

Plastic Properties Database

FILE DESCRIPTION

The **Plastic Properties Database**, which is owned by Gardner Publications, Inc., provides detailed engineering and design data, chemical descriptions, and trade names for over 11,500 grades of plastics materials. Records may contain up to 65 properties and characteristics for each grade. Data is provided for thermoset, thermoplastic, and elastomeric materials in more than 60 generic families.

The file is especially useful to design and manufacturing engineers for finding plastic materials with the desired combination of engineering and processing properties. Numeric data is searchable to allow selection of materials that meet design requirements. Results can be displayed in tabular format for easy comparison and evaluation of plastics having appropriate performance characteristics.

SUBJECT COVERAGE

References to plastic materials in the Plastic Properties Database include the following types of information:

- Chemical Type
- Physical Properties
- Electrical Properties
- Price
- Manufacturer Name
- Processing Properties
- Mechanical Properties
- Thermal Properties
- Optical Properties
- Trade Name

SOURCES

The data in the file is obtained from plastics materials suppliers.

DIALOG FILE DATA

Inclusive Dates: Current Through February 1999

Update Frequency: Closed

File Size: 12,774 records

CONTACT

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SAMPLE RECORD

DIALOG(R)File 321:Plastic Properties Database
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00007314

/TN, TN=, /NA, NA=	TRADE NAME: Plexiglas
/MT, MT=, /NA, NA=	MATERIAL TYPE: Thermoplastic
/GN, GN=, /NA, NA=	GENERIC FAMILY: Acrylic
/CO, CO=	SUPPLIER: Rohm and Haas Co.
/PT, PT=	PROCESS TYPE: Extrusion, Injection
/CT, CT=, /NA, NA=	CHEMICAL TYPE: Amorphous
GR=	GRADE OF MATERIAL: V826
FE=	FEATURE(S): Chemical Resistance; Weather Resistant; Heat Resistant
FD=	FDA APPROVED?: yes
	PHYSICAL PROPERTIES
FP=	Fill Percentage : 0 %
ML=	Melt Flow and Direction : 1.60 machine g/10 min
RM=	Recommended Melt Temp : 440 - 00550 degree F
VS=	Vicat Point : 232 degree F
SI=	Mold Shrinkage and Direction : 0.0020000 - 0.0060000 machine 0.0040000 - 0.0080000 transverse Inch/Inch
SG=	Specific Gravity and Temperature : 1.1900 ambient gm/cc
WD=	Water Absorption-24 hrs period : 0.300 %
RF=	Resin Form : pellets
NF=	No-Flow Point Temperature : 275 degree F
	MECHANICAL PROPERTIES
TY=	Tensile Strength at Yield : 10.200E03 PSI
TB=	Tensile Strength at Break Point : 10.200E03 PSI
EY=	Elongation at Yield : 4.50 %
EB=	Elongation at Break : 4.50 %
DL=	Deflection under load : 0.30 %
	ELASTICITY
FY=	Flexural Strength at Yield : 15E03 PSI
CS=	Compressive Strength : 17E03 PSI
TM=	Tensile Modulus : 4.500E05 PSI
FM=	Flexural Modulus : 4.5000E05 PSI
CM=	Compression Modulus : 4.500E05 PSI
SS=	Shear Strength : 9.7000 PSI
	HARDNESS
HR=	Hardness Method (Rockwell): M97
	ENERGY
II=	Izod Impact for material (1/8) : 0.23 ft-lb/Inch
IL=	Izod Impact for material (1/4) : 0.400 ft-lb/Inch
IF=	Izod low Temp Test. (ft-lbs/Inch) : 0.20000 ft-lb/Inch
IM=	Izod low Temp Test. (degree F) : -40 degree F
	THERMAL PROPERTIES
DA=	Heat Distortion Temp (at 66 PSI) : 223 degree F
DB=	Heat Distortion Temp (at 264 PSI) : 216 degree F
MI=	Maximum Intermittant Service Temp. : 215 degree F
MS=	Maximum Continuous Service Temp. : 198 degree F
TH=	Thermal Expansion Coefficient : 3.500000E-05 in./in./degree F
TC=	Thermal Conductivity and State : 1.30000E01 solid BTU/hr/sq
UL=	Underwriters Labs Flammability Rating: HB
FX=	Flammability Thickness : 0.1250 Inches
GT=	Glass Transition Temperature : 235 degree F
PS=	Process Temp. : 440 - 550 degree F
	ELECTRICAL PROPERTIES
DT=	Dielectric Strength, Short Term: 500 V/mil
DD=	Dielectric Constant (at 60 Hz) : 3.700 V/mil
DE=	Dielectric Constant (at 1 mHz) : 2.200 V/mil
DH=	Dissipation factor (at 60 Hz) : 0.05000E01
DM=	Dissipation factor (at 1 mHz) : 0.03000E01
VR=	Volume Resistivity : 1E18 Ohms/cm
SR=	Surface Resistivity : 1E15 Ohms
	OPTICAL PROPERTIES
HZ=	Haze : 2 %
LT=	Luminous Transmittance: 92 %
RI=	Index of Refraction : 1.490
	PRICING:
PW=	Price by Weight: 99 cent/lb FOB T.L.
PV=	Price by Volume: 4.25 cent/cubic inch
/DP, DP=	DATA PRESENT: Material Type (001); Generic Family (002); Process

