TABLE OF CONTENTS

1. OBJECTIVES

This document describes how the **DOLIUM® One-Way Kegs** must be treated during handling, storage, filling, dispensing and disposal; in order to ensure the proper use of the **DOLIUM® One-Way Kegs** and to guarantee the **users safety** under all circumstances. Dispack-Projects NV (DOLIUM®) cannot be held responsible in case of non-compliance to the prescribed Handling & Safety instructions (ref. General terms and conditions).

The Handling & Safety instructions contain amongst other topics, the description of safety procedures, actions, points of attention, and equipment that are necessary to protect people against accidents, injuries, misuse and abuse of the polymer kegs, as well as those which are necessary to avoid negative impact on the environment while disposing **DOLIUM® One-Way Kegs**.

2. TRANSMITTING and SHARING OF INSTRUCTIONS

The Handling & Safety instructions are part of the agreement governing the sale of the products by Dispack-Projects NV (the Seller) to the client (the Buyer). The Buyer expressly warrants that it will ensure proper transmission of such Handling & Safety instructions to the **DOLIUM® One-Way Kegs'** end-users.

For the avoidance of doubt, we recommend every user to check the national or other applicable legislation with regards to food packaging, transport and recycling obligations.

The team of **DOLIUM® One-Way Kegs** (Dispack-Projects NV) is available to the customers and clients for any information:

info@dolium.eu
www.dolium.eu
www.doliumkegs.com

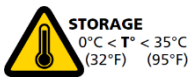
**Instructions can also be downloaded or viewed at www.dolium.eu or www.doliumkegs.com /DoliumDocumentation*

3. HANDLING & SAFETY INSTRUCTIONS:

3.1. General instructions: MUST DO's

- ***Use the kegs only for their proper purpose****:* the **DOLIUM® One-Way Kegs** are recyclable pressurized PET kegs, for single trip use of beverages only, i.e. non-returnable, as alternative to stainless steel kegs for professional draught applications.
- ***Use professional equipment for filling the kegs***: the **DOLIUM® One-Way Kegs** are equipped with standard fitting systems as per customer's request, fully compatible with existing filling lines and subject to adapted temperature and pressure settings.
- ***Use professional equipment for gas supply and gas pressure regulation***: the use of a gas regulator is mandatory for maintaining working pressure at maximum 3,5 bar or 50 psi.
- ***Use professional equipment for connecting and dispensing the kegs***: the **DOLIUM® One-Way Kegs** are equipped with standard fitting systems as per customer's request and are fully compatible with existing draught installations, conditional the necessary temperature and pressure settings have been respected and the required and legal safety features are present on the equipment.

- ***Depressurize emptied kegs after use as soon as possible***: after use, when emptied, kegs still have high residual pressure inside, equal to the pressure at draught; it is strongly recommended to depressurize the kegs immediately by use of the integrated **Pressure Relief Valve (PRV),** preferably outside, or at least **in a well-ventilated area.** For more details: see 3.3 for gasses and Carbon-dioxide; see 3.4 for PRV user instructions.



- ***Store empty or filled kegs at 0° C < Storage temperature < 35° C.*** The lower the temperature, the lower the pressure, so the safer.
  The lower the temperature, the better for beverage quality.

- **Keep away from cleaning agents** as alkaline, caustic hydroxides or soapy cleaning products with pH > 9, causing chemical embrittlement and risk to burst.
- **Keep away from direct sunlight or other heat sources** whilst this can increase temperature and induce higher pressure inside the keg.
- **Keep away from wind** by storing the kegs in a protective area.
- **Keep away from electrical equipment** or lighting bulbs.

- **Keep away from animals.**
- **Keep away from children and consumers**: the **DOLIUM® One-Way Kegs** are for professional purposes only and cannot be considered as toys or any other 2nd life purpose, not even when emptied and/or depressurized.

