chemsec

CHEMSCORE

Company name: **Shin-Etsu**

Final grade: **C- (from A+ to D-)** Total score: **15 points (out of 48)**

Introduction:

ChemScore is an initiative from the NGO ChemSec that aims to capture and rank the world's largest chemical companies' efforts to reduce their production of toxic chemicals as well as to boost investments in safer, greener alternatives. The world's largest global stock-listed chemical companies are ranked in four separate categories. The 2023 ranking marks the fourth iteration of ChemScore.

1. Hazardous product portfolio:

Category rationale: Hazardous chemicals have severe negative implications on human health, pollute the environment and create loss of biodiversity. The production of hazardous chemicals is a strong indicator of exposure to financial risks due to regulatory measures or potential future litigations connected to workers' health, consumer exposure, accidents and spills, as well as customers' needs for non-toxic or low-toxic products. A product portfolio with a low hazard profile is considerably less susceptible to all of these issues. This category assesses each company's total production of hazardous chemicals weighted against the company's total revenue. Lower production of hazardous chemicals renders a higher category score. Note: The total revenue of each company is used for weighting the score, even if some companies have business units that are not related to chemicals.

What chemical data is included?
All information in ChemScore builds on information in the public domain such as the production of industrial chemicals in the EU and US, including the production of all the companies' respective subsidiaries on these continents. EU production data comes from the European Chemicals Agency (ECHA), and US data from the US EPA Chemical Data Reporting under TSCA. In this context, "production" refers to the number of individual chemicals – not the volume.

What is not included?

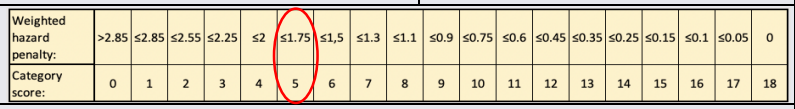
- **The production of hazardous chemicals outside the EU and US, since they cannot be obtained from public sources unless they have been voluntarily shared in public by the company itself.**
- **The production of pharmaceuticals. Since this sector is treated as a separate sector by investors, we have not included it in ChemScore.**
- **Information about the specific production volumes (tonnes/year) and revenue for each hazardous substance, since this data is not publicly available.**

Final Score:
Each hazardous chemical in a company portfolio is counted and multiplied by its hazard mark, adding up to a total hazard mark. This number is then divided by the company's revenue in billion USD, resulting in a weighted hazard penalty, which determines the category score. It is necessary to balance different companies' global production patterns (in the EU or US, where data is publicly available, vs. the rest of the world) to achieve a fair ranking. Hence, a revenue multiplier is applied, based on the share of production (0-100 per cent) in the EU/US, as indicated in the company's financial report. This means that the higher the share of known chemical production, the more favourable the multiplier. Any chemical producer that is willing to publicly share information with us about its full production outside the EU and US (criteria 3.6) is encouraged to do so and will also benefit by having the known production set to 100% in the calculation below, hence enabling maximising of the category score.

Changes in 2023 to these criteria are:

- **For category 1, we included the possibility to claim and provide verification of "Intermediate use only", "Monomer use only" and the use of "non-classified as CMR category 1" in tab "4. Category 1".**

Total maximum score in this category:	**18**
Company's score in this category:	**2**

