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# HG

## CHEMICAL INDUSTRY STANDARD

### OF THE PEOPLE'S REPUBLIC OF CHINA

# HG/T 2177-2011

Replacing HG/T 2177-1998

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## Appearance quality of tyres

轮胎外观质量

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## Foreword

This Standard is drafted in accordance with rules given by GB/T1.1-2009.

This Standard replaces HG/T2177-1992.

The main technical differences between this Standard and HG/T 2177-1998 are as follows:

- Modified the adopted standard (Chapter 2 in version-1998; chapter 2 in this version);
- Modified the thickness of rubber edge of radial tyre bead circumference (the table 1.1 in version-1998; table 1.1 in this version);
- Modified the groove depth of rubber edge of radial tyre bead circumference (the table 1.2 in version-1998; table 1.2 in this version);
- Modified the dislocation height of crown die (the table 1.3 in version-1998; table 1.3 in this version);
- Modified the base thickness of radial tyre mold seam plastic edge (table 1.5 in version-1998; table 1.5 and table 6 in this version);
- Modified the dislocation width of radial tyre mold seam (table 1.6 in version-1998; table 1.7 in this version);
- Modified the gel lack depth of radial tyre pattern rounded edges and corners (table 1.7 in version-1998; table 1.8 in this version);
- Modified the uneven depth and height inside the ring (table 1.12 in version-1998; table 1.18 in this version);
- Modified the height and depth of the outside bead-exposed cords, wrapped pleated, tilt, damage, heavy leather and split (table 1.13 in version-1998; table 1.14 in this version);
- Modified the edge thickness of bead toe of radial tyre (table 1.15 in version-1998; table 1.16 in this version);
- Modified the number of cracks in the cord in radical tyre (table 1.17 in version-1998; table 1.18 in this version);
- Modified and added the uneven depth and height in tyre (table 1.20 in version-1998; table 1.20 in this version);

- Listed the crack and impurity prints of lining in a separate column and modified the defect depth (table 1.20 in version-1998; table 1.21 in this version);
- Listed the exposed cords in tyre in a separate column (table 1.20 in version-1998; table 1.22 in this version);
- Added the number of tyre bubble of motorcycle without inner tyre(table 2 in this version);
- Added the ratio varying in width of tyre bead without inner tyre(table 2 in this version).

This Standard was proposed by China Petroleum and chemical industry association.

This Standard shall be under the jurisdiction of National Technical Committee for Standardization of Tyre and Rim.

The National Technical Committee for Standardization of Tyre and Rim is entrusted to be responsible for the interpretation of this Standard.

Drafting organizations of this Standard: Shandong Linglong Tyre Co., Ltd., Fengshen Tyre Co., Ltd., Sailun Rubber Products limited, Hangzhou Zhongce Rubber Co., Ltd., Xuzhou Xu Lun Rubber Co., Ltd., Beijing Research &Design Institute of Rubber Industry, Double Star Group Co., Ltd., and Cooper Chengshan (Shandong) Tyre Co., Ltd.

Main drafters of this Standard: Dong Maohua, Chen Shaomei, Su Pingzhi, Liu Wenming, Pan Wenlian, Chen Guohua, Pei Xiaohui, Xia Xiangxiu, Xu Lihong, Zhao Huanzhang, Xu Guangcheng, Zhang Weiwei, and He Xiaomei.

Historical version replaced by this Standard is as follows:

- HG/T 2177-1998.

# Appearance quality of tyres

## 1 Scope

This Standard specifies the requirements for the appearance quality of tyres.

This Standard applies to the pneumatic tyres of trucks, cars, construction machinery, industrial vehicles, agriculture and motorcycle, solid tyres of pneumatic tire rims, cove tyre and the flap of pressed-on solid tyres.

## 2 Normative references

The articles contained in the following documents have become part of this document when they are quoted herein. For the dated documents so quoted, all the modifications (Including all corrections) or revisions made thereafter shall be applicable to this document.

GB/T 6326 Tyre terms and definitions

## 3 Terms and definitions

The terms and definitions defined in GB/T 6326 apply to this Standard.

## 4 Requirements

**4.1** The appearance quality of tyre shall comply with provisions in table 1 to table 3; the flap shall comply with provisions in table 4.

