

---

# **TLC Basic Training Dangerous Goods**

---

**TLC Logistics 27.02.24**

# **LIEBHERR**

Foreign Trade and Logistic  
Compliance (TLC)



## Dangerous goods



## Hazardous substances



Dangerous goods =  
transport = public road, in  
the air or on the sea



Hazardous substances – storage



# Hazardous substances



Example: Flammable substances = Flash point **above** 60°C

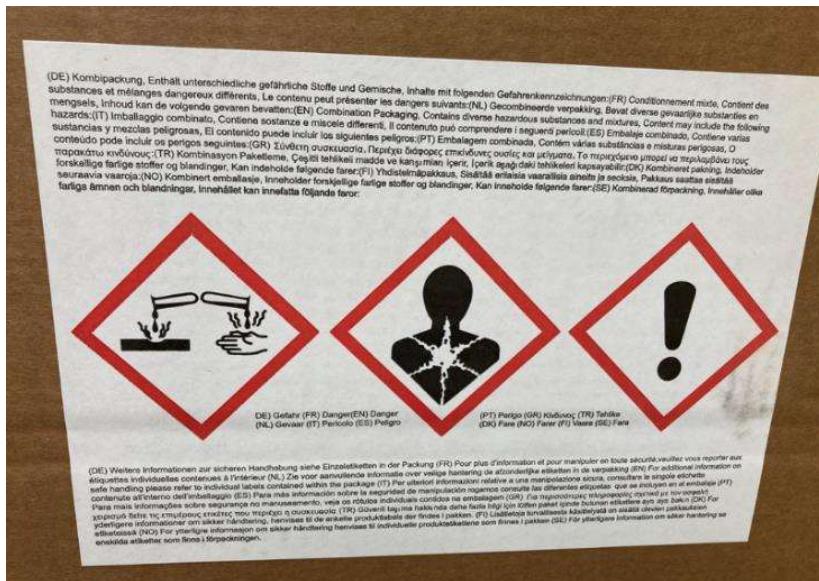
Not dangerous for transport – just for **storage**





## Hazardous substances

Pictograms can be an indication of possible dangerous goods





## Information necessary



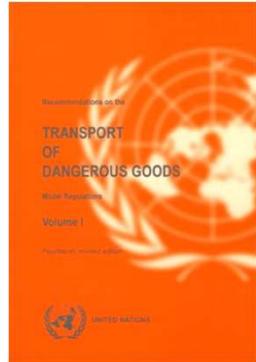
If you

- order,
- receive,
- sell
- or ship

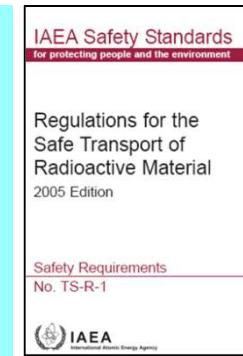
items containing dangerous goods or hazardous substances, make sure that you have a current safety data sheet (max. 2 years) in your language and the language of the consignee on hand. If necessary, request it and /or submit it.

# International Regulations

United Nations  
Economic and Social  
Council (ECOSOC)  
Recommendations on  
the **Transport of**  
**Dangerous Goods**



IAEA  
Regulations  
for the safe  
transport of  
**radioactive**  
**material**



**ADR** (UNECE)



ADNR



**RID** (OTIF)



**IMDG-Code**  
(IMO)



**ICAO-TI**  
(ICAO)

**IATA-DGR**  
(IATA)



# What is dangerous goods?



Dangerous goods are all substances, mixtures or goods that, due to their physical or chemical nature, **can be dangerous to people and the environment during transport.**

Dangerous goods substances are, for example, irritating, toxic, explosive or can cause a fire if handled incorrectly.



**LIEBHERR**

# Dangerous goods classes overview

---



# main classes of dangerous

- Class 1 Explosive goods and objects
- Class 2 Compressed, liquid or pressurized gases
- Class 3 flammable liquids
- Class 4 flammable solids
- Class 5 Organic Peroxides
- Class 6 Poison
- Class 7 Radioactive substances
- Class 8 Corrosive substances
- Class 9 Other dangerous goods and materials