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SAMPLE RECORD (cont'd)

DC=

Type (003); Chemical Type (004); Supplier (005); Trade Name (006); Grade of Material (007); Fill Percentage (008); Feature(s) (010); Melt Flow and Direction (011); Recommended Melt (012); Vicat Point (013); Mold Shrinkage and Direction (014); Specific Gravity and Temperature (016); Water Absorption - 24 hours (017); Tensile Strength at Yield (019); Tensile Strength at Break Point (020); Elongation at Yield (021); Elongation at Break (022); Flexural Strength at Yield (023); Compressive Strength (024); Tensile Modulus (025); Flexural Modulus (026); Compression Modulus (027); Hardness (Rockwell) (028); IZOD Impact (1/8) (030); IZOD Impact (1/4) (031); Deflection Under Load (032); Heat Distortion Temp at 66 PSI (035); Heat Distortion Temp at 264 PSI (036); Maximum Intermittant Service Temperature (037); Maximum Continuous Service Temperature (038); Thermal Expansion Coefficient (039); Thermal Conductivity and State (040); UnderWriter Labs Flammability Rating (042); Flammability Thickness (043); Dielectric Strength, Short Term (044); Dielectric Constant at 60 H (046); Dielectric Constant at 1 mH (047); Dissipation Factor at 60 H (048); Dissipation Factor at 1 mH (049); Volume Resistivity (050); Haze (052); Luminous Transmittance (053); Index of Refraction (054); Price by Weight (055); Price by Volume (056); IZOD Low Temperature Test (059); Glass Transition Temperature (061); Resin Form (064); FDA Approved? (066); Shear Strength (078); Surface Resistivity (084); No-flow Point (088); Process Temperature (090); Low Temperature IZOD Test (159);

SEARCH OPTIONS

BASIC INDEX

SEARCH SUFFIX	DISPLAY CODE	REPORT (FIELD LENGTH)	FIELD NAME	INDEXING	SELECT EXAMPLES
—	—	—	All Basic Index Fields	Word	S PLEXIGLAS
/CO	CO	CO (19)	Supplier Name ¹	Word	S ROHM(1W)HAAS/CO
/CT	CT	CT (35)	Chemical Type ¹	Word	S AMORPHOUS/CT
/DP	DP	—	Data Present ¹	Word	S SPECIFIC(W)GRAVITY/DP
/GN	GN	GN (31)	Generic Family ¹	Word	S ACRYLIC/GN
/MT	MT	MT (15)	Material Type ¹	Word	S THERMOPLASTIC/MT
/NA	NA	NA (33)	Product Name ^{1,2}	Word	S PLEXIGLAS/NA
/PT	PT	PT (36)	Process Type ¹	Word	S EXTRUSION/PT
/TN	TN	TN (15)	Brand Name ¹	Word	S PLEXIGLAS/TN

¹ Searchable in the Basic Index and in the Additional Indexes.

² Includes Trade Name, Material Type, Generic Family, and Chemical Type.

