

***Newsletter 04/2016***

# ***PVC Stabilisation***

**HMS Concept e.U.**

Am Huegel 1  
9601 Arnoldstein  
Austria

Phone: +43 4255 2030  
Email: [michael.schiller@hms-concept.net](mailto:michael.schiller@hms-concept.net)  
Webpage: [www.hms-concept.net](http://www.hms-concept.net)

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ANSWER 1

AN 164:383964  
 TI Process for production of PVC profiled material with phosphogypsum as filler  
 IN Yang, Yongbin; Yang, Bulei; Xiang, Qianyong; Li, Zegang; Wang, Wei  
 PA Guizhou Kailin Group Co., Ltd., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 5pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
|      | -----            | ---- | -----    | -----            | -----        |
| PI   | CN 105348686     | A    | 20160224 | CN 2015-10845127 | 20151129 <-- |
| PRAI | CN 2015-10845127 |      | 20151129 |                  |              |

AB The PVC profiled material is prepared from polyvinyl chloride resin 70-100, phosphogypsum 30-45, stabilizer (calcium carboxylate and zinc acetylacetonate) 3-6, antioxidant (carbamate ester, ester group-containing phenol, etc.) 0.5-2, lubricant (stearyl alc., paraffin, etc.) 1-2, and compound plasticizer (palm oil, dioctyl phthalate, etc.) 5-10 parts. The production process includes pulverizing phosphogypsum, soaking in calcium hydroxide solution with mass concentration of 10-40%, dewatering, calcining at 600-900°, soaking in water, dewatering, calcining at 163-400° to obtain anhydrite, and grinding into 400-800 mesh powder; heating the anhydrite powder, polyvinyl chloride resin, stabilizer, antioxidant, lubricant and compound plasticizer to 120-135°, stirring for mixing for above 10 min, and discharging while keeping the material temperature at 60-80°; performing extrusion forming at first-section cylinder temperature of 150-170°, second-section cylinder temperature of 163-180° and third-section cylinder temperature of 120-150°; and performing cooling forming, and cutting.

ANSWER 2

AN 164:383962  
 TI Cable insulation material with heat-aging resistance  
 IN Wang, Weisong  
 PA Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 4pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
|      | -----            | ---- | -----    | -----            | -----        |
| PI   | CN 105348654     | A    | 20160224 | CN 2015-10837527 | 20151126 <-- |
| PRAI | CN 2015-10837527 |      | 20151126 |                  |              |

AB The title cable insulation material is composed of (by weight parts) ethylene-propylene-diene monomer 100, PVC resin 40-50, polytetrafluoroethylene 8-12, dicumyl peroxide 6-8, nitrile butadiene powder 10-15, tri-Et citrate 6-8, high glue powder 4-5, pentaerythritol 1-2, flame retardant smoke suppressant (mixture of antimonous oxide, aluminum hydroxide and magnesium hydroxide) 2-4, modification filler (mixture of jade nanopowder, zinc palmitate and bentonite) 18-22, heat stabilizer (mixture of trioctyl trimellitate and boron nitride) 3-5, dysprosium oxide 0.6-0.8, and dispersant (mixture of PE wax, paraffin and zinc stearate) 2-3. The inventive cable insulation material has low smoke and small amount of toxic gas when being burned, excellent heat resistance, aging resistance, elec. insulation, environmental friendliness, dampness/heat resistance and long service life, and is free of halogen.

ANSWER 3

AN 164:373258  
 TI Calcium-based hydrotalcite-containing composite heat stabilizer for polyvinyl chloride (PVC)  
 IN Lin, Yanjun; Rao, Zhi; Li, Kaitao  
 PA Beijing University of Chemical Technology, Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 7pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
| PI   | CN 105348682     | A    | 20160224 | CN 2015-10821425 | 20151123 <-- |
| PRAI | CN 2015-10821425 |      | 20151123 |                  |              |

AB The title calcium-based hydrotalcite-containing composite heat stabilizer for polyvinyl chloride (PVC) comprises calcium-based hydrotalcite 20-60, calcium soap (calcium stearate, calcium benzoate, etc.) 15-55, zinc soap (zinc stearate, zinc benzoate, etc.) 5-40, lubricant (paraffin, stearic acid, etc.) 15-35, antioxidant (antioxidant 1076, antioxidant 1010, etc.) 1-6, light stabilizer (HALS-944, HALS-770, etc.) 1-6 and chelating agent (phosphite or  $\beta$ -diketone) 4-12 weight parts.

ANSWER 4

AN 164:350835  
 TI Stabilizer composition for vinyl chloride resin, vinyl chloride resin composition using said stabilizer composition, and molded article obtained from said resin composition  
 IN Mitamura, Ryusuke; Mitsudera, Taro; Tanaka, Kazumasa  
 PA Adeka Corporation, Japan  
 SO PCT Int. Appl., 40pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

|      | PATENT NO.  | KIND | DATE     | APPLICATION NO. | DATE         |
|------|---|------|----------|-----------------|--------------|
| PI   | WO 2016035315   | A1   | 20160310 | WO 2015-JP4402  | 20150831 <-- |
|      | W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW<br>RW: AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, RU, TJ, TM |      |          |                 |              |
| PRAI | JP 2014-180114  | A    | 20140904 |                 |              |

AB The present invention is a stabilizer composition for vinyl chloride resin containing (A) an organic acid calcium salt and/or an organic acid zinc salt, (B) a  $\beta$ -diketone compound, and (C) a blue pigment, wherein the stabilizer composition for vinyl chloride resin has a mass ratio [(A):(B)] of component (A) and component (B) in the range of 99.9:0.1-

15.0:85.0, and component (C) is 0.1-5.0 parts by mass per 100 total parts by mass of component (A) and component (B).

ANSWER 5

AN 164:350449  
 TI Calcium zinc heat stabilizer with surface antibacterial function for polyvinyl chloride  
 IN Shi, Yanqin; Wang, Xu; Chen, Si; Ma, Meng; Wu, Bozhen; Xu, Xiaopeng; Wang, Muyan; Ying, Jie  
 PA Zhejiang University of Technology, Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 16pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.        | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|-------------------|------|----------|------------------|--------------|
|      | -----             | ---- | -----    | -----            | -----        |
| PI   | CN 105315574      | A    | 20160210 | CN 2015-10658743 | 20151012 <-- |
| PRAI | CN 2015-10658743  |      | 20151012 |                  |              |
| OS   | MARPAT 164:350449 |      |          |                  |              |

AB The calcium zinc heat stabilizer is composed of main stabilizer 50-80 and auxiliary stabilizer 20-50 parts, wherein the main stabilizer comprises zinc quinolone 10-50 and calcium quinolone 10-70 parts; and the auxiliary stabilizer is one or more of tri-Ph phosphite, epoxidized soybean oil, octyl epoxy stearate, pentaerythritol, dipentaerythritol, sorbitol, trimethylolpropane, dibenzoyl methane, stearyl benzoyl methane and uracil. The inventive calcium zinc heat stabilizer has good heat stabilization and surface antibacterial functions for PVC.

ANSWER 6

AN 164:350384  
 TI An organic transparent composite thermal stabilizer, its preparation method and application  
 IN Chen, Si; Wang, Xu; Wang, Muyan; Wu, Bozhen; Ma, Meng; Shi, Yanqin  
 PA Zhejiang University of Technology, Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 10pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.        | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|-------------------|------|----------|------------------|--------------|
|      | -----             | ---- | -----    | -----            | -----        |
| PI   | CN 105315485      | A    | 20160210 | CN 2015-10750773 | 20151105 <-- |
| PRAI | CN 2015-10750773  |      | 20151105 |                  |              |
| OS   | MARPAT 164:350384 |      |          |                  |              |

AB The an organic transparent composite thermal stabilizer includes urea derivative (I) 10-55, epoxy compound 25-90, phosphite compound 15-90 and  $\beta$ -dione 1-10 parts. The epoxy compound is epoxidized soybean oil, epoxidized sunflower oil or epoxidized undecanoic acid Me ester. The  $\beta$ -dione is stearyl benzoyl methane or dibenzoyl methane. The preparation method of the thermal stabilizer includes mixing materials, and stirring at 70-120° and 40-80 rpm for 10-30 min. The organic transparent composite thermal stabilizer has excellent thermal stability and outstanding transparency, and can be widely used in PVC manufacture field.

