SAC/TC 280

China Petroleum Products and Lubricants StandardizationTechnical Committee

Overview of the Group Standard: Pyrolysis Oil from Waste Plastics

Sinopec Research Institute of Petroleum Processing Co., Ltd.

October 29, 2026



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1 Group Standard Publication

ICS 75.140
CCS E 49

T/CSPCI

团　　体　　标　　准

T/CSPCI 00059—2026

废塑料热裂解油

Pyrolysis oil from waste plastics

2026－06－29 发布　　2026－06－29 实施

中国石油化工信息学会　　发 布

本文件主要起草单位：中石化石油化工科学研究院有限公司、中国石油和化学工业联合会、中国环境科学研究院、中国石油天然气股份有限公司石油化工研究院、中海油化工与新材料科学研究院（北京）有限公司、中国石油化工股份有限公司、中国石油天然气股份有限公司炼油化工和新材料分公司、中海石油炼化有限责任公司、中石化循环利用科技有限公司、中国石化塔河炼化有限责任公司、中国循环经济协会、北京航天动力研究所、济南恒誉环保科技股份有限公司、浙江科茂环境科技有限公司、嘉禾聚能（北京）科技有限公司、大连兴环能源科技有限公司、江门市成鑫环保有限公司、巴斯夫（中国）有限公司、优欧辟环球优品工艺技术有限公司、埃克森美孚化工商务（上海）有限公司、壳牌（中国）有限公司。

本文件主要起草人：李明丰、赵晓敏、刘倩、庞广廉、满娟、周奇、侯研博、杨鹤、张哲民、葛少辉、张海洪、聂紫薇、蔡志强、王攀飞、蔡烈奎、雷俊伟、吴冲冲、王震、史新艳、赵凯、赵杰、陈学峰、王勇、吴梅、徐凯、邵劲、张彦军、牛晓璐、魏思凯、姜朝兴、孙承林、李开颜、单雪菲、陈曦、郑莉霞、杜闰萍、张海敏、宋佳、孙宝林、李恒强、陈宗达、邹源、卢静、侯聪。

1 Group Standard Publication

Standard Number	Standard Title	Lead Drafting Organization
T/CSPCI 00012—2024	Determination of Hydrocarbon Composition in Pyrolysis Oil from Waste Plastics — Gas Chromatography–Mass Spectrometry	Sinopec Research Institute of Petroleum Processing Co., Ltd
T/CSPCI 00025—2025	Determination of Metals in Pyrolysis Oil from Waste Plastics by Inductively Coupled Plasma Optical Emission Spectrometry	Sinopec Research Institute of Petroleum Processing Co., Ltd
T/CSPCI 00026—2025	Determination of Silicon Content in Pyrolysis Oil from Waste Plastics — Monochromatic Wavelength Dispersive X-ray Fluorescence Spectrometry	Sinopec Research Institute of Petroleum Processing Co., Ltd
T/CSPCI 00027—2025	Determination of Chlorine Content in Pyrolysis Oil from Waste Plastics — Monochromatic Wavelength Dispersive X-ray Fluorescence Spectrometry	Sinopec Research Institute of Petroleum Processing Co., Ltd
T/CSPCI 00028—2025	Determination of Chlorine Content in Pyrolysis Oil from Waste Plastics — Microcoulometry	Sinopec Research Institute of Petroleum Processing Co., Ltd
T/CSPCI 00029—2025	Determination of Oxygen Content in Pyrolysis Oil from Waste Plastics — Reductive Pyrolysis	Sinopec Research Institute of Petroleum Processing Co., Ltd
T/CSPCI 00043—2026	Determination of Fluorine, Chlorine, and Bromine Contents in Pyrolysis Oil from Waste Plastics: Combustion Ion Chromatography	Petrochemical Research Institute, PetroChina Company Limited

A series of supporting group standards for test methods has also been developed

1 Organization Responsible for Group Standards

Standards Division, China Society for Petrochemical Information:



