

主管单位:中华人民共和国公安部

主办单位:中国消防协会

承办单位:公安部天津消防研究所

中国标准连续出版物号:ISSN 1009-0029
CN 12-1311/TU

《中国消防》杂志社

社长 总编辑:葛明礼

执行总编辑:张立果

副社长:李学诚

《消防科学与技术》编辑委员会

主任:杜兰萍

副主任:范维澄(院士) 张清林

委员:(按姓氏笔画为序)

王中铮 方正 比扬·卡尔森(冰岛)

东靖飞 孙金华 朱国庆 李引擎

李国强 李炎锋 吴宗之 宋波

阎永林 陆守香 赵钊 袁宏永

徐志胜 黄晓家 梁栋 游宏仁(美国)

蒋军成 董希琳 韩林海

《消防科学与技术》编辑部

总编辑:张潇琳(兼)

主编:王铁强

副主编:王万钢

编辑部主任:邢玉军

责任编辑:刘征 梁兵 董里

毛星 李艳娜

编辑出版:

《中国消防》杂志社《消防科学与技术》编辑部

编辑部地址:天津南开区卫津南路110号

邮政编码:300381

编辑部电话:(022)23388612 23920235

传真:(022)23387274

投稿邮箱:fire@cfkj.com.cn

网址:http://www.cfkj.com.cn

广告策划:杨静旭 李艳娜

广告发行部电话:(022)233887276

电子信箱:guanggao@cfkj.com.cn

国内发行:《消防科学与技术》编辑部

国外发行:中国国际贸易促进委员会

国外发行代号:MOBEM

印刷:天津环球磁卡股份有限公司

出版日期:2017年12月15日

发行范围:国内外公开发售

定价:30.00元/册 400.00元(含光盘)/全年

国外定价:15.00美元/册

准各经售发布登记010400238号

本刊发表全部文章和图片版权归属《消防科学与技术》编辑部所有,如蒙转载请与本刊编辑部联系,未经授权不得以任何形式转载。

中文核心期刊·中国科技核心期刊

消防科学与技术®

XIAOFANG KEXUE YU JISHU

(月刊·1982年创刊)

2017年第12期(总第36卷第268期)

目次

2017年《消防科学与技术》总目次 (1781)

消防理论研究

火灾后钢管混凝土叠合短柱轴压性能分析 项凯、潘雁翀(1637)
密闭管道内爆炸下限甲烷-空气混合及爆炸规律 任少云(1642)
石油醚的爆炸极限和最大允许氧含量的试验研究 霍雨江、谭迎新、谢溢月,等(1645)

多孔材料种类对储罐内LNG流动的影响 邢志祥、张淑淑、魏振刚,等(1649)
飞机典型密封材料发烟特性研究 卜庆伟、王志、张旭,等(1652)
扩散供氧对煤阴燃动力学反应影响 宋泽阳、范浩然(1655)

建筑防火设计

贴附羽流形成条件探讨 张仁、李俊梅、董启伟,等(1660)
航站楼高大空间自然排烟研究 韩见云、申勇、刘琮,等(1663)
地铁换乘站共用站厅疏散数值模拟研究 黄晓露、张翔、谢元一(1666)
轨道交通火灾人员疏散数值模拟研究 陈胜朋、梁栋、莫善军(1668)
地铁隧道不同排烟模式下烟气逆流长度 陈震、张少纲(1672)
某城市综合体长途客运站消防安全分析 陈湘华(1675)
防火单元在体育馆建筑消防设计中的应用 颜艳、刘博(1678)

灭火系统设计

核电厂内电缆密集区水喷雾灭火系统全尺寸试验研究 童浩、蔡宙、陆嘉,等(1681)
离心式喷嘴雾化特性实验研究与数值模拟 吴晋湘、张瑞、徐越群,等(1685)
新型水系灭火剂自动喷水灭火技术试验研究 东靖飞、刘欣、李毅,等(1688)
高压细水雾及超细干粉在综合管廊电缆火灾中的应用 柴一波(1690)

