



# HPC RESEARCH





# PRODUCT RANGE



SPECIFICATIONS	COMPANION G2			
	12	18	24	26
Gas capacity, kg:				
Propane	5,3	7,5	10,2	11,0
Butane	6,3	9,0	12,2	13,1
Water capacity, L	12,7	18,2	24,4	26,2
Height, mm	396	481	583	612
Diameter, mm	310	310	310	310
Empty weight, kg	3,6	4,2	5,0	5,2

- Design minimum burst pressure 120 bar.
- Design lifetime not limited.
- Inspection interval 10 years.
- Translucent.



# CYLINDER'S KEY FEATURES



- Low weight



- No rust



- Explosion proof in fire



- Good look



- Extensive customization options

- Any types of valves and threads are available

- Easy gas level control

- No cleaning and painting



# STEEL VS COMPOSITE

## Composite Cylinder

- Advantages
  - Low weight.
  - Non corrosive.
  - No painting/cleaning required.
  - Good appearance.
  - Higher durability.
  - Explosion proof.
- Disadvantages
  - Price.





# STEEL VS COMPOSITE

## Steel Cylinder

- Advantages
  - Low price.
- Disadvantages
  - High weight.
  - Higher maintenance costs.
  - Explodes in fire.
  - High level of rejected cylinders due to corrosion and shock marks.





# CYLINDER DESIGN







# PRESSURE VESSEL DESIGN



Cylinder's boss. Standard thread type is 25E according to ISO 11363-1:2010. Other threads are available upon customer request. Valve installation max allowed torque is up to 170 Nm.

Polymer barrier layer. Permeability rate less than 3 grams of gas per year (24L cylinder)!

High strength composite shell. Burst pressure up to 150 bar.



# MARKING REQUIRED BY STANDARDS AND REGULATIONS

- Marking required by standards and regulations is embossed on an upper handle surface and special label ring near valve opening. Normally this marking does not require any changes because corresponds to international regulations. Upon special request this marking can be changed according to customer's and national regulations requirements.





# CASING DESIGN



- Casing is designed to fulfill the most advanced customer's requirements.
- Easily replaceable on site.
- Made of scratch proof plastic.
- Made of material with antistatic additives.
- Allows extensive customization for customer's needs.
- Extensive marketing options.
- Fits to standard filling lines and handling equipment.



# CUSTOMIZATION FEATURES



Any customer's logo or text here. Normally, HPCR logo is placed here.

Logo, trademark or special pattern.

Max size 240x100 mm.

Can be see trough for easy gas level control.

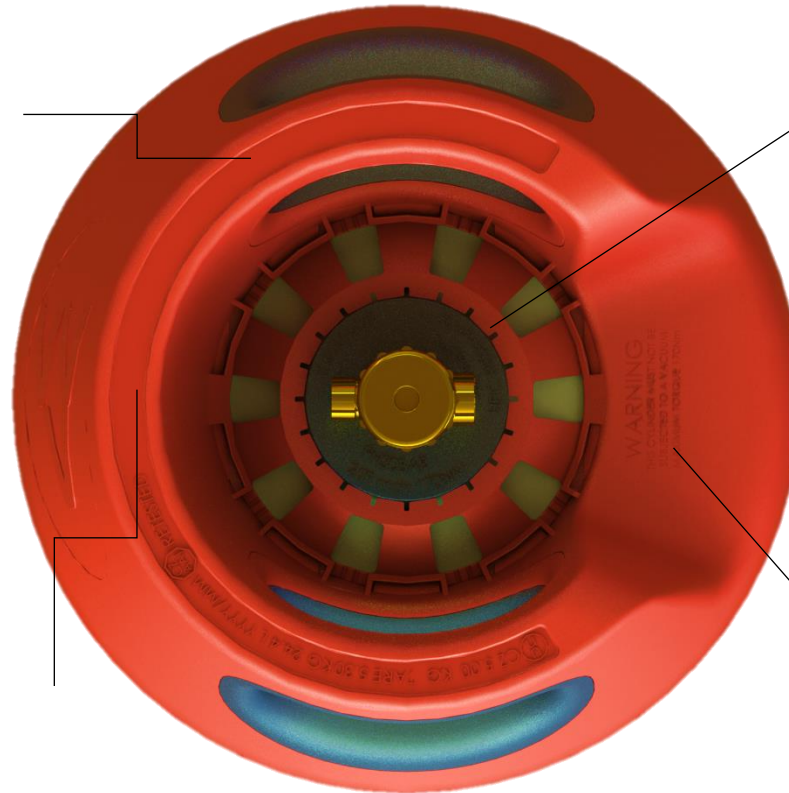
Shrink film sleeve compatible. Special casing design allows to fit shrink film perfectly.



