

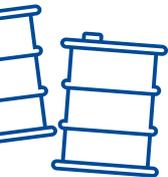


What is CCD?

Cafe Coffee Day?

Charge-coupled device?

Community College of Denver?



□ • BASF

We create chemistry

CCD stands for...

Carbonyl Chloride Derivatives

Chloroformates

E.g.

- 2-Ethylhexyl chloroformate
- Isopropyl chloroformate

Acid chlorides

E.g.

- Isononanoyl chloride
- Neodecanoyl chloride
- 2-Ethylhexanoyl chloride
- Pivaloyl chloride

**BASF's
high-quality
CCD portfolio**





Pharmaceuticals



Organic peroxides to produce polymers

Essential for our daily life



Plant protection agents



Personal care



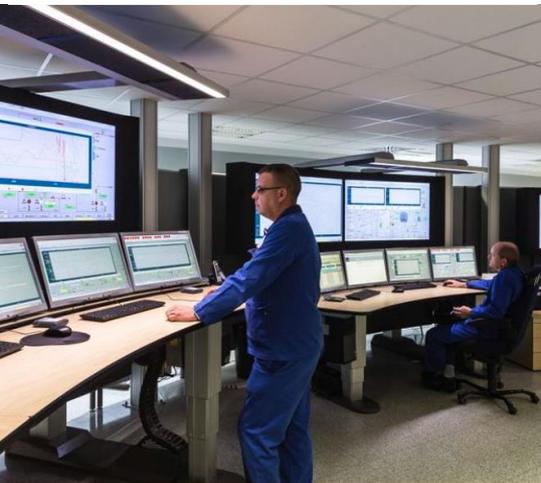


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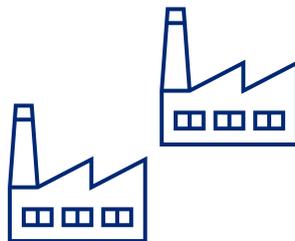
production sites



Yeosu, Korea



Ludwigshafen, Germany





Why are CCDs
so sophisticated
to produce and
transport?





Storage
temperature

$\leq 25^{\circ}\text{C}$

Transportation
temperature

$< 40^{\circ}\text{C}$



Storage duration

6 or 12 months



Flammable



Corrosive



Toxic





Months-long
journey by
marine vessels
and long
standby time in
container yard

Imagine...



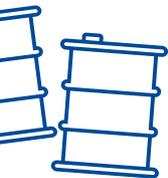
Exposed to the
heat of the sun



Potential drum
damage
and bulging



NOT with
BASF





What makes **BASF's** CCD drums safe?





Based on our long-standing safety knowledge

BASF utilizes a **double-layer** (composite) drum for safe CCD packaging

BASF

Carbon steel outer

- ☹ High physical stability
- ☹ More tolerance
- ☹ Minimize risk of leakage



High Density Polyethylene (HDPE) inliner

- ☹ Minimize gas permeation in drum
- ☹ Minimize material penetration and emission risk

**DOUBLE LAYERS
DOUBLE SAFETY**

Common plastic drums

1-layer

High Density Polyethylene (HDPE) drum



- ☹ Crash → leakage
- ☹ Explosion & environmental risk
- ☹ Exposure from permeated gas





The result?





BASF's CCD drums Package testing results*

- Cold drop at -18°C ¹
- Leakage proofness²
- Hydraulic pressure³
- Crash⁴



PASSED

* Based on BASF's package tests, its CCD drums passed all tests without any leakage

1. Filled with Glycol water and dropped at a height of 2.4 meters and a temperature of -18°C with different drop positions, including diagonally on the bottom seam of the plastic receptacle, diagonally on the body in the area of one of the closures, and flat on the body in the area of one of the closures. Number of tests: 6

2. Filled with air under the pressure of 30 kPa for 5 minutes at 28°C . Number of samples: 3

3. Filled with water under the pressure of 300 kPa for 30 minutes, with three samples at 35°C and one sample at 18°C

4. Crash test at 6km/h with forklblade protectors





More than



years of

safe and reliable

CCD production and supply

[Learn more](#) | [Contact us](#)

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We create chemistry