消防设备研究

消防卫星通信网扩频技术探讨 林海(1693)
地下停车场外置式通风管道对火灾探测的影响 王肖(1695)

灭火剂与阻燃材料

有机磷阻燃剂对环氧树脂性能的影响 董美丽、武保林、胡泊(1698)
温敏性凝胶水溶液的冷却性能研究 贾春雷、杨素芳、付建利,等(1702)
无机阻燃剂对防火涂料性能的影响 许晓晴、王爽、田宏,等(1706)
磷酸阻燃松木的热解特性及动力学研究 曹俊(1710)

灭火指挥与救援

油罐火灾中举高消防车的战术性能分析 杨素芳、陈智慧、贾春雷,等(1713)
公路隧道火灾防控对策研究 代旭日、朱志祥(1715)
消防部队整编基地化轮值轮训探析 高宁宇(1717)
提升消防部队灭火救援初战能力的探讨 杨钊(1720)
基于大数据的消防部队战斗力评估与分析 吴君(1722)
锂电池电动汽车灭火救援技术探讨 柯锦城、杨旻、谢宁波,等(1725)

消防管理研究

不同荷电状态下锂离子电池外热实验与分析 孙均利、陈捷、顾宗钰,等(1728)
基于实体试验的磷酸铁锂电池火灾危险性分析 于东兴、李毅、张少禹,等(1731)
基于BIM的民用机场航站楼防火疏散安全管理 宋洋、凌竹、张俊鹏(1735)
大型商场可用安全疏散时间不确定性探讨 杨海潮、王祎龙(1738)
基于大数据的电气火灾隐患排查治理体系探讨 严晓龙(1742)
基于数据挖掘技术的火灾风险预警模型研究 何晨炜、张云明(1745)
LNG翻滚预测模型及其应用研究 党文义、王全国、李兆慈,等(1749)
区域消防安全评估量化方法及其应用 罗永龙(1752)
LNG装车区泄漏后爆炸后果研究 李晋(1756)
消防员心理健康评估及影响因素 卢立红、付丽秋、吴豪华,等(1758)
医疗建筑中医用气体防火审查探讨 王静莹、虎亮(1762)
气雾剂燃烧热测试装置及测量方法研究 赵雅娟(1764)
《消防科学与技术》高被引论文特征分析 张磊、张小霞(1766)

火灾调查与分析

火灾现场重构矢量模型 姚浩伟、蒋丹、骆腾,等(1771)
电弧熔痕的表面特征演变 王莉、盛虎、梁栋(1774)
电缆并绝缘穿刺线夹火灾危险性分析 鲁志宝、王鑫(1778)

期刊基本参数:CN12-1311/TU * 1982 * b * A4 * 152 * zh * P * ¥30.00 * 9500 * 45 * 2017-12

Fire Science and Technology

(monthly)

Founded in 1982

Vol. 36, No. 12, December 2017

Unit in charge: The Ministry of Public Security of the People's Republic of China
Sponsor: China Fire Protection Association

Undertake: Tianjin Fire Research Institute of the Ministry of Public Security
President (Editor in Chief): Ge Mingli
Executive Editor in Chief: Zhang Liguo
Vice President: Li Xuecheng
Editor in Chief: Zhang Qinglin
Chief Editor: Wang Tieqiang
Assistant Editor: Wang Wangang
Editorial director: Xing Yujun
Editorial Panel: Liu Zheng, Liang Bing, Dong Li, Mao Xing, Li Yanna

Publisher and Editor: Editorial Office of Fire Science and Technology, 110 South Weijin Road, Tianjin 300381, China
Tel: (86-22)23383612/23920225
Fax: (86-22)23387274
E-mail: fire@xfkj.com.cn
URL: http://www.xfkj.com.cn
Advertisement: Yang Chunxu, Li Yanyan
Advertisement/Distribution Department
Tel: (86-22)23387276
E-mail: guanggao@xfkj.com.cn
Subscription: Editorial Office of Fire Science and Technology
Overseas Distributor: China International Book Trading Corporation (M1508)