# CUSTOMIZATION FEATURES

Additional information can be placed here, e.g. owner of a cylinder.

DATAMATRIX readable from any cylinder's position. Contains cylinder's unique number.



RFID can be placed inside cylinder's handle.

Warnings required by laws and standards. Additional warnings can be added.



# TOP LOGO

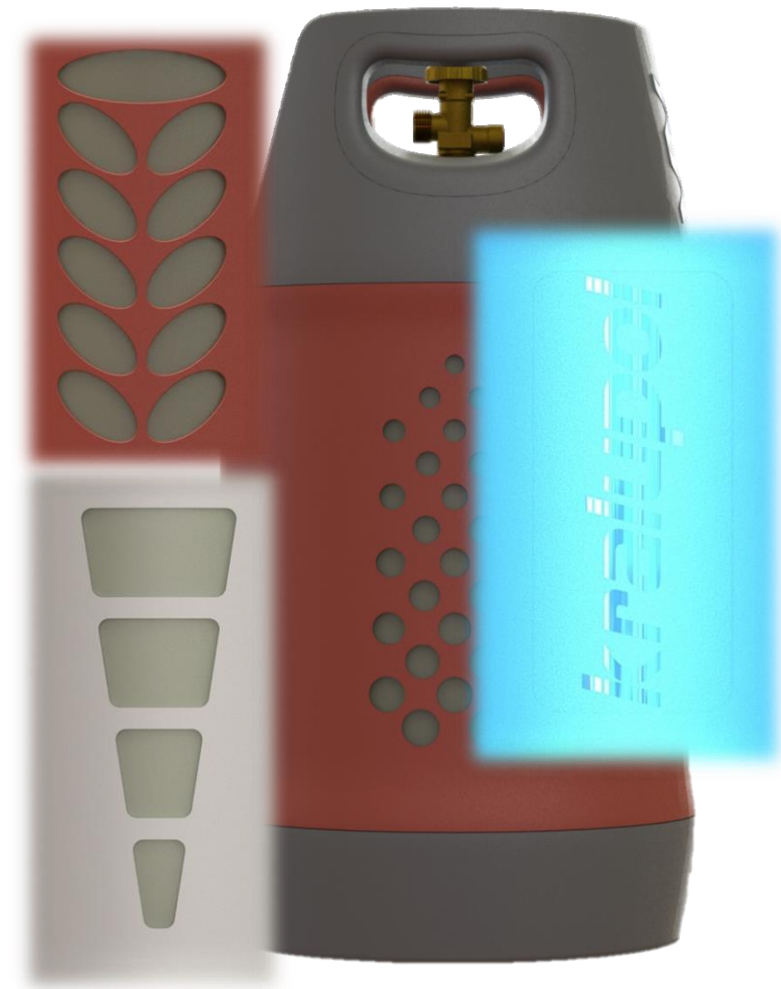
- Logo is created by combination of engravings and different surface textures.
- Logo can be placed to oval shaped zone with projection size approx.140 x 120 mm.
- Logo is created during part injection molding by replacing part of the mold by customers insert.
- For each new logo new insert has to be produced.
- Once insert is produced no extra costs are added to a cylinder price.
- MOQ for production of customized parts is 2500 cylinders.
- Approximate price of the mold insert is from 2200 to 3500 EUR depending on logo and textures complicity.
- Lead time for insert production is 6-8 weeks approx.





# MIDDLE PATTERN

- Pattern is created by combination of engravings/openings and different surface textures.
- Pattern is created during part injection molding by replacing part of the mold by customer's insert.
- For each new logo new insert has to be produced.
- Once insert is produced no extra costs are added to a cylinder price.
- MOQ for production of customized parts is 1250 cylinders.
- Approximate price of the mold insert is from 6000 to 7500 EUR depending on size, logo and textures complicity.
- Lead time for insert production is 6-8 weeks approx.