3.1. General Instructions: DO NOT's…

- **Do not over-pressurize kegs!** Keep pressure at maximum of 3, 5 bar – 50 psi
  Too high pressure might result in a burst of the container (see section 3.7.5.)
- **Do not tamper with the spear** (keg valve system) or keg.
- **Do not deliberately drop or impact** the spear, neck or body of the keg.
- **Do not clean, repair, maintain or reuse** the **DOLIUM® One-Way Kegs.**
- **Do not pierce the flexible body** of the **DOLIUM® One-Way Kegs** in any way; as the pressurized keg body is composed of flexible PET material, piercing will result into burst and might cause unsafe situations.
- **Do not weaken or burn the keg** not even after use.
- **Do not heat the empty or filled kegs** whilst this can increase temperature and as such also pressure inside the keg. Do not expose to temperatures > 50°C
- **Do not climb stacked kegs** neither use kegs for construction purposes.

3.2. Food safety

- The assembled keg is composed of materials which are compliant with the relevant European directives and US-FDA legislation for food contact materials. Food safety declarations of the sourcing companies and migration reports are available at Dispack-Projects NV.
- The production of the keg complies with the requirements of the GMP legislations.
- The keg is suitable for beverages with an alcohol content up to 15% (US) and 20% (EU) for long term storage at room temperature or below.

3.3. CO_2 - carbon dioxide or mixed (CO_2/N_2) gasses- Safety Instructions

- Assure that all users are informed of CO_2 hazards and CO_2 user instructions. These are available at your CO_2 supplier. Read them carefully.
- CO_2 is a non-toxic, odorless and colorless gas that is heavier than air. As such, CO_2 replaces oxygen from the air, resulting in risk of suffocation at concentrations higher than 5%. CO_2 concentrations as from 9% are lethal.
- Make sure the CO_2 is of food quality certified, with purity rate > 99,8 %.
- Make sure CO_2 bottles cannot drop. Fix them properly with a chain or similar.
- Use CO_2 bottles only with an appropriate CO_2 regulator and an adjacent pressure relief valve. **NEVER** connect a CO_2 bottle directly to a keg as instant high pressure could lead to immediate burst.
- It is strongly recommended to install a CO_2 alarm, especially in very small or not well-ventilated storage rooms or cellars.

3.4. Automatic Pressure Relief Valve (PRV)

- The **DOLIUM® One-Way Kegs** PRV is an innovative and patented feature. The automatic "Pressure Relief Valve" (PRV) has a dual purpose which allows the pressure to be released automatically when it exceeds 4,8 bar during **storage or transport**, which then automatically closes when it reaches 2 bar.
- Likewise, this valve can be activated manually to release pressure or depressurize the keg after emptying to prepare for recycling (see section 3.8.)

Exhibit #1

☑ Pressure relief valve (PRV) integrated

☑ Release pressure easily with screwdriver

3.5. Palletizing, stacking, storage and transport of empty and filled kegs

3.5.1 Palletization: good palletization is important in order to avoid the sliding, falling or destabilization. We recommend:

- The top surface of the pallet should not be slippery to prevent the kegs from sliding off the pallet. The bottom chimes of the **DOLIUM® One-Way Kegs** are provided with a knurling pattern in order to prevent them from sliding.
- Ensure less than 50 mm over- or under hang at each side of the pallet.
- Beware of unstable stacking on pallets: fix them well by use of strapping.
- For filled kegs strap the contour of the pallets in horizontal direction at each layer (as seen in Exhibit #2).
- Palletization patterns depends on the keg types and pallet types (as seen in Exhibit #3, Page 5):

