

STN[®]

The Revolutionary PCTFULL on STN[®]

FIZ Karlsruhe

Agenda

- PCTFULL reload
- Numeric property search
- Search examples
- Case study – polymerization catalysts

The new PCTFULL – keeping pace with modern requirements

- The new version of the PCTFULL includes:
 - Improved OCR data from LexisNexis Univentio (LNU)
 - Better identification of claims and descriptions
 - Improved bibliographic details including priority numbers based on EPO-DOCDB data
 - Backfile updates for additions and corrections
 - Machine translations from several European languages into English
 - Displayable original national characters for several languages (e.g. Chinese, Korean and Russian)
 - Applicant, inventor and agent address data

Example: More applicant details

PA

POSITEC POWER TOOL (SUZHOU) CO., LTD, **Number 18 Dongwang Road, Industrial Park, Suzhou,** Jiangsu 215123, CN, [NAT: CN, RES: CN], for all designated states except US;
HUO, Lixiang, Number 18 Dongwang Road, Industrial Park, Suzhou, Jiangsu 215123, CN, [NAT: CN, RES: CN], for US only

PAOR

苏州宝时得电动工具有限公司, 中国江苏省苏州市工

业园区东旺路18号, Jiangsu 215123, CN, [NAT: CN, RES: CN];

霍立祥, 中国江苏省

苏州市工业园区东旺

路18号, Jiangsu 215123, CN, [NAT: CN, RES: CN]

Add **OR** to standard display formats to see original national characters , e.g. **PAOR, ALLOR, ABOR, CLMOR**, etc.

The new PCTFULL – keeping pace with modern requirements (cont.)

- The new version of the PCTFULL includes:

numeric property search

Agenda

- PCTFULL reload
- **Numeric property search**
- Search examples
- Case study – polymerization catalysts

PCTFULL numeric property search

- Numeric Property Data is extracted from the full-text and made available for searching by FIZ Karlsruhe for improved retrieval
 - Over 30 physical and chemical properties in almost 400 units
 - Automatic unit conversion
- Searchable property data is available within all English-language text fields (title, abstract, description, claims)
 - Proximity searching using numeric properties and keywords
 - Flexible data input (ranges, tolerances, exact values)

Semantic enrichment: numbers and units behind the scenes

- The task: make numeric property values and ranges searchable
 - Identify numbers and units in the full-text
 - Correctly recognize ranges

Semantic enrichment: numbers and units identifying measurements

The resulting CeO_2 particle size measured by x-ray diffraction were in the range of 10 to 30 nm. Fig. 1 shows typical nano particles in a sample milled for 6 hours. In a second experiment a 1 litre attrition mill was used for milling the mixture. ... In addition it is widely accepted that the existence of a so-called 'limiting particle size' limits the practical minimum particle size that can be attained by grinding to values greater than 100nm, irrespective of the type of ball mill employed.

Semantic enrichment: numbers and units identifying measurements (cont.)

- The task: make numeric property values and ranges searchable
 - Identify numbers and units in the full-text
 - Correctly recognize ranges
 - Extract and normalize to base units

Semantic enrichment: numbers and units normalization

Values are converted to SI base units.

The resulting CeO_2 particle size measured by x-ray diffraction were in the range of 10 to 30 nm. Fig. 1 shows typical nano particles in a sample milled for 6 hours. In a second experiment a 1 litre attrition mill was used for milling the mixture. ... In addition it is widely accepted that the existence of a so-called 'limiting particle size' limits the practical minimum particle size that can be attained by grinding to values greater than 100nm, irrespective of the type of ball mill employed.

Semantic enrichment: numbers and units normalization

Values are converted to SI base units.

10 to 30 nm

1.0×10^{-8} m, 3.0×10^{-8} m

6 hours

2.16×10^4 sec

1 litre

1.0×10^{-3} m³

greater than 100nm

1.0×10^{-7} m, ∞

Note for technical reasons, 100nm are included in this range, even though the text defines the size to be 'greater than 100nm'.

