

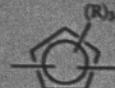


wherein each R is independently, each occurrence, H, hydrocarbyl, silahydrocarbyl, or hydrocarbylsilyl, containing up to about 30 preferably from 1 to about 20 more preferably from 1 to about 10 carbon or silicon atoms or two R groups together form a divalent derivative of such group. Preferably, R independently, each occurrence is (including where appropriate all isomers) hydrogen, methyl, ethyl, propyl, butyl, pentyl, hexyl, benzyl, phenyl or silyl or (where appropriate) two such R groups are linked together forming a fused ring system such as indenyl, fluorenyl, tetrahydroindenyl, tetrahydrofluorenyl, or octahydrofluorenyl.

Particularly preferred catalysts include, for example, racemic-(dimethylsilanediyl)-bis-(2-methyl-4-phenylindenyl)zirconium dichloride, racemic-(dimethylsilanediyl)-bis-(2-methyl-4-phenylindenyl)zirconium 1,4-diphenyl-1,3-butadiene, racemic-(dimethylsilanediyl)-bis-(2-methyl-4-phenylindenyl)zirconium di-C1-4 alkyl, racemic-(dimethylsilanediyl)-bis-(2-methyl-4-phenylindenyl)zirconium di-C1-4 alkoxide, or any combination thereof and the like.

It is also possible to use the following titanium-based constrained geometry catalysts, [N-(1,1-dimethylethyl)-1,1-dimethyl-1-[(1,2,3,4,5-η)-1,5,6,7-tetrahydro-s-indacen-1-yl]silanaminato(2-)N]titanium dimethyl; (1-indenyl)(tert-butylamido) dimethyl-silane titanium dimethyl; ((3-tert-butyl)(1,2,3,4,5-η)-1-indenyl)(tert-butylamido) dimethyl-silane titanium dimethyl; and ((3-iso-propyl)(1,2,3,4,5-η)-1-indenyl)(tert-butyl amido)dimethyl-silane titanium dimethyl, or any combination thereof and the like.

Further preparative methods for the interpolymers used in the present invention have been described in the literature. Longo and Grassi (*Makromol. Chem.*, Volume 191, pages 2387 to 2396 [1990]) and D'Amiello et al. (*Journal of Applied Polymer Science*, Volume 58, pages 1701-1706 [1995]) reported the use of a catalytic system based on methylalumoxane (MAO) and cyclopentadienyltitanium trichloride (C_5TiCl_3) to prepare an ethylene-styrene copolymer. Xu and Lin (*Polymer Preprints, Am. Chem. Soc., Div. Polym. Chem.*) Volume 35, pages 686,687 [1994]) have reported copolymerization using a $MgCl_2/TiCl_4/NdCl_3/Al(iBu)_3$ catalyst to give random copolymers of styrene and propylene. Lu et al (*Journal of Applied Polymer Science*, Volume 53, pages 1453 to 1460 [1994]) have described the copolymerization of ethylene and styrene using a $TiCl_4/NdCl_3/MgCl_2/Al(Et)_3$ catalyst. Sernetz and Mulhaupt, (*Macromol. Chem. Phys.*, v. 197, pp. 1071-1083, 1997) have described the influence of polymerization conditions on the copolymerization of styrene with ethylene using $Me_2Si(Me_2Cp)(N\text{-}tert\text{-butyl})TiCl_2/\text{methylaluminoxane}$ Ziegler-Natta catalysts. Copolymers of ethylene produced by bridged metallocene catalyst by Arai, Toshiaki and Suzuki (*Jpn. Chem. Soc., Div. Polym. Chem.*) Vol. [1997]) and in U.S. Pat. No. 5,652,315 also issued to Mitsubishi Chemicals, Inc. The manufacture of aromatic monomer interpolymers such as butene/styrene are described in U.S. Pat. No. 5,652,315 also issued to Mitsubishi Chemicals, Inc. The manufacture of α-olefin/vinyl ester polymers such as propylene/styrene are described in U.S. Pat. No. 5,244,996, issued to Mitsui Petrochemical Industries Ltd or U.S. Pat. No. 5,652,315 also issued to Mitsubishi Petrochemical Industries Ltd or as disclosed in DE 1997 11 339 A1 to Denki.



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Photographs of patents displayed on a CRT in the PSR, compared to the printed page photographed in the same frame.

6,376,095 B1

12

KAGAKU KOGYO KK. All the above methods disclosed for preparing the interpolymer component are incorporated herein by reference.

While preparing the substantially random interpolymer, an amount of atactic vinyl aromatic homopolymer may be formed due to homopolymerization of the vinyl aromatic monomer at elevated temperatures. The presence of vinyl aromatic homopolymer is in general not detrimental for the purposes of the present invention and can be tolerated. The vinyl aromatic homopolymer may be separated from the interpolymer, if desired, by extraction techniques such as selective precipitation from solution with a non solvent for either the interpolymer or the vinyl aromatic homopolymer. For the purpose of the present invention it is preferred that no more than 30 weight percent, preferably less than 20 weight percent based on the total weight of the interpolymers of atactic vinyl aromatic homopolymer is present.