CSSN: ISSN 1009-0029
CN 12-1311/TU
Publishing date: 2017-12-15
Price: ¥ 30.00
Overseas Price: \$ 15.00

CONTENTS

Fire theory study	
Research on compression performance analysis of concrete-encased concrete-filled steel tubular subcolumns after fire exposure	WUANG-Hai, MAO Xiao-chong (2837)
Influence of mixing time and position of metal bar on the compressive strength of fiber-reinforced concrete under high temperature	REN Zhao-yun (2842)
Experimental study on fire exposure limits and heat release rate of oxygen content of Petroleum ether	LI Yu, XIE Jiang-hui, LI YAN-GUO, XIE Yi-jun, et al. (2843)
Influence on the combustion performance of exterior spray polyurethane foam by surface crust	XING Zhi-xiang, ZHANG Shi-shi, WU Zhen-gang, et al. (2849)
Effect of porous material types on LNG flow in storage tank	ZHAO Chao, ZHANG Wei (2850)
Study on combustion behavior of four typical aeronautics rubber materials	BU Qing-wei, WANG Zhi, ZHANG Xu, et al. (2852)
Research on change rule of methane explosion limit under coupling conditions of temperature and pressure	JI Wei-wei, SU Lei, GOU Zi-dong, et al. (303)
Building fire protection design	
Violence of aluminum powder in Kunshan "8·2" accident	ZHANG RAN, CHAN Li-Gang, LI Si-jin, et al. (308)
Discussion on the formation of adhered plume	ZHANG RAN, CHAN Li-Gang, LI Si-jin, et al. (308)
Analysis of shaft smoke extraction in high ceiling airport terminal	ZHENG Jian-peng, HU Ding-yu (313)
Building fire protection design	
Numerical simulation study on influence of the location of escape door on the smoke control effect	HAN Jian-yun, SHEN Yong, LIU Cong, et al. (1663)
The experimental study on influence of the location of escape door on the smoke control effect	CHEN Ying, LIU CHEN-wang, ZHANG Jie-sheng, YUAN Jun (1665)
Numerical simulation of evacuation from rail transit fire smoke vent in lateral smoke extraction system	YANG Hui, SHI Xiang-qiang, LIAN Wang, ZHOU Shao-jun (1668)
Research on intelligent safety evaluation of fire smoke and SWOP model for evacuation for pension institutions	CHEN ZHE, ZHANG Xian-shu, ZHANG (1673)
Effect of safety analysis on long distance passenger station shopping complex	CHEN Xiang-hua (1675)
The application of fire prevention unit in fire protection design of underground parking	ZHOU DAN, YANG Li-li, BO (1678)
Design of fire extinguishing system	
Longitudinal ventilation mode	GUI Jia, CHEN Rong-heng (330)
Fluid dynamics simulation studies of extinguishing rate of gas table in simulated area of nuclear power plant	WU Jin-xiang, ZHANG Rui, XU Yue-qun, et al. (1685)
Discussion on the fire problems of the ancient building group in MING Jiajing	CAI Zhou, LU Jie, et al. (1681)
Experimental and simulation studies on the spray characteristics in centrifugal atomizer	CHEN Xiu-feng (336)
Design of fire extinguishing system	
Experiment study on auto-sprinkler extinguishing technology with new type water based extinguishing agent	WU Jin-xiang, ZHANG Rui, XU Yue-qun, et al. (1685)
Comparative study on fire extinguishing characteristics of high and low expansion foam in pyrolytic fire	LUO Hui-zhao, FENG Xue-qin, LI Jie, et al. (1690)
Application of high pressure water mist and superfine powder on cable fire in utility tunnel	CHEN Hua-min, HOU Da-pan (342)
Test of high-pressure water mist nozzle with a distributor	CHEN Hua-min, HOU Da-pan (342)
Study of fire equipment	
The comparative experimental study on two kinds of sprinklers performance	SHEN Nan-nan (345)
Effect of the setting position of nozzle on fire extinguishing performance with grid ceiling	LIN Hai (1693)
The effect of outside ventilation pipeline on fire detection in underground parking lot fire	WU Hai-yan, SHI Rong-hong (1693)