Semantic enrichment: numbers and units identifying measurements

- The task: make numeric property values and ranges searchable
 - Identify numbers and units in the full-text
 - Correctly recognize ranges
 - Extract and normalize to base units
 - Make this information available for searching

PCTFULL numeric property search

- The generated numeric property data are searchable within the English-language full-text
 - Can be combined with text-based search terms
 - Using standard text-based proximity operators
 - Exact values or numeric ranges
 - In a wide variety of search unit options

To learn more about PCTFULL property searching visit:
http://www.stn-international.com/pctfull_reload.html

PCTFULL numeric property search units

Almost 400 different units are searchable

Becquerel bit byte candela degree Hertz
Joule Kelvin kg/m^3 kilogram kg/s lumen
Lux m^2 m/s meter m^2/s m^3 mol mol/l
N/m Ohm Pa·s Pascal percent pH rpm
second Siemens Tesla Volt Watt

In over 30 different numeric fields. . . .

Numeric property search fields

PROPERTY	FIELD CODE	BASE UNIT
AREA (SURFACE AREA)	/SAR	m ² (square meter)
BIT RATE	/BIR	Bit
BYTE RATE	/BYR	Byte
MOLAR CONCENTRATION (MOLARITY)	/CMOL	mol/L (mol per liter)
CONDUCTANCE (ELECTRICAL CONDUCTANCE)	/CON	S (Siemens)
DEGREE	/DEG	Degree
DENSITY (MASS DENSITY)	/DEN	kg/m ³ (kilogram per cubic meter)
VISCOSITY, DYNAMIC	/DV	PA s (pascal second)
ELECTRICAL IMPEDANCE/RESISTANCE	/RES	ohm
ENERGY	/ENE	J (Joule)
FORCE	/FOR	N (Newton)
FREQUENCY	/FRE	Hz (Hertz)

Numeric property search fields (cont.)

PROPERTY	FIELD CODE	BASE UNIT
VISCOSITY, KINEMATIC	/KV	m ² /s (square meter per second)
LUMINOUS EMITTANCE/ILLUMINANCE	/LUME	Lux
LUMINOUS FLUX (LUMINOUS POWER)	/LUMF	Lumen
LUMINOUS INTENSITY	/LUMI	Candela
MASS	/M	Kg (kilogram)
MAGNETIC FIELD STRENGTH (MAGNETIC FLUX DENSITY)	/MFS	T (Tesla)
MASS FLOW (MASS TRANSFER)	/MFL	Kg/s (kilogram per second)
MOLECULAR WEIGHT (MOLAR MASS)	/MW	g/mol (gram per mol)
PERCENT (PROPORTIONALITY)	/PER	percent
PH VALUE	/PHV	pH
POWER	/POW	W (Watt)
PRESSURE	/PRES	Pa (Pascal)

Numeric property search fields (cont.)

PROPERTY	FIELD CODE	BASE UNIT
RADIOACTIVITY	/RAD	Bq (Becquerel)
SPRING CONSTANT	/SCO	N/m (Newton per meter)
SIZE	/SIZ	m (meter)
SURFACE TENSION	/ST	J/m ² (Joule per square meter)
TEMPERATURE	/TEMP	K (Kelvin)
TIME	/TIM	S (second)
VELOCITY	/VEL	m/s (meter per second)
VELOCITY, ANGULAR	/VELA	rpm (rotations per minute)
VOLUME	/VOL	m ³ (cubic meter)
VOLTAGE	/VOLT	V (Volt)

Agenda

- PCTFULL reload
- Numeric property search
- **Search examples**
- Case study – polymerization catalysts

Numeric operators

- within a range
- > greater than
- < less than
- >= greater or equal to
- <= less or equal to

Search example: Nanoscale

```
=> FILE PCTFULL
```

```
=> S SIZE (3A) SIZ<=100 NM
      756526 SIZE
      112228 SIZ<=100 NM
```

```
L1      17287 SIZE (3A) SIZ<=100 NM
```

```
=> D KWIC
```

```
L1      ANSWER 1 OF 17287 PCTFULL
```

```
DETDEN . . .
```

```
particles with an average particle size of from approximately 3 to 100
nanometers, and a. . .
```

```
DETDEN . . .
```

```
30 to 300 or even 100 nanometer size range results in a significant. . .
```

```
DETDEN . . .
```

```
SiC powder with an average size of 90 nanometers was added and the. . .
```

Here we are using the Size (/SIZ) field to search for size on the nanoscale (less than 100 nm).

For technical reasons, hit-term highlighting typically highlights only the first number in a range. Units are not highlighted.

