - (1) the current level (pressure-altitude);
 - (2) the forecast time of penetration of 18 000 m (60 000 ft) pressure-altitude and;
 - (3) the forecast time and location of ground impact.

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

39.195 NOTIFICATION OF ENDING OF OPERATION

- (a) The operator of a HAPS shall notify the appropriate air traffic services unit when the operation is ended.

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

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APPENDICES

APPENDIX 1 TO 39.003: - SUMMARY OF AMENDMENTS AND REVISION HIGHLIGHTS

This Appendix contains a summary of all amendments and revision highlights to this Part since the issuance of the original regulation.

Amended Regulation	Amendment Source	Revision	Description of Revision
39.003	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added to provide for highlights of amendments.
39.125	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added to applicability for HAPS operations
39.130	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added to Authorize HAPS operations
39.131	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added as a guide to general operating rules for HAPS
39.135	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added for Frequency Spectrum operating license for HAPS
39.140	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added for HAPS separation with manned A/C
39.145	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added to guide HAPS operations in different meteorological conditions
39.150	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added to capture the equipage for HAPS tracking
39.155	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added to capture the equipage for HAPS surveillance
39.160	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added to guide lighting system for HAPS
39.165	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added to guide HAPS for pre-flight notification
39.170	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added to guide HAPS for pre-launch changes
39.175	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added to guide HAPS launch notification
39.180	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added to guide HAPS for notification of flight cancellation
39.185	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added for the position recording and reporting of HAPS

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39.190	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added for HAPS planned descend reporting
39.195	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added for HAPS notification of ending of operation
Appendix 1 to 39.003	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Added a new Appendix providing details to the summary of Amendments and Highlight of Revisions.
Appendix 1 to 1.015	Internal	Special Regulation RSR/01/2020 Effective 15 November 2020	Addition of miscellaneous new definitions from the November 2020 amendments to the Annexes containing the ICAO Standards and Recommended Practices.

New: Internal: Special Regulation RSR/01/2020: Effective 15 November 2020

APPENDIX 1 TO 39.020: CLASSIFICATION OF BALLOONS

CHARACTERISTICS		PAYLOAD MASS (kilogrammes)					
		1	2	3	4	5	6 or more
ROPE or OTHER SUSPENSION 230 Newtons or MORE		HEAVY					
INDIVIDUAL PAYLOAD PACKAGE <div style="border: 1px dashed black; padding: 2px; width: fit-content;"> AREA DENSITY CALCULATION $\frac{\text{MASS (g)}}{\text{Area of smallest surface (cm}^2\text{)}}$ </div>	AREA DENSITY more than 13 g/cm ²	LIGHT		MEDIUM			
	AREA DENSITY less than 13 g/cm ²						
COMBINED MASS (if Suspension OR Area density OR Mass of individual package are not factors)							

END OF RCAR PART 39