中国石油化工信息学会文件

中国石化信学〔2021〕4号

关于设立中国石油化工信息学会标准处的通知

各位理事、各位会员单位：

中国石油化工信息学会于2021年4月27日以通讯方式召开第五届理事会第六次会议，审议通过了标准处设立议题。标准处于2021年5月10日正式成立，依托中国石化石油化工科学研究院燃料技术及润滑剂标准检测研究室开展工作，中国石油化工信息学会授权全国石油产品和润滑剂标准化技术委员会石油燃料和润滑剂分技术委员会（SAC/TC280/SC1）开展团体标准化工作。

特此通知。

中国石油化工信息学会

2021年6月1日

中国石油化工信息学会　　2021年6月1日印发



中国石油化工信息学会文件

中国石化信学〔2021〕3号

关于中国石油化工信息学会授权SAC/TC280/SC1的通知

全国石油产品和润滑剂标准化技术委员会石油燃料和润滑剂分技术委员会：

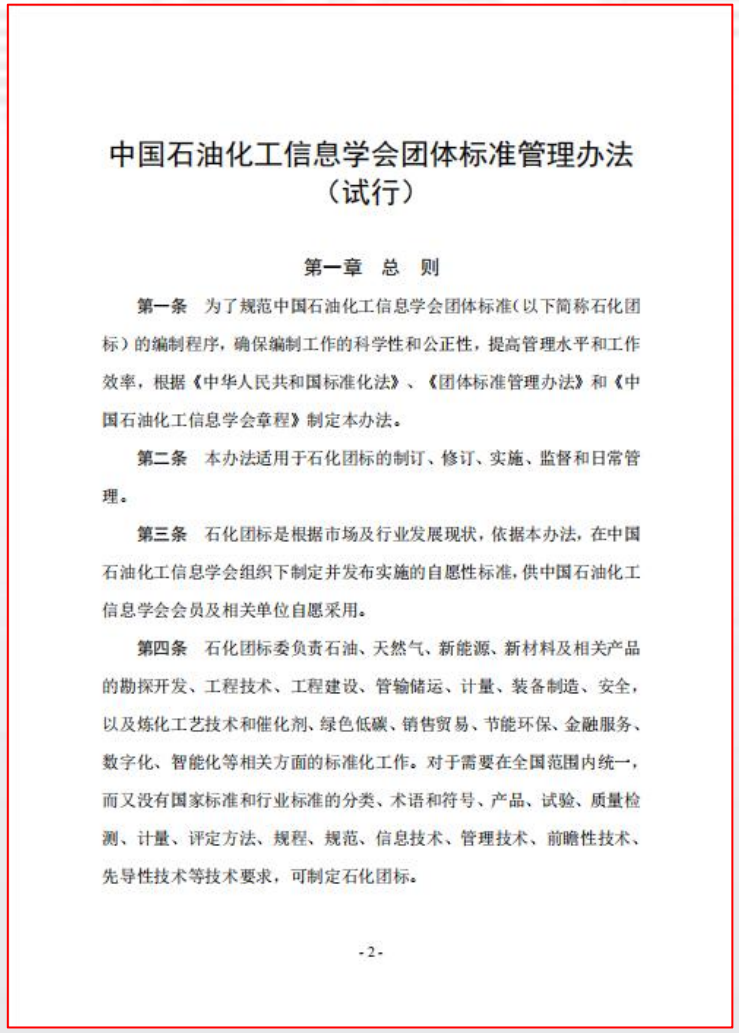
兹授权全国石油产品和润滑剂标准化技术委员会石油燃料和润滑剂分技术委员会（SAC/TC280/SC1）开展学会团体标准化工作。

特此通知。

中国石油化工信息学会

2021年6月1日

中国石油化工信息学会　　2021年6月1日印发



中国石油化工信息学会团体标准管理办法（试行）

第一章　总　则

第一条　为了规范中国石油化工信息学会团体标准（以下简称石化团标）的编制程序，确保编制工作的科学性和公正性，提高管理水平和工作效率，根据《中华人民共和国标准化法》、《团体标准管理办法》和《中国石油化工信息学会章程》制定本办法。