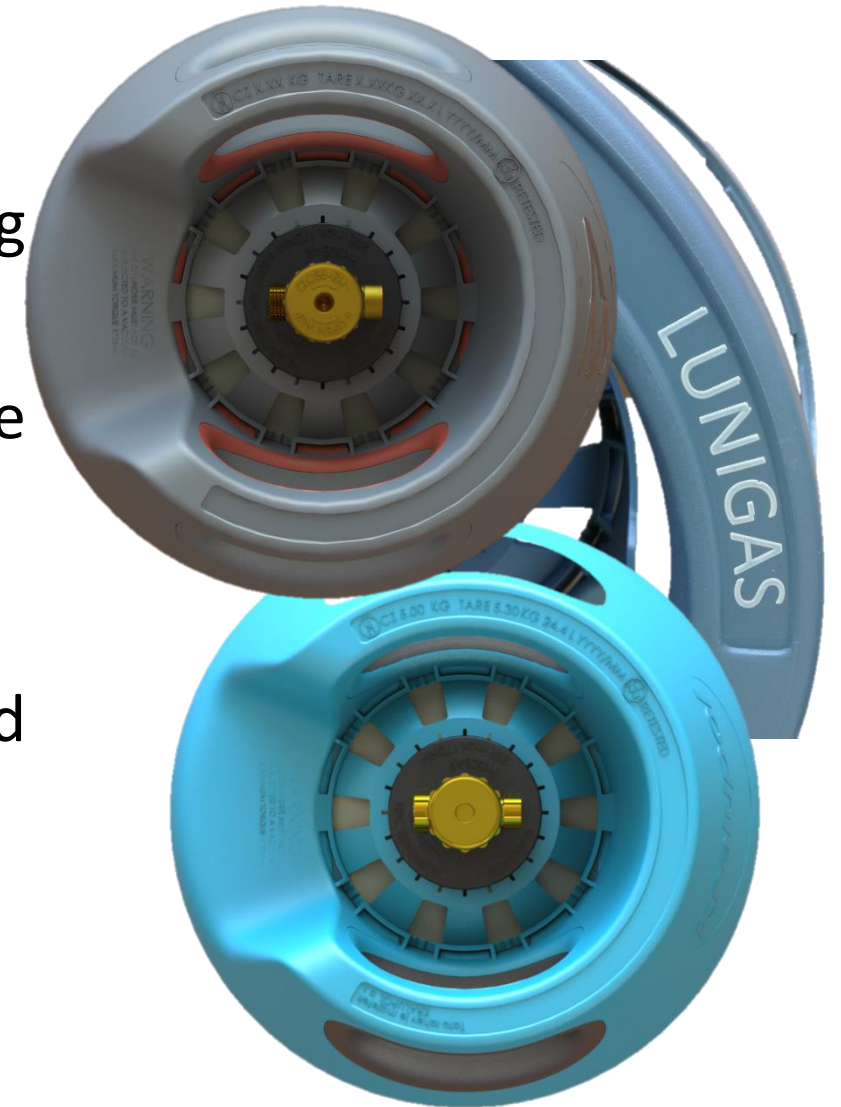






# TOP PART EXTRA MARKING

- Extra marking is possible on a top surface.
- Marking can be done by engravings during injection molding process or by laser.
- In case of mold insert marking one time investment is required.
- Insert cost is between 2300 and 2800 EUR.
- In case of laser marking no extra costs applied for batches smaller than 2000 cylinders.







# SCREEN PRINTING

- Screen printing is possible on cylindrical part of cylinder as well on the top part of the cylinder into oval instead of standard HPC Research logo.
- Printing is possible in one or two colors.
- Surface is corona treated for better adhesion.
- Printing size is limited by height of cylindrical part and width of approx. 260 mm (projection size).
- Price is applied for printing screen manufacturing and per single print.
- Depending on batch size, number of colors and prints total price per a single cylinder varies from 2.9 to 6.5 EUR.





# OTHER OPTIONS

- Plastic sleeve. Applied to a cylindrical part of a body. Price depends on the size of the sleeve.
- Stickers and labels. Applied to any appropriate surface of a cylinder. Price depends on the size of the sticker and starts from 0,20 EUR
- Additional plastic marking ring (different colour can be applied) around the valve with laser marking costs 0,6 EUR. Ring can be supplied in different colours.