ANSWER 7

AN 164:339183

TI PVC pellet producing process  
 IN Gao, Zhibing; Han, Jinquan; Ma, Jianxin  
 PA Nantong Huiyuan Plastic Co., Ltd., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 5pp.  
 CODEN: CNXXEV

DT Patent  
 LA Chinese

FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
| PI   | CN 105313240     | A    | 20160210 | CN 2014-10249148 | 20140609 <-- |
| PRAI | CN 2014-10249148 |      | 20140609 |                  |              |

AB The title PVC pellet is composed of polyvinyl chloride 100, filler 10-20, plasticizer 10-20, heat stabilizer 2-3, lubricant 1-2 and antioxidant 2-5 weight parts. The PVC pellet is produced by the steps of: preparing raw materials, mixing, heating and stirring, cooling, granulating, cooling, and packaging.

ANSWER 8

AN 164:339069

TI Hydroxybenzophenone-based stabilizers and polymers end-capped with the stabilizers

IN Pollino, Joel; Srinivasan, Satchit  
 PA Solvay Specialty Polymers USA, LLC, USA  
 SO PCT Int. Appl., 34pp.  
 CODEN: PIXXD2

DT Patent  
 LA English

FAN.CNT 1

|      | PATENT NO.  | KIND | DATE     | APPLICATION NO. | DATE     |
|------|---|------|----------|-----------------|----------|
| PI   | WO 2016034689   | A1   | 20160310 | WO 2015-EP70191 | 20150903 |
|      | W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW<br>RW: AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, RU, TJ, TM |      |          |                 |          |
| PRAI | US 2014-62046011  | P    | 20140904 |                 |          |

AB The hydroxybenzophenone-based compds. are used to improve UV, thermal, and thermo-oxidative stability of high performance aromatic polymers in a blend or as end-cappers of the same polymers.

RE CITED REFERENCES

- (1) COLEMAN RALPH A; US 3391110 A 1968 HCA
- (2) Colquhoun, H; Macromolecules, 10.1021/ma0517796 2005, V38(25), P10413 HCA
- (3) SASSI THOMAS PATRICK; US 6537670 B1 2003 HCA

ANSWER 9

AN 164:338999

TI Hydrotalcite-rare earth maleate composite environmentally-friendly stabilizer for PVC and preparation method thereof

IN Wang, Shengmao; Qiu, Yonggui; Song, Kaisheng; Gao, Xu; Li, Yi; Xu, Ming;

Xiao, Dushan; Sun, Rongxing  
 PA Anhui Hwasu Corp., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 5pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
| PI   | CN 105295251     | A    | 20160203 | CN 2015-10793165 | 20151118 <-- |
| PRAI | CN 2015-10793165 |      | 20151118 |                  |              |

AB The invention involves hydrotalcite-rare earth maleate composite environmentally-friendly stabilizer for PVC and preparation method thereof. The stabilizer is prepared from (by weight parts) modified zinc-aluminum hydrotalcite 20-30, methyltin mercaptide-181 10-12, lanthanum maleate 6-9, isooctyl diPh phosphite 1-3, calcium stearate 3-6, epoxy fatty acid Me ester 2-4, Bu methacrylate 16-20, polyvinyl alc. 1-2, 2-hydroxy-4-methoxybenzophenone 1-2, and wollastonite powder 5-10. The inventive PVC stabilizer has good thermal stability and processing property, environmental friendliness, no toxicity and low cost, has good plastifying property in PVC processing, and can reduce balancing torque.

ANSWER 10

AN 164:338998  
 TI Hydrotalcite-tin maleate composite environmental-friendly heat stabilizer for PVC and preparation method thereof  
 IN Wang, Shengmao; Qiu, Yonggui; Song, Kaisheng; Gao, Xu; Li, Yi; Xu, Ming; Xiao, Dushan; Sun, Rongxing  
 PA Anhui Hwasu Corp., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 5pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
| PI   | CN 105295250     | A    | 20160203 | CN 2015-10793163 | 20151118 <-- |
| PRAI | CN 2015-10793163 |      | 20151118 |                  |              |

AB The title stabilizer is prepared from modified Mg-Al hydrotalcite 20-30, tin maleate 10-12, lanthanum salicylate 6-9, tri-Et phosphite 1-3, barium stearate 3-6, epoxy soybean oil 2-4, polypropylene adipate 10-13,  $\beta$ -diketone 2-3, isomaltitol 5-6, 2,4,6-tris(2'-n-butoxyphenyl)-1,3,5-triazine 2-3, oxidized polyethylene wax 1-3, and celestite powder 10-12 parts.

ANSWER 11

AN 164:338997  
 TI Hydrotalcite-rare earth composite environmentally-friendly stabilizer for PVC and preparation method thereof  
 IN Wang, Shengmao; Qiu, Yonggui; Song, Kaisheng; Gao, Xu; Li, Yi; Xu, Ming; Xiao, Dushan; Sun, Rongxing  
 PA Anhui Hwasu Corp., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 5pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|  | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------------|------|------|-----------------|------|
|  |            |      |      |                 |      |

PI CN 105295249 A 20160203 CN 2015-10793160 20151118 <--  
 PRAI CN 2015-10793160 20151118

AB The invention provides hydrotalcite-rare earth composite environmentally-friendly stabilizer for PVC and preparation method thereof. The stabilizer is prepared from (by weight parts) modified magnesium-aluminum hydrotalcite 20-30, dimethyltin dichloride 8-10, lanthanum salicylate 6-9, tri-Ph phosphite 1-3, trioctyl trimellitate 15-17, magnesium stearate 3-6, epoxy sunflower oil 2-4, tetramethylol cyclohexanol 5-6, 2-hydroxy-4-n-octyloxybenzophenone 1-2, castor wax 1-2, zinc stearate 3-5, magnesium oxide 4-5, and barium sulfate 10-13. The inventive PVC stabilizer has good thermal stability and processing property, environmental friendliness, no toxicity and low cost, has good plasticizing property in PVC processing, and can reduce balancing torque.

ANSWER 12

AN 164:338996  
 TI Hydrotalcite-lanthanum dimer acid composite environmental-friendly heat stabilizer for PVC and preparation method thereof  
 IN Wang, Shengmao; Qiu, Yonggui; Song, Kaisheng; Gao, Xu; Li, Yi; Xu, Ming; Xiao, Dushan; Sun, Rongxing  
 PA Anhui Hwasu Corp., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 5pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
|      | -----            | ---- | -----    | -----            | -----        |
| PI   | CN 105295248     | A    | 20160203 | CN 2015-10793151 | 20151118 <-- |
| PRAI | CN 2015-10793151 |      | 20151118 |                  |              |

AB The title stabilizer is prepared from modified magnesium-aluminum hydrotalcite 20-30, dibutyltin oxide 10-12, lanthanum dimer acid 6-9, tri-Ph phosphite 1-3, zinc stearate 3-6, epoxidized soybean oil 2-4,  $\beta$ -diketone 5-6, 2,2'-thiobis(4-t-octylphenolato) nickel 2-4, tri-Et O-acetylcitrate 12-15, lignite wax 1-2, and attapulgite 10-15 parts.

ANSWER 13

AN 164:338994  
 TI Hydrotalcite-lanthanum cyanurate composite environmentally-friendly stabilizer for PVC and preparation method thereof  
 IN Wang, Shengmao; Qiu, Yonggui; Song, Kaisheng; Gao, Xu; Li, Yi; Xu, Ming; Xiao, Dushan; Sun, Rongxing  
 PA Anhui Hwasu Corp., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 5pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
|      | -----            | ---- | -----    | -----            | -----        |
| PI   | CN 105295246     | A    | 20160203 | CN 2015-10793102 | 20151118 <-- |
| PRAI | CN 2015-10793102 |      | 20151118 |                  |              |

AB The invention provides hydrotalcite-lanthanum cyanurate composite environmentally-friendly stabilizer for PVC and preparation method thereof. The stabilizer is prepared from (by weight parts) modified magnesium-aluminum hydrotalcite 20-30, dibutyltin oxide 10-12, lanthanum cyanurate 6-8, cerium laurate 6-9, tri-Me phosphite 1-3, acetyl tris(2-ethylhexyl) citrate 13-15, barium stearate 3-6, N,N'-diphenylthiourea 2-4, zinc stearate 5-6, HMPA (hexamethylphosphoramide) 1-2, stearic acid 1-

2, and vermiculite power 10-13. The inventive PVC stabilizer has good thermal stability and processing property, environmental friendliness, no toxicity and low cost, has good plastifying property in PVC processing, and can reduce balancing torque.