第二条　本办法适用于石化团标的制订、修订、实施、监督和日常管理。

第三条　石化团标是根据市场及行业发展现状，依据本办法，在中国石油化工信息学会组织下制定并发布实施的自愿性标准，供中国石油化工信息学会会员及相关单位自愿采用。

第四条　石化团标委负责石油、天然气、新能源、新材料及相关产品的勘探开发、工程技术、工程建设、管输储运、计量、装备制造、安全，以及炼化工艺技术和催化剂、绿色低碳、销售贸易、节能环保、金融服务、数字化、智能化等相关方面的标准化工作。对于需要在全国范围内统一，而又没有国家标准和行业标准的分类、术语和符号、产品、试验、质量检测、计量、评定方法、规程、规范、信息技术、管理技术、前瞻性技术、先导性技术等技术要求，可制定石化团标。

-2-

1 Organization Responsible for Group Standards

➢ China Petroleum Products and Lubricants Standardization Technical Committee (SAC/TC 280)

Established with the approval of the Standardization Administration of China (SAC),

the committee coordinates and manages standardization in petroleum products and lubricants nationwide.

➢Establishing and supervising authority:

Standardization Administration of China

➢Secretariat:

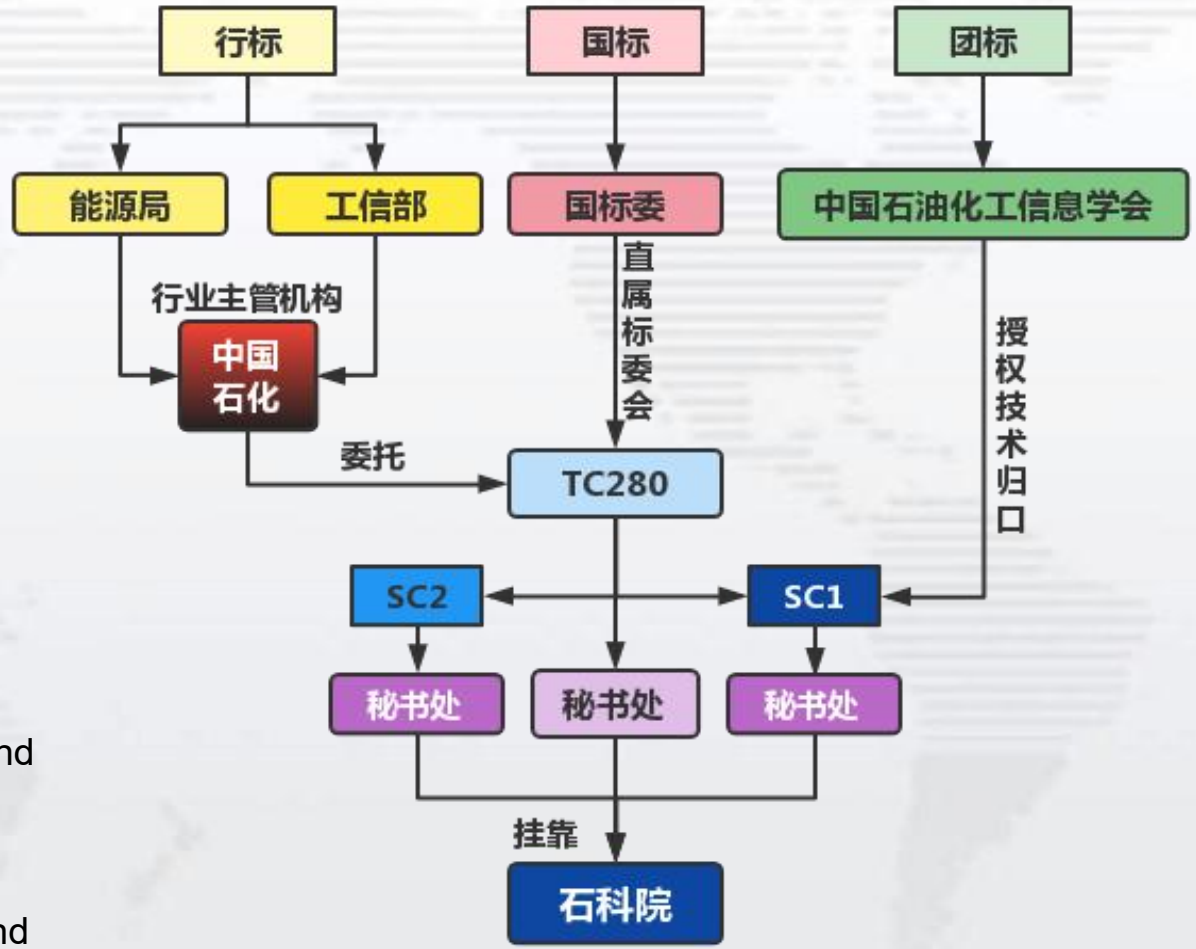
Sinopec Research Institute of Petroleum Processing Co., Ltd.