Exhibit #2

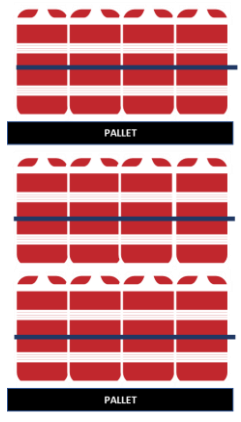
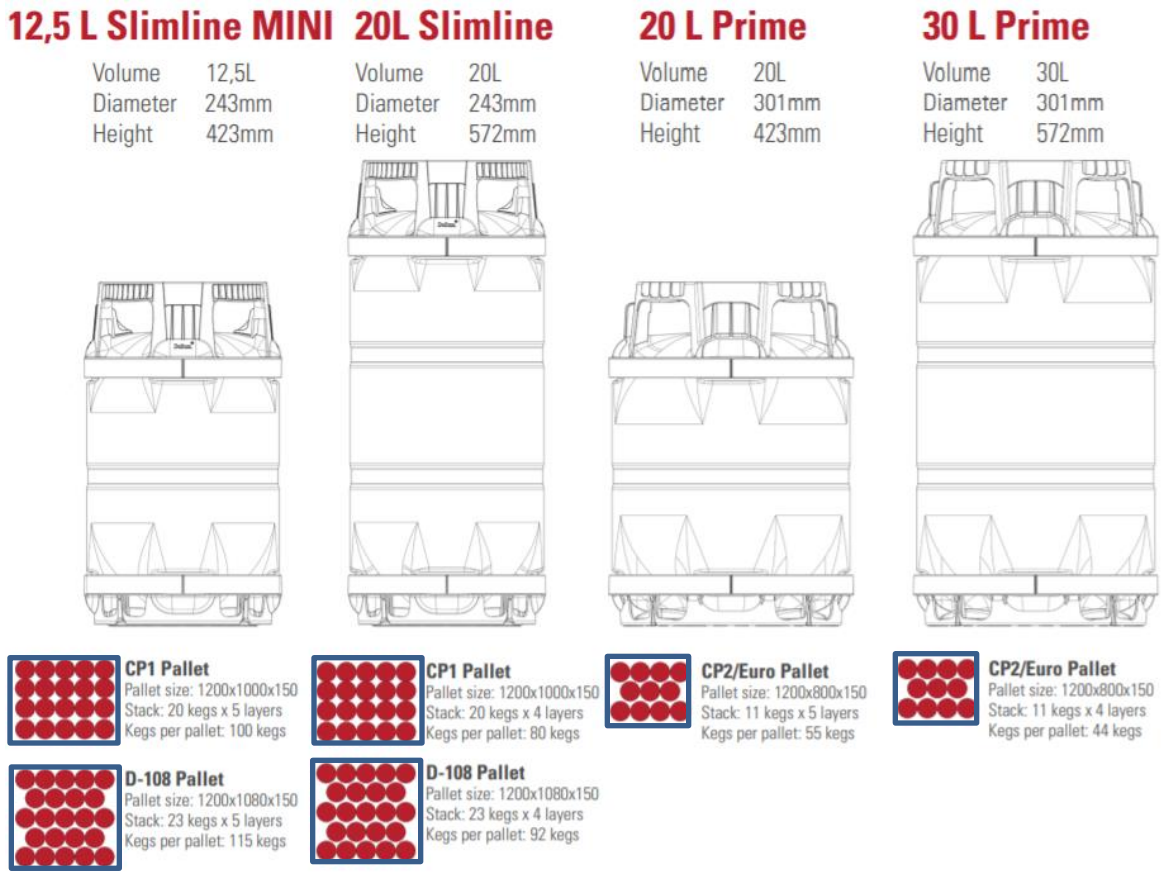


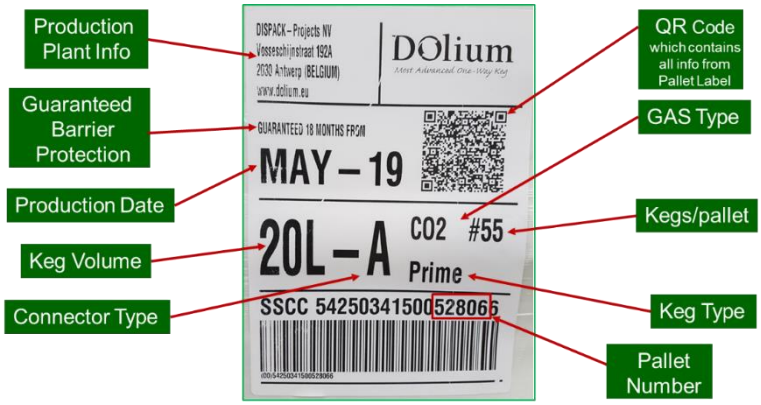
Exhibit #3



3.5.2 Pallet Label:

- Each pallet of the **DOLIUM® One-Way Kegs** include a pallet label for identification and warehouse management purposes (see Exhibit #4):
- We highly recommend customers either to scan the information via QR Code or record the data manually.