# Label class 1, 2 and 3 – with sub classes

**1** Explosive goods and objects



**2 gas**



**2.1**  
flammable

**2.2**  
Non-flammable,  
Non-toxic gas

**2.3**  
Toxic gas

**Klasse 3**

**Flammable liquid**



# Label class 4 and class 5 with sub classes



**4.1** flammable  
solids



**4.2** Self-igniting  
substances



**4.3** Substances that develop  
inflammable gases in  
contact with water



**5.1** Substances with an  
inflammable (oxidizing)  
effect



**5.2** Organic peroxides

# Label class 6, 7 and 8 (sub classes)



## 6.1 Poisonous substances



## 6.2 Infectious substances



7A 7B 7C 7E  
radioaktiv



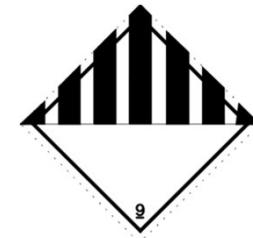
## 8 corrosive



# Label class 9

## 9 Other dangerous goods and materials

Examples: Dry ice, **lithium batteries, environmentally hazardous goods**, airbag, magnetized material...



# Dangerous goods classes at Liebherr

---



## Dangerous goods class 2

Examples: propane gas, hydrogen, hairspray, acetylene

oxidizing  
flammable (spray paint)  
Toxic (insect spray)



# Gases of division 2.1 flammable gas

Paint spray

Lacquer synthetic resin

Spray rust remover

Assembly spray Anti-Seize High Tech ASW

Disinfectant spray

Cleaner - Sika Remover 208 Spray

Break cleaner

Corrosion inhibitor 400 ml spray can

GREASE UNOLIT SPRAY OIL

Spray (300 ml silicone-free lubricating spray)

Glue (spray adhesive)

Fast cleaner Loctite SF 7061

Paint spray corrosion protection red-brown 400ML

Contact spray Cramolin 1151611

Mounting material

SPRAY CAN ARDROX DEVELOPER 9D1

Spray Caramba

Silicone spray



## Danger properties::

- Danger of explosion
- Fire hazard
- Can be under pressure

May cause burns and/or cause frostbite

Enclosures can be exposed to heat burst

# Aerosols



8303008 / / VERDÜNNUNG

– thinner"



**LIEBHERR**

# Gases of division 2.2 non-flammable gas

**Stabilus gas spring**

**Membrane accumulator, HYDAC accumulator**

Stabilus gas spring

**Shock absorber SUSPA**

Switching block 2-fold, retrofit kit pressure accumulator installation Hydac

BRAKE AIR ADAPTER, capsule CO 2 UMAREX

**Fire extinguisher (Total G-Classic GX 6N) Total**

Gas spring (Stabilus) Stabilus

LEAK DETECTION SPRAY CRC Industries Europe

Hydac membrane accumulator

Membrane accumulator Freudenberg Freudenberg

Piston accumulator (also conversion kit) Hydac

Membrane accumulator unfilled

Fire extinguisher FX N2 gas

**COMPRESSED AIR SPRAY CAN 200ML WÜRTH Würth**

Membrane storage HYDRO LEDUC

Damping element Hydac

**Piston accumulator // 95 bar pre-filling pressure HYDAC**

Hydac membrane accumulator

Fire Extinguisher Suzhou Wuyue Synthetic Chemical Fabric

Transfer case (diaphragm accumulator installed) HYDAC

Bladder storage Hydac

Bladder accumulator Roth Hydraulics GmbH

Bladder storage (manufacturer Hydac) Hydac

Bladder accumulator (MCR item), piston accumulator (LWT) Parker Hannifin



7622448 / / MEMBRANSPEICHER — Diaphragm accumulator



10040904 / / GASFEDER — Gas spring



→ Some are just regulated by air / and or sea (free on road)



11698902 / / DRUCKLUFT — compressed air



**LIEBHERR**



– piston accumulator

11840400 / / KOLBENSPEICHER



– shock absorber

7621164 / / STOSSDAEMPFER



**LIEBHERR**

→ ready for pick up to Indonesia



**LIEBHERR**

# Flammable Liquids Class 3

**Primer** (Dinitrol 530), DINITROL 520 // Repair kit for glass panes

**Cleaner (Dinitrol 520) // Repair kit for glass panes**

Glass-Clear-Classic windshield cleaner

Thinner / PUR Thinner TL009

Thinner THINNER 21-06 (AMEROAT 65)

Primer (Amercoat 4171 Resin RAL 7035)

**Hardener (Amercoat 4171 Cure)**

Top coat 1K KH Liebherr Yellow / 8302013: 1L, 8302018: 5L

Glue (can 730 ml)