Criteria:	Hazard marks:	Points awarded:	Source:	Rationale for inclusion of criteria:	How we judged the fulfilment of the criteria:	Result:
Number of SIN List chemicals, POPs, PICs and HHP substances produced	1 mark per chemical	N/A See calculation below	ChemSec SIN Producers	The SIN List is a list of very hazardous chemicals used in a wide variety of products and manufacturing processes around the globe. The SIN List is developed by non-profit ChemSec, in close collaboration with scientists and technical experts. The list is based on credible, publicly available information from existing databases and scientific studies. Inclusion on the SIN List is based on the same criteria as the EU's legislative framework for chemicals — REACH. Therefore, a substance being put on the SIN List is a strong signal that it will be placed on the REACH Candidate List, facing strict regulation in the EU. As an additional dimension, the production of POPs (Persistent Organic Pollutants) listed in the Stockholm Convention, PIC (Prior Informed Consent) substances listed in the Rotterdam Convention, and Highly Hazardous Pesticides, HHP, as identified by the Pesticide Action Network, have been included.	ChemSec keeps a record of all producers of SIN List chemicals in a publicly available database, tailored for investors, called the SIN Producers List. It lists the total number of SIN List chemicals produced by each chemical company, including subsidiaries. The legal status of the chemical can also be found in this database, visualising the steps towards a ban: the EU REACH Candidate List and – one step further – the REACH Authorisation List. The information used comes from registration dossiers submitted to the European Chemicals Agency (ECHA) and Chemical Data Reporting (CDR) from the US EPA. POPs, PICs and HHPs (if not already covered by the SIN List) have been included in the SIN Producers list as well, under a separate appendix.	10
Number of EU REACH Candidate List chemicals produced	1 additional mark per chemical	N/A See calculation below	ChemSec SIN Producers	REACH, the EU's legislative framework for chemicals, is in many respects the leading chemicals legislation in the world. The REACH Candidate List is the first step towards strict regulation of particularly hazardous substances, in legal terms called Substances of Very High Concern (SVHCs). When a chemical is included on the Candidate List, it triggers information requirements in the whole supply chain, as well as the "consumers' right to know" principle. It is also the first step towards Authorisation.	ChemSec keeps a record of all producers of SIN List chemicals in a publicly available database, tailored for investors, called the SIN Producers List. The SIN List chemicals that are on the REACH Candidate List are tagged and will add 1 additional hazard mark per substance.	5
Number of chemicals produced on the EU's REACH Authorisation List and/or POP substances	2 additional marks per chemical	N/A See calculation below	ChemSec SIN List & ChemSec SIN Producers	A substance on the EU REACH Authorisation List is prohibited within the EU unless a specific authorisation has been granted by the EU Commission. Applying for authorisation is time-consuming and costly and the grant is time-limited. Without an authorisation, the chemical has to be phased out by the stated sunset date. POP substances are banned globally unless specifically exempted in the Stockholm Convention.	ChemSec keeps a record of all producers of SIN List chemicals in a publicly available database tailored for investors called the SIN Producers List. SIN List chemicals that are POPs or listed on the REACH Authorisation List are tagged individually and will add 2 additional hazard marks to the total hazard mark per substance.	1
Number of persistent chemicals produced on the SIN List and POP substances	2 additional marks per chemical	N/A See calculation below	ChemSec SIN List & ChemSec SIN Producers	Persistent chemicals are particularly problematic since they do not break down. Instead, they accumulate in humans and/or the environment. Because of this, persistent chemicals should be of extra concern for investors. Substances not considered a problem today might become huge liabilities in the future with regard to clean-up and compensation costs as well as legal responsibilities.	Information on persistent chemicals that meet the REACH criteria can be found on the SIN List. This is cross-referenced with the SIN Producers List to find producers of such chemicals. Further, POP substances are per definition persistent and are also counted here. Persistent substances will add 2 additional hazard marks per substance.	5
Total hazard mark				The total number of hazardous chemicals times (x) their individual hazard mark renders a total hazard mark for each producer.		27
Company's total revenue in billion USD				Revenue is an indication of the size of a chemical producer.		16
Weighted hazard penalty				To get a fair weighting of the hazardous chemicals production, the total hazard mark is divided by the company's revenue in billion USD. The result determines the category score.	[Total hazard marks]/[Revenue]=[Weighted hazard penalty]	1,71
Category score						5
Percentage of EU/US revenue				Since this is a global benchmark, it is important to balance the uncertainty about chemical production taking place outside of the EU/US markets where legislation is often less strict and data is not publicly available. The "Category score" from above is therefore multiplied by the share of production (0-100 per cent) in the EU/US, as indicated in the company's annual report. Higher EU/US production means less uncertainty about the total production of hazardous chemicals. We therefore factor in the percentage of EU/US revenue as a multiplier. For example, 100 per cent EU/US production means that the company gets the full category score from the table above, while 20 per cent EU/US production means that it gets only 20 per cent of the category score. However, please note that this number could be set to 100 per cent by providing a response to criteria 3.6 below.		45%
Final category 1 score				[Category score]*[Percentage EU/US revenue]		**2**