Search example: Nanoscale (cont.)

```
=> S SIZE (3A) SIZ<=100 NM
      756526 SIZE
      112228 SIZ<=100 NM
L1      17287 SIZE (3A) SIZ<=100 NM
```

Flexible search input options.

```
=> S SIZE (3A) SIZ<=1.0E-7
      756526 SIZE
      112228 SIZ<=1.0E-7 M
L2      17287 SIZE (3A) SIZ<=1.0E-7 M
```

Scientific notation is supported.

```
=> S SIZE (3A) SIZ<=0.0000001
      756526 SIZE
      112228 SIZ<=0.0000001 M
L3      17287 SIZE (3A) SIZ<=0.0000001 M
```

The base unit for size is meter.

Search example: Green AlGaInP LEDs

=> FILE PCTFULL

Green light has a wavelength of 500-570nm.

=> S (LIGHT EMITTING DIODE OR LED) (S) AlGaInP (S) 500-570 NM /SIZ

L1 19 (LIGHT EMITTING DIODE OR LED) (S) ALGAINP (S) 500-570 NM /SIZ

=> D KWIC 3

Note: Proximity operators may be used just like in a typical text search.

L1 ANSWER 3 OF 19 PCTFULL COPYRIGHT 2011 LNU on STN

DETDEN

... The LED can be based on different materials, such as, without limitation, GaN, AlGaN, ..., AlInGaN (emitting from 285 nm to 550nm), GaP, GaP:N, GaAsP, GaAsP:N, AlGaInP (emitting from 550nm to 660nm) SiC, ..., (emitting in near infrared and infrared). ...

KWIC is a free-of-charge review format for text searches in PCTFULL.

Search example: Block copolymer molecular weight

=> FILE PCTFULL

Here we are searching for a Molecular Weight (/MW) of over 75 kg/mol.

=> S ?BLOCK? (A) ?POLYMER?/CLM (S) MW>75000

L1 51 ((?BLOCK? (A) ?POLYMER?)/CLM (S) MW>75000

=> D KWIC 1,11,23

Note: specialized text fields, e.g. the claims (/CLM), may be used just like in a typical text search.

L1 ANSWER 1 OF 51 PCTFULL COPYRIGHT 2011 LNU on STN

CLMEN

1. **Block copolymer** with a weight-middle molecular weight Mw of at least 100,000 g/mol, containing

CLMEN

3. **Block copolymer** according to requirement 1 or 2, by the fact characterized that the weight-middle molecular weight Mw the **block copolymers** within the range of 250.000 to 350,000 g/mol is appropriate.

Search example: Block copolymer molecular weight (cont.)

L1 ANSWER 11 OF 51 PCTFULL COPYRIGHT 2011 LNU on STN

CLMEN

17. The refrigerant composition of claim 15 wherein said **diblock copolymer**, said **triblock copolymer** or said gradient copolymer has an average molecular weight of from about **1 kg/mol to about 130 kg/mol.**

CLMEN

18. The refrigerant composition of claim 15 where said **diblock copolymer**, said **triblock copolymer** or said gradient copolymer has an average molecular weight of from about **1 kg/mol to about 90 kg/mol.**

L1 ANSWER 23 OF 51 PCTFULL COPYRIGHT 2011 LNU on STN

CLMEN

6. The amphiphilic **multiblock copolymer** of claim 1 wherein said hydrophobic blocks each have a molecular weight of from **0.5 kg/mol to 80 kg/mol**, and said hydrophilic block has a molecular weight of from **2 kg/mol to 160 kg/mol.**

CLMEN

7. The amphiphilic **multiblock copolymer** of claim 6 wherein said hydrophobic blocks each have a molecular weight of from **3 kg/mol to 60 kg/mol**, and said hydrophilic block has a molecular weight of from **15 kg/mol to 100 kg/mol.**

STN units system

- All values searched using accepted units are automatically converted for searching
 - E.g. 100 °C => 373.15 K
- **SET UNIT** to change default search units
 - E.g. => **SET UNIT TEMP=F DEN=LB/FT**3 PERM**
 - HELP SET UNIT for instructions
- **D UNIT <field>** to see the default and current units for an individual PCTFULL property
 - E.g. => **D UNIT TEMP**
 - D UNIT ALL to see the complete list

Valid units systems for searching

CGS	The centimeter-gram-second system
ENG	Customary U. S. Engineering units
FPS	The foot-pound-second system
MKS	The meter-kilogram-second system
SI	Systeme Internationale (International System), based on the MKS system
STN	Customary units based on the SI system

Tip: Use e.g. `SET UNITS ALL=CGS` to convert all units to the centimeter-gram-second system.