**acetone**

**Diesel engine**

Adhesive primer - SIKA Primer-206 G+P

Hardener 4 L varnish colorless

**resin**

Clear as glass

Windshield washer fluid 200 L

Window cleaning glass cleaner SMA 19

Corrosion protection Dinitrol 4010 20 liters

**Glue Drive window adhesive set - SIKA TACK 8159**

Contact adhesive Jowat 445.00

Cleaner Industrial Clean

Primer FEIDOLUX PRIMER KG92

Disinfectant MYXAL SEPT 80

**Activator (Sika Tack Go4it)**

**Top coat FEIDOLUX KD19**



– Paint



– hardener



# Engine, internal combustion, flammable liquid powered **UN 3166**



Only classified for Air- and Seafreight

→ Not dangerous on road transports

DOT's Hazmat Information Center = **exemption** which could be used to move the engine. The exemption is covered under Chapter 173.220(b)(4) & 173.220(h)(1) of the CFR49 (DOT Hazmat regulation).



**LIEBHERR**

# Engine, internal combustion, flammable liquid powered UN 3528



SHIPPER'S DECLARATION FOR DANGEROUS GOODS				IATA			
Shipper Liebherr-Logistics GmbH St. Vitus 1 88457 Kirchdorf an der Iller GERMANY		Air Waybill No. Page 1 of 1 Pages Shipper's Reference Number (optional)					
Consignee RECO EQUIPMENT INC. Jacob Dechler 20620 ROUTE 19NORTH US 16066 PA CRANBERRY TOWNSHIP, USA							
Two completed and signed copies of this Declaration must be handed to the operator.		WARNING Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.					
TRANSPORT DETAILS This shipment is within the limitations prescribed for: (delete non-applicable) <table border="1"><tr><td>PASSENGER AND CARGO AIRCRAFT</td><td>S C A R G O A I R C R A F T O N L Y</td></tr></table> Airport of Destination (optional): <b>[NON-RADIOACTIVE] RADIOPACTIVE</b>						PASSENGER AND CARGO AIRCRAFT	S C A R G O A I R C R A F T O N L Y
PASSENGER AND CARGO AIRCRAFT	S C A R G O A I R C R A F T O N L Y						
NATURE AND QUANTITY OF DANGEROUS GOODS Dangerous Goods Identification							
UN or ID No.	Proper Shipping Name	Class or Division (selectivity hazard)	Pack- ing Group	Quantity and Type of Packing	Packing Inst.	Authorization	
UN3528	Engine, internal combustion, flammable liquid powered	3		1 engine on metal skid x 886 kg Overpack used	378		
Additional Handling Information Emergency CONTACT(24-Hour-Number)GBK/InfotracD102531:(USA domestic)18005355053 or international(001)3523233500							
I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. I declare that all of the applicable air transport requirements have been met.			Name of Signatory Erik Siebenhaar  1.2023				
Order No.: 11529 0119 ^ v 1 / 1 ⊞ ⊙ ⊞							

Example airfreight

- Attention new class 3 and new UN 3528  
(former class 9 and UN 3166)



**LIEBHERR**

primer

12691865 / / GRUNDIERUNG



Repair set



11088499 / / DECKLACK paint



10012527 / / AKTIVATOR



cleaner



# Flammable Solids Class 4.1



Substances of Class 4.1 **are easily flammable solid substances** and articles that can be ignited by sparks or can cause a fire through friction. Furthermore, Class 4.1 includes self-reactive substances that, at exceptionally high temperatures or upon contact with impurities, tend to undergo highly exothermic decompositions."