ADDITIONAL INDEXES

SEARCH PREFIX	DISPLAY CODE	REPORT (FIELD LENGTH)	FIELD NAME	INDEXING	SELECT EXAMPLES
—	AN	—	DIALOG Accession Number		
AP=	AP	—	Applications	Phrase	S AP=MEDICAL GRADE
AR=	AR	AR (10)	Arc Resistance (sec) ³	Numeric	S 300< =AR< =600
AT=	AT	AT (8)	Abrasion Resistance Taber (Mg/1000) ³	Numeric	S AT=10
BF=	BF	BF (8)	Bulk Factor ³	Numeric	S BF=2.2
CA=	CA	CA (13)	Compression Set at 73 deg F for 22 hrs (%) ³	Numeric	S CA=23
CB=	CB	CB (13)	Compression Set at 158 deg F for 22 hrs (%) ³	Numeric	S CB=43
CM=	CM	CM (14)	Compression Modulus (PSI) ³	Numeric	S CM=450000
CO=	CO	CO (19)	Supplier Name ¹	Phrase	S CO="ROHM AND HAAS"?
CR=	CR	CR (9)	Crystallinity (%) ³	Numeric	S CR=30
CS=	CS	CS (15)	Compressive Strength (PSI) ³	Numeric	S CS=17000
CT=	CT	CT (35)	Chemical Type ¹	Phrase	S CT=AMORPHOUS
CX=	CX	CX (7)	Cure Time (sec) ³	Numeric	S CX=73
CY=	CY	CY (7)	Cure Temperature (deg F) ³	Numeric	S CY=300
DA=	DA	DA (16)	Heat Distortion Temperature at 66 PSI (deg F) ³	Numeric	S DA=223
DB=	DB	DB (16)	Heat Distortion Temperature at 264 PSI (deg F) ³	Numeric	S DB=216
DC=	DP	—	Data Present Code	Phrase	S DC=039
DD=	DD	DD (12)	Dielectric Constant at 60 Hz (V/mil) ³	Numeric	S DD=3.7
DE=	DE	DE (12)	Dielectric Constant at 1 mHz (V/mil) ³	Numeric	S DE=2.2
DH=	DH	DH (16)	Dissipation Factor at 60 Hz ³	Numeric	S DH=0.05
DL=	DL	DL (15)	Deflection Under Load (%) ³	Numeric	S DL=0.30
DM=	DM	DM (16)	Dissipation Factor at 1 mHz ³	Numeric	S DM=0.03
DP=	DP	—	Data Present ¹	Phrase	S DP=MELT FLOW?
DS=	DS	DS (11)	Dielectric Strength, Step/Step (V/mil) ³	Numeric	S DS=340
DT=	DT	DT (13)	Dielectric Strength, Short Term (V/mil) ³	Numeric	S DT=500
EB=	EB	EB (14)	Elongation at Break (%) ³	Numeric	S EB=4.5
—	EL	—	Elasticity		
—	EN	—	Energy		
—	EP	—	Electrical Properties		
EY=	EY	EY (14)	Elongation at Yield (%) ³	Numeric	S EY=4.5
FA=	FA	FA (22)	FDA Approval Number	Phrase	S FA=21CFR177.1520
FD=	FD	FD (8)	FDA Approved?	Phrase	S FD=YES
FE=	FE	—	Feature(s)	Phrase	S FE=HEAT RESIST?
FI=	FI	FI (18)	Flammability Oxygen Index (%) ³	Numeric	S 95< FI < =100
FM=	FM	FM (28)	Flexural Modulus (PSI) ³	Numeric	S FM=450000
FP=	FP	FP (7)	Fill Percentage ³	Numeric	S FP=0
FT=	FT	FT (25)	Filler Type	Phrase	S FT=BRONZE
FX=	FX	FX (7)	Flammability Thickness (inches) ³	Numeric	S FX=0.125
FY=	FY	FY (13)	Flexural Strength at Yield (PSI) ³	Numeric	S FY=15000
GI=	GI	GI (12)	Gardner Impact Test (ft-lb/inch) ³	Numeric	S GI=37
GN=	GN	GN (31)	Generic Family ¹	Phrase	S GN=ACRYLIC
GR=	GR	GR (14)	Grade of Material	Phrase	S GR=V826
GT=	GT	GT (7)	Glass Transition Temperature (deg F) ³	Numeric	S GT=235
HB=	HB	HB (10)	Hardness Method, Shore	Phrase	S HB=D60
HR=	HR	HR (10)	Hardness Method, Rockwell	Phrase	S HR=M97
—	HS	—	Hardness		
HZ=	HZ	HZ (18)	Haze (%) ³	Numeric	S HZ=2
—	ID	—	Basic Information		
IF=	IF	IF (10)	IZOD Low Temperature Test (ft-lb/inch) ³	Numeric	S IF=0.2
II=	II	II (10)	Izod Impact for material 1/8 inch thick (ft-lbs/inch) ³	Numeric	S II=0.23
IL=	IL	IL (10)	Izod Impact for material 1/4 inch thick (ft-lbs/inch) ³	Numeric	S IL=0.4