2. Development of safer chemicals and circular products

Category rationale: Better and less toxic products are needed to protect human health, reduce carbon dioxide emissions, as well as to stop pollution and loss of biodiversity. A circular economy can only be truly sustainable when products do not contain hazardous ingredients. Therefore, chemical companies need to have full control of their product ingredients and know the answers to how their products serve society and a more sustainable world. Companies need to walk their talk by ensuring safer products right from the design stage and actively market them. The approach to these issues is paramount to create a foundation for healthy profits in the future and to avoid costly last-minute substitutions forced by regulation. To transition from the extraction of resources and depletion of natural capital to a circular economy, the chemical industry needs to make sure it can deliver safer alternatives and make increased use of renewable resources, while also reducing its waste generation.

Minor changes made in ChemScore 2022:

- Only actively advertised safer alternatives independently evaluated by third-party platforms are counted (criteria 2.5)
- Clarifying the criteria for circular products and biobased & renewable feedstocks (criteria 2.6 and 2.7)

Total maximum score in this category:	**12**
Company's score in this category:	**6**

Criteria:	Maximum points:	Source:	Rationale for inclusion of criteria:	How we judged fulfilment of the criteria:	Result:
2.1. The company has a method in place to screen and assess the environmental sustainability of its products	1 point	Example of search words used: "product stewardship", "energy", "water", "resource", "hazardous", "SVHC", "product assessment"	Large chemical companies have a huge variety of products for various sectors. They therefore need to have an overview of which products contribute to a sustainable future and which products still pose a threat to human health and the environment. Knowledge of its product portfolio is the starting point for any company aiming to improve its environmental sustainability and reduce its use of hazardous chemicals.	We have looked for any indication that the company has a methodology to assess its product portfolio with regard to its general sustainability, including water, energy and use of resources. And if the company assesses the use of hazardous substances or has a product stewardship program. Any mention of such a systematic process is enough to score a point.	1
2.2. The assessment method includes the intrinsic hazards of the company's product portfolio	2 points	Example of search words used: "product stewardship", "SVHC", "GreenScreen"	In order to be sustainable, a chemical company needs to acknowledge that its core products – the chemicals – can pose severe threats due to their toxic properties. It is therefore essential that companies include the toxicity of ingredients in their definition of sustainability. Internal methods, or external tools like GreenScreen, could provide an evaluation for chemicals based on intrinsic hazards.	If the company has an outspoken methodology to assess the intrinsic properties of its products, it will be rewarded. Any indication or mention that hazard makes up part of the assessment is enough to score. If a company has been found to make systematic use of GreenScreen or other similar assessment tools through annual/sustainability reports or websites, points are also rewarded.	2
2.3. The company has a strict hazard-based and public committment to not develop or market new chemicals or products with SVHC properties.	2 points	Example of search words used: "product stewardship", "hazardous", "SVHC", "substitution"	Hazardous chemicals need to be eliminated from products in order to move towards a safer product portfolio and a circular economy. Once toxicity is part of a company screening, it is relevant to know what the company defines as toxic. For ChemScore, we require newly designed products to explicitly exclude SVHC properties: persistence (PBT/PMT/POP), endocrine-disrupting (EDC) and carcinogenic, mutagenic and reprotoxic (CMR 1A/1B). These toxic properties were chosen to reflect the current regulatory landscape and uncertainties regarding future bans and litigations.	We searched the company website and its annual/sustainability report to see if it promises not to put new products with SVHC properties on the market. Any indication of such cut-off criteria is enough to score. Many known hazardous substances are not banned. Therefore, general statements that the company "complies with regulation", "avoids", "minimises" etc. are not sufficiently strong to be rewarded. Nor is the banning of only one or a few of such properties enough. All SVHC properties need to be included.	0