Blend Compositions Comprising the Substantially Random Interpolymers

The present invention also provides films prepared from blends of the substantially random α -olefin/vinyl or vinylidene interpolymers with one or more other polymer components which span a wide range of compositions.

The other polymer component of the blend can include, but is not limited to, one or more of an engineering thermoplastic, an α -olefin homopolymer or interpolymer, a thermoplastic olefin, a styrenic block copolymer, a styrenic copolymer, an elastomer, a thermoset polymer, or a vinyl halide polymer.

Engineering Thermoplastics

The third edition of the Kirk-Othmer Encyclopedia of Science and Technology (Volume 9, p 118-137, herein incorporated by reference), defines engineering plastics as thermoplastic resins, neat or unreinforced or filled, which maintain dimensional stability and most mechanical properties above 100° C. and below 0° C. The terms "engineering plastics" and "engineering thermoplastics", can be used interchangeably. Engineering thermoplastics include acetal and acrylic resins, polyamides (e.g. nylon-6, nylon 6,6), polyimides, polyetherimides, celluloses, polyesters, poly(arylate), aromatic polyesters, poly(carbonate), poly(butylene) and polybutylene and polyethylene terephthalates, liquid crystal polymers, and selected polyolefins, blends, or alloys of the foregoing resins, and some examples from other resin types (including e.g. polyethers) high temperature polyolefins such as polycyclopentanes, its copolymers, and polymethylpentane).

An especially preferred engineering thermoplastic are the acrylic resins which derive from the peroxide-catalyzed free radical polymerization of methyl methacrylate (MMA). As described by H. Luke in Modern Plastics Encyclopedia, 1989, pp 20-21, MMA is usually copolymerized with other acrylates such as methyl- or ethyl acrylate using four basic polymerization processes, bulk, suspension, emulsion and solution. Acrylics can also be modified with various ingredients including butadiene, vinyl and butyl acrylate.

The (α -Olefin Homopolymers and Interpolymers

The α -olefin homopolymers and interpolymers comprise polypropylene, propylene/ C_4-C_{20} α -olefin copolymers, polyethylene, and ethylene/ C_3-C_{20} α -olefin copolymers, the interpolymers can be either heterogeneous ethylene/ α -olefin interpolymers or homogeneous ethylene/ α -olefin interpolymers, including the substantially linear ethylene/ α -olefin interpolymers. Also included are aliphatic α -olefins having from 2 to 20 carbon atoms and containing polar groups. Suitable aliphatic α -olefin monomers which inter-

6,376,095 B1

13

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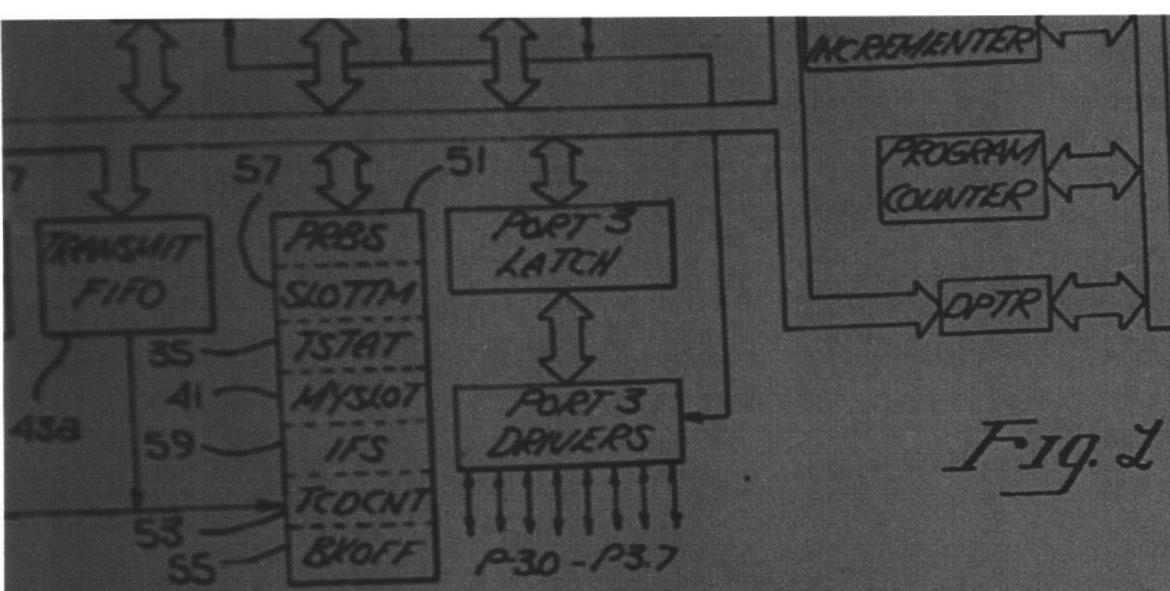
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4,780,814