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ADDITIONAL INDEXES (cont'd)

SEARCH PREFIX	DISPLAY CODE	REPORT (FIELD LENGTH)	FIELD NAME	INDEXING	SELECT EXAMPLES
IM=	IM	IM (10)	IZOD Low Temperature Test (degF) ³	Numeric	S IM=-40
LT=	LT	LT (10)	Luminous Transmittance(%) ³	Numeric	S LT=92
MD=	MD	MD (11)	Average Molecular Weight Distribution (gm/mol) ³	Numeric	S MD=2.1
—	ME	—	Mechanical Properties		
MI=	MI	MI (14)	Maximum Intermittent Service Temperature (deg F) ³	Numeric	S MI=215
ML=	ML	ML (14)	Melt Flow (g/10 min) ³	Numeric	S ML=1.6
MO=	MO	MO (12)	Modulus at 100% Elongation (PSI) ³	Numeric	S MO=110
MP=	MP	MP (9)	Melting Point (deg F) ³	Numeric	S 300< =MP < =350
MS=	MS	MS (12)	Maximum Continuous Service Temperature (deg F) ³	Numeric	S MS=198
MT=	MT	MT (15)	Material Type ¹	Phrase	S MT=THERMOPLASTIC
MV=	MV	MV (11)	Melt Viscosity ³	Numeric	S MV=2500
MW=	MW	—	Molecular Weight (g/mol) ³	Numeric	S MW=38E4
MX=	MX	MX (12)	Modulus at 300% Elongation (PSI) ³	Numeric	S MX=1000
NA=	NA	NA (33)	Product Name ^{1,2}	Phrase	S NA=PLEXIGLAS
NF=	NF	NF (9)	No-Flow Point Temperature (deg F) ³	Numeric	S NF=275
—	OP	—	Optical Properties		
—	PP	—	Physical Properties		
—	PR	—	Pricing		
PS=	PS	PS (9)	Process Temperature (deg F) ³	Numeric	S 440 < =PS < =550
PT=	PT	PT (36)	Process Type ¹	Phrase	S PT=EXTRUSION?
PV=	PV	PV (14)	Price by Volume (cents/cubic inch) ³	Numeric	S PV=4.25
PW=	PW	PW (12)	Price by Weight (cents/lb FOB T.L.) ³	Numeric	S PW=99
RF=	RF	—	Resin Form	Phrase	S RF=PELLETS
RI=	RI	RI (10)	Refractive Index ³	Numeric	S RI=1.49
RM=	RM	RM (10)	Recommended Melt Temperature (deg F) ³	Numeric	S 425 < =RM < =500
SG=	SG	SG (16)	Specific Gravity (gm/cc) ³	Numeric	S SG=1.19
SI=	SI	SI (30)	Shrinkage (in/in) ³	Numeric	S 0.002 < =SI < =0.006
SP=	SP	SP (10)	Specific Heat (cal/gm) ³	Numeric	S SP=0.4200
SR=	SR	SR (7)	Surface Resistivity (Ohms) ³	Numeric	S SR=1E15
SS=	SS	SS (8)	Shear Strength (PSI) ³	Numeric	S SS=9.7
TB=	TB	TB (9)	Tensile Strength at Break Point (PSI) ³	Numeric	S TB=10200
TC=	TC	TC (17)	Thermal Conductivity (BTU/hr/sq ft/deg F/in) ³	Numeric	S TC=1.3
TH=	TH	TH (13)	Thermal Expansion Coefficient (in/in/deg F) ³	Numeric	S TH=3.5E-5
TM=	TM	TM (15)	Tensile Modulus (PSI) ^{3,4}	Numeric	S TM=450000
TN=	TN	TN (15)	Brand Name ¹	Phrase	S TN=PLEXIGLAS
—	TP	—	Thermal Properties		
TS=	TS	TS (23)	Tensile Creep Modulus (PSI) ³	Numeric	S TS=3.5E5
TY=	TY	TY (14)	Tensile Strength at Yield (PSI) ³	Numeric	S TY=10200
UD=	—	—	Update Code	Phrase	S UD=9999
UL=	UL	UL (10)	Underwriter Labs Flammability Rating	Phrase	S UL=HB
VR=	VR	VR (17)	Volume Resistivity (Ohms/cm) ³	Numeric	S VR=1E18
VS=	VS	VS (11)	Vicat Softening Point (deg F) ³	Numeric	S VS=232
WD=	WD	WD (17)	Water Absorption in 24hrs (%) ³	Numeric	S WD=0.3
WL=	WL	WL (11)	Water Absorption Long Term (%) ³	Numeric	S WL=0.25