Search example: Unit conversion

```
=> S 303.15 - 313.15/TEMP
L1      136689 303.15 - 313.15 K/TEMP
```

The base unit for temperature (/TEMP) is Kelvin (K).

```
=> S 30-40 C/TEMP
L2      136689 30-40 C/TEMP
```

Values in other accepted units, e.g. Celsius (C), are automatically converted.

```
=> SET UNIT TEMP=C
SET COMMAND COMPLETED
```

Use SET UNIT to change the default search unit, e.g. from Kelvin to Celsius.

```
=> S 30-40/TEMP
L3      136689 30-40 C/TEMP
```

Search example: Unit conversion (cont.)

=> D KWIC 1,3,12,32

The Celsius search (L3) retrieves answers in several units (°C, °F, K).

L3 ANSWER 1 OF 136689 PCTFULL
DETDEN . . .

temperature. The mixture was heated to 35 °C for 3 h.. . .

L3 ANSWER 3 OF 136689 PCTFULL COPYRIGHT 2011 LNU on STN
DETDEN . . .

formed hydrogels after incubating at 37 °C for 24 hr as. . . .

L3 ANSWER 12 OF 136689 COPYRIGHT 2011 LNU on STN
DETDEN . . .

to a temperature from about 50 degrees Fahrenheit to about 550 degrees Fahrenheit.. . .

L3 ANSWER 32 OF 136689 COPYRIGHT 2011 LNU on STN
DETDEN . . .

temperature is within the range 263 Kelvin to 333 Kelvin.

Search example: Open ranges

=> S VOLT>0.5

L1 116530 VOLT>0.5 V

=> D KWIC 1 2

L1 ANSWER 1 OF 116530 PCTFULL COPYRIGHT 2011 LNU on STN

DETDEN . . .

the battery may be at 3.7 volts and be able to. . .

DETDEN . . .

that may receive power (e.g., +5 volts) from a digital device. . .

DETDEN . . .

example, the battery may provide 3.7 volts and the buck/boost power. . .
step up the voltage to +5 volts.

L1 ANSWER 2 OF 116530 PCTFULL COPYE

DETDEN . . .

voltage is typically from about 2,000 to 80,000 volts. The charge. . .

DETDEN . . .

Biax tube. A voltage of 9.2 kV was employed. PTFE was. . .

Open ranges are truly open – and may retrieve irrelevant results.

Search example: Open ranges (cont.)

=> S IRON (2A) PARTICLE (2A) SIZ>100 NM

139768 IRON

. . . .

Open ranges will often exceed truncation limits.

TERM 'SIZ>100 NM' EXCEEDED TRUNCATION LIMITS - SEARCH ENDED

=> S IRON (2A) PARTICLE (2A) 100 - 1000 NM/SIZ

L1 22 IRON (2A) PARTICLE (2A) 100 - 1000 NM/SIZ

Restricting the range allows the search to complete.

=> D KWIC

L1 ANSWER 1 OF 22 PCTFULL COPYRIGHT 2011 LNU on STN

DETDEN . . .

This range overlaps with the range searched.

a pollutant by means of pumping the colloid into the water and/or soil.

More preferred, the particle size of the iron oxide particles is

100 to 400 nm. It was found that these iron oxide particles are especially effective in the present invention.

Search example: Exact values

```
=> S 100 C/TEMP (3A) (MELTING (W) POINT OR MP)
L1          988 100 C/TEMP (3A) (MELTING (W) POINT OR MP)
```

An exact value (L1).

```
=> S 100 +-1 C/TEMP (3A) (MELTING (W) POINT OR MP)
L2          1075 100 +-1 C/TEMP (3A) (MELTING (W) POINT OR MP)
```

Using *tolerances* is possible, e.g. ± 1 .

```
=> S L2 NOT L1
L3          87 L2 NOT L1
```

```
=> D KWIC 2
```

```
L3          ANSWER 2 OF 87 PCTFULL COPYRIGHT 2011 LNU on STN
```

```
DETDEN . . .
```

consist of an organic cation and a generally inorganic anion. They do not contain any neutral molecules and usually have **melting points** below 373 K.