Extinguishant and flame retardant material	
Contrastive analysis of lithium battery electrolysis gas detection effect in air transportation	ZHANG Qing-song, GUO Xinyi, LUO Xiang-qun, et al. (352)
The effect of organic phosphorus flame retardant on the performance of epoxy resin	ZHANG Qing-song, GUO Xinyi, LUO Xiang-qun, et al. (352)
The design and implementation of a composed fire detector for EMU	DONG Mei-li, WU Bao-jin, HU Tao (1698)
Study on the cooling performance of temperature sensitive glassy polymer solution	HUA Zhong-qiu, et al. (355)
The analysis of residual current based on fast Fourier transform algorithm	YANG Su-lan, FU Jian-li, et al. (1702)
The influence of inorganic flame retardant on fire retardant coatings	ZHONG Chuan, ZHANG Xue-jun (359)
Design and implementation of fire cloud platform	XU Xiao-qing, WANG Shu-ting, LIAN Hui-zhi, et al. (369)
Pyrolysis characteristics and kinetics of ground polyamide flame retardant	CAO Jun (1710)
Fire fighting command and rescue	
Construction of emergency rescue decision-making system for large reserve depot	WANG Lin, JIN Hong-yu, LV Dong (366)
Analysis on tactical performance of the elevating fire truck	CHEN Xiang-xin, WANG Yu-fei, et al. (370)
Application of 3D printing technology in fire fighting	CHEN Zhi-lai, JIA Chun-lai, et al. (1713)
Research on fire prevention and control countermeasure of subway equipment	CHEN Jie, CHEN Peng, CHEN Yi, et al. (1715)
Research on training and operation of fire-fighting and rescue tools	GAO Ning-yu (1717)
Discussion on enhancing the first battle ability of fire-fighting and rescue	REN Zhen, ZHOU Feng, YANG Wen (1720)
Construction and analysis of fire-fighting force based on data application of fire shunter	WU Jun (1722)
Discussion on fire-fighting and rescue technology of lithium battery electric vehicles fire	LIU Yu-zheng (380)
Extinguishant and flame retardant material	
Research on the effects of foaming net on the performance of aqueous film-forming foam	SONG Yang, LIU Zhi, LIANG Qiang, et al. (383)
Preparation and properties of halogen-free flame retardant	SHEN Jie-peng, CHEN Peng, CHEN Yi, et al. (1728)
Fire risk analysis of LiFePO ₄ batteries based on full scale tests	LI Chang-hao, ZHU Xiang-dong, et al. (382)
Fire manage study	
Research on the external heat on lithium-ion battery with fire protection material	SONG Yang, LIU Zhi, LIANG Qiang, et al. (383)
Preparation and properties of halogen-free flame retardant	SHEN Jie-peng, CHEN Peng, CHEN Yi, et al. (1728)
Fire risk analysis of LiFePO ₄ batteries based on full scale tests	LI Chang-hao, ZHU Xiang-dong, et al. (382)
Fire manage study	
Research on the effects of foaming net on the performance of aqueous film-forming foam	SONG Yang, LIU Zhi, LIANG Qiang, et al. (383)
Building fire safety management of civil airport terminal building based on BIM	JI Cao, SHI Jian-yong (391)
Building fire safety analysis based on BIM	JI Cao, SHI Jian-yong (391)
Fire risk management model of workshop ventilation system based on CFD	LIANG Jun-peng (1735)
Discussion on uncertainty of ASFT of mega shopping mall	SA Zhan-yu, LI Li, MA Chao-xiang, et al. (395)
Discussion on electrical fire hazard management system based on big data	YAN Xiao-long (1742)
Research on fire risk alert model based on data mining technology	HE Chen, SUN Xing-ping, et al. (1745)
Research on the influence of fire load on the fire spread characteristics of floor-based floorings	WANG He, WANG Ya-jun (1754)
Research on the psychological behavior characteristics of fire-fighting	QU Meng-qian, WANG Wu-jiu (1757)
Regional fire safety assessment quantification method and its application	WANG Quan-guo, LI Zhi-shi, et al. (1759)