Exhibit #4



3.5.3. Stacking, storage and transport:

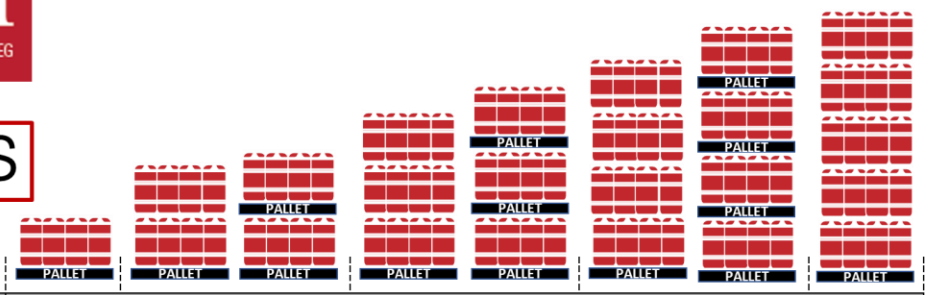
- Storage of empty kegs: **ATTENTION!**
  - **Keep out** of the wind by protective storage: light-weight kegs (even palletized), are not wind stable.
  - **Keep out** of sunlight.
- Store empty or filled kegs preferably at **0° C < Storage temperature < 35° C.**
- Use a forklift with armored cage for warehouse activities and pallet handling.
- While loading /unloading of trucks, trains and containers: avoid open spaces between pallets.
- Ambient conditions during transport:
  - No exposure to extreme temperatures: 0° C < Storage temperature < 35° C
  - No exposure to direct sunlight
  - No exposure to wind

WAREHOUSE STACKING-EMPTY KEGS (Static):

Dolium
MOST ADVANCED ONE-WAY KEG

EMPTY KEGS

❖ The additional pallets are required when the wrapping is removed.



Keg Type	Pallet Type	Weight/Height	Stacking Layers															
			1 High		2 High				3 High				4 High				5 High	
12,5 Liter Slim	CP1 Pallet Dimensions: 120*100 Kegs per pallet: 100 (5 layers)	Height (mm/ inch)	581	22,8	1004	39,5	1162	45,7	1427	56,1	1743	68,6	1850	72,8	2324	91,5	2273	89,5
		Weight (kg/pound)	39	85	61	134	78	171	83	182	117	257	105	231	156	343	127	279
	D-108 Pallet Dimensions: 120*108 Kegs per pallet: 115 (5 layers)	Height (mm/ inch)	581	22,8	1004	39,5	1162	45,7	1427	56,1	1743	68,6	1850	72,8	2324	91,5	2273	89,5
		Weight (kg/pound)	45,3	99	70,6	155	87,3	192	95,9	211	135,9	299	121,2	267	181,2	399	146,5	322
20 Liter Slim	CP1 Pallet Dimensions: 120*100 Kegs per pallet: 80 (4 layers)	Height (mm/ inch)	730	28,7	1302	51,2	1460	57,4	1874	73,7	2190	86,2	2446	96,2	2920	117,7	NA	
		Weight (kg/pound)	39	85	61	134	78	171	83	182	117	257	105	231	156	343		
	D-108 Pallet Dimensions: 120*108 Kegs per pallet: 92 (4 layers)	Height (mm/ inch)	730	28,7	1302	51,2	1460	57,4	1874	73,7	2190	86,2	2446	96,2	2920	117,7		
		Weight (kg/pound)	45,3	99	70,6	155	87,3	192	95,9	211	135,9	299	121,2	267	181,2	399		
20 Liter Prime	EURO or CP2 Pallet Dimensions: 120*80 Kegs per pallet: 55 (5 layers)	Height (mm/ inch)	581	22,8	1004	39,5	1162	45,7	1427	56,1	1743	68,6	1850	72,8	2324	91,5	2273	89,5
		Weight (kg/pound)	28,2	62	41,4	91	56,4	124	54,6	120	84,6	186	67,8	149	112,8	248	81	178
30 Liter Prime	EURO or CP2 Pallet Dimensions: 120*80 Kegs per pallet: 44 (4 layers)	Height (mm/ inch)	730	28,7	1302	51,2	1460	57,4	1874	73,7	2190	86,2	2446	96,2	2920	117,7	NA	
		Weight (kg/pound)	28,2	62	41,4	91	56,4	124	54,6	120	84,6	186	67,8	149	112,8	248		