Fig. 1



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Sheet 1 of 3

4,780,814

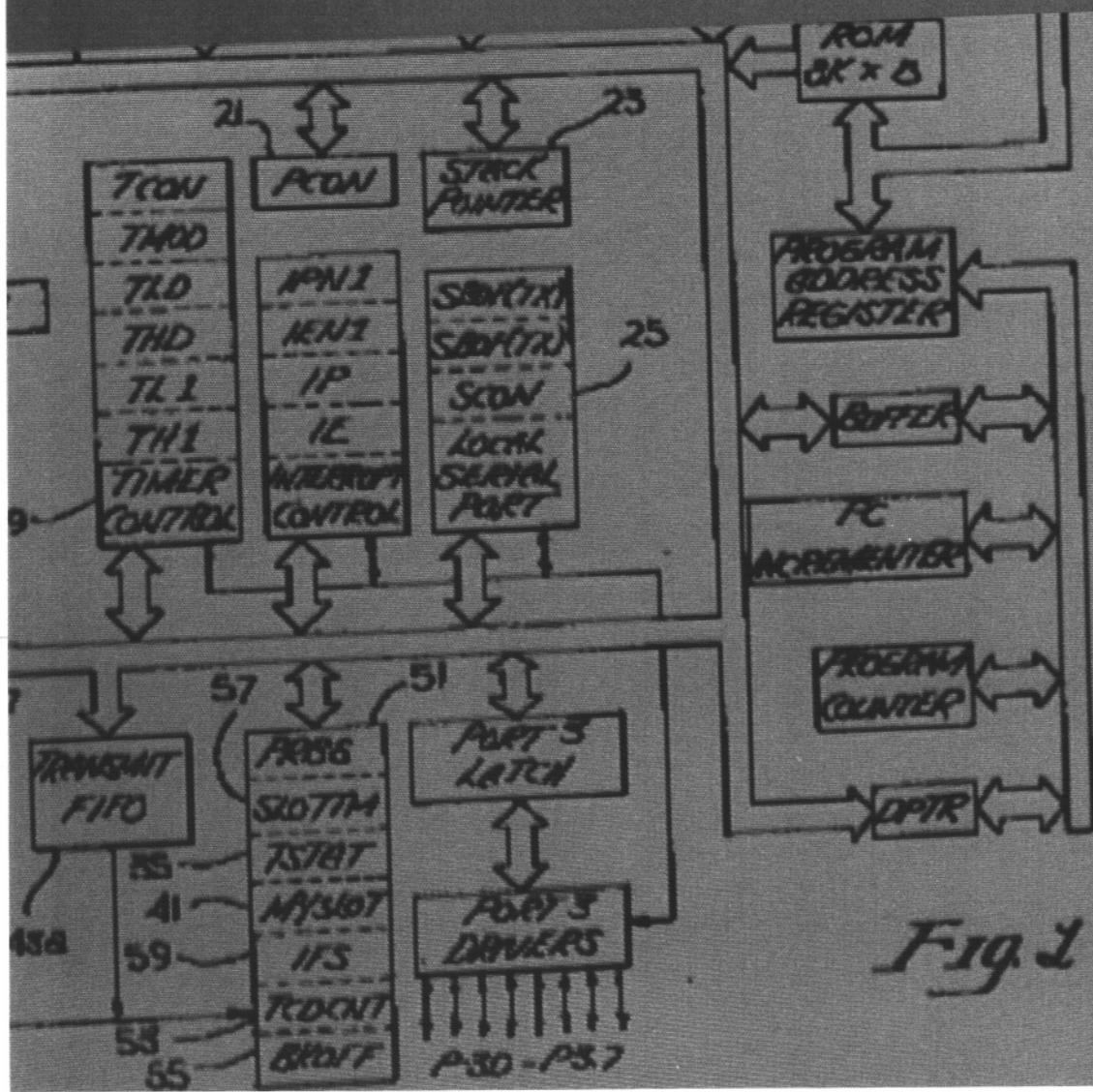


Fig. 1

TABLE I-continued

	7 AD external data memory read strobe	5
Port 4	Port 4 is an 8-bit bi-directional I/O port with 40 internal pullups. Port 4 pins that have to written to them are pulled high by the internal pullups, and in that state can be used as inputs.	9
RESET	Reset input. A low level on this pin for two machine cycles while the oscillator is running resets the device.	10
EA	External Address Enable. EA must be externally held low in order to enable the device to fetch code from external Program Memory locations \$0000H to \$FFFFH.	11
ALE	Address Latch Enable output pin for latching the low byte of the address during access to external memory. Its normal operation ALE is asserted at a constant rate of 1/4 of the oscillator frequency, and may be used for external timing or clocking purposes. Note, however, that one ALE pulse is skipped during each access to external Data Memory.	12
RDST	Program Store Enable is the read enable to external Program Memory. When the processor is accessing code from external Program Memory, RDST is asserted twice each machine cycle, except that two RDST assertions are skipped during each access to external Data Memory.	13

GLOBAL SERIAL CHANNEL REGISTERS

The GSC performs as a slave peripheral for the microcontroller processor (CPU) through GSC control block 31. The CPU controls the GSC by accessing the various GSC registers. The GSC registers control selection of operating modes, report status of the GSC and