ANSWER 14

AN 164:338993  
 TI Hydrotalcite-zinc glutarate composite environmentally-friendly stabilizer for PVC and preparation method thereof  
 IN Wang, Shengmao; Qiu, Yonggui; Song, Kaisheng; Gao, Xu; Li, Yi; Xu, Ming; Xiao, Dushan; Sun, Rongxing  
 PA Anhui Hwasu Corp., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 5pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
|      | -----            | ---- | -----    | -----            | -----        |
| PI   | CN 105295245     | A    | 20160203 | CN 2015-10793097 | 20151118 <-- |
| PRAI | CN 2015-10793097 |      | 20151118 |                  |              |

AB The invention discloses hydrotalcite-zinc glutarate composite environmentally-friendly stabilizer for PVC and preparation method thereof. The stabilizer is prepared from (by weight parts) modified magnesium-aluminum hydrotalcite 20-30, monobutyltin oxide 10-12, lanthanum laurate 6-9, cerium stearate 4-6, cyclic phosphate ester 1-3, zinc glutarate 3-6, epoxidized soybean oil 2-4, polyphthalate 12-14, polyethylene wax 1-2, carbitol 5-6, tris(1,2,2,6,6-pentamethylpiperidyl)phosphite 2-3, zinc stearate 4-6 and calcined pottery clay 4-5. The inventive PVC stabilizer has good thermal stability and processing property, environmental friendliness, no toxicity, low cost and good light transmission, has good plastifying property in PVC processing, and can reduce balancing torque.

ANSWER 15

AN 164:338992  
 TI Hydrotalcite-organotin composite environmentally-friendly stabilizer for PVC and preparation method thereof  
 IN Wang, Shengmao; Qiu, Yonggui; Song, Kaisheng; Gao, Xu; Li, Yi; Xu, Ming; Xiao, Dushan; Sun, Rongxing  
 PA Anhui Hwasu Corp., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 5pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
|      | -----            | ---- | -----    | -----            | -----        |
| PI   | CN 105295244     | A    | 20160203 | CN 2015-10793093 | 20151118 <-- |
| PRAI | CN 2015-10793093 |      | 20151118 |                  |              |

AB The invention discloses hydrotalcite-organotin composite environmentally-friendly stabilizer for PVC and preparation method thereof. The stabilizer is prepared from (by weight parts) modified Mg-Al hydrotalcite 20-30, dibutyltin maleate 10-12, lanthanum stearate 6-9, zinc glutarate 3-6, diisooctyl Ph phosphite 8-10, di-n-octyl phthalate 20-25, epoxy soybean oil 2-4, pentaerythritol 5-6, zinc stearate 2-4, polyethylene wax 2-3, and light calcium carbonate 10-15. The inventive PVC stabilizer has good thermal stability and processing property, environmental



friendliness, no toxicity, low cost and good light transmission, has good plastifying property in PVC processing, and can reduce balancing torque.

ANSWER 16

AN 164:338990  
 TI Hydrotalcite-lanthanum ricinoleate composite environmentally-friendly stabilizer for PVC and preparation method thereof  
 IN Wang, Shengmao; Qiu, Yonggui; Song, Kaisheng; Gao, Xu; Li, Yi; Xu, Ming; Xiao, Dushan; Sun, Rongxing  
 PA Anhui Hwasu Corp., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 5pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE     |
|------|------------------|------|----------|------------------|----------|
| PI   | CN 105295218     | A    | 20160203 | CN 2015-10792975 | 20151118 |
| PRAI | CN 2015-10792975 |      | 20151118 |                  |          |

AB The invention discloses hydrotalcite-lanthanum ricinoleate composite environmentally-friendly stabilizer for PVC and preparation method thereof. The composite environmental-friendly stabilizer is prepared from (by weight parts) modified magnesium-aluminum hydrotalcite 20-30, tin dilaurate 10-12, lanthanum ricinoleate 6-9, tri-Et phosphate 1-3, barium stearate 3-6, epoxidized soybean oil 2-4, propylene glycol polysebacate 10-13, zinc stearate 5-6, 4-benzoyloxy-2,2,6,6-tetramethyl piperidine 2-4, ethylene bis(stearamide) 2-4, and potassium feldspar powder 10-14. The inventive PVC stabilizer has good thermal stability and processing property, environmental friendliness, no toxicity, low cost and good light transmission, has good plastifying property in PVC processing, and can reduce balancing torque.

ANSWER 17

AN 164:327172  
 TI Heat-resistant and highly transparent CPVC composition  
 IN Zhang, Xueming; Jia, Xiaobo; Kong, Xiuli; Li, Changchun; Zhang, Qiang; Xu, Yongsen; Xiao, Enlin  
 PA China Petroleum & Chemical Corp., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 6pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE     |
|------|------------------|------|----------|------------------|----------|
| PI   | CN 105295271     | A    | 20160203 | CN 2014-10257320 | 20140611 |
| PRAI | CN 2014-10257320 |      | 20140611 |                  |          |

AB The title composition consists of CPVC resin 100, heat stabilizer 1.5-3.0, auxiliary heat stabilizer 0.5-1.5, perchlorate transparent modifier 0.1-0.5, internal lubricant 0.3-1.0, external lubricant 0.8-2.0, heat-resistant plasticizer 1.0-4.0, and impact modifier 0-2.0 parts, in which the CPVC resin is prepared by chlorination of PVC with d.p. of 700-1000 and has Cl content of 64-70%.

ANSWER 18

AN 164:327143  
 TI Hydrotalcite-lanthanum stearate environmentally-friendly stabilizer for PVC

IN Wang, Shengmao; Qiu, Yonggui; Song, Kaisheng; Gao, Xu; Li, Yi; Xu, Ming;  
Xiao, Dushan; Sun, Rongxing  
PA Anhui Hwasu Corp., Peop. Rep. China  
SO Faming Zhuanli Shenqing, 5pp.  
CODEN: CNXXEV

DT Patent  
LA Chinese

FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
|      | -----            | ---- | -----    | -----            | -----        |
| PI   | CN 105295247     | A    | 20160203 | CN 2015-10793120 | 20151118 <-- |
| PRAI | CN 2015-10793120 |      | 20151118 |                  |              |

AB The stabilizer comprises modified magnesium-aluminum hydrotalcite 20-30, monobutyltin trichloride 10-12, diisooctyl Ph phosphite 1-3, lanthanum stearate 15-20, calcium adipate 6-8, zinc adipate 15-18, epoxy soybean oil 2-4, sorbitol 5-6, resorcinol monobenzoate 2-4, tri-Et citrate 10-12, carnauba wax 1-2 and bentonite 8-10 parts.

ANSWER 19

AN 164:327141

TI Environmentally-friendly hydrotalcite-rare earth oleate composite stabilizer for PVC and preparation method thereof

IN Wang, Shengmao; Qiu, Yonggui; Song, Kaisheng; Gao, Xu; Li, Yi; Xu, Ming;  
Xiao, Dushan; Sun, Rongxing

PA Anhui Hwasu Corp., Peop. Rep. China

SO Faming Zhuanli Shenqing, 5pp.

CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
|      | -----            | ---- | -----    | -----            | -----        |
| PI   | CN 105295243     | A    | 20160203 | CN 2015-10793053 | 20151118 <-- |
| PRAI | CN 2015-10793053 |      | 20151118 |                  |              |

AB The stabilizer is prepared from modified magnesium-aluminum hydrotalcite 20-30, monobutyltin oxide 10-12, lanthanum oleate 6-9, tritolyol phosphite 1-3, barium stearate 3-6, epoxy Bu stearate 2-4, tri-Bu citrate 10-14, xylitol 5-6, o-hydroxybenzotriazole and triazine 1-2, zinc stearate 2-3, and sepiolite powder 10-15 parts. The inventive PVC stabilizer has good thermal stability and processing property and can reduce balancing torque.

ANSWER 20

AN 164:327139

TI Hydrotalcite composite environmentally-friendly stabilizer for PVC and preparation method thereof

IN Wang, Shengmao; Qiu, Yonggui; Song, Kaisheng; Gao, Xu; Li, Yi; Xu, Ming;  
Xiao, Dushan; Sun, Rongxing

PA Anhui Hwasu Corp., Peop. Rep. China

SO Faming Zhuanli Shenqing, 5pp.

CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
|      | -----            | ---- | -----    | -----            | -----        |
| PI   | CN 105295242     | A    | 20160203 | CN 2015-10793031 | 20151118 <-- |
| PRAI | CN 2015-10793031 |      | 20151118 |                  |              |

AB The stabilizer is prepared from modified magnesium-aluminum hydrotalcite 20-30, octyltin mercaptide 10-12, lanthanum laurate 6-9, tri-Ph phosphite 1-3, zinc stearate 3-6, stearic acid 2-4, epoxy soybean oil 2-4, diisononyl phthalate 20-24, carbitol 5-6, o-hydroxybenzophenone 2-3, and heavy calcium carbonate 10-15 weight parts.

ANSWER 21

AN 164:327070

TI Efficient thermal stabilization of polyvinyl chloride with tannin-Ca complex as bio-based thermal stabilizer

AU Shnawa, Hussein A.; Khalaf, Moayad N.; Jahani, Yousef; Taobi, Abed Alameer H.