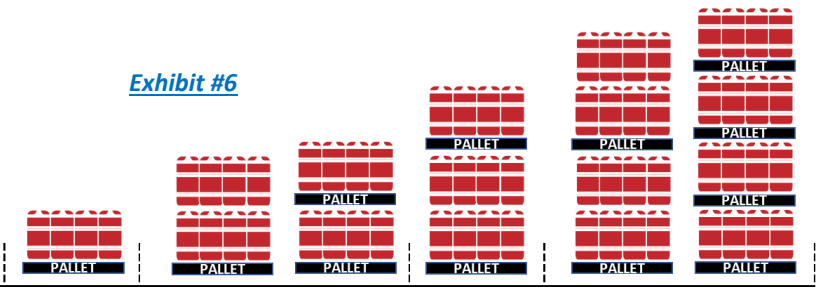
Exhibit #5

WAREHOUSE STACKING-FILLED KEGS (Static):

Dolium
MOST ADVANCED ONE-WAY KEG

FILLED KEGS

Exhibit #6



Keg Type	Pallet Type	Weight/Height	Stacking Layers											
			1 High		2 High		3 High		4 High					
12,5 Liter Slim	CP1 Pallet Dimensions: 120*100 Kegs per pallet: 100 (5 layers)	Height (mm/ inch)	581	23	1004	40	1162	46	1427	56	1850	73	2324	92
		Weight (kg/ pound)	289	637	561	1236	578	1274	850	1873	1122	2473	1156	2548
	D-108 Pallet Dimensions: 120*108 Kegs per pallet: 115 (5 layers)	Height (mm/ inch)	581	23	1004	40	1162	46	1427	56	1850	73	2324	92
		Weight (kg/ pound)	333	734	645	1421	665	1466	978	2156	1290	2843	1331	2934
20 Liter Slim	CP1 Pallet Dimensions: 120*100 Kegs per pallet: 80 (4 layers)	Height (mm/ inch)	730	29	1302	51	1460	57	1874	74	2446	96	2920	118
		Weight (kg/ pound)	439	967	861	1898	878	1935	1300	2866	1722	3796	1756	3871
	D-108 Pallet Dimensions: 120*108 Kegs per pallet: 92 (4 layers)	Height (mm/ inch)	730	29	1302	51	1460	57	1874	74	2446	96	2920	118
		Weight (kg/ pound)	505	1112	990	2183	1010	2225	1495	3296	1980	4365	2019	4452
20 Liter Prime	EURO or CP2 Pallet Dimensions: 120*80 Kegs per pallet: 55 (5 layers)	Height (mm/ inch)	581	23	1004	40	1162	46	1427	56	1850	73	2324	92
		Weight (kg/ pound)	358	789	701	1545	716	1578	1060	2336	1403	3093	1433	3159
30 Liter Prime	EURO or CP2 Pallet Dimensions: 120*80 Kegs per pallet: 44 (4 layers)	Height (mm/ inch)	730	29	1302	51	1460	57	1874	74	2446	96	2920	118
		Weight (kg/ pound)	412	907	807	1777	824	1815	1219	2686	1613	3557	1648	3633

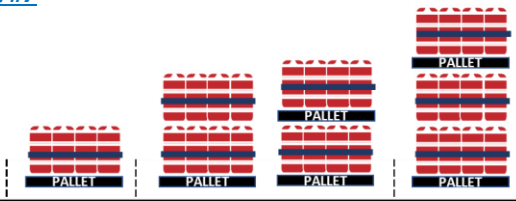
TRANSPORT STACKING-FILLED KEGS (Dynamic):

Dolium
MOST ADVANCED ONE-WAY KEG

TRANSPORT FILLED KEGS

❖ Use **"plastic-strap"** on each keg layer.

