



# SAFETY DATA SHEET

## DRAFT FOR TECHNICAL AND REGULATORY REVIEW

|              |                                                                                                                                                                        |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product name | RuCl <sub>2</sub> [(R)-DM-BINAP][(R,R)-DPEN] /Dichloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl][(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II) |
| Product code | Pending verification by Comora before issue. Catalog record: KML-000460                                                                                                |
| CAS number   | 220114-38-5                                                                                                                                                            |
| SDS version  | 0.1 - Unapproved draft                                                                                                                                                 |
| Issue date   | 2026-10-02 - draft preparation only                                                                                                                                    |
| Supersedes   | Initial draft; no approved version                                                                                                                                     |

Supplier-source draft. Sections 4-14 use the US source SDS; section 2 also shows the EU classification where available. Product equivalence and EU/US requirements must be verified before issue.

## SECTION 1 IDENTIFICATION

|                               |                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.1 Product identifier        | RuCl <sub>2</sub> [(R)-DM-BINAP][(R,R)-DPEN] /Dichloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl][(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II)                                                                                                                                                                                                                   |
| Other means of identification | CAS: 220114-38-5; Formula: C <sub>66</sub> H <sub>64</sub> Cl <sub>2</sub> N <sub>2</sub> P <sub>2</sub> Ru; Molecular weight: 1119.15 g/mol. Source SDS name: [1,1'-(1R)-[1,1'-Binaphthalene]-2,2'-diylbis[1,1-bis(3,5-dimethylphenyl)phosphine-κP]]dichloro[(1R,2R)-1,2- diphenyl-1,2-ethanediamine-κN1,κN2]ruthenium. Chemical form and stereochemistry require product confirmation. |
| 1.2 Recommended use           | Intended Comora uses: pending verification. Source use: The end use(s) have not been fully determined. The substance is supplied for Research and Development purposes by professionals only.                                                                                                                                                                                            |
| Restrictions on use           | Restrictions on use: pending product-specific verification. Not an authorization for medical or consumer use.                                                                                                                                                                                                                                                                            |
| 1.3 Supplier                  | Tianjin Comora Technology Co., Ltd.                                                                                                                                                                                                                                                                                                                                                      |
| Address                       | Pending verification by Comora before issue.                                                                                                                                                                                                                                                                                                                                             |
| Telephone                     | +86 15908635794 (business contact; not a verified emergency line)                                                                                                                                                                                                                                                                                                                        |
| WhatsApp                      | +86 15908635794                                                                                                                                                                                                                                                                                                                                                                          |
| Email                         | tao@comoratj.com                                                                                                                                                                                                                                                                                                                                                                         |
| Website                       | www.comoratj.com                                                                                                                                                                                                                                                                                                                                                                         |
| 1.4 Emergency telephone       | Pending verification by Comora before issue. Business contacts above must not be treated as a 24-hour emergency service.                                                                                                                                                                                                                                                                 |



## SECTION 2 HAZARDS IDENTIFICATION

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.1 GHS classification   | US supplier SDS: Acute toxicity, oral(Category 4) H302 Skin corrosion/irritation (Category 2) H315 Serious eye damage/eye irritation(Category 2A) H319 Specific target organ toxicity, single exposure;Respiratory system(Category 3) H335<br>EU supplier SDS: Physical hazards Based on available data, the classification criteria are not met Health hazards Acute toxicity, oral Category 4 (H302) Skin corrosion/irritation Category 2 (H315) Serious eye damage/eye irritation Category 2A (H319) Specific target organ toxicity, single exposure;Respiratory system Category 3 (H335) Environmental hazards Based on available data, the classification criteria are not met<br>Final Comora classification: pending review. |
| 2.2 Signal word          | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| GHS pictograms           | GHS07 - Exclamation mark<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Hazard statements        | H302 Harmful if swallowed H315 Causes skin irritation H319 Causes serious eye irritation H335 May cause respiratory irritation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Precautionary statements | P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 2.3 Other hazards        | Additional precautionary phrases are located throughout the safety data sheet.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Unknown acute toxicity   | Not determined for the Comora product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## SECTION 3 COMPOSITION INFORMATION ON INGREDIENTS