CS Chemistry Department, College of Science, University of Basrah, Basrah, Iraq

SO Materials Sciences and Applications (2015), 6(5), 360-372

CODEN: MSAACO; ISSN: 2153-1188

DOI 10.4236/msa.2015.65042

PB Scientific Research Publishing, Inc.

DT Journal; (online computer file)

LA English

AB The potential use of tannin-Ca complex derived from tannins as bio-based thermal stabilizer and antioxidant additive for polyvinyl chloride (PVC) was investigated in this work. For this project, Reapak B-NT/7060 was applied as reference thermal stabilizer. Variable compns.: (1, 2, and 3) part per hundred ratio (phr) of tannin-Ca complex in the presence of 10 phr Dioctyl phthalate (DOP) as plasticizer in all PVC formulations were prepared by melt mixing by internal mixer at 165°C. Tannin-Ca complex was characterized by FT-IR spectroscopy, SEM (SEM) and energy dispersive X-ray anal. (EDX) anal. as well as by means of differential scanning calorimetry (DSC). The tannin derivative stabilization efficiency under inert atmospheric was determined by using thermogravimetric anal. (TGA). In addition, its thermal stabilization effect has been assessed in air as oxidizing atmospheric by DSC in dynamic conditions. According to TGA thermograms, the initial degradation temperature (Ti) and optimum degradation temperature (Top) for the main degradation stage of PVC stabilized with this derivative were about 280° and 310°, resp. While these were about 255° and 293°, resp. for PVC stabilized with com. thermal stabilizer. Global results of TGA, DSC, SEM and EDX show that the tannin- Ca complex provides the best properties and results in stabilizing both against thermal degradation and thermal oxidation degradation of PVC.

RE CITED REFERENCES

- (1) de Yuso, A; Materials & Design, <http://dx.doi.org/10.1016/j.matdes.2014.05.072> 2014, V63, P208
- (2) Dora, T; Polymer Degradation and Stability, <http://dx.doi.org/10.1016/j.polymdegradstab.2014.02.012> 2014, V102, P33
- (3) Elaine, C; Composites: Part B, <http://dx.doi.org/10.1016/j.compositesb.2012.04.049> 2012, V43, P2851
- (4) Formagio, A; Antioxidants, <http://dx.doi.org/10.3390/antiox3040745> 2014, V3, P745 CAPLUS
- (5) Graciela, P; Water Research, <http://dx.doi.org/10.1016/j.watres.2003.08.008> 2003, V37, P4974
- (6) Grigsby, W; Macromolecular Materials and Engineering, <http://dx.doi.org/10.1002/mame.201400051> 2014, V299, P1251 HCA
- (7) Grigsby, W; Polymers, <http://dx.doi.org/10.3390/polym5020344> 2013, V5, P344
- (8) Laurent, R; Green Chemistry, <http://dx.doi.org/10.1039/c3gc41281d> 2013, V15, P3268
- (9) Mahmut, O; Journal of Applied Polymer Science, <http://dx.doi.org/10.1002/app.23944> 2006, V102, P786
- (10) Owen, E; Degradation and Stabilisation of PVC,

- <http://dx.doi.org/10.1007/978-94-009-5618-6> 1984
- (11) Pierfrancesco, C; *Polymer Degradation and Stability*,  
<http://dx.doi.org/10.1016/j.polymdegradstab.2009.07.023> 2009, V94, P2095
- (12) Rabek, J; *Experimental Methods in Polymer Chemistry* 1970, P221
- (13) Rosales-Castro, M; *Records of Natural Products* 2014, V8, P217
- (14) Starnes, W; *Progress in Polymer Science*,  
[http://dx.doi.org/10.1016/S0079-6700\(02\)00063-1](http://dx.doi.org/10.1016/S0079-6700(02)00063-1) 2002, V27, P2133 HCA
- (15) Wei, S; *Molecules*, <http://dx.doi.org/10.3390/molecules15064369> 2010, V15, P4369 HCA
- (16) Woo, L; *Journal of Vinyl and Additive Technology*,  
<http://dx.doi.org/10.1002/vnl.730130408> 1991, V13, P199 HCA
- OSC.G 1            THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

ANSWER 22

AN 164:327053

TI Thermal behavior of epoxidized cardanol diethyl phosphate as novel renewable plasticizer for poly(vinyl chloride)

AU Chen, Jie; Liu, Zengshe; Li, Xiaoying; Liu, Peng; Jiang, Jianchun; Nie, Xiaolan

CS Key Laboratory of Biomass Energy and Material, Institute of Chemical Industry of Forestry Products, National Engineering Laboratory for Biomass Chemical Utilization, Chinese Academy of Forestry, Jiangsu, 210042, Peop. Rep. China

SO *Polymer Degradation and Stability* (2016), 126, 58-64  
CODEN: PDSTDW; ISSN: 0141-3910

DOI 10.1016/j.polymdegradstab.2016.01.018

PB Elsevier Ltd.

DT Journal; (online computer file)

LA English

AB A novel plasticizer, epoxidized cardanol di-Et phosphate (ECEP), based on cardanol was synthesized. Chemical structure of ECEP was characterized by fourier transform IR (FTIR), <sup>1</sup>H -NMR(<sup>1</sup>H NMR) and <sup>13</sup>C -NMR(<sup>13</sup>C NMR). Effects of ECEP substitution for the petroleum-based plasticizer dioctyl phthalate (DOP) in soft poly(vinyl chloride) (PVC) films were studied. Thermal stability and mech. properties before and after aging of PVC films plasticized with different content of ECEP were investigated with thermogravimetric anal. (TGA), dynamic mech. anal. (DMA) and tensile tests. The results indicated that PVC films plasticized with ECEP showed increased thermal stability. When DOP was substituted for ECEP completely, glass transition temperature (T<sub>g</sub>) of PVC films decreased from 41.07 °C to 33.20 °C, the 10% and 50% weight loss temps. (T<sub>10</sub> and T<sub>50</sub>) increased by 31.57 °C and 23.09 °C resp. The mech. properties of PVC films before and after aging were also investigated.

RE CITED REFERENCES

- (1) Alexander, M; *J. Appl Polym Sci* 2006, V102, P4835 HCA
- (2) Antony, R; *J. Appl Polym Sci* 1993, V49, P2129 HCA
- (3) Arias, V; *J. Appl Polym Sci* 2013, V130, P2962 HCA
- (4) Bani-Jaber, A; *J. Drug Deliv Sci Tec* 2009, V19, P125 HCA
- (5) Behr, A; *Green Chem* 2008, V1, P13
- (6) Bouchareb, B; *J. Appl Polym Sci* 2008, V107, P3442 HCA
- (7) Brunetti, D; *Polym Degrad Stab* 2010, V95, P2169
- (8) Cal, E; *Polym Degrad Stab* 2011, V96, P784
- (9) Chiellini, F; *Int J Pharm* 2011, V409, P57 HCA
- (10) Chiellini, F; *Prog Polym Sci* 2013, V38, P1067 HCA
- (11) Coltro, L; *Food control* 2014, P118 HCA
- (12) Coltro, L; *Polym Test* 2013, V32, P272 HCA
- (13) Demertzis, P; *Eur Polym J* 1991, V7, P231
- (14) Dong, Y; *Carbohydr Polym* 2014, V103, P198
- (15) Dorsey, J; *Anal Chem* 1977, V8, P1144
- (16) Fenollar, O; *Eur Polym J* 2009, V45, P2674 HCA

- (17) Fenollar, O; J. Mater Sci 2009, V44, P3702 HCA
- (18) Gamage, P; J. Appl Polym Sci 2011, V121, P823 HCA
- (19) Hines, C; Int Arch Occ Env Hea 2012, V85, P317 HCA
- (20) Joseph, R; J. Appl Polym Sci 2003, V89, P668 HCA
- (21) Krewson, C; J. Am Oil Chem Soc 1966, V43, P377 HCA
- (22) Lavorgna, M; Carbohydr Polym 2010, V82, P291 HCA
- (23) Lithner, D; Sci Total Environ 2011, V409, P3309 HCA
- (24) Lizymol, P; Polym Degrad Stab 1993, V41, P59 HCA
- (25) Maffezzoli, A; Green Chem 2007, V9, P754
- (26) McNeill, I; Polym Degrad Stab 1995, V49, P181 HCA
- (27) Mehta, B; Polym Int 2013, V63, P1456
- (28) Meier, M; Green Chem 2014, V16, P1672 HCA
- (29) Mele, G; Green Chem 2004, V6, P604 HCA
- (30) Mohapatra, S; Ind Eng Chem Res 2013, V52, P5951 HCA
- (31) Noel, A; Acs Macro Lett 2015, V4, P645 HCA
- (32) Oliveira Santos, R; J. Appl Polym Sci 2014, V131, P469
- (33) Papageorgiou, G; Eur Polym J 2014, V67, P383
- (34) Papageorgiou, G; Polymer 2014, V55, P3846 HCA
- (35) Pillot, J; Eur Polym J 1989, V25, P285 HCA
- (36) Pospisil, J; Polym Degrad Stab 1999, V65, P405 HCA
- (37) Rao, B; Eur Polym J 2013, V49, P2365 HCA
- (38) Rios, M; Fuel Process Technol 2012, V96, P1 HCA
- (39) Saygin, D; Renew Sust Energ Rev 2014, V40, P1153 HCA
- (40) Semsarzadeh, M; Eur Polym J 2002, V38, P351 HCA
- (41) Souza, J; Polym Test 2007, V26, P720
- (42) Sun, Y; J. Mol Catal A Chem 2001, V166, P219 HCA
- (43) Wang, S; J. Polym Sci Pol Phys 2000, V38, P2409 HCA
- (44) Xu, Y; J. Appl Polym Sci 2009, V112, P3185 HCA
- (45) Yadav, R; Eur Polym J 2007, V43, P3531 HCA
- (46) Yahya, M; Eur Polym J 2003, V39, P897 HCA
- (47) Yan, J; J. Appl Polym Sci 2015, V132, P42311