373 K = 99.85 °C.

```
=> SET TOLERANCE TEMP=1
SET COMMAND COMPLETED
```

```
=> S 100 C/TEMP (3A) (MELTING (W) POINT OR MP)
L4          1075 100 +-1 C/TEMP (3A) (MELTING (W) POINT OR MP)
```

Use **SET TOLERANCE** to automatically turn exact values into ranges. Use **SET TOL TEMP=1 PERM** to save this setting for your Login ID.

Search example: Search units

=> S 1-5 INCH/SIZ

L1 251985 1-5 INCH/SIZ

Some Imperial / U.S. Customary units can also be used for searching.

=> D KWIC

L1 ANSWER 1 OF 251985 PCTFULL COPYRIGHT 2011 LNU on STN

DETDEN . . .

surrounding that value. For example, a dimension disclosed as "40 mm" is intended to mean "about 40 mm".

=> S 100 FAHRENHEIT/TEMP

L2 43153 100 FAHRENHEIT +-1 /TEMP

=> D KWIC

L2 ANSWER 1 OF 43153 PCTFULL COPYR 100 °F ≈ 37.77 °C, this is a correct hit!

DETDEN . . .

typically range from about 5 °C to about 90 °C The water to fabric ratio is typically. . .

Search example: Search units (cont.)

=> S 37.77 CELSIUS/TEMP

L3 83325 37.77 CELSIUS +-1 /TEMP

=> S L7 NOT L6

L4 40627 L3 NOT L2

=> D KWIC 1 2

L4 ANSWER 1 OF 40627 PCTFULL COPYRIGHT

DETDEN . . .

synthesis and release of 5.75 fmol cDNA in 15 minutes at 37-C for MMLV reverse transcriptase, and the production of 5.0 fmol RNA transcript in 20 minutes at 37 °C for T7 RNA polymerase.

L4 ANSWER 2 OF 4

DETDEN . . .

in USP apparatus (40 mesh baskets), 100 revolutions per minute (rpm) in pH 5.8 phosphate buffer (0.1 N HCl) 37 °C Samples of 5 milliliters (ml) at each time-point, are taken without media replacement at 1, 2, 4, 6, .

Note: There are considerably more hits for 37.77°C±1 (L3) than for 100°F±1 (L2).

Reason: The interval 37.77°C±1 is relatively bigger than 100°F±1.

37° C ≈ 98.6°F, just outside 100°F±1

Search example: Search units (cont.)

```
=> SET TOL TEMP=1%  
SET COMMAND COMPLETED
```

The use of percent-based tolerances may help compensate for this, **but be careful!**

```
=> S 100 FAHRENHEIT/TEMP  
L5      43153 100 FAHRENHEIT +-1% /TEMP
```

Search for 100 °F ± 1%
(= 99 – 101 °F) (L5).

```
=> S 37.77 CELSIUS/TEMP  
L6      43096 37.77 CELSIUS +-1% /TEMP
```

Search for 37.77 °C ± 1%
(= 37.3723 – 38.1477 °C) (L6).

```
=> S L5 NOT L6  
L7      57 L5 NOT L6
```

Note: L5 ≠ L6, because 99 – 101 °F = 37.222 – 38.333 °C.

```
=> D KWIC
```

```
L7      ANSWER 1 OF 57 PCTFULL COPYRIGHT 2011 LNU on STN
```

```
DETDEN . . .
```

37.3 °C = 99.14 °F.

pH of 2.8, grit, (measured on a 40 μ mesh), of 0.031 % and a Tg, (onset, by DSC), of 37.3 °C.

Note: L7 = L5 (37.222 – 38.333 °C) NOT L6 (37.3723 – 38.1477 °C).

Search example: Alloy percent composition

```
=> S ALLOY (S) BISMUTH (1A) 40-60/PER (S) LEAD (1A) PER>20 (S)
    TIN (S) CADMIUM
```

```
L1          17 ALLOY (S) BISMUTH (1A) 40 PERCENT - 60 PERCENT /PER (S) LEAD
            (1A) PER>20 PERCENT (S) TIN (S) CADMIUM
```

```
=> D KWIC 1,2
```