SEALANT - TEROSON RB 4100 BK  
Repair kit with cleaning cloth

UN 1327 Matches



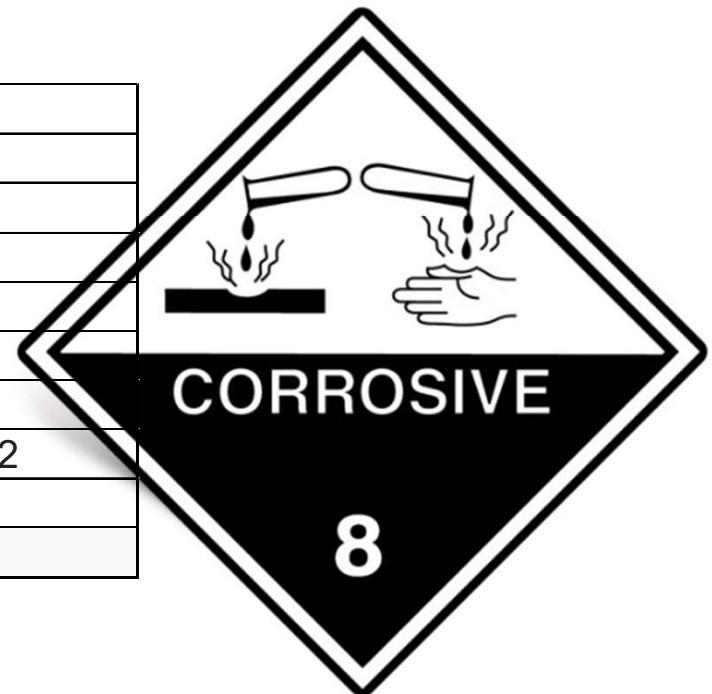
UN 1327 Hay or straw





# Corrosive substances class 8

Yes	additive
Yes, air + sea	battery banner only
Yes	<b>battery acid</b>
Yes	diesel additive 1 liter
Yes, just air + sea	battery, filled, charged
Yes, only air	high pressure lamp neutral white 400 V
Yes, air + sea	battery only
Yes	battery 12V 300W type SBH 300-12 / SBH 270-12
Yes	Battery 12V 100Ah 830A - Clarios
Yes	Adhesive Loctite EA 9492





Additive (GrotaMar 71):

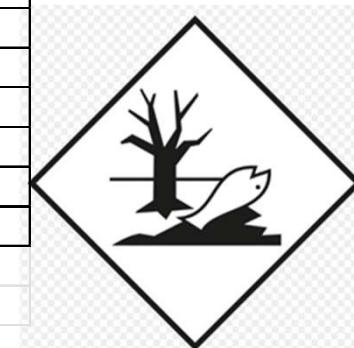


Wet battery

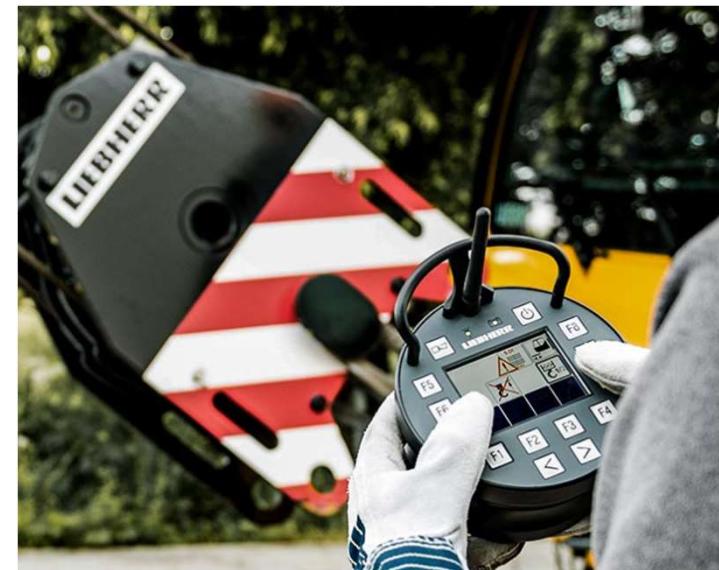


# „Other dangerous goods and materials“ Class 9

AVIA GEAR VSG 220 / Gear oil AVILUB VSG 220
Gear oil AVIA GEAR VSG 100
Battery (Lithium-ion-iron phosphate battery)
Lubricating paste 10 g, Molub-Alloy Paste White
<b>Yes, air and sea</b> BATTERY 3.6V 0.450Ah PRINT CONNECTION VARTA
BATTERY AC500-CPUs
Battery module 3.6V T200 PR63
<b>Yes, air and sea</b> Assembly paste Weicon Anti-Seize
High-performance grease paste Gleitmo 805
Lithium battery
<b>Yes, air and sea</b> Battery Replacement battery
Lubricating paste 100g Molub-Alloy Paste TA
Sealant 300ml cartridge Copper Silicone, Loctite SI 5990
<b>Yes, air only</b> Display (contains battery)
Telematics unit with BATTERY SPF006
<b>Battery (Lithium) for control unit</b>
Display (contains Lithium Metal Battery)



10182189 / / AKKU



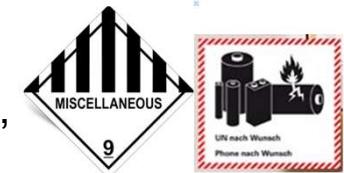
613202401 / / BATTERIE



# Examples of dangerous goods at LLG – do you know the class?



Lithium batteries / rechargeable batteries (cell phones, telephones, laptops, loggers/GPS, remote control or crane control, engine control devices, etc.)