**3.1 Substance or mixture:** Substance identity as listed in the catalog; actual supplied composition and chemical form pending verification.

| Chemical name                                                                                                                                                          | CAS No.     | EC No.       | Concentration                                      | GHS classification                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|----------------------------------------------------|----------------------------------------------------|
| <chem>RuCl2[(R)-DM-BINAP][(R,R)-DPEN]</chem> /Dichloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II) | 220114-38-5 | Not verified | Not verified;<br>catalog purity is not composition | See section 2; supplier-source classification only |

**Impurities and stabilizing additives:** Not reported for the Comora product; review required.

**Trade secret statement:** No trade-secret claim assessed.

## SECTION 4 FIRST AID MEASURES

**4.1 Inhalation:** If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**Skin contact:** Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

**Eye contact:** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

**Ingestion:** Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**4.2 Most important symptoms and effects:** The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11



**4.3 Immediate medical attention and special treatment:** No data available General advice: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

## SECTION 5 FIREFIGHTING MEASURES

|                                         |                                                                                                          |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>5.1 Suitable extinguishing media</b> | alcohol-resistant foam, dry chemical or carbon dioxide                                                   |
| <b>Unsuitable extinguishing media</b>   | no data                                                                                                  |
| <b>5.2 Specific hazards</b>             | In combustion toxic fumes may form.                                                                      |
| <b>Hazardous combustion products</b>    | Carbon monoxide , carbon dioxide , hydrogen chloride , nitrogen oxides , oxides of phosphor              |
| <b>5.3 Firefighter protection</b>       | Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes. |

## SECTION 6 ACCIDENTAL RELEASE MEASURES

|                                        |                                                                                                                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>6.1 Personal precautions</b>        | Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. Do not attempt to take action without suitable protective clothing. For personal protection see section 8. |
| <b>Protective equipment</b>            | See section 8.                                                                                                                                                                                                                                                                           |
| <b>Emergency procedures</b>            | See personal precautions above.                                                                                                                                                                                                                                                          |
| <b>6.2 Environmental precautions</b>   | Prevent further leakage or spillage if safe to do so. Do not let product enter drains or river. Alert the neighbourhood to the presence of fumes or gas.                                                                                                                                 |
| <b>6.3 Containment and cleanup</b>     | Mix with sand or vermiculite. Sweep up and shovel. Transfer to a closable, labelled salvage container for disposal by an appropriate method.                                                                                                                                             |
| <b>6.4 Reference to other sections</b> | For disposal see section 13.                                                                                                                                                                                                                                                             |

## SECTION 7 HANDLING AND STORAGE

|                               |                                                                                                                                                                                                                                                    |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>7.1 Safe handling</b>      | Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Wash hands thoroughly after handling. Ensure there is sufficient ventilation of the area. Normal measures for preventive fire protection. For precautions see section 2.2. |
| <b>7.2 Safe storage</b>       | Keep container tightly closed in a dry and well-ventilated area. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Inert atmosphere, 2-8°C                                                               |
| <b>Incompatible materials</b> | No data available                                                                                                                                                                                                                                  |
| <b>7.3 Specific end use</b>   | The end use(s) have not been fully determined. The substance is supplied for Research and Development purposes by professionals only.                                                                                                              |

## SECTION 8 EXPOSURE CONTROLS PERSONAL PROTECTION

### 8.1 Control parameters

| Component | CAS No. | Limit type | Value | Basis / jurisdiction |
|-----------|---------|------------|-------|----------------------|
|-----------|---------|------------|-------|----------------------|



| Component                                                                                                                                                                 | CAS No.     | Limit type      | Value           | Basis / jurisdiction                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------|
| RuCl <sub>2</sub> [(R)-DM-BINAP][(R,R)-DPEN]<br>/Dichloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl][(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II) | 220114-38-5 | Not established | Not established | Supplier statement:<br>Contains no substances with occupational exposure limit values. Current EU/US limits require review. |