ANSWER 23

AN 164:315231

TI Hydroxyl complex thermal stabilizer, composite thermal stabilizer and polyvinyl chloride resin composition and preparation method thereof

IN Chen, Huanzhang; Shen, Jie; Zhang, Canming

PA Hebei Jingxin Chemical Group Co., Ltd., Peop. Rep. China

SO Faming Zhuanli Shenqing, 8pp.

CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
|      | -----            | ---- | -----    | -----            | -----        |
| PI   | CN 105273223     | A    | 20160127 | CN 2015-10764724 | 20151111 <-- |
| PRAI | CN 2015-10764724 |      | 20151111 |                  |              |

AB The present invention provides a hydroxyl complex thermal stabilizer, composite thermal stabilizer and polyvinyl chloride resin composition and preparation method thereof. This thermal stabilizer is hydroxyl calcium complex and/or hydroxyl zinc complex. The preparation method of the hydroxyl calcium complex includes: mixing Ca-containing compound, hydroxy compound and low carbon alc., reacting under refluxing conditions of low carbon alc., cooling to room temperature, pump filtering, washing, drying to obtain hydroxyl calcium complex. The preparation method of the hydroxyl zinc complex includes: mixing hydroxy compound and zinc-containing compound uniformly, heating, cooling, adding low carbon alc., forming uniform material slurry, centrifuging, washing, drying to obtain the hydroxyl zinc complex. The composite thermal stabilizer includes main stabilizer and auxiliary thermal stabilizer at a weight ratio of

0.8-2:0.9-2, the main stabilizer is the above hydroxyl complex thermal stabilizer. The polyvinyl chloride resin composition includes 100 weight parts of polyvinyl chloride resin, 1.5-4 weight parts of composite thermal stabilizer, 0.2-0.4 weight part of lubricating agent and 0-5 weight parts of plasticizer. Advantage of the present invention is that prepared composite thermal stabilizer is used for stabilizer for processing plastic such as PVC, has features of being not easy to precipitate, being nontoxic, being cheap, and good stabilizing effect.

ANSWER 24

AN 164:315195

TI Thermal stabilizer composition and synthetic resin composition including same

IN Negishi, Yoshinori; Honma, Yasuhiro; Segawa, Masaki; Ishizuka, Yuto; Ishii, Mariko

PA Adeka Corporation, Japan

SO PCT Int. Appl., 63pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

|      | PATENT NO.  | KIND | DATE     | APPLICATION NO. | DATE     |
|------|---|------|----------|-----------------|----------|
|      | -----   | ---- | -----    | -----           | -----    |
| PI   | WO 2016031505   | A1   | 20160303 | WO 2015-JP72149 | 20150804 |
|      | W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW<br>RW: AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, RU, TJ, TM |      |          |                 |          |
| PRAI | JP 2014-173319  | A    | 20140827 |                 |          |

OS MARPAT 164:315195

AB Provided are a thermal stabilizer composition that does not generate a phosphorus-based antioxidant odor, and a synthetic resin composition including the same. The stabilizer composition comprises 100 parts by mass of a phosphorus-based antioxidant having a phosphite structure and 0.001-10 parts by mass of a phenolic antioxidant having a substructure represented by general formula I (R1, R2, R3, and R4 are each independently a hydrogen atom, or a hydrocarbon group having 1-10 carbon atoms, a is an integer of 0-2, and when a is 2, the plurality of R3s may be the same or different.). Thus, a mixture of 100 parts triisodecyl phosphite and 0.01 part 1,1,3-tris(2-methyl-4-hydroxy-5-tert-butylphenyl)butane showed no odor during storage and clouding.

ANSWER 25

AN 164:315154

TI Thermal degradation of  $\gamma$ -irradiated PVC: II-Isothermal experiments

AU Boughattas, Imene; Pellizzi, Eleonora; Ferry, Muriel; Dauvois, Vincent; Lamouroux, Christine; Dannoux-Papin, Adeline; Leoni, Elisa; Balanzat, Emmanuel; Esnouf, Stephane

CS DSM, IRAMIS, LIDYL, CEA, Gif-sur-Yvette, F-91191, Fr.

SO Polymer Degradation and Stability (2016), 126, 209-218

CODEN: PDSTDW; ISSN: 0141-3910  
 DOI 10.1016/j.polymdegradstab.2015.05.010  
 PB Elsevier Ltd.  
 DT Journal; (online computer file)  
 LA English  
 AB A previous study carried out using dynamical thermogravimetry showed that radio-oxidation enhances the thermal degradation of poly(vinyl chloride) (PVC). In order to gain a better understanding of the mechanisms responsible for this thermal instability, a series of isothermal treatments were performed on radio-oxidized PVC. Two materials were studied: additive-free PVC and plasticized PVC. The samples were pre-degraded using  $\gamma$ -radiation under air at room temperature. The isothermal degradation at 120 and 150 °C of radio-oxidized PVC was then investigated using thermogravimetry followed by mass spectrometry, in-situ IR spectroscopy and thermodesorption coupled with gas chromatog.-mass spectrometry. For both pre-irradiated polymers the major weight loss appears after 30 min of heating at 120 °C or 150 °C. The gases responsible for this weight loss are mainly HCl, a small amount of benzene and CO<sub>2</sub>. Desorption of degradation mols. resulting from radio-oxidation also contributes to the weight loss.

RE CITED REFERENCES

- (1) Arakawa, K; Radiat Phys Chem 1986, V27, P157 HCA
- (2) Audouin, L; J. Appl Polym Sci 1992, V45, P2091 HCA
- (3) Bacaloglu, R; Polym Degrad Stabil 1995, V47, P33 HCA
- (4) Beltran, M; Eur Polym J 1997, V33, P1135 HCA
- (5) Bockhorn, H; J. Anal Appl Pyrolysis 1999, V50, P77 HCA
- (6) Cooray, B; Eur Polym J 1980, V16, P169 HCA
- (7) Endo, K; Prog Polym Sci 2002, V27, P2021 HCA
- (8) Hegazy, E; J. Appl Polym Sci 1981, V26, P2947 HCA
- (9) Hjertberg, T; Macromolecules 1988, V21, P603 HCA
- (10) Ivan, B; Polym Bull 1980, V2, P83 HCA
- (11) Kelen, T; Polym Bull 1978, V1, P79 HCA
- (12) Kelen, T; React Kinet Catal Lett 1974, V1, P93 HCA
- (13) Krylova, S; Vysokomol Soedin Seriya A 1979, V21, P684 HCA
- (14) Lerke, I; J. Appl Polym Sci 1977, V21, P2067 HCA
- (15) Marongiu, A; J. Anal Appl Pyrolysis 2003, V70, P519 HCA
- (16) Martinsson, E; Macromolecules 1988, V21, P136 HCA
- (17) Minsker, K; J. Macromol Sci Part C 1981, V20, P243
- (18) Nagy, T; Angew Makromol Chem 1978, V66, P193 HCA
- (19) Nagy, T; Polym Bull 1980, V3, P613 HCA
- (20) Nagy, T; React Kinet Catal Lett 1976, V5, P303 HCA
- (21) Nagy, T; React Kinet Catal Lett 1978, V8, P7 HCA
- (22) Panek, M; Macromolecules 1985, V18, P1040 HCA
- (23) Saido, K; Macromol Res 2003, V11, P178 HCA
- (24) Salovey, R; J. Appl Polym Sci 1970, V14, P713 HCA
- (25) Salovey, R; J. Appl Polym Sci 1972, V16, P3265 HCA
- (26) Scott, G; Eur Polym J 1978, V14, P377 HCA
- (27) Svetly, J; Makromol Chem Rapid Commun 1980, V1, P247 HCA
- (28) Szymanski, W; J. Appl Polym Sci 1979, V23, P791 HCA
- (29) Troitskii, B; Polym Degrad Stabil 1997, V58, P83 HCA
- (30) Troitskii, B; Polym Sci Part A Polym Chem 1993, V31, P75 HCA
- (31) Villar, H; J. Chem Phys 1988, V88, P1003 HCA
- (32) Wypych, J; PVC Degradation and Stabilization 2008
- (33) Zahran, A; Radiat Phys Chem 1985, V26, P25 HCA
- (34) Zeppenfeld, G; On the Mechanism of the Radiation Oxidation of Poly (vinyl Chloride PVC) 1966
- (35) Zhao, W; J. Polym Sci Part A Polym Chem 1998, V36, P3089 HCA

OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)



AN 164:315079

TI Thermal degradation of  $\gamma$ -irradiated PVC: I-dynamical experiments

AU Boughattas, Imene; Ferry, Muriel; Dauvois, Vincent; Lamouroux, Christine; Dannoux-Papin, Adeline; Leoni, Elisa; Balanzat, Emmanuel; Esnouf, Stephane

CS DSM, IRAMIS, LIDYL, CEA, Gif-sur-Yvette, F-91191, Fr.

SO Polymer Degradation and Stability (2016), 126, 219-226  
CODEN: PDSTDW; ISSN: 0141-3910

DOI 10.1016/j.polyimdegradstab.2015.03.014

PB Elsevier Ltd.

DT Journal; (online computer file)

LA English

AB Polymers used in nuclear industry are important constituents of nuclear wastes. In case of fire during waste transportation, package temperature could rise markedly. Within this context, the objective of this work is to analyze the thermal degradation of irradiated polymers. The dynamical degradation of radio-oxidized poly(vinyl chloride) was investigated by thermogravimetry coupled with mass spectrometry and by thermodesorption coupled with gas chromatog.-mass spectrometry. Additive-free and plasticized PVC was pre-aged using  $\gamma$ -irradiation under air at room temperature. Pre-irradiation induces a decrease of the initial degradation temperature and leads to an early formation of HCl and benzene. Although dehydrochlorination remains the predominant degradation process within the temperature range used in this study, others processes contribute to the mass loss such as dehydration and desorption of degradation mols. resulting from radio-oxidation

RE CITED REFERENCES

- (1) Anon; Polyvinyl chloride degradation 1985
- (2) Bacaloglu, R; Polym Degrad Stabil 1994, V45, P301 HCA
- (3) Bacaloglu, R; Polym Degrad Stabil 1995, V47, P33 HCA
- (4) Beltran, M; Polym Degrad Stabil 1997, V55, P73 HCA
- (5) Benes, M; J Therm Anal Calorim 2004, V78, P621 HCA
- (6) Bockhorn, H; J Anal Appl Pyrolysis 1999, V50, P77 HCA
- (7) Braun, D; Dev Polym Degrad 1981, V3, P173
- (8) Carlsson, D; ACS Symp Ser 1988, V364, P376 HCA
- (9) Cooray, B; Eur Polym J 1980, V16, P169 HCA
- (10) Decker, C; J Appl Polym Sci 1976, V20, P3321 HCA
- (11) Esposti, G; Radiat Phys Chem 1999, V54, P203 HCA
- (12) Gardette, J; Macromolecules 1989, V22, P2576 HCA
- (13) Geoffrey, M; Polym Degrad Stabil 1999, V64, P353
- (14) Hjertberg, T; Macromolecules 1988, V21, P603 HCA
- (15) Krzysztof, P; Thermal degradation of polymeric materials 2005
- (16) Marcilla, A; Polym Degrad Stabil 1995, V48, P219 HCA
- (17) Martinsson, E; Macromolecules 1988, V21, P136 HCA
- (18) Matuschek, G; Thermochim Acta 2000, V361, P77 HCA
- (19) McNeill, I; Polym Degrad Stabil 1995, V49, P181 HCA
- (20) Miranda, R; Polym Degrad Stabil 1999, V64, P127 HCA
- (21) Montaudo, G; Polym Degrad Stabil 1991, V33, P229 HCA
- (22) Nagy, T; Angew Makromol Chem 1978, V66, P193 HCA
- (23) Nagy, T; Polym Bull 1980, V3, P613 HCA
- (24) Ozawa, T; J Therm Anal Calorim 1970, V2, P301 HCA
- (25) Salovey, R; J Appl Polym Sci 1970, V14, P713 HCA
- (26) Salovey, R; J Appl Polym Sci 1972, V16, P3265 HCA
- (27) Sanchez-Jimenez, P; Polymer 2010, V51, P3998 HCA
- (28) Slapak, M; Comput Theor Polym Sci 2000, V10, P481 HCA
- (29) Soudais, Y; J Anal Appl Pyrolysis 2007, V78, P46 HCA
- (30) Starnes, W; Prog Polym Sci 2002, V27, P2133 HCA
- (31) Stromberg, R; J Polym Sci 1959, V35, P355 HCA
- (32) Troitskii, B; Eur Polym J 1997, V33, P1179
- (33) Troitskii, B; J Polym Sci Part A Polym Chem 1990, V28, P2695 HCA
- (34) Troitskii, B; J Polym Sci Part A Polym Chem 1993, V31, P75 HCA
- (35) Troitskii, B; Polym Degrad Stabil 1997, V58, P83 HCA



(36) Wu, C; Chem Eng J Biochem Eng J 1994, V55, P87 HCA  
 (37) Wypych, J; PVC degradation and stabilization 2008  
 (38) Zeppenfeld, G; On the mechanism of the radiation oxidation of poly(vinyl chloride PVC) 1966  
 (39) Zhu, H; J Anal Appl Pyrolysis 2008, V82, P1 HCA  
 OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

ANSWER 27

AN 164:304817  
 TI A hydrotalcite having acid adsorption property and transparent effect used in polymer and preparation method thereof  
 IN He, Jiebing; Chi, Wenjie  
 PA GCH Technology Co., Ltd., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 7pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE     |
|------|------------------|------|----------|------------------|----------|
| PI   | CN 105293541     | A    | 20160203 | CN 2015-10769992 | 20151112 |
| PRAI | CN 2015-10769992 |      | 20151112 |                  |          |

AB The present invention relates to a hydrotalcite, and its chemical formula is:  $M2+xM3+y(OH)_{2x+3y-x/2}(CO3)_{x/4} \cdot mH2O$ , wherein  $M2+$  is divalent metal ions or a mixture of the divalent metal ions selected from one or two of  $Mg^{2+}$ ,  $Ca^{2+}$ ,  $Ni^{2+}$ ,  $Zn^{2+}$ ,  $Mn^{2+}$ ,  $Cu^{2+}$ ,  $Co^{2+}$ ,  $Pd^{2+}$  and  $Fe^{2+}$ ;  $M3+$  is trivalent metal ions selected from one of  $Al^{3+}$ ,  $Ga^{3+}$  and  $In^{3+}$ ;  $x$  and  $y$  are pos. nos.;  $x/y=2.0-2.5$ ;  $m=3.5-4.0$ .  $D50$  of the hydrotalcite is smaller than  $0.150 \mu m$ , and the numerical range is  $0.120-0.140 \mu m$ . The sp. surface area of the hydrotalcite is larger than  $30 m^2/g$ . The preparation method of the hydrotalcite is: mixing  $M2+(HCO3)_2$  of  $x/8$  mol,  $NaM3+O2$  of  $y$  mol,  $M2+Cl2$  of  $1/4x$  mol,  $M2+(OH)_2$  of  $5/8x$  mol and  $H2O$  of  $(4+3/4x)$  mol and stirring thoroughly, heating to  $75-85 \text{ }^\circ C$ ; stirring while preserving heat for a period of time, and obtaining the final product; its reaction formula is as follows:  $x/8M2+(HCO3)_2+yNaM3+O2+O2+1/4xM2+Cl2+5/8xM2+(OH)_2+(4+3/4x)H2O \rightarrow M2+xM3+y(OH)_{2x+3y-x/2}(CO3)_{x/4} \cdot 4H2O$ . The hydrotalcite is used to adsorb the acid exuded from decomposition of the polymer by heating; its addition proportion is  $0.5-1.5\%$ , and the polymer is polyvinyl chloride. The hydrotalcite has good acid adsorption property with an acid adsorption capacity which is five times stronger than that of calcium stearate, and the hydrotalcite can be used as a good soft and rigid transparent or non-transparent PVC processing acid adsorption agent, which is a good stabilizer of organohalogen flame retardant. The hydrotalcite has advantages of good thermostability, high efficiency and good photostability, and it has good compatibility with PVC and does not volatilize, migrate, or give out frost, and it is non-toxic and pollution-free, and ensure transparency of PVC and prevent degradation