³ In the record display, some numeric values appear in exponential floating point format. For example, a Flexural Strength at Yield of 15000 PSI (pounds per square inch) is shown as 15E03. For searching, the numeric value can be entered in several ways: either directly, without conversion to exponential form, or in exponential form, e.g., S FY=15000, or S FY=15E03, or S FY=15E3. Letter abbreviations are also available: K for thousands, M for millions, B for billions, and T for trillions, e.g., S FY=15K. To search a range of values, use numeric operators (i.e., >, <, >=, and <=), e.g., S MP=<=150, or S 79.0<MP<82.0.

⁴ Also known as Young's Modulus

SPECIAL FEATURES

For command descriptions, enter HELP LIMIT, HELP SORT, HELP RANK, HELP MAP online.

SORT	AP, AR, AT, BF, CA, CB, CM, CO, CR, CS, CT, CX, CY, DA, DB, DD, DE, DH, DL, DM, DS, DT, EB, EY, FA, FD, FI, FM, FP, FT, FX, FY, GI, GN, GR, GT, HB, HR, HZ, IF, II, IL, IM, LT, MD, MI, ML, MO, MP, MS, MT, MV, MW, MX, NA, NF, PS, PT, PV, PW, RF, RI, RM, SG, SI, SP, SR, SS, TB, TC, TH, TM, TN, TS, TY, UL, VR, VS, WD, WL	SORT S13/ALL/MP/MT PRINT S2/5/1-24/PT
RANK	All phrase- and numeric-indexed fields in the Additional Indexes can be ranked.	RANK MP RANK DP S4
MAP	TN	MAP TN TEMP S2

PREDEFINED FORMAT OPTIONS

NO.	DIALOGWEB FORMAT	RECORD CONTENT
1	--	DIALOG Accession Number
2	--	Full Record
3	Medium	DIALOG Accession Number, Material Type, Generic Family, Process Type, Chemical Type, Trade Name, Grade of Material, and Feature(s)
4	--	Full Record with Tagged Fields
5	--	Full Record
6	Short	Material Type, Generic Family, Process Type, Supplier, and Trade Name
7	Long	Material Type, Generic Family, Chemical Type, Supplier, and Trade Name
8	Free	Material Type and Generic Family
9	Full	Full Record
12	--	General Information and Physical Properties
13	--	General Information and Mechanical Properties
14	--	General Information and Elasticity
15	--	General Information and Hardness
16	--	General Information and Energy
17	--	General Information and Thermal Properties
18	--	General Information and Electrical Properties
21	--	General Information and Pricing
22	--	General Information and Data Present
23	--	General Information and Optical Properties
K	--	KWIC (Key Word In Context) displays a window of text; may be used alone or with other formats

OTHER OUTPUT OPTIONS

For an explanation, enter HELP TYPE, HELP REPORT, HELP UDF, HELP TAG online.

REPORT	Output can be displayed in table format. REPORT codes with field lengths in parentheses are listed in the Search Options tables. Default table width is 72 characters; use SET H 132 to set maximum table width.	REPORT S3/CO,PW/1-25
USER DEFINED FORMATS	Display codes listed in the Search Options tables can be used to customize output.	TYPE S3/CO,TN/1-5
TAG	Output can be displayed with tags identifying each display field.	TYPE S2/3/1-5 TAG
DIRECT RECORD ACCESS	If the accession number of a specific record is known, it can be used to display the record directly.	TYPE 0000016/5 DISPLAY 0007288/TN,CO PRINT 0001964/5

FOR ONLINE HELP:

See HELP FIELDS 321 for searchable fields; HELP FORMAT 321 for output formats; HELP LIMIT 321 for limits; HELP RATES 321 for cost information; HELP SORT 321 for sorts.