Cleaning agents/disinfectants, window cleaner, antifreeze



Spray, Aerosols



gas springs (mostly dangerous by air), fire extinguisher



Diesel engines (air freight/sea freight)

Additives, wet batteries





## UN – Number (MSDS section 14)

**UN numbers** or **UN IDs** are four-digit numbers that **identify** dangerous goods

UN numbers range from UN0001 to about UN3550 and are assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods

They are published as part of their *Recommendations in the “Organe book”*



UN 1950 = Aerosols



UN 1263 = paint

## Who knows the answer?



- How many classes of dangerous goods are there?
- What dangerous goods class does an engine have?
- Is an engine classified as dangerous goods on all modes of transport?
- What danger does a remote control, e.g. a crane control, pose?
- What means UN-Nr. 1950?

# Packing

---

**LIEBHERR**

# Approved packing (UN permit)

→ Single Packing



→ composite packaging

Liquids inside

UN 4G/=fibreboard box



Example: UN 1A1 = steel drum,

## Recognizing dangerous goods







– Class 3 is??

**LIEBHERR**

# Packing group = PG



PG				carton	
I	high danger	high toxic	high corrosive	X	
II	dangerous	toxic	corrosive	Y or X	
III	low danger	less toxic	less corrosive	Z, Y or X	

**The most important thing when transporting dangerous goods is:**



**Load securing !!!!**



**LIEBHERR**

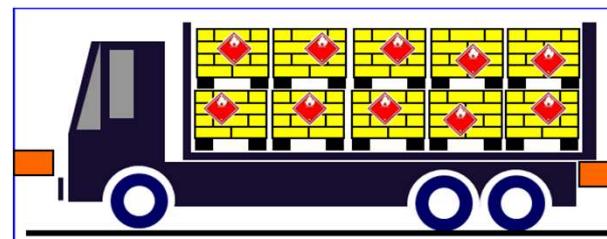
# Simplifications for smaller quantities

---

# We have four different types of dangerous goods shipments:

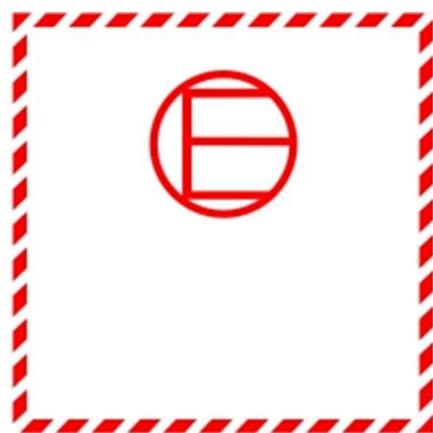


1. Excepted (small) quantities "E" Chapter 3.5 ADR 
2. Limited Quantities LQ (many facilitations) Chapter 3.4 ADR 
3. Exemption transport according to „1000 point rule“ Chapter 1.1.3.6. ADR 
4. Dangerous goods transports (orange sign)



**LIEBHERR**

# 1.) „E“ Excepted Quantities ADR 3.5



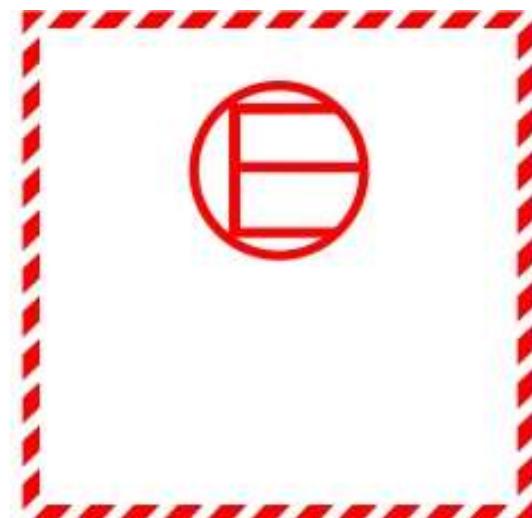
**LIEBHERR**

# 1. Excepted Quantities ADR 3.5

## ■ E1

- z.B. 30ml Paint = Paint pens, 33 pieces in one outer packaging.

Code	Höchste Nettomenge je Verpackung (ml)	Höchste Nettomenge je Außenverpackung (ml)
E 0	in freigestellten Mengen nicht zugelassen	
E 1	30	1000
E 2	30	500
E 3	30	300
E 4	1	500
E 5	1	300



# Labeling Excepted Quantities

- Cushioning material must be used
- Free-fall tests from a height of 1.8 meters.
- Test reports for the packaging / approval and test certificates.