Exhibit #7

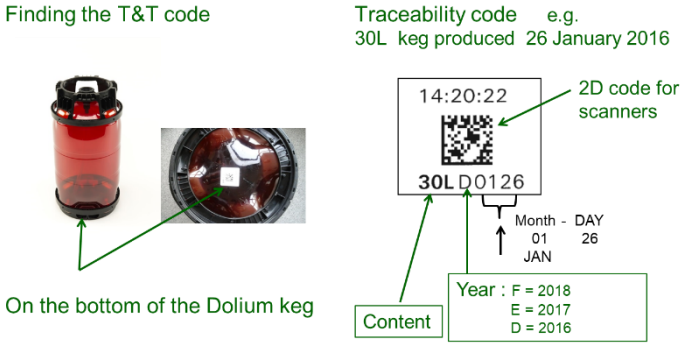


Keg Type	Pallet Type	Weight/Height	Stacking Layers							
			1 High		2 High				3 High	
12,5 Liter Slim	CP1 Pallet Dimensions: 120*100 Kegs per pallet: 100 (5 layers)	Height (mm/ inch)	581	23	1004	40	1162	46	1427	56
		Weight (kg/ pound)	289	637	561	1236	578	1274	850	1873
	D-108 Pallet Dimensions: 120*108 Kegs per pallet: 115 (5 layers)	Height (mm/ inch)	581	23	1004	40	1162	46	1427	56
		Weight (kg/ pound)	333	734	645	1421	665	1466	978	2156
20 Liter Slim	CP1 Pallet Dimensions: 120*100 Kegs per pallet: 80 (4 layers)	Height (mm/ inch)	730	29	1302	51	1460	57	1874	74
		Weight (kg/ pound)	439	967	861	1898	878	1935	1300	2866
	D-108 Pallet Dimensions: 120*108 Kegs per pallet: 92 (4 layers)	Height (mm/ inch)	730	29	1302	51	1460	57	1874	74
		Weight (kg/ pound)	505	1112	990	2183	1010	2225	1495	3296
20 Liter Prime	EURO or CP2 Pallet Dimensions: 120*80 Kegs per pallet: 55 (5 layers)	Height (mm/ inch)	581	23	1004	40	1162	46	1427	56
		Weight (kg/ pound)	358	789	701	1545	716	1578	1060	2336
30 Liter Prime	EURO or CP2 Pallet Dimensions: 120*80 Kegs per pallet: 44 (4 layers)	Height (mm/ inch)	730	29	1302	51	1460	57	1874	74
		Weight (kg/ pound)	412	907	807	1777	824	1815	1219	2686

3.6. Keg filling

- The **DOLIUM® One-Way Kegs** are fully compatible to all filling lines.
- Contact our **DOLIUM® One-Way Kegs** team at: info@dolium.eu for support and detailed filling line set-up specifications.
- For Tracking & Tracing purposes the **DOLIUM® One-Way Kegs** are individually identified by use of a digital 2D data matrix (readable by camera) as well as an analogical *mmdd + hh:mm:ss* inkjet print on the keg bottom label (see Exhibit #8):