Percentages are also searchable.

```
L1          ANSWER 1 OF 17 PCTFULL COPYRIGHT 2011 LNU on STN
```

```
DETDEN . . .
```

temperature curing processes is used to cover the fasteners. One example of such an alloy is a eutectic alloy, made of about 50% bismuth, about 26.7% lead, about 13.3% tin, and about 10% cadmium by weight, and with a melting point of approximately 70 °C (158 °F). During the curing. . .

```
L1          ANSWER 2 OF 17 PCTFULL COPYRIGHT 2011 LNU on STN
```

```
DETDEN . . .
```

lowered clearly, if a such alloy contains approx. 14% to 60% bismuth, 20% to 30% lead or up to 45% tin or also antimony, cadmium, Indium, zinc, tellurium, mercury or thallium. In particular with initially the

```
. . .
```

Search example: Percent identity

=> S (FIBROBLAST GROWTH FACTOR OR FGF?)/CLM (S) (SIMILAR? OR IDENTI? OR HOMOLOG?)/CLM(S) PERCENT>=80

L1 39 (FIBROBLAST GROWTH FACTOR OR FGF?)/CLM (S) (SIMILAR? OR IDENTI? OR HOMOLOG?)/CLM(S) PERCENT>=80 PERCENT

=> D KWIC 1,4

L1 ANSWER 1 OF 12237 PCTFU

Long and short forms of numeric field names are often available, e.g. /PER, or /PERCENT.

CLMEN

10. A chimeric **FGF19** polypeptide, wherein the sequence of the polypeptide comprises: a first polypeptide sequence having at least **85%** sequence **identity** to SEQ ID NO: 1, wherein a portion of the first polypeptide sequence is substituted with a portion of a second polypeptide sequence, the second polypeptide sequence having at least **85%** sequence **identity** to SEQ ID NO:2,

L1 ANSWER 4 OF 39 PCTFULL COPYRIGHT 2011 LNU on STN

CLMEN

1. A mutant **fibroblast growth factor (EGF)** protein having a polypeptide sequence that is at least **90%** **identical** to the polypeptide sequence of wild-type human **FGF-I** protein (SEQ ID NO. 1)

Search example: Physical properties (PHP)

=> S CAMPHOR (5A) PER/PHP

L1 237 CAMPHOR (5A) PER/PHP

=> D KWIC 1-10

L1 ANSWER 1 OF 237 PCTFULL COPYRIGHT

DETDEN . . .

(5% or less), 4 methylbenzylidene **camphor** (6% or less),
terephthalylidene dicamphor sulfonic. . .

L1 ANSWER 9 OF 237 PCTFULL COPYRIGHT 2011 LNU on STN

DETDEN . . .

4 gram preparation contains about **1 % camphor** by weight {eg.,
about ,04g). . .

CLMEN. . .

0.10% by weigh, to about **1.0% by weight of camphor;** b. from
about 0.06% by weight to about 0.60%. . .

CLMEN. . .

of claim 8, comprising about **0.14% by weight of camphor,** about
0.08% by weight of menthol, and. . .

Searching for a property in the Physical Properties (/PHP) field, finds all property values and highlights them, e.g. all percentages PER/PHP.

PCTFULL numeric property search: review of search options

=> S 50/VOL

L1 454 50 M**3 /VOL

Searching with **default units**.

=> S 50-60/VOL

L1 599 50 M**3 - 60 M**3 /VOL

Searching with **closed ranges**.

=> S 10-30 ML/VOL

L1 114646 10-30 ML/VOL

Searching with **other units**.

=> S SIZ < 5 MM

L1 463893 SIZ < 5 MM

Searching with **open ranges**.

=> S 5 MM +-1/SIZ

L1 160136 5 MM +-1/SIZ

Searching with **tolerances**.

=> S 5 MM +-5%/SIZ

L1 113784 5 MM +- 5%/SIZ

Searching with **tolerances in %**

Agenda

- PCTFULL reload
- Numeric property search
- Search examples
- Case study – polymerization catalysts

Polymerization catalysts

Sample search question:

Find patents which feature:

- 1) Ethylene or propylene polymers
- 2) Supported Ziegler-Natta catalyst
- 3) Triethylaluminum cocatalyst
- 4) Claimed catalyst particle size of 50 – 200 micrometers

Polymerization catalysts (cont.)

Additional information:

- 1) Use DWPISM and CAplusSM to find precise polymerization catalyst patents results.
- 2) Simplification: Limit publication year of the indexed patent to the last 15 years.
- 3) Use PCTFULL numeric search feature to limit to patents with claimed catalyst particle size.

Search strategy

1. Search in WPIX* and HCAPLUS for the polymerization aspects, except for the size.
2. Transfer results from WPIX and HCAPLUS into PCTFULL to perform the size limitation search.