➢Corresponding ISO technical committee: ISO/TC 28

- As of the end of 2025, TC 280 managed 1,208 national and industry standards

(319 national standards and 889 industry standards).

- Since 2022, 146 group standard projects have been approved and 95 standards published.



1 Organizations Responsible for Group Standards

TC280 draws on existing resources to coordinate the development of national, industry and group standards and maintain a consistent standards system.



- 1 group standard cited in a national standard (the first case in China)
- 7 group standards converted into national standards
- 4 group standards converted into industry standards
- 5 group standards included in the MIIT recommended list

Petrochemical group standards cover petroleum, natural gas, coal, shale oil and gas, renewable energy (wind, solar, tidal, nuclear, etc.), hydrogen, new materials, and related petroleum, chemical and biomass products. They address exploration and development, engineering construction, equipment manufacturing, storage and transportation, product quality, testing, metrology, safety and environmental protection, as well as refining and petrochemical processes, catalysts, chemical looping, green and low-carbon development, trade and sales, financial services, digitalization and intelligent technologies.

National Standardization Development Outline, Section 25: Optimize the supply of standards. Encourage market participants to develop standards, improve the balance between government-issued and market-developed standards, and substantially increase the share developed by the market. Expand group standards, implement a quality improvement program and demonstrate their application. Encourage technically advanced enterprises to contribute and guide social organizations in developing original, high-quality standards.

2 Need for the Group Standard

Standards for waste plastic pyrolysis oil enable its lawful circulation as a feedstock for secondary processing in refineries

- **HJ 364-2022"Technical Specification for Pollution Control of Plastic Waste"**

8.3 化学再生要求

8.3.5 废塑料化学再生产物，应按照 GB 34330 进行鉴别，经鉴别属于固体废物的，应按照固体废物管理并按照 GB 5085.7 进行鉴别，经鉴别属于危险废物的，应按照危险废物管理。

- **GB 34330—2025" Identification Standards for Solid Wastes General Rules"**

6 利用固体废物生产的产物以及环境治理和污染控制过程中产生的物质的鉴别

6.1 市场上存在使用正常原料生产的同类物质，并同时满足以下条件时，不属于固体废物，否则均属于固体废物：

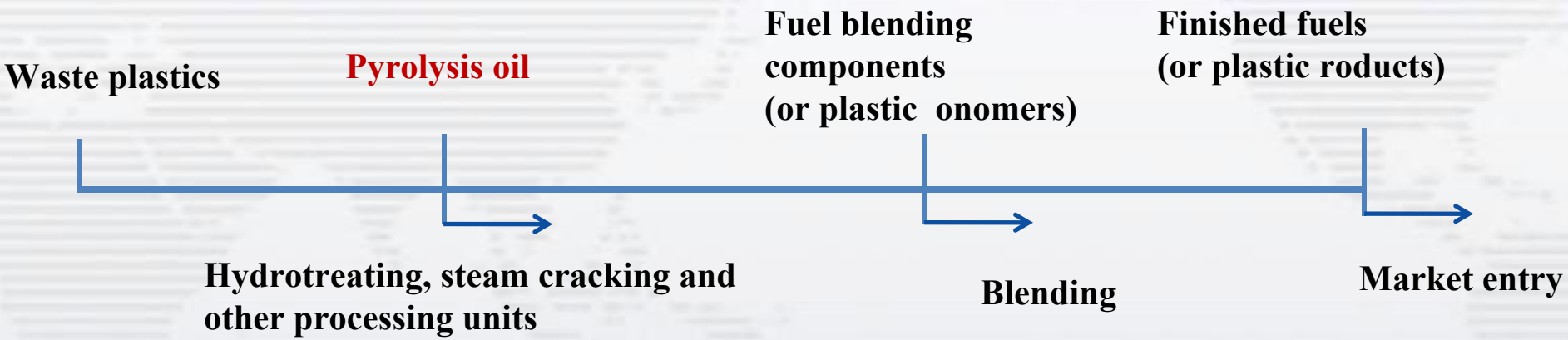
a） 物质组成（有效成分含量和杂质限量）及性能指标符合以下任一国家或行业通行的标准，并按标准规定的用途使用：