## 8.2 Exposure controls

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Engineering controls</b>     | Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Eye and face protection</b>  | Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).                                                                                                                                                                                                                                                                                                                                                 |
| <b>Skin and hand protection</b> | Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. |
| <b>Respiratory protection</b>   | Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full- face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).                                                                               |
| <b>Environmental controls</b>   | Do not let product enter drains.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

| Property                  | Value              | Property                  | Value              |
|---------------------------|--------------------|---------------------------|--------------------|
| Physical state            | solid              | Color                     | No data available. |
| Appearance                | Form: solid        | Odor                      | No data available  |
| Odor threshold            | No data available  | pH                        | No data available  |
| Melting/freezing point    | No data available  | Boiling point/range       | No data available  |
| Flash point               | No data available  | Evaporation rate          | No data available  |
| Flammability              | No data available. | Explosive limits          | No data available. |
| Vapor pressure            | No data available  | Vapor density             | No data available  |
| Relative density          | No data available  | Bulk density              | No data available. |
| Solubility                | No data available  | Partition coefficient     | No data available. |
| Auto-ignition temperature | No data available  | Decomposition temperature | No data available  |
| Kinematic viscosity       | No data available. | Dynamic viscosity         | No data available. |



| Property                 | Value              | Property          | Value                                                                              |
|--------------------------|--------------------|-------------------|------------------------------------------------------------------------------------|
| Particle characteristics | No data available. | Other information | Explosive properties: No data available<br>Oxidizing properties: No data available |

## SECTION 10 STABILITY AND REACTIVITY

|                                       |                                                                                             |
|---------------------------------------|---------------------------------------------------------------------------------------------|
| 10.1 Reactivity                       | No data available                                                                           |
| 10.2 Chemical stability               | Stable under recommended storage conditions.                                                |
| 10.3 Hazardous reactions              | No data available                                                                           |
| 10.4 Conditions to avoid              | No data available                                                                           |
| 10.5 Incompatible materials           | No data available                                                                           |
| 10.6 Hazardous decomposition products | Carbon monoxide , carbon dioxide , hydrogen chloride , nitrogen oxides , oxides of phosphor |

## SECTION 11 TOXICOLOGICAL INFORMATION

|                                |                                                                                                                     |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------|
| 11.1 Likely routes of exposure | No data available.                                                                                                  |
| Symptoms                       | The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11 |
| Immediate and delayed effects  | No data available.                                                                                                  |

| Endpoint                  | Result            | Species      | Method / source         |
|---------------------------|-------------------|--------------|-------------------------|
| Acute oral toxicity       | Not reported      | Not reported | Not reported            |
| Acute dermal toxicity     | Not reported      | Not reported | Not reported            |
| Acute inhalation toxicity | Not reported      | Not reported | Not reported            |
| Other endpoint            | No data available | Not reported | Supplier SDS section 11 |

**Skin corrosion or irritation:** No data available

**Serious eye damage or irritation:** No data available

**Respiratory or skin sensitization:** No data available

**Germ cell mutagenicity:** No data available

**Carcinogenicity:** No data available

**Reproductive toxicity:** No data available

**STOT single exposure:** No data available

**STOT repeated exposure:** No data available

**Aspiration hazard:** No data available

**NTP, IARC, or OSHA carcinogen listing:** Not independently verified for current US listings. Additional supplier information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH



## SECTION 12 ECOLOGICAL INFORMATION

| Endpoint          | Result            | Organism     | Duration / method |
|-------------------|-------------------|--------------|-------------------|
| Aquatic toxicity  | No data available | Not reported | Not reported      |
| Other ecotoxicity | Not reported      | Not reported | Not reported      |

|                                           |                                                                                                 |
|-------------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>12.2 Persistence and degradability</b> | No data available                                                                               |
| <b>12.3 Bioaccumulative potential</b>     | No data available                                                                               |
| <b>12.4 Mobility in soil</b>              | No data available                                                                               |
| <b>12.5 Other adverse effects</b>         | No data available PBT/vPvB: No data available Endocrine-disrupting properties: not established. |