* **Note:** this search example uses the subscriber version of DWPI (file [WPIX](#)), so that DWPI Polymer Indexing ([/PLE](#)) can be incorporated into the search.

STN ID settings

- For this search example, the following SET commands are used:
 - => SET AUDIT ON
 - => SET PLURALS ON
 - => SET SPELLINGS ON
 - => SET ABBREVIATIONS ON
 - => SET SFIELDS BI CLM (for DWPI)

Note: None of these are the default settings on STN.

Polymerization catalyst search in DWPI

=> FILE WPIX

=> S (H0000 (P) (R00326 OR R00964) OR H0022 (P) R00326 (P) R00964) /PLE
L1 161590 (H0000 (P) (R00326 OR R00964) OR H0022 (P) R00326 (P) R00964) /PLE

=> S L1 (L) (R00659 (L) C033) /PLE
L2 1680 L1 (L) (R00659 (L) C033) /PLE

Polymer Indexing search (L2).

=> S POLYETHYLENE OR POLYETHENE OR POLYPROPYLENE OR POLYPROPENE
OR POLY (W) (ETHYLENE OR ETHENE OR PROPYLENE OR PROPENE) OR
COPOLYMER (1A) (ETHYLENE OR ETHENE) (1A) (PROPYLENE OR PROPENE)

L3 434529 POLYETHYLENE/BI,CLM OR POLYETHENE/BI,CLM OR

=> S TRIETHYLALUMINUM OR TRIETHYL (W) ALUMINUM OR
TRI (W) ETHYL (W) ALUMINUM OR DCR-351/DCR

L4 7205 TRIETHYLALUMINUM/BI,CLM OR TRIETHYL/BI,CLM (W)

=> S L3 AND L4 AND ZIEGLER
L5 474 L3 AND L4 AND ZIEGLER/BI,CLM

=> S (L2 OR L5) AND PY.B>1995
L6 1389 (L2 OR L5) AND PY.B>1995

The polymer Indexing (L2) and text search (L5) strategies are combined, and limited by basic publication year (/PY.B) (L6).

DWPI Polymer Indexing code definitions

H0000	Homopolymer
H0022	Binary copolymer
R00326	Ethylene
R00964	Propylene
R00659	Triethylaluminum (DCR-351)
C033	Coordination catalyst
(P)	Paragraph proximity (= combine monomers together to form polymers)
(L)	Link proximity (= associate polymers with closely related terms; in this case the catalyst concepts)

Polymerization catalyst search in CAplus

=> FILE REGISTRY

Retrieve the polymers in REGISTRY (L7).

=> S ((74-85-1/CRN AND 115-07-1/CRN AND 2/NC) OR ((74-85-1/CRN OR 115-07-1/CRN) AND 1/NC)) AND PCT/FA

L7 26 ((74-85-1/CRN AND 115-07-1/CRN AND 2/NC) OR

=> FILE HCAPLUS

Use controlled terminology in HCAPLUS (L9).

=> S L7

L8 363446 L7

=> S "POLYMERIZATION CATALYSTS (L) ZIEGLER-NATTA"/CT

L9 6405 "POLYMERIZATION CATALYSTS (L) ZIEGLER-NATTA"/CT

=> S 97-93-8/CT

Registry number for triethylaluminum.

L10 18657 97-93-8/CT

=> S L8 AND L9 AND L10

HCAPLUS Indexing search (L11).

L11 2244 L8 AND L9 AND L10

Polymerization catalyst search in CAplus (cont.)

=> S POLYETHYLENE OR POLYETHENE OR POLYPROPYLENE OR POLYPROPENE OR POLY(W) (ETHYLENE OR ETHENE OR PROPYLENE OR PROPENE) OR COPOLYMER(1A) (ETHYLENE OR ETHENE) (1A) (PROPYLENE OR PROPENE)

L12 682676 POLYETHYLENE OR POLYETHENE OR POLYPROPYLENE OR

=> S TRIETHYLALUMINUM OR TRIETHYL(W)ALUMINUM OR TRI(W)ETHYL(W)ALUMINUM OR 97-93-8/CT

L13 19214 TRIETHYLALUMINUM OR TRIETHYL(W)ALUMINUM OR

=> S L12 AND L13 AND ZIEGLER

L14 3210 L12 AND L13 AND ZIEGLER

=> S (L11 OR L14) AND P/DT AND PY.B>1995

L15 1344 (L11 OR L14) AND P/DT AND PY.B>1995

The Indexing (L11) and text search (L14) strategies are combined, and limited by basic publication year (/PY.B) (L15).