1） 针对固体废物利用工艺制定的产品质量标准；

2） 市场上使用正常原料生产的同类物质的质量标准。

2 Need for the Group Standard

Standardize waste plastic pyrolysis oil quality to ensure safe processing and the quality of downstream products



2 Need for the Group Standard

- No product standard for waste plastic pyrolysis oil exists in China or internationally

- International standards related to waste plastics

ISO 15270:2008: Plastics — Guidelines for the Recovery and Recycling of Plastics Waste
ASTM D8577-2025: Standard Guide for Waste Plastic Process Oil Analyses
CEN/TS 16010-2013: Plastics — Recycled Plastics — Sampling Procedures for Testing Plastics Waste and Recyclates
JIS K7392-2009: Waste Plastics — Test Method for Total Bromine Contents

- Chinese standards related to waste plastics

HJ 364-2022: Technical Specification for Pollution Control of Plastic Waste
GB/T 30102-2024: Guidelines for the Recovery and Recycling of Plastics Waste (adopts ISO 15270:2008)
SB/T 11149-2015: Technical Specification for Waste Plastics Recovery and Sorting
GB/T 37821-2019: Technical Specifications for Recycling of Waste Plastics
GB/T 39171-2020: Technical Specification for Waste Plastics Recycling
GB/T 32662-2016: Complete Production Equipment for Converting Waste Rubber and Waste Plastics into Oil by Pyrolysis
GB/T 37547-2019: Classification and Codes of Waste Plastics

3 Contents of the Group Standard



中国石油化工信息学会文件

石化信标〔2022〕4号

关于下达2022年第二批石化团体标准制定项目计划的通知

各有关单位：

经研究，中国石油化工信息学会标准处决定下达《净味沥青》等13项团体标准项目计划，项目计划汇总表见附件。

请各起草单位抓紧落实和实施计划，在计划执行中加强协调，广泛征求意见，按要求完成团体标准制定任务，确保标准质量和水平。

中国石油化工信息学会标准处

2022年05月09日

Lead organization: Sinopec Research Institute of Petroleum Processing

Participating organizations:

China Petroleum and Chemical Industry Federation

Chinese Research Academy of Environmental Sciences

Petrochemical Research Institute, PetroChina

CNOOC Institute of Chemical & Advanced Materials (Beijing) Co., Ltd.

China Petroleum & Chemical Corporation

PetroChina Refining, Chemicals and New Materials Company

CNOOC Oil & Petrochemicals Co., Ltd.

Sinopec Recycling Technology Co., Ltd.

Sinopec Tahe Refining & Chemical Co., Ltd.

China Association of Circular Economy

Beijing Aerospace Propulsion Institute

Niutech Environment Technology Corporation

Zhejiang COMY Environmental Technology Co., Ltd.

Jiahe Juneng (Beijing) Technology Co., Ltd.

Dalian Xinghuan Energy Technology Co., Ltd.

Jiangmen Chengxin Environmental Protection Co., Ltd.