At least 10x10 cm

Permanent and legible

\*Primary hazard = 3

\*\* Name of sender or recipient if not indicated elsewhere on the packaging

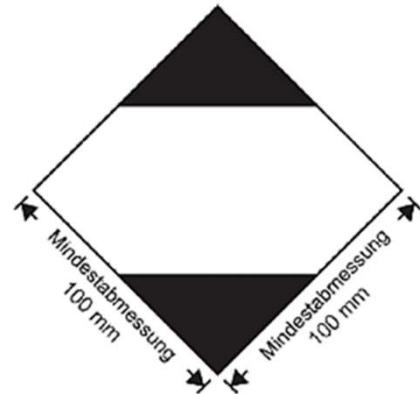


**LIEBHERR**

## 2. LQ Limited Quantity ADR 3.4



**Example LLG:**  
**LLG mainly uses this**  
**simplification for**  
**transport by road**



**LIEBHERR**

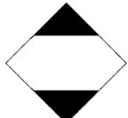


## 2.) Limited Quantity – LQ

Exemption in connection with the carriage of limited quantities

***ADR only applies to a very limited extent (only chapter 3.4.)***

- ✓ No “hazardous goods driving license” required for drivers
- ✓ No hazardous goods equipment required
- ✓ No written instructions necessary (accident information sheet)
- ✓ In principle, no transport document is necessary (just information) Reference to LQ plus gross quantity
- ✓ No dangerous goods officer necessary
- ✓ No UN packaging necessary
- ✓ max 30kg gross
- ✓ Only for composite packaging (inner/outer packing)
- ✓ Labeling only necessary with LQ label



**LIEBHERR**

## 2.) Limited Quantity – LQ – Important „must“



- Packaging quality requirements
- Training (yearly) of all employees involved in transport (including packers)

## 2.) Limited Quantity – LQ



- ✓ max 30kg gross
- ✓ Only for composite packaging (inner/outer packing)



**LIEBHERR**

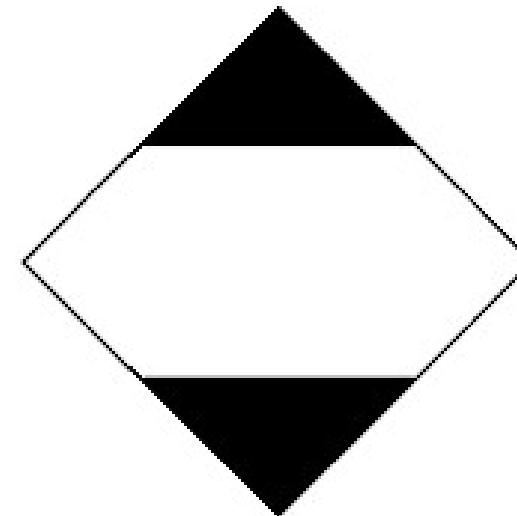


## Paint as Limited Quantity LQ

**UN 1263 PG III Paint**

**Max 5 L per inner packing (paint can)**

**Max 30kg Gross =max. 5 x 5L paint can due to weight of outer packing**



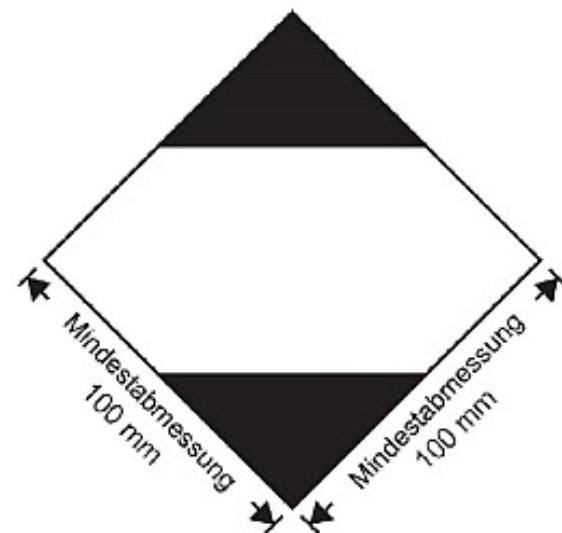
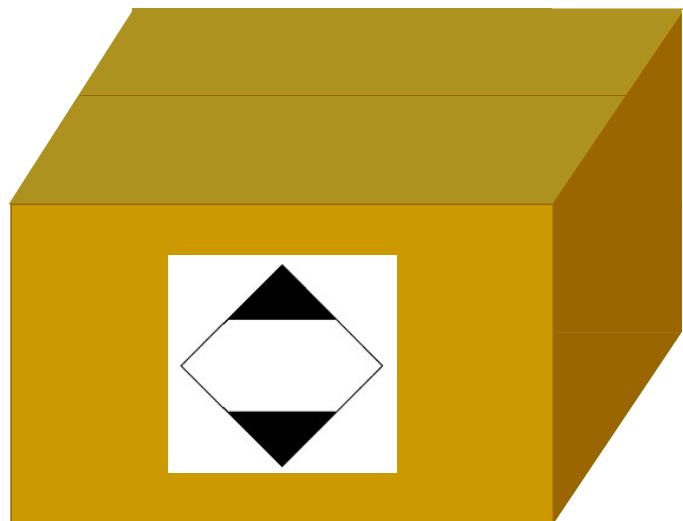
Dims Label = 100x100mm