**4.2** The appearance quality of tyre is allowed to be re-evaluated after its defects have been rectified and repaired.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                              |             |             |  |           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------|-------------|--|-----------|
| 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Unclear marks<br>on the tyre | Not allowed | Not allowed |  | By visual |
| <p>Note:</p> <p>“Special giant” refers to the pneumatic tire with a rim with nominal diameter of 33 in and the above, and nominal section width of 24 in and the above.</p> <p>“Giant” refers to the pneumatic tire with nominal section width of 18 in and the above that does not meet the conditions referred in the “special giant”.</p> <p>“Big” refers to the pneumatic tire with nominal section width below 18 in and above 10 in.</p> <p>“Medium” refers to the non-limousine tyre with nominal section width below 10 in, excluding the pneumatic tire with rim diameter of 12 in and the below.</p> <p>“Small” refers to limousine tires and the car tires with nominal rim diameter of 12 in and the below.</p> |                              |             |             |  |           |

**Table 2 Tyre of motorcycles**

| No. | Defects name                                                                                      | Allowable range                                                                                                                                                                                                                                                                                                                                                                                   |
|-----|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Crown channelling and dislocation of plastic edge and die orifice                                 | Depth or thickness $\leq 1.0$ mm and the plastic edge height $\leq 3.0$ mm                                                                                                                                                                                                                                                                                                                        |
| 2   | Patten glue starvation or rounded pattern                                                         | Depth $\leq 2.0$ mm and the accumulative length $\leq 1/4$ of the circumference                                                                                                                                                                                                                                                                                                                   |
| 3   | Cracks, cold-lay and glue starvation beside the tyre                                              | Crack: not allowed<br>Cold-lay and glue starvation: depth $\leq 40\%$ of the plastic thickness beside the tyre and the length at one location $\leq 50$ mm; the that at the other side shall not exceed three locations.                                                                                                                                                                          |
| 4   | Border break of the bread heel                                                                    | The thickness of that sandwiched with cord edge $\leq 3.0$ mm                                                                                                                                                                                                                                                                                                                                     |
| 5   | The thin seam of the first layer of the cord                                                      | Depth $\leq 3.0$ mm and the number of it $\leq 8$                                                                                                                                                                                                                                                                                                                                                 |
| 6   | The impression of the impurities, bubble impression or damage on the thread cap and the tyre side | The depth at thread cap $\leq 20\%$ of the depth of the pattern ditch<br>The depth at beside the tyre $\leq 40\%$ of the plastic thickness of the tire<br>The diameter of bubble impression $\leq 6.0$ mm<br>All of them shall not exceed two locations (the seal layer of the tyre without inner tyre shall not have bubbles)                                                                    |
| 7   | Uneven of the tire bead                                                                           | The depth or the height $\leq 2.0$ mm and there is no hard bending in steel ring.                                                                                                                                                                                                                                                                                                                 |
| 8   | Tire bead varying in width                                                                        | The ratio value between the width difference and the wide one of tire bead $\leq 30\%$ and the width of the narrow tyre bead $\geq 70\%$ of the designed width of the tyre bead.<br>For tyre without inner tyre: The ratio value between the width difference and the wide one of tire bead $\leq 15\%$ and the width of the narrow tyre bead $\geq 85\%$ of the designed width of the tyre bead. |
| 9   | Rounded bead toe                                                                                  | The bead toe shall not exceed the ditch and become limp; the length $\leq 1/3$ of the circumference of the tyre bead                                                                                                                                                                                                                                                                              |
| 10  | Uneven and impressions of pressed material in tyre                                                | The depth $\leq 1.0$ mm and the area $\leq 800$ mm <sup>2</sup> and the cross-country tread pattern is allowed to have patterns.                                                                                                                                                                                                                                                                  |

**Table 4 Flap**

| No. | Defect name                             | Qualified products                                                                                                               |
|-----|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| 1   | Bubbles, impurities and glue starvation | The thickness at the defect $\geq 70\%$ of the measured thickness at the normal location                                         |
| 2   | Misalignment of the belt                | Measured from the center line, the width difference at the expanded flat $\leq 2.5\%$ of the measured width of the expanded flat |
| 3   | Spongiform at the edge                  | Measured from the edge $\leq 5.0$ mm                                                                                             |
| 4   | The belt is narrow                      | The width of the narrowest expanded plane $\geq 90\%$ of the width of the standard expanded plane                                |
| 5   | Edge exclusion                          | Axial edge exclusion $\leq 5.0$ mm and it needs trimming                                                                         |
| 6   | The embossment at the joint             | The embossment height $\leq 30\%$ of the measured thickness at the normal location                                               |
| 7   | Dislocation of the inflating valve      | The disorientation without exceeding the design location $\leq 5.0$ mm                                                           |
| 8   | Joint cracks                            | The thickness at the crack $\geq 70\%$ of the measured thickness at normal location                                              |

**END**

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