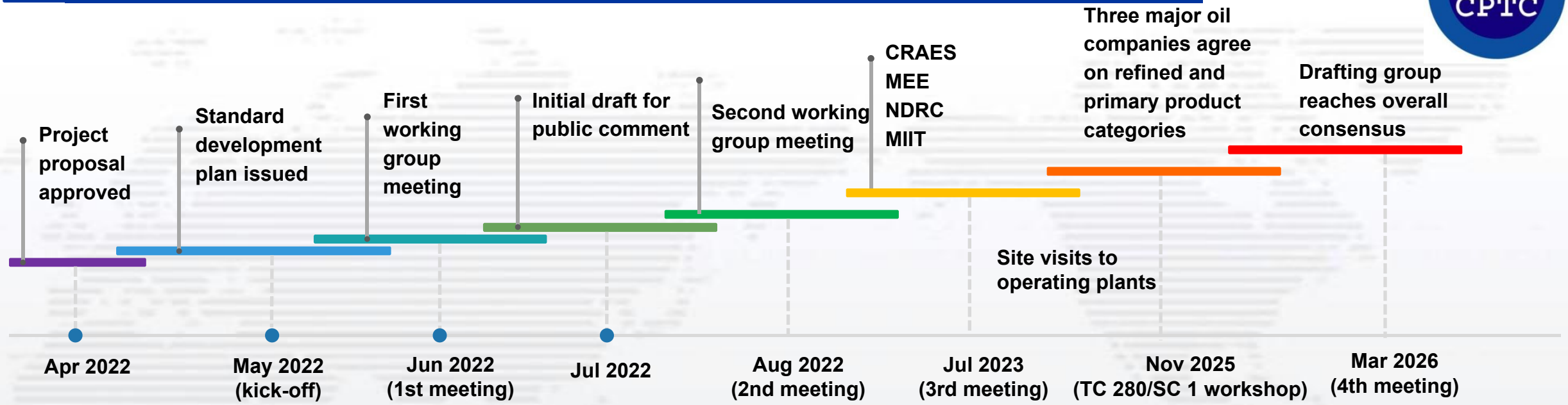
BASF (China) Co., Ltd.

UOP Process Technology Co., Ltd.

ExxonMobil Chemical Commerce (Shanghai) Co., Ltd.

Shell (China) Co., Ltd.

3 Contents of the Group Standard







Scope

This document specifies product classification and labels, technical requirements and test methods, inspection rules, marking, packaging, storage, transportation and safety requirements for pyrolysis oil produced from waste plastics by high-temperature pyrolysis in continuous production equipment.

HJ 364-2022: Technical Specification for Pollution Control of Plastic Waste:

8.3 化学再生要求

8.3.4 废塑料化学再生裂解设施应使用连续生产设备（包含连续进料系统、连续裂解系统和连续出料系统）。

8.3.5 废塑料化学再生产物，应按照 GB 34330 进行鉴别，经鉴别属于固体废物的，应按照固体废物管理并按照 GB 5085.7 进行鉴别，经鉴别属于危险废物的，应按照危险废物管理。

Product classification

This document classifies waste plastic pyrolysis oil into two types according to its intended use: refined product and primary product.

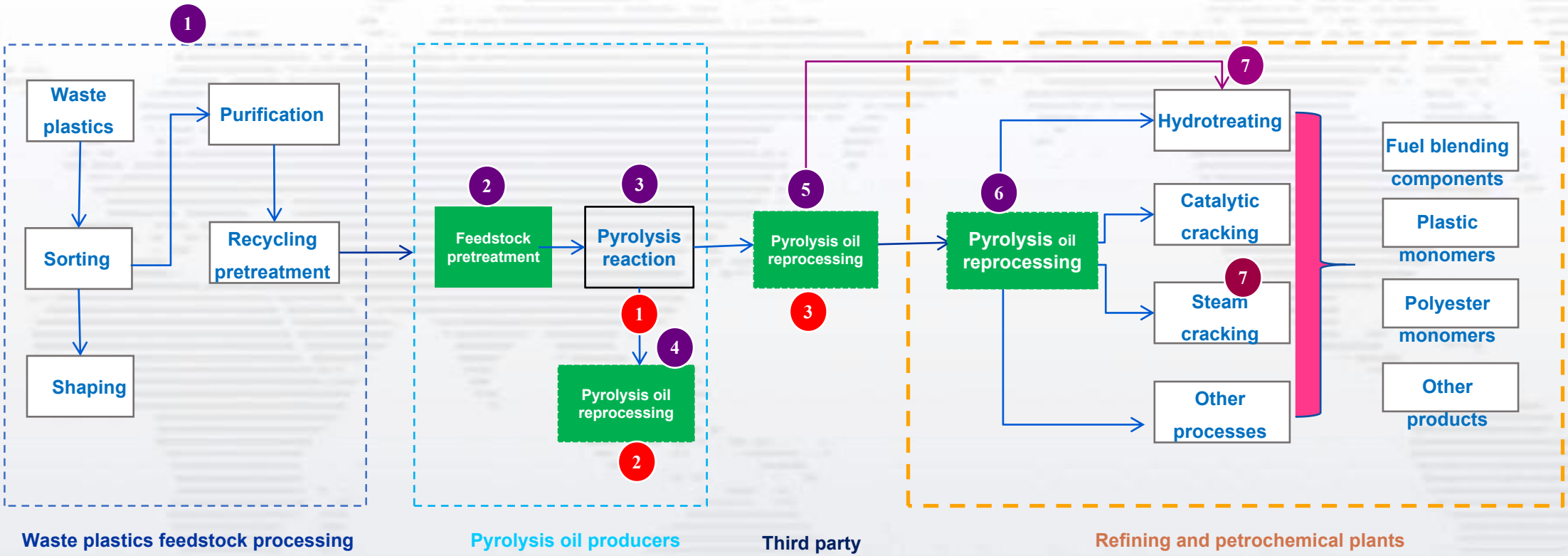
Waste plastic pyrolysis oil (refined product) is suitable as a blending feedstock for steam cracking, hydrotreating, catalytic cracking and delayed coking in petroleum refining.