No “UN packaging” is necessary, but must be stable and be suitable / drop test 120cm

Maximum 30 kg gross

**LIEBHERR**

# LQ Limited Quantity Label Chapter 3.4.7.1 ADR



**LIEBHERR**

## Questions LQ



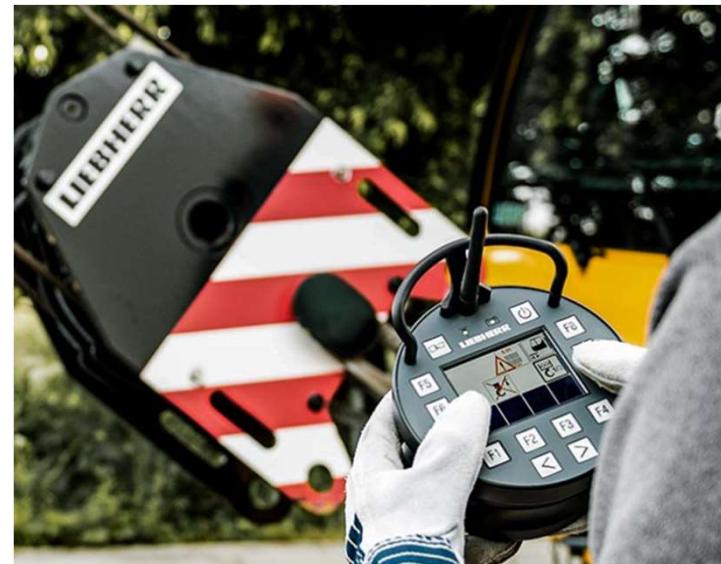
- Is this about LQ?
- Single packing allowed for LQ?
- What maximum gross weight is permitted?

# Batteries

---

**LIEBHERR**

# Lithium Batteries





# Lithium Batteries are dangerous goods (Class 9)

Very common products are subject to regulations:

All items that contain lithium batteries (e. g. mobile phones, mobile computers and tablet computers, electrical tools, battery powered vehicles, toys etc.)

all items that are packed with lithium batteries

**Laptop explodes and burns down office building (youtube.com)**

<https://www.youtube.com/watch?v=2a0ICtMyKTk>

<https://www.youtube.com/watch?v=8nz5ijXcckI>



# Risks for Lithium Batteries



Minor defects can lead to fire!

Lithium batteries contain high rates of energy and contribute oxygen to their own fire.

Once on fire, a lithium cell will not be extinguished.



# Dangerous goods regulations apply



Lithium batteries are goods of class 9.

Based on preconditions, simplifications might be legal but require compliance with a number of additional requirements, among them usually

Specific markings and additional documents are required.



There is no lithium battery that is not covered by the dangerous goods regulations

# Example Electric wheel loader L 507 E



**fast charging**



# Material Safety Data Sheet

## MSDS

---

# Material Safety Data Sheet (MSDS) – Sodium Hydroxide



## Section 14 = Transport Information

14 . Transport information						
Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	UN1823	SODIUM HYDROXIDE, SOLID	8	II		<u>Reportable quantity</u> 1000 lbs. (454 kg)