2.4. Active marketing of self-proclaimed greener, eco-friendlier and more sustainable products	1 point	Example of search words used: "green products", "alternatives", "eco-friendly", "energy-efficient", "water-efficient", "circular"	Even if screening of product portfolios is the first step towards sustainability, manufacturing and active marketing of greener or safer products need to follow. Some companies are sincerely transforming their product portfolio, while others just showcase examples or pilot products. Active marketing of sustainable products, such as those using less resources, energy, water and non-hazardous chemicals, is a hallmark of a forward-looking chemical company. And as regulation gets stricter and stricter, this is where future profits will lie.	Does the company have a section on its website or in its annual/sustainability report where it actively pushes for safer or more sustainable products? It must mention environmentally preferred products, more sustainable products, safer or less hazardous products, or use similar phrasings to be rewarded in this category. Statements need to be substantiated by relevant information.	1
2.5. Active marketing of less toxic alternatives, independently evaluated by third-party platforms	1 point	https://marketplace.chemsec.org/	Actively advertising non-toxic chemicals, e.g. safer alternatives, to engage customers is an indication that a company has verified safer alternatives. ChemSec's Marketplace – the only existing online platform of safer alternatives – can be used for this purpose.	ChemSec keeps a record of producers of safer alternatives in a publicly available database called Marketplace. Points will be awarded for any company that has at least one entry on Marketplace or a similar platform with independently evaluated safer alternatives.	0
2.6. Offering of circular end-products or processes, enabling circularity (products of biobased or recycled feedstock is rewarded separately in 2.7 & 2.8)	1 point, + 1 additional point for non haz.	Example of search words used: "circular", "recycling"	Developing circular products and processes, or products that can enable circularity, requires in-depth know-how and a lot of resources. Companies that already have a fully recyclable product in their portfolio, or a process to get product resources back, should be encouraged to steer innovation further in the same direction.	Does the company offer a product with a circular end-of-life concept or a product that enables its customers to design circular products? If those products are self-proclaimed not to contain hazardous chemicals, one additional point is rewarded.	0
2.7. Using biobased/renewable resources (as input to their production/processes)	1 point	Example of search words used: "bio-based", "renewable", "bio-mass"	Generally speaking, using biobased and/or renewable resources is better than fossil-based. However, to avoid other environmental and social problems, it is important that the feedstock does not compete with the production of food, or involve non-sustainable farming practices or land use.	Does the company mention on its website or in its annual/sustainability report that it uses biobased or renewable feedstocks? It must also be clear that the feedstock does not compete with food production or require extra land use.	1
2.8 Using or producing recycled feedstock	1 point	Example of search words used: "recycling", "recyclate"	Reusing materials and resources is imperative to increase resource efficiency and transition towards a circular economy. However, to avoid other environmental problems, it is important that the recycled materials are sourced and treated in a sustainable way and make a positive contribution to the circular economy. Only mature recycling practices, with a proven track record are rewarded.	Does the company mention on its website or in its annual/sustainability report that it produces or uses recycled feedstocks? Only proven recycling practices used at scale, such as mechanical recycling, are rewarded. It should also be mentioned that the produced recycled product does not contain any hazardous substances. Chemical recycling is not mature enough and is associated with high energy use and misleading use of the mass-balance approach, and is therefore currently not rewarded.	0
2.9. Reduction of generated waste	1 point	Example of search words used: "waste"	The reduction of generated waste can be seen as an indicator of a higher process efficiency and atom economy. Indirectly, it could serve as a measure of the efficiency of production (industrial symbiosis).	We compare the last two consecutive years for changes in waste and hazardous waste production. To be rewarded a point, the amount of (hazardous) waste generated must have decreased. Where possible, the generated waste/production unit is reported. If not available, the total waste generated must be reported.	1

3. Management & Transparency

Category rationale: A transparent and future-oriented chemical strategy is fundamental for a chemicals company, especially for those with a large share of hazardous substances in production. A transparent approach to product ingredients as well as public commitments to phase out certain substances are good indications of the direction in which a company is moving.