CAS Polymer Indexing code definitions

Registry:

74-85-1/CRN	Ethylene Component Registry Number
115-07-1/CRN	Propylene Component Registry Number
1/NC	Number of components = 1 (Homopolymer)
2/NC	Number of components = 2 (Binary copolymer)
PCT/FA	Polymer Class Term available (Limit to Polymers)

CAplus:

97-93-8/CT	Triethylaluminum (including non-specific derivatives)
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Search strategy

1. Search in DWPI and HCAPLUS for the polymerization aspects, except for the size.
2. Transfer results from WPIX and HCAPLUS into PCTFULL to perform the size limitation search.

Transfer and combine results in PCTFULL

=> FILE PCTFULL

=> SET HIGHLIGHT OFF
SET COMMAND COMPLETED

=> TRANSFER L6 1- PN WITH "WO"
L16 TRANSFER L6 1- PN WITH "WO" :
L17 562 L16
ALL TERMS IN L16 RETRIEVED.

=> TRANSFER L15 1- PN WITH "WO"
L18 TRANSFER L15 1- PN WITH "WO" :
L19 456 L18
ALL TERMS IN L18 RETRIEVED.

=> SET HIGHLIGHT ON
SET COMMAND COMPLETED

=> S L17 OR L19
L20 821 L17 OR L19

Tip: Use SET HIGHLIGHT to disable or enable hit term highlighting, as needed.

Transfer only WO documents from the WPIX search (L6).

Transfer only WO documents from the HCAPLUS search (L15).

Combine the WPIX (L17) and HCAPLUS (L19) polymerization catalyst results (L20).

Perform the size limitation search

```
=> S L20 AND CATALYST/CLM(S) 50-200 MICROMETER/SIZ  
L21          12 L20 AND CATALYST/CLM(S) 50-200 MICROMETER/SIZ
```

Limit to a size of 50 – 200 micrometers in the claims (L21).

```
=> D KWIC 1-12
```

```
L21 ANSWER 1 OF 12 PCTFULL CO
```

Reminder: KWIC is a free-of-charge review format for text searches in PCTFULL.

```
CLMEN
```

1. A **catalyst** system for polymerizing an olefin, comprising: a solid titanium **catalyst** component having a substantially spherical shape and a diameter from about **3 microns to about 150 microns** (on a 50% by volume basis), the solid titanium **catalyst** component comprising a titanium compound and a support made from a magnesium compound and an alkyl silicate; from about 5 ppm to about 3000 ppm of an antistatic agent based on the weight of the **catalyst** system; optionally an organoaluminum compound having at least one aluminum-carbon bond; and optionally an organosilicon compound,
. . . .

Perform the size limitation search (cont.)

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. . . .

Note: Not all of the answers are perfect matches to the intended search query.

CLMEN

21. The supported **catalyst** system of any of claims 14-20, wherein the at least one **silica support material** has a particle size distribution in. . . . the particles have a size below 12 microns, and no more than 8% of the particles have **a size above 50 microns.**

. . . .

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. . . but many are exactly what was searched for.

CLMEN

1. A **catalyst** system for the polymerization of ethylene comprising: a solid titanium **catalyst** component having a diameter **from about 5 microns to about 60 microns** (on a 50% by volume basis), the solid titanium **catalyst** component comprising a titanium compound and a support made from a magnesium compound, an alkyl silicate, and a monoester; and. . . .

The new PCTFULL summary

- Higher quality of full-text
 - Better identification of claims and descriptions
 - Improved bibliographic data incl. priority numbers
 - More machine translations into English
 - Searchable address data
- Numeric property searching within all English language text fields
 - More than 30 chemical and physical properties
 - Automatic unit conversion
 - Flexible data input (exact values, ranges, tolerances, units, orders of magnitude, etc.)

Resources

- PCTFULL database summary sheet
<http://www.stn-international.com/pctfull.html>
- PCTFULL reload enhancements
http://www.stn-international.com/pctfull_reload.html
- General Information on the STN Units System
<http://www.cas.org/support/stngen/doc/stnunits/>

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- Access the questionnaire with the link below:
- http://www.stn-international.de/pctfull_quest.html

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