Waste plastic pyrolysis oil (primary product) is suitable as feedstock for dechlorination pretreatment or for producing refined product.

This classification resolve the mismatch between pyrolysis oil supply and petrochemical users' requirements

3 Group Standard Development: Product Classification

Waste Plastic Pyrolysis Oil Value Chain



Transaction points

Dechlorination points

Optional stages

Principles for setting technical specifications for refined product:

- Primarily based on the processing needs of refining and petrochemical enterprises.
- Consider China's current pyrolysis technology, production practices and testing capabilities.
- Consider feedstock and processing costs. Specifications should regulate the market, phase out outdated capacity and technology, and support industry development.
- Petrochemical enterprises determine blending ratios according to their own operating conditions.

3 Contents of the Group Standard: Product Specifications

Technical Requirements for Waste Plastic Pyrolysis Oil (Refined Product)

No.	Property	Unit	Specification	
			Premium grade	First grade
1	Appearance	-	Report	Report
2	Density (20 °C)	kg/m³	Report	Report
3	Distillation range (initial boiling point, T50, T90, final boiling point)	°C	Report	Report
4	Carbon content (mass fraction)	%	Report	Report
5	Hydrogen content (mass fraction)	%	≥ 12	≥ 12
6	Oxygen content (mass fraction)	%	≤1.0	≤2.0
7	Sulfur content (mass fraction)	%	≤0.5	≤0.5
8	Nitrogen content (mass fraction)	%	≤0.3	≤0.3
9	**Chlorine content (include fluorine and bromine)**	**mg/kg**	**≤3**	**≤30**
10	Each of mercury, arsenic and lead Each of silicon, lithium, sodium, potassium and magnesium Each of iron, calcium, nickel and vanadium Total of the above 12 elements plus Cu, Al, Zn, Sn, Sb, Cr, Mn, Mo and Ag	mg/kg	≤1 ≤3 ≤5 ≤20	≤1 ≤30 ≤25 ≤200
11	Acid value	mg KOH/g	≤5	≤5
12	Water content (mass fraction)	%	≤0.2	≤0.2
13	Asphaltene content (mass fraction)	%	Report	Report
14	Mechanical impurity content (mass fraction)	%	≤0.05	≤0.05
15	Carbon residue (mass fraction)	%	≤1	≤1.5
16	Bromine value	g Br/100 g	Report	Report

Principles for setting technical specifications for primary product:

表 3　原油的技术要求和试验方法

项　目		石蜡基或石蜡-中间基	中间基或中间-石蜡基或中间-环烷基	环烷基或环烷-中间基	试验方法
水含量[a](质量分数)/%	不大于	0.50	1.00	2.00	GB/T 8929
交接温度下蒸气压[b]/kPa	不大于	66.7			GB/T 11059
机械杂质含量[a](质量分数)/%	不大于	0.05			GB/T 511
204 ℃前馏分有机氯含量(质量分数)/(μg/g)	不大于	10			GB/T 18612
盐含量(以氯化钠的质量分数计)[c]/%		报告			GB/T 6532
密度(20 ℃)[d]/(kg/m³)		报告			GB/T 1884、GB/T 1885
硫含量[e](质量分数)/%		报告			GB/T 17606
酸值[f](以氢氧化钾计)/(mg/g)		报告			GB/T 18609