ANSWER 28

AN 164:303362  
 TI Organic zinc complex composite heat stabilizer for PVC and preparation method thereof  
 IN Chen, Huanzhang; Shen, Jie; Zhang, Canming  
 PA Hebei Jingxin Chemical Group Co., Ltd., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 7pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.   | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|--|------|----------|------------------|--------------|
|      | -----  | ---- | -----    | -----            | -----        |
| PI   | CN 105273337   | A    | 20160127 | CN 2015-10764723 | 20151111 <-- |
| PRAI | CN 2015-10764723   |      | 20151111 |                  |              |
| OS   | MARPAT 164:303362  |      |          |                  |              |
| AB   | The composite heat stabilizer comprises main stabilizer and auxiliary heat stabilizer. The mass ratio of described main stabilizer and auxiliary heat stabilizer is (0.9-3.0):(0.1-1.0); where, described main stabilizer is organic zinc complex and calcium stearate; described auxiliary heat stabilizer is selected at least one from stearic acid, polyhydric alc., hydrotalcite and zeolite. The stabilizer is prepared by the following steps: (1) mixing zinc salt and organic solvent, heating to reflux, adding organic ligand to mixed solution, evaporating organic solvent and excessive organic ligand to obtain organic zinc complex; and (2) mixing with calcium stearate and auxiliary heat stabilizer. |      |          |                  |              |

ANSWER 29

AN 164:303324  
 TI Heat-resistant modified polyvinyl chloride plastic and its preparation method  
 IN Jiang, Lei; Zhang, Li; Zheng, Xiao; Qiu, Yufei  
 PA Ningbo Shanggao New Materials Co., Ltd., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 5pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.  | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|---|------|----------|------------------|--------------|
|      | -----   | ---- | -----    | -----            | -----        |
| PI   | CN 105255068  | A    | 20160120 | CN 2015-10814408 | 20151123 <-- |
| PRAI | CN 2015-10814408  |      | 20151123 |                  |              |
| AB   | The title heat-resistant modified polyvinyl chloride (PVC) plastic is composed of (by weight parts) stannous sulfide 0.1-0.2, bisphenol A phosphite 2-3, modified PVC emulsion 150-170, ammonium molybdate 2-4, vinyl chloride-vinyl acetate resin 4-7, 2-benzisothiazolin-3-one 0.6-1, vanadium acetylacetonate 0.1-0.2, sodium dodecanol polyoxyethylene ether sulfate 1-2, tri-Bu borate 4-7, fluorinated graphite 30-40, polytetrafluoroethylene 5-10, hexamethylphosphoric triamide 2-3, potassium zirconium carbonate 2-4, and oleic diethanolamide 0.6-1, wherein the modified PVC emulsion is prepared from PVC, L-lysine diisocyanate, calcium sulfoaluminate, TRITON(R) X-100, hydrogenated, palm wax, hexabromocyclododecane, dimethyldioctylammonium chloride and phthalic acid polyester. The invention also provides preparation method of the heat-resistant modified PVC plastic. According to the invention, the modified PVC emulsion has good adhesion, stability, and compatibility with each raw material; and the heat-resistant modified PVC plastic has good surface strength, weather resistance, improved heat resistance, aging resistance and prolonged service life. |      |          |                  |              |

ANSWER 30

AN 164:303303  
 TI Flame-retardant PVC insulating cable sheath  
 IN Sun, Miao; Jiang, Huiqi; Cai, Xudong  
 PA Qingdao Zhongke Software Co., Ltd., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 4pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
|      | -----            | ---- | -----    | -----            | -----        |
| PI   | CN 105255043     | A    | 20160120 | CN 2015-10667197 | 20151016 <-- |
| PRAI | CN 2015-10667197 |      | 20151016 |                  |              |

AB The invention discloses a flame-retardant PVC insulating cable sheath. The sheath is prepared from (by weight parts) PVC resin 100, ethylene-propylene rubber 30-40, chlorosulfonated polyethylene 12-15, alkoxy polydimethylsiloxane 6-8, sulfur 4-6, vulcanization accelerator 1-2, boron-zinc compound stabilizer 1-2, dioctyl phthalate 4-6, UV light absorber 0.3-0.5, acid absorbent 2-4 and filler 3-5. The cable material of the invention has good insulativity, good heat resistance, high tensile strength and good flame retardancy. The cable material has good chemical medium corrosion resistance and high radiation resistance, and has the elongation at break greater than 50% after radiation dosage is 2400 KGy.

ANSWER 31

AN 164:302809  
 TI Phosphite antioxidant and its green preparation method  
 IN Xie, Quancheng; Song, Weibin; Feng, Jianhui; Wang, Min; Cui, Xiaokun  
 PA Zibo Yifeng Iron Polymer Material Co., Ltd., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 13pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.        | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|-------------------|------|----------|------------------|--------------|
|      | -----             | ---- | -----    | -----            | -----        |
| PI   | CN 105294758      | A    | 20160203 | CN 2015-10823385 | 20151124 <-- |
| PRAI | CN 2015-10823385  |      | 20151124 |                  |              |
| OS   | MARPAT 164:302809 |      |          |                  |              |

AB The present invention relates to a kind of antioxidant and its preparation method, and specifically relates to a kind of phosphite antioxidant and its preparation method. Chemical formula is as follows I, wherein: R1 is methylpiperidyl, R2 is Ph or R3-phenyl; R3 is C10-C22 alkyl. The present invention provides a kind of novel phosphite antioxidant, and the product has double effects of antioxidant and light stabilization. This kind of antioxidant is applicable to the rubber-plastic elastomers, such as SBS, TPR, IPS, PS, SBR, BR, PVC, PE, PP, ABS, and has high thermal and oxygen stabilization efficiency, and the antioxidant does not change color in the course of processing and use, is especially suitable for being used as light color stabilizer with wider market prospect. The present invention also provides its preparation method, which has high product yield, little 'three wastes' discharge, and is environmentally friendly and energy-saving.

ANSWER 32

AN 164:290724  
 TI Formulation for polyvinyl chloride (PVC) window screen filaments with good weather resistance and light heat resistance  
 IN Wang, Xiaowei  
 PA Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 4pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|  | PATENT NO. | KIND | DATE  | APPLICATION NO. | DATE  |
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PI CN 105255071 A 20160120 CN 2015-10822159 20151124 <--  
 PRAI CN 2015-10822159 20151124  
 AB The title formulation comprises (by weight) polyvinyl chloride (PVC) (SG-5) 100 parts, di-Bu phthalate (DBP) 2-9 parts, stabilizer (tribasic lead sulfate and/or dibasic lead phosphite) 8-10 parts and stearic acid 0.4-0.6 part. The formulation has good weather resistance, light heat resistance, good performance, low cost, and good processability.

ANSWER 33

AN 164:290675  
 TI Environment-friendly hydrotalcite-rare earth citrate composite stabilizer for PVC and the manufacture thereof  
 IN Wang, Shengmao; Qiu, Yonggui; Song, Kaisheng; Gao, Xu; Li, Yi; Xu, Ming; Xiao, Dushan; Sun, Rongxing  
 PA Anhui Hwasu Corp., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 5pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.   | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|--|------|----------|------------------|--------------|
|      | -----  | ---- | -----    | -----            | -----        |
| PI   | CN 105255064   | A    | 20160120 | CN 2015-10793162 | 20151118 <-- |
| PRAI | CN 2015-10793162   |      | 20151118 |                  |              |
| AB   | The title stabilizer is prepared from modified Zn/Al hydrotalcite 20-30, octyl tin mercaptide 10-12, cerium stearate 6-9, lanthanum citrate 2-3, diisodecyl phthalate 18-22, N-(p-chlorophenyl) phthalimide 10-15, zinc stearate 3-6, Ba-Cd-Zn soap-based stabilizer 2-4, carbitol 5-6, 2,4-dihydroxy benzophenone 1-2, bayberry wax 2-3, and nano-calcium carbonate 5-10 parts. |      |          |                  |              |

ANSWER 34

AN 164:278604  
 TI Method for production and applications of 2-mercaptoethanol  
 IN Boehling, Ralf; Hayer, Michael; Rehfinger, Alwin; Deckers, Andreas; Triller, Michael  
 PA BASF SE, Germany  
 SO PCT Int. Appl., 36pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA German  
 FAN.CNT 1

|      | PATENT NO.  | KIND | DATE     | APPLICATION NO. | DATE     |
|------|---|------|----------|-----------------|----------|
|      | -----   | ---- | -----    | -----           | -----    |
| PI   | WO 2016024012   | A1   | 20160218 | WO 2015-EP68752 | 20150814 |
|      | W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW |      |          |                 |          |
|      | RW: AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, RU, TJ, TM  |      |          |                 |          |
| PRAI | EP 2014-181167  | A    | 20140815 |                 |          |