Fire investigation and analysis	
Research on explosion after leakage of LNG loading area	LUO Yong-long (1752)
Research on explosion after leakage of LNG loading area	LI Jin (1756)
Research on the effects of foaming net on the performance of aqueous film-forming foam	SONG Yang, LIU Zhi, LIANG Qiang, et al. (383)
Building fire safety management of civil airport terminal building based on BIM	JI Cao, SHI Jian-yong (391)
Building fire safety analysis based on BIM	JI Cao, SHI Jian-yong (391)
Fire risk management model of workshop ventilation system based on CFD	LIANG Jun-peng (1735)
Discussion on uncertainty of ASFT of mega shopping mall	SA Zhan-yu, LI Li, MA Chao-xiang, et al. (395)
Discussion on electrical fire hazard management system based on big data	YAN Xiao-long (1742)
Research on fire risk alert model based on data mining technology	HE Chen, SUN Xing-ping, et al. (1745)
Research on the influence of fire load on the fire spread characteristics of floor-based floorings	WANG He, WANG Ya-jun (1754)
Research on the psychological behavior characteristics of fire-fighting	QU Meng-qian, WANG Wu-jiu (1757)
Regional fire safety assessment quantification method and its application	WANG Quan-guo, LI Zhi-shi, et al. (1759)
Fire investigation and analysis	
Research on explosion after leakage of LNG loading area	LUO Yong-long (1752)
Research on explosion after leakage of LNG loading area	LI Jin (1756)
Research on the effects of foaming net on the performance of aqueous film-forming foam	SONG Yang, LIU Zhi, LIANG Qiang, et al. (383)
Building fire safety management of civil airport terminal building based on BIM	JI Cao, SHI Jian-yong (391)
Building fire safety analysis based on BIM	JI Cao, SHI Jian-yong (391)
Fire risk management model of workshop ventilation system based on CFD	LIANG Jun-peng (1735)
Discussion on uncertainty of ASFT of mega shopping mall	SA Zhan-yu, LI Li, MA Chao-xiang, et al. (395)
Discussion on electrical fire hazard management system based on big data	YAN Xiao-long (1742)
Research on fire risk alert model based on data mining technology	HE Chen, SUN Xing-ping, et al. (1745)
Research on the influence of fire load on the fire spread characteristics of floor-based floorings	WANG He, WANG Ya-jun (1754)
Research on the psychological behavior characteristics of fire-fighting	QU Meng-qian, WANG Wu-jiu (1757)
Regional fire safety assessment quantification method and its application	WANG Quan-guo, LI Zhi-shi, et al. (1759)
Fire investigation and analysis	
Research on explosion after leakage of LNG loading area	LUO Yong-long (1752)
Research on explosion after leakage of LNG loading area	LI Jin (1756)
Research on the effects of foaming net on the performance of aqueous film-forming foam	SONG Yang, LIU Zhi, LIANG Qiang, et al. (383)
Building fire safety management of civil airport terminal building based on BIM	JI Cao, SHI Jian-yong (391)
Building fire safety analysis based on BIM	JI Cao, SHI Jian-yong (391)
Fire risk management model of workshop ventilation system based on CFD	LIANG Jun-peng (1735)
Discussion on uncertainty of ASFT of mega shopping mall	SA Zhan-yu, LI Li, MA Chao-xiang, et al. (395)
Discussion on electrical fire hazard management system based on big data	YAN Xiao-long (1742)
Research on fire risk alert model based on data mining technology	HE Chen, SUN Xing-ping, et al. (1745)
Research on the influence of fire load on the fire spread characteristics of floor-based floorings	WANG He, WANG Ya-jun (1754)
Research on the psychological behavior characteristics of fire-fighting	QU Meng-qian, WANG Wu-jiu (1757)
Regional fire safety assessment quantification method and its application	WANG Quan-guo, LI Zhi-shi, et al. (1759)