Changes in 2023 to these criteria are:

- **For criterion 3.1, we removed the reference to Safe and Sustainable by Design (SSbD) and rephrased it to inherently safe and sustainable products.**
- **For criterion 3.3, we now ask the companies to report on revenue connected to the aggregated production of SVHCs to receive a point.**

Total maximum score in this category:	**12**
Company's score in this category:	**2**

Criteria:	Maximum points:	Source:	Rationale for inclusion of criteria:	How we judged fulfilment of the criteria:	Result:
3.1. Company only produces products that are considered inherently safe and sustainable	2 points	Example of search words used: "Safe and sustainable"	The ultimate goal for a sustainable chemicals company is to have a product portfolio with only inherently safe and sustainable products. For this to be achieved, management and product development will have to follow a strict path towards sustainability accompanied by a public commitment.	Does the company have a public commitment that it will only produce products which are inherently safe and sustainable? We consider "safe" as any substance not meeting these classification criteria: - CMR, Categories 1 and 2 - PBTs, vPvBs, PMTs, vPvMs - Endocrine-disrupting chemicals - Respiratory sensitizers, Category 1 - Skin sensitizers, Category 1 - STOT, Categories 1, 2 (RE and SE) and 3 (SE) - Acute Health Hazards, Category 1 and 2 - Acute Aquatic Toxicity Category 1 - Chronic Environmental Hazards, Categories 1-4 - Ozone Depleting Compounds and to be considered as "sustainable" it must also include an assessment covering at least CO2 emissions.	0
3.2. Company has a public strategy with (timed) phase-out plans for existing hazardous chemicals beyond regulatory compliance	1 point, + 1 additional point for timed plans	Example of search words used: "phase-out", "hazard", "product stewardship", "roadmap"	In order to become a company that only produces non-hazardous substances, the company needs to embrace a clear strategy with (timed) phase-out plans for hazardous chemicals. Simply following regulatory compliance is not enough, as many hazardous chemicals are not regulated.	Does the company have a public commitment that it intends to phase out the existing hazardous products and replace them with safer alternatives? If the plan is timed, one additional point is rewarded. Hazardous substances is a broad concept. However, in ChemScore as a minimum, hazardous substances covered by the SIN List, SVHC criteria, PIC, POP and HHPs must be included in the phase-out strategy to be rewarded.	0
3.3 The company reports on the revenue connected to substances meeting the SVHC criteria.	1 point	Example of search words used: "SVHC"	It is important to be transparent about how much hazardous chemicals are being produced. If the company discloses the volumes produced/used and/or revenue connected to the production of hazardous chemicals it would give a much better understanding for investors to be able to judge the financial risks connected to the production and use of such chemicals. Even if data is not disclosed on a substance level, which would be preferred, disclosure on an aggregated property level can and should be done.	Does the company publicly report on the aggregated revenue connected to the sales of products containing Substances of Very High Concern (SVHCs)?	0
3.4. Code of Ethics or Code of Conduct and a Supplier Code of Conduct	1 point	Example of search words used: "code of ethics", "code of conduct", "supplier code of conduct", "policy"	The existence of a Code of Conduct or Code of Ethics gives a hint of the company's approach to management. The document should provide guidance to all employees on how to conduct business in an ethical and responsible way. Additionally, every company should have a Supplier Code of Conduct, which it also requires its suppliers to follow. The document should provide guidance to all the company's suppliers on how they should conduct their business in an ethical and responsible way.	There must be a document or references to ethics codes that all employees must adhere to. Additionally, a document or reference to a Supplier Code of Conduct, or a similar standard, is necessary. Only if documents covering both employees and suppliers are present, a point is rewarded.	1
3.5. Respond to our request for feedback	1 point	Direct communication with the company	Being willing to participate in a dialogue with civil society regarding the company's chemicals management and product portfolio should be encouraged.	We expect the company to respond in a constructive way, either via email or through a (online) meeting. We reward upfront information as well as feedback on the company draft score. Just a note stating that the company has received our communications is not enough.	1
3.6. Public information on global hazardous chemicals production	2 points	Example of search words used: "transparency", "global production", "due diligence", "SVHC"	As there is no public information available about hazardous chemicals produced outside of the EU/US, we encourage companies to publicly disclose their full production outside of the EU/US for transparency reasons. This will naturally also affect the "Percentage of EU/US revenue" in Category 1 favourably by setting it to 100 per cent.	Does the company either provide public information about its full production of hazardous chemicals or provide a public statement that the non-EU/US production includes no other chemicals than the production within those markets? If provided, points are awarded.	0
3.7. Internal circular economy policy in place	1 point	Example of search words used: "circular", "circular economy", "circularity". Source inlcudes also LinkedIn.	In order to make global chemical companies circular, the culture and strategy of the company must change from within. This can be done through policies or transformation programmes. Employees who are aware of the concept of circular economy are more likely to apply its principles in daily business practice.	Does the company have a public commitment regarding a circular economy, or does it have a department, dedicated website or annual report section on its position or contribution to a circular economy? At least one of these preconditions must be in place for a point to be rewarded.	0
3.8. The company has key performance indicators (KPIs) covering circular economy targets	2 points	Example of search words used: "circular", "circular economy", "circularity", "KPI", "SMART"	Companies that are willing to develop and apply circular economy metrics to their portfolio and processes show an interest in a circular transformation. Any KPIs should be SMART: 1. Specific (= clearly defined) 2. Measurable (= expressed with a number) 3. Achievable (= ambitious but not unrealistic) 4. Relevant (= circular economy-related) 5. Time-bound (= there is a deadline to achieve it)	Assessment of ambition and transparency of developing and applying circular economy metrics to the company's products and processes, with concrete key performance indicators (KPI) covering the five SMART targets. All five must be in place to earn two points. If only four are present, one point is rewarded. Please note: As a minimum, targets must be considered both ambitious AND relevant, else it will not be rewarded at all.	0