AB A method for production of 2-mercaptoethanol comprises (a) providing a liquid thiodiglycol flow, (b) providing hydrogen sulfide in a liquid or gas phase, (c) providing liquid ethylene oxide, (d) mixing hydrogen sulfide and ethylene oxide with thiodiglycol in a mixing zone to obtain a feed mixture, wherein a temperature is 0-200° and a pressure is 2-100 bar at the outlet of the mixing zone, (e) converting ethylene oxide and hydrogen sulfide contained in the feed mixture in an adiabatic reaction zone at an outlet temperature of ≥ 120° to ≤ 300° and a pressure of ≥ 1.5 bar to obtain the reaction product which comprises 2-mercaptoethanol and thiodiglycol, wherein the feed mixture in step (d) has a thiodiglycol/ethylene oxide ratio from 99.5/0.5 to 80/20. The invention also relates to the use of 2-mercaptoethanol in production of rubber, plasticizers, as enzyme stabilizer, pH buffer, cell culture growth promoter, chain transfer agent in polymerization, intermediate product in synthesis of amino acids, stabilizer in PVC-containing plastics.

RE CITED REFERENCES

- (1) ARRETZ, E; DE 3122285 A1 No publication given 1982 HCA
- (2) Anon; No publication given
- (3) BAYER AG; GB 1334100 A 1973 HCA
- (4) GOETZE, W; CH 533092 A No publication given 1973 HCA
- (5) MEYBORG, H; EP 0007502 A1 No publication given 1980 HCA
- (6) REHFINGER, A; EP 1923384 A1 No publication given 2008 HCA

ANSWER 35

AN 164:277739

TI Stabilizing agent for chlorine-containing resins, and chlorine-containing resin composition containing said stabilizing agent

IN Wazaki, Takahiro; Morimoto, Kensaku; Minamino, Satoshi

PA Nitto Kasei Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 17pp.; Chemical Indexing Equivalent to 161:9124 (WO)

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 2

|      | PATENT NO.  | KIND | DATE     | APPLICATION NO. | DATE         |
|------|---|------|----------|-----------------|--------------|
| PI   | JP 2016027063   | A    | 20160218 | JP 2012-255457  | 20121121     |
|      | WO 2014080755   | A1   | 20140530 | WO 2013-JP79868 | 20131105 <-- |
|      | W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW |      |          |                 |              |
|      | RW: AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, RU, TJ, TM  |      |          |                 |              |
| PRAI | JP 2012-255457  | A    | 20121121 |                 |              |

AB In the above-mentioned situations, the present invention provides: a stabilizing agent for chlorine-containing resins, which has an excellent stability-improving effect; and a chlorine-containing resin composition containing the stabilizing agent. According to the present invention, a chlorine-containing resin composition is provided, which comprises at least one tetrazole salt (A) selected from the group consisting of metal

salts of 5-amino-1H-tetrazole and hydrates of the metal salts, a perchlorate salt (B) and a chlorine-containing resin.

ANSWER 36

AN 164:277711  
 TI High-temperature anti-aging modified PVC material for interior decoration and its preparation method  
 IN Tang, Guangshun  
 PA Wuhu Aidesen Automation Equipment Co., Ltd., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 4pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
| PI   | CN 105255059     | A    | 20160120 | CN 2015-10762248 | 20151110 <-- |
| PRAI | CN 2015-10762248 |      | 20151110 |                  |              |

AB The modified PVC material comprises PVC resin 80-100, zircon powder 4-6, graphite powder 2-4, carbon fiber 1-2, nano zinc oxide 1-2, Pr gallate 0.2-0.4, antioxidant 1010 0.1-0.2, UV absorber UV-531 0.1-0.2, calcium-zinc stabilizer 2-3, epoxy soybean oil 5-10, tri-Bu acetylcitrate 20-30, oleamide 0.5-1 and modifier 5-10 weight parts. The modifier is prepared from acrylic acid 6-8, methylenebisacrylamide 0.1-0.15, potassium persulfate 0.2-0.4, nano alumina 3-5, diatomite 10-15, xanthan gum 1-2, silane coupling agent KH550 0.1-0.2 and water 80-100 weight parts by the steps of adding diatomite, xanthan gum, nano alumina and potassium persulfate to water, stirring at 50-60 °C for 0.5-1 h, then adding acrylic acid and methylenebisacrylamide, further stirring for 2-3 h, filtering, washing, fully drying, mixing with acrylic acid, methylenebisacrylamide and silane coupling agent KH550 at 100-120 °C for 10-15 min, cooling and grinding evenly. The modified PVC material is used for interior decoration, has good mech. properties, moisture absorption and humidity-controlling performance, can effectively improve the comfort of indoor environment, and also has good high-temperature aging resistance, high stability, long service life and great added value and practical value.

ANSWER 37

AN 164:277681  
 TI Weathering-resistant flame-retardant polyvinyl chloride sheathed cable  
 IN Li, Zhengxiang; Wang, Zhaolan; Liu, Qin  
 PA Anhui Land Group Co., Ltd., Peop. Rep. China  
 SO Faming Zhuanli Shenqing, 8pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE         |
|------|------------------|------|----------|------------------|--------------|
| PI   | CN 105255044     | A    | 20160120 | CN 2015-10679531 | 20151016 <-- |
| PRAI | CN 2015-10679531 |      | 20151016 |                  |              |

AB The cable sheath material is prepared from polyvinyl chloride 50-70, chlorinated polyethylene 5-20, styrene-butadiene block copolymer 5-10, hydroxyl-terminated polybutadiene 1-5, dodecafluoroheptyl methacrylate 5-12,  $\beta$ -(3,5-di-tert-butyl-4-hydroxyphenyl) propionic acid n-octadecyl alc. ester 3-12, modified montmorillonite 5-15, expanded graphite 3-15, zinc borate 2-10, nanoscale zinc hydroxy stannate 3-10, heat stabilizer 5-10, Bu stearate 0.5-2, cerium stearate 0.5-2, ethylene glycol dimethacrylate

1-5, dioctyl adipate 3-15, hexaphenoxy cyclotriphosphazene 2-10, modified carbon nanotube 5-15, isobutyltriethoxysilane 2-5, and 4,4'-thio-bis(6-tert-butyl-3-Me phenol) 0.2-1 weight parts. The sheath of the invention has good impact resistance, excellent flame retardancy and weathering resistance, and long service life.

ANSWER 38

AN 164:326878

TI Production method for improving thermostability of PVC resin

IN Xu, Suxia; Zhao, Guangming; Zheng, Shihong; Wang, Zhenhua; Han, Yanli; Zhao, Yusheng

PA Haohua Yuhang Chemical Co., Ltd., Peop. Rep. China

SO Faming Zhuanli Shenqing, 9pp.

CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

|      | PATENT NO.       | KIND | DATE     | APPLICATION NO.  | DATE     |
|------|------------------|------|----------|------------------|----------|
|      | -----            | ---  | -----    | -----            | -----    |
| PI   | CN 105294895     | A    | 20160203 | CN 2015-10892801 | 20151208 |
| PRAI | CN 2015-10892801 |      | 20151208 |                  |          |

AB The production method comprises the following concrete steps of: after coating a kettle, starting a main feeding program, adding a buffer agent firstly, then sequentially adding pure water, vinyl chloride monomer, dispersant 1, dispersant 2 and an initiator, after reaction is finished, adding a terminating agent to carry out termination reaction, pumping slurry in the kettle into a discharge chute by utilizing a discharging pump, then stripping by a stripper, and drying further, and in the reaction process, adding zinc fatty acid to obtain a resin product with higher thermostability. The dispersant 1 is mixture of PVA L-10, LW-100, hydroxypropylmethyl cellulose 65HD50 at a mass ratio of 5.9:1:1. The dispersant 2 is 3.9-4.2 % PVA GH-20. The buffer is 9-11 wt% ammonium bicarbonate solution. The initiator is composed of dihexyl peroxydicarbonate and isopropylphenyl peroxy neo-decanoate. The terminator is water emulsion terminator with oil phase content of 38-40%. According to the production method disclosed by the invention, under the condition without changing the traditional main production device, by adding the zinc fatty acid in the reaction process, the performance indexes including the thermostability and the thermal ageing whiteness of the polyvinyl chloride resin product are better ensured; and by optimization the production process, the problem that insolubles are adhered to a plate of the stripper is solved, extending cleaning cycle, saving cleaning cost, and improving the production capacity of the device.