Exhibit #8



- The **DOLIUM® One-Way Kegs** are flushed (> 90 %) and **pre-pressurized with CO_2 and/or N_2** @ 1,0 bar.
  - ***Use professional equipment for filling the kegs***: the **DOLIUM® One-Way Kegs** are equipped with standard fitting systems as per customer's request and are fully compatible with existing filling lines, conditional the necessary temperature and pressure settings have been respected, cleaning and steaming facilities are shut-off and the required and legal safety features are present.
  - The **DOLIUM® One-Way Kegs** are supplied in dry and microbial clean conditions. Therefore, no cleaning or disinfection activity is required along the filling cycle.
  - Avoid microbial contamination as it can be cause of beverage spoilage and, when fermenting the remaining extracts, premature burst in extreme conditions.
  - Disinfect the spear heads by spraying with alcohol or a peracetic acid solution for a few minutes prior to filling.
  - Check that the **DOLIUM® One-Way Kegs** are pressurized before filling line entrance.
  - No cleaning or sterilizing cycle allowed:
    - **Keep DOLIUM® One-Way Kegs away from caustic hydroxides** as cleaning agents.
    - **Keep DOLIUM® One-Way Kegs away from steam or vapor**.
  - CO_2 or N_2 flush mandatory prior to filling:
    - All **DOLIUM® One-Way Kegs** have been vented by use of CO_2 or N_2 at assembly to evacuate most of the air and oxygen (O_2) in particular.
    - Flush the kegs thoroughly with CO_2 or N_2 prior to filling.
    - For detailed Safety Instructions on CO_2 or N_2: see CO_2 supplier instructions.
  - **DOLIUM® One-Way Kegs** filling cycle:
    - Compatible to existing filling lines
    - Filling speed equal to stainless steel kegs
    - Filling by volumetric control
    - Checking by weight control
    - Avoid overfilling of the keg as it can result into burst at impact
    - Headspace = minimum 2 %

3.7. KEG HANDLING, DISPENSING AND STORAGE AT POINT OF SALES

Pressure Table	Dolium THERE IS ONLY ONE WAY
Working Pressure	3,5 bar (50 psi)
PRV	4,8 bar (70 psi)
Burst Pressure	>7 bar (>101 psi)

3.7.1. Handling - manual:

- Do not roll kegs over sharp objects
- Do not throw empty or filled kegs
- Avoid dropping filled kegs: *Exhibit #9*
  - Drop on concrete: < 0,25 m
  - Drop on drop cushion: < 2,5 m

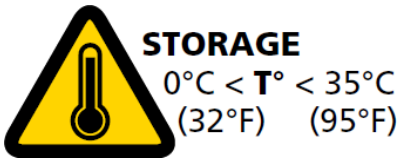
3.7.2. Storage before and after dispensing (not palletized):

- For safety and beverage quality reasons store filled kegs at 0° C < Storage temperature < 35°C.
- For beverage quality reasons store filled kegs at a constant temperature.
- Do not stack unpalletized (closed) filled kegs or (disconnected) empty kegs more than 2 kegs high.

3.7.3. Dispensing:

- Use an appropriate keg connector with adjacent pressure relief valve.
- Use an appropriate CO_2 or N_2 regulator and adjacent pressure relief valve.
- Use food grade CO_2 or N_2 at purity rate > 99,8%.
- Do not stack a connected keg when in dispense mode.