## SECTION 13 DISPOSAL CONSIDERATIONS

|                                     |                                                                                                                                |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>13.1 Waste treatment methods</b> | Consult state, local or national regulations for proper disposal. Hand over to authorised disposal company as hazardous waste. |
| <b>Contaminated packaging</b>       | Disposal must be made according to official regulations.                                                                       |
| <b>Disposal precautions</b>         | Product-specific waste classification and applicable jurisdiction requirements must be verified.                               |

## SECTION 14 TRANSPORT INFORMATION

| Information           | ADR/RID                         | IMDG                            | IATA/ICAO                       | Other                |
|-----------------------|---------------------------------|---------------------------------|---------------------------------|----------------------|
| UN number             | Not specified in source         | Not specified in source         | Not specified in source         | US DOT: not verified |
| Proper shipping name  | Not dangerous goods             | Not dangerous goods             | Not dangerous goods             | US DOT: not verified |
| Hazard class          | Not specified in source         | Not specified in source         | Not specified in source         | US DOT: not verified |
| Packing group         | Not specified in source         | Not specified in source         | Not specified in source         | US DOT: not verified |
| Environmental hazards | Not specified in source         | Not specified in source         | Not specified in source         | US DOT: not verified |
| Special precautions   | No special precautions required | No special precautions required | No special precautions required | US DOT: not verified |

**14.7 Maritime transport in bulk:** Not determined. Source transport information must be reviewed for the actual shipment and current mode-specific rules.

## SECTION 15 REGULATORY INFORMATION

|                                          |                                                                                                                                               |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>15.1 Product-specific regulations</b> | United States: OSHA HCS review pending. European Union: CLP and REACH Annex II review pending. This draft is not a declaration of compliance. |
| <b>Chemical inventories</b>              | TSCA, REACH registration and destination-market inventories: not verified.                                                                    |



|                                 |                                                            |
|---------------------------------|------------------------------------------------------------|
| Restricted substance status     | SVHC, restrictions and authorization status: not verified. |
| 15.2 Chemical safety assessment | Not performed or not supplied by Comora.                   |

## SECTION 16 OTHER INFORMATION

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Preparation / revision date | 2026-10-02 (draft preparation; not an effective issue date)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Version / prepared by       | 0.1 - preparer to be designated by Comora                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Approved by                 | Pending verification by Comora before issue.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Revision summary            | Initial source-based review draft. Catalog and source product names use different wording. Confirm synonym equivalence, stereochemistry and salt/solvate state before applying source safety data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| References / abbreviations  | BLD Pharmatech: Safety Data Sheet BD627832 (US); revision 11/10/2025; accessed 2026-10-02. <a href="https://file.bldpharm.com/static/upload/prosds/bldsds-us/628/SDS-BD627832.pdf">https://file.bldpharm.com/static/upload/prosds/bldsds-us/628/SDS-BD627832.pdf</a><br>BLD Pharmatech: Safety Data Sheet BD627832 (EU); revision 11/10/2025; accessed 2026-10-02. <a href="https://file.bldpharm.com/static/upload/prosds/bldsds-ger/628/SDS-BD627832.pdf">https://file.bldpharm.com/static/upload/prosds/bldsds-ger/628/SDS-BD627832.pdf</a><br>Identity cross-check only: <a href="https://pubchem.ncbi.nlm.nih.gov/compound/16220282">https://pubchem.ncbi.nlm.nih.gov/compound/16220282</a> ; accessed 2026-10-02. |

### Disclaimer

Unapproved technical draft. Supplier information relates to the referenced supplier product and is not proof of equivalence to the material supplied by Tianjin Comora. A qualified person must verify identity, composition, classification, handling measures, transport, company contacts and destination-market requirements before issue. Missing information does not mean absence of hazard. Do not use this draft as a release document.

### Template reference

Sixteen-section format retained. OSHA HCS, EU CLP and REACH review is required before issue. Abbreviations: GHS, Globally Harmonized System; ADR/RID, European road/rail transport; IMDG, maritime transport; IATA, air transport; PBT/vPvB, persistence and bioaccumulation criteria.