[a] 特殊情况下，双方可按约定执行。
[b] 只针对敞口贮存和运输的交接原油。
[c] 也可采用 SY/T 0536 或 SN/T 2782 进行测定，结果有异议时，以 GB/T 6532 方法为准。
[d] 也可采用 SH/T 0604 或 NB/SH/T 0874 进行测定，结果有异议时，以 GB/T 1884 和 GB/T 1885 方法为准。
[e] 也可采用 GB/T 17040 或 GB/T 11140 进行测定，结果有异议时，以 GB/T 17606 方法为准。
[f] 也可采用 GB/T 7304 进行测定，结果有异议时，以 GB/T 18609 方法为准。

Specifications for primary product draw on the development of GB 36170-2018” Crude Oil”, with additional limits for characteristic pollutants in pyrolysis oil.

Basis for the chlorine limit for primary product (≤300 mg/kg):

1. China's current pyrolysis dechlorination capabilities.
2. Technical difficulty, economic cost and environmental benefits of downstream hydrotreating.
3. Corrosion and safety risks during pyrolysis oil storage and transportation.
4. Impact of unlawful pyrolysis oil circulation on the finished fuel market.
5. The aspirations of China's management departments for the development of the waste plastics pyrolysis industry in China.

3 Contents of the Group Standard: Product Specifications

Technical requirements for waste plastic pyrolysis oil (primary product)

No.	Property	Unit	Specification
1	Appearance	-	Report
2	Density (20 °C)	kg/m³	Report
3	Sulfur content (mass fraction)	%	Report
4	Chlorine content (include fluorine and bromine)	mg/kg	≤300
5	Silicon content	mg/kg	≤400
6	Mercury, arsenic, lead, lithium, sodium, potassium, magnesium, iron, calcium, nickel, vanadium, copper, aluminum, zinc, tin, antimony, chromium, manganese, molybdenum, silver Each element Total content	mg/kg	 Report ≤300
7	Acid value	mg KOH/g	≤20
8	Water content (mass fraction)	%	≤0.5
9	Mechanical impurity content (mass fraction)	%	≤0.05

Waste plastic pyrolysis oil (primary product) is suitable as feedstock for dechlorination pretreatment or for producing refined product. Primary product with chlorine content above 30 mg/kg shall be directed to dedicated facilities for treating high-chlorine feedstocks for dechlorination pretreatment.

Materials used in containers, piping, pumps, seals and other components for transporting and storing waste plastic pyrolysis oil (primary product) shall incorporate corrosion protection in their design. Storage and transportation systems shall be clean and contain no free water.

The national standard development plan has been issued (Project No. 20263538-T-469)

- Lead technical committee: China Petroleum Products and Lubricants Standardization Technical Committee (TC 280)
- Co-responsible technical committee: National Technical Committee on Fundamentals and Management of Product Recycling (TC 415)

- Lead drafting organization: Sinopec Research Institute of Petroleum Processing Co., Ltd.

- A nationwide call for drafting participants was issued in July 2026.

- The drafting group held its kick-off meeting in September 2026.

4 Development of the National Standard

Schedule:

- **Nov 2026: method comparison and specification studies**
  - Collect and distribute samples
  - Design comparative test protocols
  - Research markets and standards
  - Study specification limits
- **Dec 2026: annexes and draft for public comment**
  - Complete the draft and supporting documents for public comment
- **Jan 2027: Public consultation**
  - Public consultation: 2 months
- **Apr 2027: Draft for review**
  - Compile and address comments, and conduct additional studies
  - Prepare the draft and supporting documents for review
  - Hold a workshop if necessary
- **Jul 2027: Review meeting**
  - Present and defend the draft at the review meeting
- **Sep 2027: Submission for approval**
  - Revise the draft based on experts' review comments
  - Submit the draft for approval

Thank you!

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