4,8

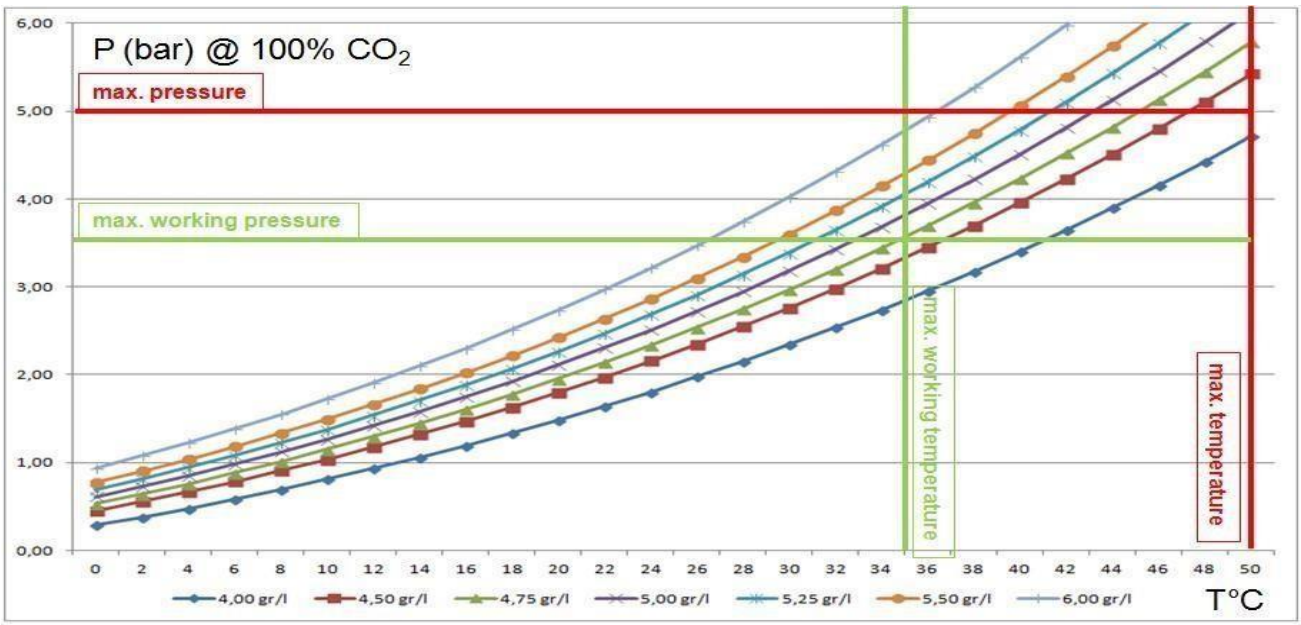


3.7.4. CO_2 pressurized kegs

- Use CO_2 always in well ventilated rooms.
- For detailed safety instructions on CO_2: (see 3.3).
- Do not over-pressurize, working pressure = max. 3,5 bar (see Exhibits #9 and #10).
- Depressurize emptied kegs immediately after use when emptied, by use of the PRV, outside or in a well-ventilated area. For more details: (see 3.3.) Carbon-dioxide and (3.8.) Disposal and recycling.

3.7.5. Pressure Graph- CO_2 Saturation:

Exhibit #10



3.8. Disposal and recycling

- The **DOLIUM® One-Way Kegs** are **for professional purposes only** and are not to be re-used for any 2nd life purpose, not even when emptied and/or depressurized, as this might lead to abuse or misuse creating a risk of accidents such as burst or CO_2 release.
- ***Do not clean, repair, maintain or re-use*** the **DOLIUM® One-Way Kegs.**
- ***Depressurize empty kegs to 0 bar.*** Emptied kegs still have a high residual pressure inside equal to the pressure at draught; it is strongly recommended **to depressurize** the kegs immediately by use of the **PRV,** outside or in a well-ventilated area. (see 3.4.)
- After the **DOLIUM® One-Way Kegs** have been emptied and depressurized, disposal of the kegs must be done in an environmentally friendly way.

AFTER USE
0 BAR (0 PSI)

Manual Depressurization and Disposal

STEP	ACTION
1	**ATTENTION!** **Read the Handling & Safety Instructions** prior to any action or manipulation. For a safe handling and disposal, take care of the instructions below in the right chronological or
2	- Keep **away from children** - Bring the empty kegs outside **in open air or in a well ventilated area.** - Keep the kegs **away from direct sunlight.** - **Do not cut or pierce pressurized containers** - **CAUTION! CO_2 hazard!** Stay out of the CO_2 blowing stream while venting
3	**Depressurise** empty kegs with a screw driver by turning the **Pressure Relief Valve 90°** or use the appropriate keg connector.
4	Remove top + bottom from the body
5	Unclips the spear from the keg neck by use of an appropriate tool
6	Dispose by crushing or shredding the parts into seperated bins or containers: - Keg body: PET - Top + bottom rings: HDPE - Spear tube: LDPE - Spear: PET, TPE, stainless steel springs

3.9. Complaint Handling

- In the event of an issue or complaint, please send an e-mail to: info@dolium.eu and include the following information for complaint registration:
  - Customer name
  - Issue description
  - Keg label information (see section 3.6.)
  - Pictures of kegs involved in the complaint
- If possible, please keep sample of kegs for examination
- Our **DOLIUM® One-Way Kegs** team will activate the complaint process and contact you.

info@dolium.eu
www.dolium.eu
www.doliumkegs.com