
CMP

*

(/ / : / / :)

CMP

CMP

CMP
(Irganox)

Tinuvin Tinuvin (DHB)
(TEMPO)

Everfos

BCMP

CMP

CMP :

...

CMP

$\beta-$

() ()

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nm

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O $\beta--$

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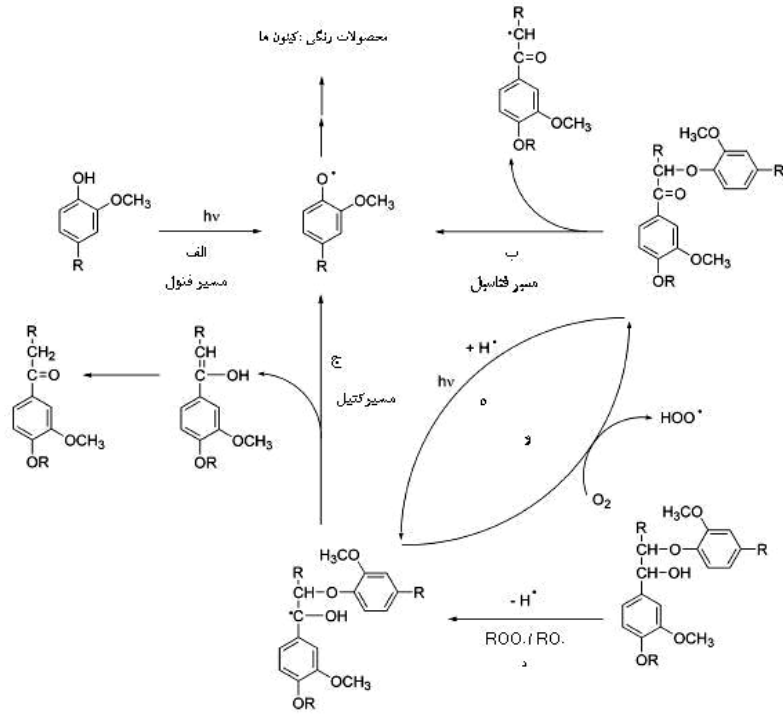
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()

$-\beta$

(RO.)

(ROO.)



()

(UVA)

(RS)

UVA ()

RS

TMP

(PEG)

(PTH)

(PVP)

N

(UVA)

[]

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()

UVA

()

Ultra Violet Absorber
Radical Scavenger

... **CMP**

.((

CMP

.()

()

()
(RS)

()

(CMP)

.()

CMP

)

CMP

(

| pH | g/l Na⁺ | % | ISO % | % | ISO% | CSF ml | % | % |
|-----------|---------------------------|----------|--------------|----------|-------------|---------------|----------|----------|
| / | / | / | | | | | / | |