4. Impact & Controversies

Category rationale: A good company has to ensure that it meets the requirements of international and national environmental legislation, and protects occupational health and the right of communities to live in a healthy and sustainable environment. In case of a lawsuit, a company should demonstrate its ability to meet the decision of the court, ensure proper rehabilitation of the contaminated sites and provide compensation to affected communities. It should also demonstrate improvements in its chemicals management.

Changes in 2023 to these criteria are:

- **For criterion 4.1, the reporting period has changed to five (5) years instead of ten (10) years. Furthermore, the score is now rewarded in a more gradual way with one-point steps instead of three points to better distinguish the companies.**

Total maximum score in this category:	**6**
Company's score in this category:	**5**

Criteria:	Maximum points:	Source:	Rationale for inclusion of criteria:	How we judged fulfilment of the criteria:	Result:
4.1. Actual track record of accidents and controversies	6 points	Information has been provided by the violation tracker project of Good Jobs First. Furthermore, information about lawsuits associated with environmental pollution, toxic spills, land and/or water contamination and human rights violations have been found through internet research by local NGO partners and/or affected communities. Example search words used: toxic spills, environmental degradation, water pollution, air emissions, hazardous waste, occupational health, explosions, fire, community rights, human rights	A company has to ensure that it meets the requirements of international and national environmental legislation, and protects occupational health and the right of communities to live in a healthy and sustainable environment. In case of a lawsuit, a company should demonstrate its ability to meet the decision of the court, ensure proper rehabilitation of the contaminated sites and provide compensation to affected communities.	ChemSec sums up the total fines connected to environmental pollution, toxic spills, land and/or water contamination, and/or human rights violations caused by the company and its subsidiaries during the last 5 years (2018-2022). In addition to this, ChemSec investigates if any accidents have resulted in fatalities or had a very large impact on the environment. - Fatalities and accidents/spills with a very large impact on the environment will result in zero (0) points rewarded. Accidents with a small or medium impact and/or personal injuries will also result in a deduction of points. If no such occasions were discovered, points in this category are rewarded based on the aggregated sum of fines during the past five years. - Over 5 million US$ - 0 points - Between 3,5 and 4,99 million US$ - 1 point - Between 2,0 and 3,49 million US$ - 2 points - Between 1,0 and 1,99 million US$ - 3 points - Between 0,5 and 0,99 million US$ - 4 points - Less than 0,49 million US$ - 5 points - No fines at all - 6 points	5