

ICS 53.020.20

CCS J 80



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 36697-2018

Discard qualification for ladle cranes

铸造起重机报废条件

Issued on: September 17, 2018

Implemented on: April 1, 2019

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

1 Scope	
2 Normative references	
3 Terms and definitions	
4 Scrap conditions	
4.1 Machine scrap conditions	
5 Appendix A (informative) Calculation method for design life of foundry cranes	
6 Appendix B (informative) Factors affecting the service life of foundry cranes	
13 Reference	19

1 Scope

China's national standard for deciding when a ladle crane must be taken out of service. It specifies the terms and definitions, the scrap conditions, the evaluation method and the disposal after scrapping, with an informative annex on calculating the design life of a foundry crane. A ladle crane lifts molten metal, which makes it the single most consequential machine in a steelworks: a dropped ladle is a catastrophe that no amount of protective equipment addresses. It also works in the worst conditions of any crane - radiant heat from the metal, dust, and a duty cycle of thousands of lifts a year at close to rated load - so its structure accumulates fatigue damage faster than any other lifting appliance. That is why it needs a discard standard rather than only an inspection regime. Fatigue damage is cumulative and largely invisible, and a crane that passes every inspection can still have consumed its design life. Establishing when that has happened, from the load history rather than from appearance, is what this standard is for.

This standard specifies the scrapping conditions and evaluation methods for casting cranes. This standard applies to cranes that carry molten metal.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article. Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 3811 crane design specification

GB/T 5972 crane wire rope maintenance, maintenance, inspection and scrapping

GB/T 6067.1-2010 Safety rules for lifting machinery - Part 1. General

GB/T 6974.1 Crane terminology Part 1. General terms

GB/T 6974.5 Crane terminology - Part 5. Bridge and gantry cranes

GB/T 14405-2011 Universal Bridge Crane

GB/T 14711-2013 General safety requirements for small and medium-sized rotating electrical machines

GB/T 30024 crane metal structure capability verification

3 Terms and definitions

The following terms and definitions as defined in GB/T 6974.1 and GB/T 6974.5 apply to this document.

3.1 Main structure The failure will result in the loss of the main load-bearing structure (main beam and end beam) of the crane.

3.2 Design life designlife The number of load cycles based on the initial design requirements of the crane and the allowable working time under the load spectrum conditions.

3.3 Service life Under the actual working cycle number and load spectrum conditions, the actual working time of the crane from the time of use to the end of the scrap condition.

3.4 Remaining life remaininglife The working time of the crane from the current time to its retirement, that is, the difference between the service life and the used time.

4.1 Machine scrap conditions

4.1.1 Design life calculation The total number of working cycles of the casting crane shall be selected in accordance with the provisions of GB/T 3811. Casting crane design on the main steelmaking production line

6 Appendix B (informative) Factors affecting the service life of foundry cranes

8 Appendix C (Normative Appendix) Disposal Conditions for Main Parts of Foundry Cranes

9 Appendix D (Normative Appendix) Method for evaluating the remaining life of foundry cranes

13 Reference 19

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard was proposed by the China Machinery Industry Federation. This standard is under the jurisdiction of the National Crane Machinery Standardization Technical Committee

(SAC/TC227). This standard is drafted by: Taiyuan Heavy Machinery Group Engineering Technology Development Co., Ltd., Beijing Crane Transportation Machinery Design and Research Institute Limited company, Taiyuan University of Science and Technology, National Lifting and Transportation Machinery Quality Supervision and Inspection Center. Participated in the drafting of this standard. Henan Branch of Beijing Crane Transportation Machinery Design and Research Institute, Dalian Huarui Heavy Industry Group Co., Ltd. Henan Mining Crane Co., Ltd., Konecranes Lifting Equipment (Shanghai) Co., Ltd., Taiyuan Iron and Steel (Group) Co., Ltd., Henan Weihua Machinery Engineering Research Institute Co., Ltd., Franktek Heavy Industry Co., Ltd., Shanqi Heavy Machinery Co., Ltd., Ningbo Bump Heavy Industry Co., Ltd. Chongqing Crane Factory Co., Ltd., Jiangxi Crane Machinery Factory, Henan Giant Crane Group Co., Ltd., Baoshan Iron and Steel Co., Ltd. Division, Shanghai Jinyi Testing Technology Co., Ltd., Baosteel Co., Ltd. Wugang Co., Ltd. The main drafters of this standard. Gu Cuiyun, Shang Hong, Xu Gening, Zhao Chunhui, Shen Changhong, Wang Shunting, Gu Hongze, Tao Tianhua, Lian Jinhua, Lin Fukui, Liu Huanjiang, Xu Lei, Zeng Ling, Ren Haitao, Zhou Jihong, Wang Shoucheng, Dong Qing, Wang Jiuyuan, Wu Jun, Yuan Xiufeng, Liu Yongqing, Zhao Xueming, Luo Yuli, Liu Xiaosheng, Gao Zheng, Chen Xianbo, Li Chengsheng, Chen Chizhong, Yan Shaoquan, Yu Wancheng, Yan Ying, Wang Zhaofeng. Casting crane scrap condition