TEMPO

Merck

Tinuvin Tinuvin

Irganox

Ciba Specialty Chemicals

CMP

) DTPA /

Aldrich

Everfos

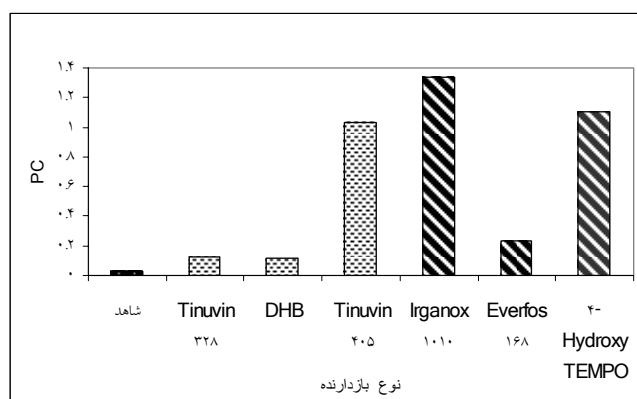
- diethylene triamine penta acetic acid

| ... | CMP | TAPPI | CIE LAB |
|---------|----------------|--|---|
| | (DMRT) SPSS | | (T 524 om -94 TechnidyneMicroTB-1C L* |
| | | + a* + b* | a* b* |
| | CMP | [] Giertz | |
| CMP | | : (PC) | |
| | | PC=(k/s) -(k/s) ×) () | |
| | | k/s=(1-R _∞) / R _∞ () | |
| | / | ISO | s k R _∞ |
| | | | R _∞ |
| | | () Kubelka – Munk | |
| | DHB Tinuvin | | PC |
| | ISO / | PC | |
| TEMPO | Tinuvin | | |
| ISO | / Everfos | PC | |
| Irganox | / | | |
| () | | | PC |
| (L*) | (b*) | PC | PC ISO |
| | | (PC) | (PC) |
| | | PC = PC ₁ +) | PC PC |
| | | | (PC ₂ |
| | | (CRD) | |
| | | () | |
| | | | () |

CMP

| b* | a* | L* | (ISO%) | | () | |
|----|----|----|--------|---|-----|-----------------|
| | | | / | / | | |
| / | / | / | / | / | | |
| / | / | / | / | / | | Tinuvin 328 |
| / | / | / | / | / | | DHB |
| / | / | / | / | / | | Tinuvin 405 |
| / | / | / | / | / | | Irganox 1010 |
| / | / | / | / | / | | Everfos 168 |
| / | / | / | / | / | | 4-hydroxy TEMPO |

PC (-b*) (+b*)
 . (+a*) (-a*) CIELAB
 ()



CMP

PC

CMP

()
 (PC)

... **CMP**

CMP (PC)

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PC
Tinuvin

CMP
DHB Tinuvin
PC

ISO

PC Tinuvin

CMP

TEMPO
PC PC

Everfos Irganox

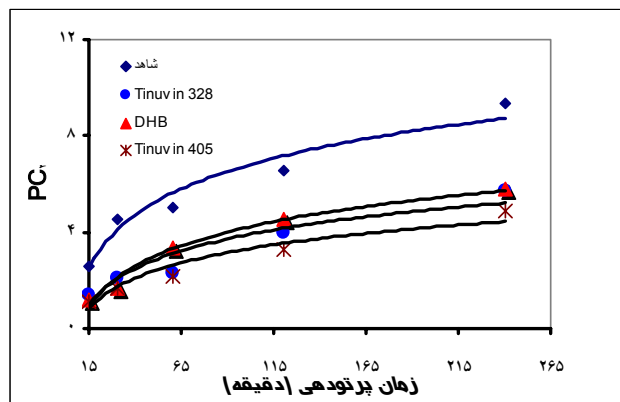
PC
PC PC

CMP

| | PC | | PC | | (ISO%) | |
|---|----|---|----|---|--------|--------------------|
| d | / | d | / | a | / | |
| e | / | e | / | b | / | Tinuvin 328 |
| e | / | e | / | b | / | DHB |
| e | / | f | / | c | / | Tinuvin 405 |
| a | / | a | / | a | / | Irganox 1010 |
| c | / | c | / | a | / | Everfos 168 |
| b | / | b | / | a | / | 4-hydroxy TEMPO |