# COLORS CUSTOMIZATION

- Standard color combinations (always in stock):
  - Top, bottom and handle inserts: RAL 7011 (Iron Grey) or RAL 9005 (Jet Black)
  - Middle part: RAL 3000 (Flame Red)
- MOQ for non standard colors/logos/patterns:
  - Top part: 2500 cylinders (or 500 cylinders with extra charge of 200 EUR per batch of non-standard parts).
  - Middle part: 1250 cylinders (or 500 cylinders with extra charge of 200 EUR per batch of non-standard parts).
  - Bottom part: 2500 cylinders (or 500 cylinders with extra charge of 200 EUR per batch of non-standard parts).
  - Handle insert 1250 cylinders (or 500 cylinders with extra charge of 200 EUR per batch of non-standard parts).
- Extra price can be charged for specific colors where master-batch price is much higher than an average.
- For orders below MOQ casing parts have to produced in full number. In this case parts can be stored in stock for a limited time and used for the following orders. In this case price of cylinder in the following orders will be proportionally reduced by a price of parts which are already in stock and paid.



# CUSTOMIZATION SAMPLES





# STANDARD DESIGN

Grey-Red







# STANDARD DESIGN

Grey-Red







# SAFETY

- Does not explode in fire even if not equipped with safety valve. Diameter of a fire ball for 24 l cylinder is not more than 1 m.
- For extra safety equipped with pressure relieve valve which is usually set to a pressure of 35 bar. This feature relieves pressure in cylinder in case of overfilling.



# COMPOSITE CYLINDER IN FIRE



Outer casing melts down at 130°C.

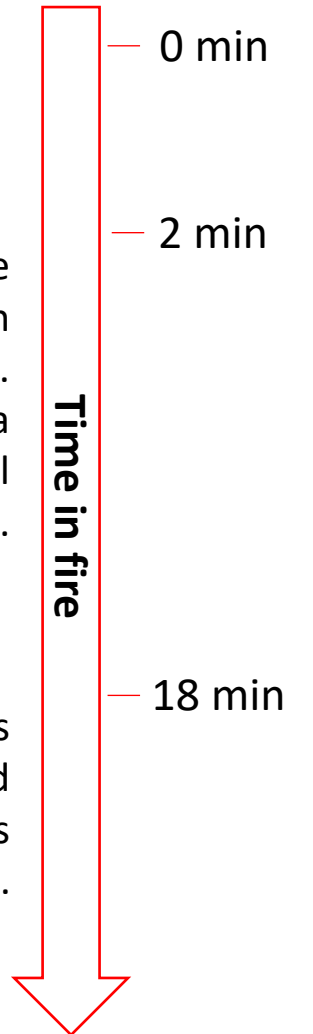
Inner gas tight polymer liner melts down at 260°C.

Composite shell. Service temperature of E-Glass up to 630°C, softening temperature around 850°C.

Outer casing melts down, pressure vessel heats up.

Temperature of pressure vessel wall rise up to 260°C. Polymer liner melts down letting gas to leak out slowly and burn. Evaporating LPG cools down wall of a cylinder. Diameter of a fire ball for 24 l cylinder is less than 1 m.

Whole gas evaporates (11 kg) and burns slowly. Cylinder keeps its integrity and shape. Pressure in a cylinder is always below 8 bar during burning.





# QUALITY AND SAFETY

- All quality control procedures in the plant are in accordance with ISO 11119-3, ADR/RID 2017 and Directive 2010/35/EU.
- Each produced cylinder is checked by pressure of 30 bar.
- Each produced cylinder is checked for leakage at a pressure of 20 bar.
- One cylinder per each production batch is subjected to pressure cycle test (12000 cycles).
- One cylinder per each production batch is subjected to pressure a burst test.
- Average burst pressure of our cylinders is more then 130 bar.



# CERTIFICATION



- Cylinders are certified according to the following standards and regulations:
  - ADR/RID 2017
  - ISO 11119-3
  - EN 14427
  - Directive 2010/35/EU
- All cylinders produced according to ISO 11119-3:2013 and ADR/RID requirements are UN cylinders.
- Certification is carried out by TÜV SÜD.
- Certification according to other standards upon request.



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