PG\* : Packing group



**SECTION 1: Identification of the substance/mixture and of the company/undertaking**

## 1.1 Product identifiers

Product name : Acetone EMPLURA®

## **SECTION 14: Transport information**

## 14.1 UN number

ADR/RID: 1090      IMDG: 1090      IATA: 1090

## 14.2 UN proper shipping name

ADR/RID: ACETONE

IMDG: ACETONE

IATA: Acetone

### 14.3 Transport hazard class(es)

ADR/RID: 3 IMDG: 3 IATA: 3

## 14.4 Packaging group

ADR/RID: II IMDG: II IATA: II

## 14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

## 14.6 Special precautions for user

Tunnel restriction code : (D/E)

Further information : No data available

Trade name: **Liebherr WR-Lube SC**



## SECTION 14: Transport information

### 14.1 UN-Number

ADR, IMDG, IATA

UN1268

### 14.2 UN proper shipping name

ADR

1268 PETROLEUM DISTILLATES, N.O.S.

IMDG, IATA

PETROLEUM DISTILLATES, N.O.S.

### 14.3 Transport hazard class(es)

ADR



Class

3 (F1) Flammable liquids.

Label

3

IMDG, IATA



Class

3 Flammable liquids.

Label

3

**LIEBHERR**

# TSCA = Toxic Substance Control Act (USA)



## 15 . Regulatory information

### United States

<b>HCS Classification</b>	: Highly toxic material Corrosive material Target organ effects
<b>U.S. Federal regulations</b>	: <b>United States inventory (TSCA 8b):</b> This material is listed or exempted. TSCA (Toxic Substance Control Act): This product is listed on the TSCA Inventory. <b>SARA 302/304/311/312 extremely hazardous substances:</b> No products were found. <b>SARA 302/304 emergency planning and notification:</b> No products were found. <b>SARA 302/304/311/312 hazardous chemicals:</b> Sodium Hydroxide <b>SARA 311/312 MSDS distribution - chemical inventory - hazard identification:</b> Sodium Hydroxide: Immediate (acute) health hazard <b>Clean Water Act (CWA) 307:</b> No products were found. <b>Clean Water Act (CWA) 311:</b> Sodium Hydroxide <b>Clean Air Act (CAA) 112 accidental release prevention:</b> No products were found. <b>Clean Air Act (CAA) 112 regulated flammable substances:</b> No products were found. <b>Clean Air Act (CAA) 112 regulated toxic substances:</b> No products were found.
<b>DEA List I Chemicals (Precursor Chemicals)</b>	: Not listed
<b>DEA List II Chemicals (Essential Chemicals)</b>	: Not listed
<b>Massachusetts Substances</b>	: This material is listed.
<b>New Jersey Hazardous Substances</b>	: This material is listed.



<https://lubricants.liebherr.com/Pages/default.aspx?language=de-DE>

Deutsch ▾

# Liebherr Lubricants

# LIEBHERR

Dashboard



**LIEBHERR**

## Again, Questions



- In which section of the safety data sheet is the information about the transport of dangerous goods located?
- Where can I find the safety data sheets for Liebherr lubricants?
- If I have questions regarding dangerous goods, who should I contact?
- ✓ **tlc.llg@liebherr.com**

# Working Group Dangerous goods / Battery

---

Aktuelle Themen – Gründung weiterer Arbeitsgruppen (CK)

## We need you



**We are still looking for specialists for the  
dangerous goods/batteries working group**



**LIEBHERR**

## TLC – Home (sharepoint.com)

SharePoint Diese V... ?

Nur Mitglieder

**LIEBHERR** TLC

Start + Neu Seite Details Analysen

Sie folgen nicht Für Zugriff freigegebene Web

Veröffentlicht 9.2.2024 Teilen Bearbeiten

Welcome to the Foreign Trade and Logistic Compliance (TLC) SharePoint

Contact: [tlc.llg@liebherr.com](mailto:tlc.llg@liebherr.com)

Ansprechpartner zentrale Stelle / Contact Person in central area

 Kloos Claudia (LLG)  
i. V.

Ansprechpartner Funktionsbereich Import & Exportkontrolle, Contact Person functional area Import and Export Control

 Gittel Christoph (LLG)

Ansprechpartner Funktionsbereich Zoll & WUP / Contact

Live-Ticker / Aktuelles

+ Hinzufügen

Welcome to the TLC Sharepoint

Gittel Christoph (LLG) 27. November 2023  
3 Ansichten

Start TLC kurz erklärt TLC in short FAQ DE FAQ EN Contact Organization TLC Handlungsempfehlung... Informationsmitteilung... Recomendation for act... Information notice Calendar Archive Members only Protocols



# Q&A ?

---



# Thank you for your attention