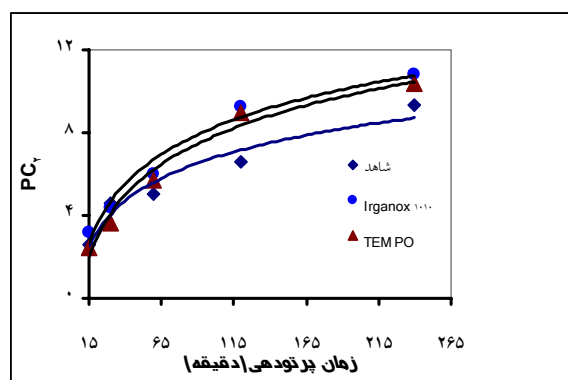
PC

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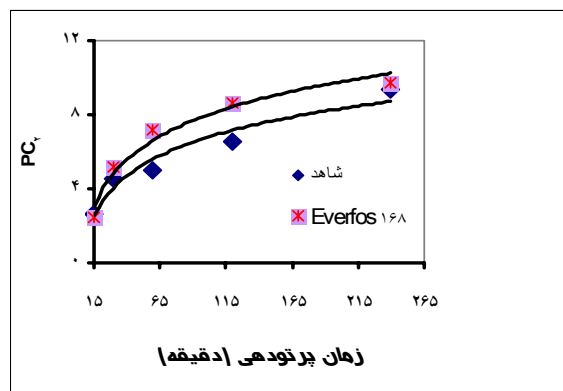
CMP

PC



PC

CMP



CMP

PC

...

CMP

(RS)

PC

CMP

[(

CMP

()

CMP

(Irganox)

)

(Everfos)

(TEMPO

()

BCTMP

$\lambda_{max} = 323$

[(

nm

()

PC

()

TEMPO

()

CMP

PC ()

PC

BTMP

Irganox

UV

CMP

Everfos

) (Irganox)
(TEMPO
(Everfos)

BCMP

CMP

CMP

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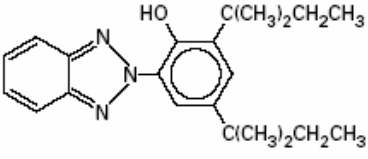
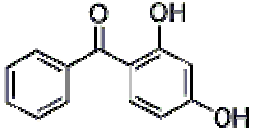
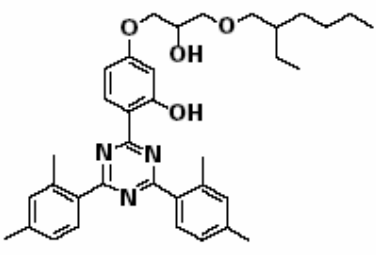
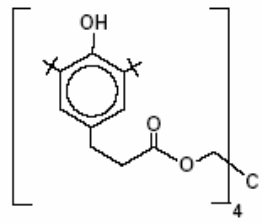
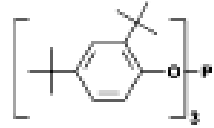
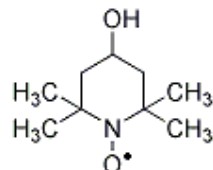
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|--------------------------------------|--|-------------------|
| | | |
| (H) |  | Tinuvin 328 |
| |  | DHB |
| <p>)] (</p> <p>(((</p> <p>()</p> |  | Tinuvin 405 |
| <p>-))</p> <p>(</p> |  | Irganox 1010 |
| <p>-)</p> <p>(</p> |  | Everfos 168 |
| N |  | 4-Hydroxy - TEMPO |

Photostabilization of CMP Bleached Pulp by Various Inhibitors

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Abstract

Photostabilization of Hardwood CMP pulp bleached with hydrogen peroxide in the presence of various additives including three ortho-hydroxy aromatic UV absorbers, hydroperoxide decomposer, hindered nitroxide and hindered phenolic antioxidant was studied. All treatments were applied as impregnation on the surface of CMP bleached testsheets. 2,4-dihydroxy benzophenone (DHB), Tinuvin 328 and Tinuvin 405 inhibited moderately light-induced yellowing of CMP bleached pulp. Hindered nitroxide (4-hydroxy TEMPO) and phenolic antioxidant (Irganox 1010) not only couldn't stabilize CMP bleached pulp efficiently, but also intensified yellowing of the pulp. The hydroperoxide decomposer (Everfos 168) was also not found to be an effective inhibitor for CMP bleached pulp.

Keywords: Light-induced yellowing, UV absorber, hydroperoxide decomposer, hindered nitroxide, antioxidant